Book of Proceedings

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Moving People, Moving Forward

UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

INTRODUCTION

We are delighted to present the Book of Proceedings that is the result of an open call for submitted papers related to the work delegates presented at the AIESEP 2011 International Conference at the University of Limerick, Ireland on 22-25 June, 2011.

The main theme of the conference *Moving People, People Moving* focused on sharing contemporary theory and discussing cutting edge research, national and international policies and best practices around motivating people to engage in school physical education and in healthy lifestyles beyond school and into adulthood and understanding how to sustain engagement over time. Five sub-themes contributed to the main theme and ran throughout the conference programme, (i) Educating Professionals who Promote Physical Education, Sport and Physical Activity, (ii) Impact of Physical Education, Sport &Physical Activity on the Individual and Society, (iii) Engaging Diverse Populations in Physical Education, Physical Activity and Sport, (iv) Physical Activity & Health Policies: Implementation and Implications within and beyond School and (v) Technologies in support of Physical Education, Sport and Physical Activity. The papers presented in the proceedings are not grouped by themes but rather by the order they were presented in the conference programme. The number that precedes each title matches the number on the conference programme.

We would like to sincerely thank all those who took the time to complie and submit a paper. Two further outlets of work related to the AIESEP 2011 International Conference are due out in 2012. The journal *Physical Education and Sport Pedagogy* will publish a special edition of peer-reviewed papers from the conference and *QUEST* will publish papers related to the Keynote presentations.

We thank all those who attended and contributed to the conference programme.

Ann MacPhail & Mary O'Sullivan, Co-chairs Scientific Committee

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[1] The number represents the abstract number in the original programme.

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The Possibilities of Self-Movement: Magic, Mystery, and Wonder

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The aim of this paper is to evoke the magic, mystery, and vast possibilities of human movement by asking; 'What is the experience of self-movement?' A phenomenological research approach was used to generate and bring living experience of self-movement to text. Descriptions of these experiences will be presented and a critical reflection on the meaning of these experiences will also be shared. In this inquiry we question the notion of movement itself. The dictionary definition is that movement is the displacement of an object in physical space and chronological time. But in this definition the focus is on an object in motion and not movement itself. So what is movement? Movement itself is understood as a primary realm of possibility (Sheets-Johnstone, 1999). In such a realm, the descriptions and critical reflection led to the assertion that self-movement is the possible physical, mental, and spiritual degrees of freedom created in movement. Also, actively engaging in self-movement, in a state of wonder, surfaced as a means to extend one's degrees of freedom, create expanded possibilities, and develop one's capacities as mover within all the dimensions of human movement in an integrated fashion.

This research is directly related to the theme of the conference. It provides research with insights into best practices of individuals who engage in self-movement activities and how they sustain their engagement over time. This research can possibly bring back a childlike playful perspective of movement-consciousness understanding that we are all born into a magical and mysterious world of movement as wondrous creatures who discover themselves *in* movement, through one's self-movement. Over time we, or sometimes "others" impose restrictions to our movement capacities bringing us in an "I can't" perspective. At best what we can do is nurture our own wonder of human movement, as well as help nurture this wonder in others. This paper

also extends questioning the impact of Physical Education, sport, and physical activity on the individual and society by questioning the impact of one's self-movement experience in general on the individual and society.

Key Words: Self-movement, movement, wonder, phenomenology, possibilities

The Possibilities of Self-Movement: Magic, Mystery, and Wonder

This paper asks the question: What is the experience of self-movement? To inquire into that question, the self-movement context of freeskiing has been chosen. Freeskiing is a generation of skiing where the freeskiers are free to express their connection with the mountain in any way they like. The freedom of this experience of skiing also presents limits and restrictions. The limits and restrictions are created in the relation between the individual freeskier and the more-than-human forces of the mountain including drastic weather change, slope, exposure, freezing temperatures, snowstorms, avalanches and so on.

To inquire into freeskiing self-movement, a phenomenological approach was chosen. Phenomenology intends to evoke human experience through descriptive writing (van Manen, 1997).A main question in phenomenology is "how can we let that what shows itself be seen in the very way that it shows itself" (vanManen, 1997, p. 45). Merleau-Ponty (1962) offers an answer to this question:"(by) re-achieving a direct and primitive contact with the world" (p. vii). But how does one re-achieve such contact with the world? Merleau-Ponty (1962) again provides an answer suggesting "turning to the phenomena of lived experience by re-learning to look at the world, by re-awakening the basic experiences of the world" (Merleau-Ponty,1962, p. viii). How do we do this? By investigating experience as we live it rather than as we conceptualize it (van Manen,

1997). Sheets-Johnstone (1999) writes, "a phenomenologist inquiring into movement would be remiss if she/he did not attend to her/his personal experience in movement" (p. 201). Phenomenological texts evoking experiences can take many forms; for this text, I have chosen first-hand accounts of human experience where poetic devices are used to draw the reader into the experience of interest.

For this text the narrative 'A Day With The Mountain' has been chosen to evoke the experience of self-movement in the context of freeskiing. A Day With The Mountain is a narrative of a personal experience with the mountain and within the narrative I have weaved the conceptual developments that have surfaced throughout this inquiry. The shifts between the narrative and the conceptual development are indicated with the narrative being italicized and at times five snowflakes are aligned as such, * * * * *, to indicate big shifts in the text. The *line* plays a vital role in the experience of this inquiry. The *line* is the line written with my skis upon the blank field of snow on the mountain and at the same time, the line is the line that I write upon the blank page with my pen. The doubling of the line is that I write while I ski, and I ski while I write.

"A Day With The Mountain"

My being is stirred with a sense of possibility as I gaze out my frosted window and see a snowflake gently floating to the earth.The single flake is joined by others and without warning flakes of snow are dancing in the sky, and accumulating on the rising ground below. The snowflakes speak, they share stories and in their voice I hear the lingering aura of opportunity from pastexperiences with snow, opportunity to fly, and fall in the possibilities of movement. A rush of energy surges throughout my being.

Melting wax drips from the iron onto the base of my skis. My backpack rests on the floor beside me packed with food, water, avalanche equipment, and extra clothing. I slowly guide the iron back and forth in a smooth flowing motion. Simultaneously my body recognizes this smoothness and thoughts of fresh powder-turns flow into my presence and I am overcome with a sense of excited calmness. The wax, memories, and my intention for tomorrow seep into my skis, and I smile.Surging through veils of time within the veins of my body, there is a rush of movement,a rush ignited by the presence of snow.

This rush of movement is more than just a temporary rush of excitement or adrenaline it is "…an upsurge of feeling, literally a *rush* that comes over and flows through me…discernible as childhood vitality, playfulness, exuberance, spontaneity, and delight" (Smith, 2007, p. 51). This childhood vitality is steeped in wonder. At times the rush is barely felt, and at others it is unmistakably present. This returning to the rush of movement is a re-turning to the childhood vitality of being born *into* movement.

> In the beginning, after all, we do not *try* to move, *think* about movement possibilities, or put ourselves to *the task* of moving. We come straightaway moving into the world; we are precisely not *stillborn*…In the beginning, we are simply infused with movement—not merely with a *propensity* to move, but the real thing. (Sheets-Johnstone, 1999, p. 136)

Sheets-Johnstone (1999) elegantly continues to describe the pulsing primordial and pre-reflected power of movement and to honour her words, her awareness, and her articulations I have left this string of words intact.

> We all start out the same way: as infants. And we all learn to move ourselves: without words, at our own pace, directly from our own bodies in an environment of possibility, on the basis of primal animation. Primal animation and tactile-kinesthetic experience are at the core of our infancy and remains the unsurpassed core of our adult being.

> Not only did we all learn to walk and to speak, but prior to these fundamental "I cans", we all *discovered* ourselves in the acts of sucking, swallowing, crying, kicking, turning, stretching, reaching, smiling, babbling, and much, much more. In the process of discovering ourselves in all these ways, we expanded our repertoire of "I cans"; we learned possibilities of movement and became progressively aware of our capacity to move effectively with respect to these possibilities—by moving ourselves. It is important to emphasize that in these situations, we were precisely *discovering* our bodies, not *controlling* them. In attending to and exploring our primal animatedness, and in thereby learning the myriad ways in which our bodily movement related us, and could relate us, to a surrounding world, we were apprentices, not would-be masters, of our bodies. (p. 270-271)

* * * * *

The snow continues to accumulate, and as the rush gains momentum the experience of time begins to shift. The chronological time between my preparations and pushing off a mountain ridge diving into the fresh snow passes both painfully slow as well as oddly fast. In the swirls of this distortion of time I suddenly find myself with one foot perched on the edge of the mountain that my friends and I just ascended.Now standing on top of one of the peaks that was looking down on us earlier this morning, my friends and I assess the thin knife-edge ridgeline that extends in front of us. This ridgeline separates us from the zone of the mountain we wish to ski, so we are going to traverse it. This ridge is very narrow. To the left, the mountain falls with a dramatic slope of 60-70 degrees. To the right is an unnerving slope littered with cliffs and trees. We walk this ridge with slow and deliberate steps. My focus narrows to the earth directly in front.

Pausing in the middle of the ridge-walk I notice thin clouds wisp below me. I visualize the town I'm living in in the distance. I can visualize the sidewalk I walked on yesterday thousands of feet away and instantly notice a difference between that walking experience and this ridge-walking experience.A change has occurred. I quickly notice

that something presented on this ridgeline has drastically changed this walking experience.

It is the presence of possibility.

* * * * *

Movement: A Realm of Possibility

In *The Primacy of Movement* Sheets-Johnstone (1999) acknowledges and challenges the common notion and dictionary definition of movement as simply being the displacement of an object in space. Such a concept of movement restricts movement experience to solely a physical realm. My ridge-walk and sidewalk experience brings to life a living experience where movement is far more than the interplay of physical forces. The physicist would tell us that the physical forces of sidewalk walking and ridge walking, are the same, the biomechanist would tell us that the motor ability needed to walk on these different terrain are also the same (or at least very similar). However, there is something quite different about the two experiences. A change has occurred in a force that often remains beyond my awareness: the force of possibility.

Along this ridgeline with the mountain plummeting steeply on either side the possibility of becoming vitally injured if my friends or I were to fall increases dramatically. This possibility of injury is far less glaring or even present when I am walking along a sidewalk. As the force of possibility increases, my experience in movement presents the elements of movement beyond physical displacement.Mental and emotional fluctuations of varying degrees begin to surface, as does my awareness of the spiritual element of movement, in the form of forces more powerful than myself. I

recognize that the displacement of my physical body cannot be removed from my emotional, mental, and spiritual body in my self-movement experience.

The physical display of movement is enchanting and simply amazing, and yet the physical realm of movement is the surface of an inexhaustible depth (Merleau-Ponty, 1964a). Sheets-Johnstone (1999) suggests that we must forego the common notion and the common dictionary definition that movement is merely a change of position, both of which are *factual* views of movement.

> *As beheld in the natural attitude*, movement is the factual displacement of an object from point A to point B, thus a change of position. Our first task is to confront this view of movement and show how it not only conceals the essential character of movement but impedes a clear conception of movement from the start by centering attention not on *movement* but on an *object in motion*…in short, to elucidate our original kinetic liveliness, we need to clear a conceptual space in which it can appear. (p.233)

I observed my experience in movement with Sheets-Johnstone's words close at hand.I embrace Sheets-Johnstone's (1999) suggestion to forego the common notion and common dictionary definition of movement.Marcel (1950) sets the tone of the terrain we are entering by embracing Sheets-Johnstone's suggestion. He writes that movement itself is a mystery in need of evocative description and not a problem to be solved. These evocative descriptionscan contribute to understandings that might bring the mystery of movement more fully into our presence, consciously acknowledging that thismystery is unsolvable. So what is movement? And how does one describe such a mystery as movement?Some authors have taken up the challenge of describing the mystery of movement.

Movement is the foundational principle of nature.
Matter will surely not move itself.

(Aristotle, in Sheets-Johnstone 1999)

Movement, viewed and
experienced as a group of physical activities
that have inherent value and
therefore pursued as being worthwhile in themselves.
(Arnold, 1979)

Human movement,
a visible expression of an invisibly organized unit,
which leads a life of its own, fed by a spate of impressions,
which is conducted there by means of the receiving organs.
… *functional reciprocity*
of inner self and
the world.
(Van Den Berg, 1952)

Human movement
(does not so much emanate from a subject as it)
locates the subject
within a landscape
that appeals to his or her movements
and so situates
their meaning. (Smith, 2007)

Human movement
is an active response
that transforms
and restructures the
relation
between subject and world.
(Benswanger, 1979)

Movement
arises mimetically, not merely in the body,
but also in the
nexus and intertwining of bodily engagement
with the world. (Smith, 2007)

Movement,
the only reasonable and sufficiently uncomplicated label
to conceptually embrace
the interrelated terms
play, recreation, games, sport and physical education. (Arnold, 1979)

Movement as a source of knowledge.
The very condition of all forms of creaturely perception.
A creature-perceived phenomenon.
(Sheets-Johnstone, 1999)

> Rediscovery of movement beneath the objective idea,
> a pre-objective experience from which it borrows its significance
> and in which movement, still linked to the person perceiving it is a variation of the
> subject's hold on his world. (Merleau-Ponty, 1962).

In the beginning, there is movement.
Our very emergence as cognizing subjects is grounded in our original kinetic spontaneity.
What is already there is movement, movement in and through which the perceptible
world and acting subject come to be constituted,
which is to say in and through which we make sense of both the world and ourselves.
(Sheets-Johnstone, 1999)

Passing through the veils of movements' surfaces may be like passing through the surface of water, wide-eyed within a diver's mask where suddenly an entirely different world is presented. In this new presenting world, movement's depth appears as *a realm of possibility* in a kaleidoscopic momentum of physical, mental, and spiritual rushes, surges, stalls, and stillness. The possibilities in movement are both visible and invisible, both effable and ineffable, and I shift through the sheaths of movements depths within a living colourful field of possibility.

The emotional interplay of fear and longing swirls in my body, the presence of possibility threatens to explode upon this ridge. I teeter upon the thin line as experience itself is seducing me into the unknown. The force of the threshold resists the expansion. I breathe deeply,

and take a step…

and another…

and another…

deeper into movement.

Reaching the end of the knife-edge section, the ridge widens and steps become easier as the threat of falling and the possibility of dying dissolves. Directly in front of me is about three meters of flat calm ridgeline. After those three meters there is no slope to see. The steepness of the mountain pulls the earth away leaving us exposed to the space of the unknown. This is where we are planning on skiing. I say that we are planning on skiing here because we don't know what the slope is like today. There could have been an avalanche, or the threat of an avalanche might be too high that we have to come up with another plan. This is where the field of snow covering this mountain offers us the possibility to express my awareness of the possibilities of movement by freeski down its slope.

After carefully conversing with the mountain, asking her where I can ski, I have created an intention of where and how I want to ski. I wrap my hands around my poles firmly, I recognize the surface and instantly my body remembers. I lift my feet in my boots, which are connected to my bindings, which are attached to my skis. As clumps of snow roll off the tops of my skis and flop on the white snow I realize that poles, boots, bindings, and skis no longer exist in separation,they now become extensions of my body. My body is realized as part of the landscape, the length of my feet have extended to the measurements of my skis, my hands the length of my poles. My heart pumps a little harder to push blood into the hollows of the aluminum poles, the air bubbles of the

plastic boots, and the wood core of my skis, as they become saturated with hemoglobin and oxygen, the gear is alive.

I have been told that freeskiing is risky, dangerous, and even crazy. Yes, I am initially afraid. I am comfortable at the top of the run. And as I look down the mountain I see potential dangers. I fear falling, I fear hitting something under the snow, fear the trees. And yet a larger fear exists. I fear hearing my heart calling out to me, and feeling the rush of movement only to ignore it because I am afraid of the risks. Fear is wonderful, full of wonder. Fearforces me to be present in the moment. The presence of fear is me, telling me, that something wonderful is present and the possibility to engage with that wonder exists now. Embracing fear and being vulnerable to what possibilities it conceals tells me that I love life enough to risk dying and engage in a dance with all that she gives.

I look down the fall line of the mountain. My eyes scan the pristine untouched white slope. "The difference between poetry and prose is the turn on the page". The words that Carl Leggo shared with me in conversation flash a smile across my face, as I stare out onto an untouched page. Do I feel like writing poetry or prose upon this sheet? What will this sheet write upon me? This is the freedom of freeskiing, the choice to choose how to turn.

Freedom

Upon this mountain,
I am free to make turns wherever I want, however I want.
I am free to disconnect from body, mind, and spirit
Free to make a turn that could lead to falling, to injury, even to death.

This is part of this freedom.

I am free to create my own death. I am humbled by this freedom, grateful and blessed.

Upon this mountain,
I am free to make turns wherever I want, however I want.
I am free to connect to body, mind, and spirit
Free to make turns that could lead to flying, of health, even to be alive.

This is part of this freedom.
I am free to create my own life. I am humbled by this freedom, grateful and blessed

I am free

Self-Movement: Degrees of Possible Freedom

In this inquiry of asking what is the experience of self-movement my theoretical explorations were pulled to first ask what is movement itself. And now with a conceptual understanding of movement as a mysterious and magical realm of possibility I now turn my conceptual theorizing towards self-movement.

In this ongoing inquiry of self-movement I engaged in conversations with freeskiers with regards to their own experience in self-movement. One of the freeskiers that contributed to my inquiry was Josh Dueck. Josh broke his back demonstrating a front-flip while coaching some younger freeskiers. During one of my conversations with Josh he said.

"So John has asked us what our experience in movement is like. The more I thought about it in terms of what does movement actually mean, and what does it feel like, the more complicated I tried to make it. In reflecting on movement I realized that years ago I got the just of it, its that right there!" [Josh lifts up his shirt and slaps at a tattooed word that spans the width of his belly.] "It's freedom!"

Sheets-Johnstone (1999) says, “Any movement we make has certain degrees of freedom. That it does—that our movement is freely variable—is a measure of the qualitative nature of movement and potential conceptual richness of our unfolding kinetic consciousness” (p. 138). Josh talks about his *experience in movement*, and Sheets-Johnstone (1999) says any movement *we make*. I understand both of these statements to be synonymous with what I call *self-movement*.

To help understand the developing concepts of movement as a realm of possibility, and self-movement containing variable degrees of freedom, I call upon the snowpack in the mountains. Movement with its immeasurable possibilities is like the snowpack that blankets the mountains. All the trillions and trillions of snowflakes that fall on the mountain, are needed to create the medium to freeski.Each snowflake is different and connects with other snowflakescreating the web of possibility.For self-movement like the snowflakes on the mountain there are trillions of elements that combine to create the web of possibility to move.The ongoing conversations with Josh and other freeskiers, my personal experience, and the literature such as Sheets-Johnstone (1999) self-movement has become*possible* physical, mental, and spiritual *degrees of freedom*created within the expansive realm of possibility that is movement itself. The conceptual developments of self-movement and movement have me feeling like I’m standing on a theoretical threshold, much like standing on the ledge of the mountain ridge.

My body leans forward in anticipation. My wonder has seduced me to the edge of the ridgeline and forces me to peer over the liminal line between known and unknown.

My gaze falls into the exposed space before it reaches the surface of the snowpack. My heart is pounding, my breath is fast and short. I visualize three or four turns before the steepness of the slope pulls the rest of the mountain out of sight. My body extends further still into the visible and invisible terrain which I am becoming, as it becomes me.In the abyss, improvising with instinct and reflex will guide my flight.

That same feeling and bodily reactions to wonder reappears while I write about these experiences. It is a feeling felt most in my chest and upper belly, a spontaneous state of presence, variably weighted with fear and longing, where:

> Neither fear nor longing are monolithic facets of the feeling of wonder…Fear and longing come in various affective shades. In turn, their dynamic form—the tactile-kinetic proclivities they embody—is variable. Moreover, whatever the initial emotional shading of wonder, the emotions can wax and wane and thus colour the global feeling of wonder and its particular tactile-kinesthetic character. (Sheets-Johnstone, 1999, p. 327-329)

Upon this ridgeline peering with deep seeking eyes,amidst the fear a smile flashes across my face because I know something wonderful is present, and that I will be extended in some way in this self-movement experience.

I remain motionless at the top of the mountain, I am moving, moved. I can feel the mountains energy ascending into my Being as I focus on the first turn. My awareness extending into the vastness of Natures secrets.

As I push off the ridge.The accumulating momentum of movement reaches a threshold wherein the moment opens to the first turn.

Accumulated energy stored in the depth of flesh,

the visceral sensibility beneath the sensorimotor surface of the body

key to worldly interactions is called to attention.

In this circulation, a fluid connectivity and reciprocity
as blood boils, pressing against skin
moist breath heaves as movement explodes

Muscles contract, pupils dilate, capillaries expand,
neurotransmitters fire, hormones are released,
a flurry of action

I feel the momentum of movement carrying me away…
from something
theorizing and concepts cannot keep up
even words struggle with the pace
the threaded thoughts that connect concepts
theory
and words
are stretched clinging to the connection
until they surrender to the force
and let go.
Somehow the release is not a disconnect,
it is a sinking in.
Concepts, theories, words dissolve into
the landscape of movement
so intimately that there is no separation.
This carriage carries me
I pass over…

The equipment, the physical training, my physical form
work synchronistically transporting me into the mountain.

I let them go…

Snow begins to pile
against my knees and thighs as I gain speed.
My senses are reeling with the familiar sensation,

The snow piles higher against my body
as I sink into a pool of air decorated with trillions of snowflakes.
The carriage of movement shifts beyond the physical.

My minds fluctuations surface,
Thoughts, fears, images,

Breathe *Inhale* *Exhale*

Threshold

Surrender

Sink

Thoughts dissolve, images fade
A moving meditation

Gravity, the forest, and time, have been embraced.
Fear and feelings have been directed to a focus in the moment.
I meet my fear on neutral grounds.
Now we can dance together

Experience falls into each other,
connected with rhythms of a living-experience
layers fall away and I stand naked with the world,
confident that I belong.

I approach the ledge of a cliff
Without hesitation my skis
pass over the ledge
and I am launched into the air
Dormant forces come alive

The motion of movement fades
And the moment arrives

Breathe

The moment is free from time, it is stillness,
the eternally moving, non-mover

Within the depth of movement lies the seed of stillness,
and in stillness lies the seed of movement.
Profound is the stillness before action.

Stillness occupies space and time,
while containing the potential of movement.
stillness becomes movement,
while movement becomes stillness.

'Still' not moving or making a sound,

'ness' a state or conditions

The ness of being still.

Still what?

"I'm still skiing"

"I will still ski in the future"

"Skiing is risky, still I feel safe while skiing"

"Keep skiing, better still, ski more."

Stillness, from which the first movement came
is more movement than movement
Stillness is the available movement of the moment.

in stillness while little is 'uttered', everything opens to possibility.

There is no momentum to anticipate or intercept,

In the moment, stillness is more movement

than movement is movement,

but there is no separation.

The constant interplay of movement

within stillness

and stillness within movement.

The moment presents an understanding more ancient than thought.
Shifting away from presence
conceals this current of understanding.
In presence layers dissolve revealing nakedness, confidence, and belonging.

Like the pause between each inhale

and each exhale,

like Rumi acknowledging the source of his words,

fluctuations are calmed in

movement

the moment

stillness

silence

silence leads through sheaths of
physical and mental fluctuations,
an experience of some spiritual presence
is shared with words
as words falter and bow down to the experience itself

this experience is the Whiteroom.

A room decorated by snowflakes,
A feeling stirred by wonder
A belief of something more
An experience of…who knows

Stillness has a weight that we do not find in any word
It is heavy with our living experience

With a deep exhale

Skis return to snow
Snow flies in the air
The world goes white

and we enter this
room, this line

beyond

words

together

What Is this Experience of Self-Movement?

As my conceptual understanding of movement and self-movement continues to develop I return to the main intention of this inquiry which was to ask what is the experience of self-movement. I have become aware that the possibility that each self-mover is conscious of, opens themselves to, and or makes herself or himself vulnerable to in movementcreates the self-movers degrees of freedom. Our degrees of freedom are constantly shifting; they are the collective sum total of the possibilities of the physical, mental, and spiritual dimensions of movement. What affects the expansion and contraction of the degrees of freedom we are creating with our self-movement experience? What has surfaced from this inquiry is that wonder plays a vital role in the expansiveness of self-movement experience.

The A Day With The Mountain experience was one of wonder in which I know I must risk something to sink beyond the surface of my possibility. Simply pushing off the ridge and sliding into the snowfield exposes me to the unknown. And as I break through one threshold of experience I am met with another. This can be a profoundly unsettling experience and at times I wonder why bother? Why turn my gaze into the depths of my capacity? Why seek more? Because when we turn towards the unknown with wonder we“open ourselves to unforeseen twists and turns, to outcomes we do not remotely suspect, to feelings we did not know were there, to ideas that are unsettling to our ways of thinking and to our comfortable way of life” (Sheets-Johnstone, 1999, p. 336-337). When we turn towards the unknown with wonder we turn towards the “possibility of discovering fundamental aspects of our freedom” (ibid). The freedom of self-movement created by wonder in movement includes a vast range of experience evoked by fear and

longing. Such experience extends our consciousness, extending the self-mover beyond understandings of one's physical and mental synaesthetic possibilities in connection with the mimetic possibilities of forces 'outside' ourselves. In such an experience movement itself as a realm of possibility is released further still into a field of freedom within which our self-movement degrees of freedom constantly slide, shift, and slip in connection with the possibilities of the moment.

If movement is an expansive realm of possibility that forms me before I form movement (Sheets-Johnstone, 1999), then coming to understand how the self-mover and consciousness of possibility are held together in movement, may be quite helpful. Here "we must not make the mistake of considering movement-consciousness merely as an "affect" of movement" (Smith, 2007, p. 66). Movement-consciousness isthe self-mover's consciousness of the possibilities of movement. This movement-consciousness is part of the relationship between self-movement and movement. But what is this relationship between movement and self-movement?

In movement, "we bring a certain play of forces to life and spatialize and temporalize them in the process. An overall dynamic with distinctive qualities is created by our movement and experienced in our kinesthetic consciousness of movement" (Sheets-Johnstone, 1999, p. 147). This is my understanding of the experience of self-movement; bringing to life a certain play of forces and possibilities that exist in movement itself. The forces we bring to life in our self-movement experience are largely dependent upon our consciousness of movement, dependent upon the possibilities that we are aware of. This is my understanding of the relation between self-movement and movement.

The experience of ‘A Day With The Mountain’presents this relation between self-movement and movement. The play of forces and possibilities brought to life in freeskiing in this inquiry were understood to be degrees of freedom for the self-mover. The degrees of freedom in self-movement were presented as a state of flux between expansion and contraction. At times the freeskiing experience is constricted to a limited consciousness. At times my thoughts are so loud that they are seemingly all that I can attend to. The thoughts can be about anything, a person, work, and an idea, whatever, the point is that my self-movement experience is laden with thoughts. At times my physical body demands my consciousness; weak legs, cold hands, sore feet, shortage of breath and so on draws and sustains my consciousness. Within this constricted self-movement experience I would continue to for instance move up the mountain, however, my consciousness of the changing texture of the snow, or of the subtle breezes in the air was not as apparent to me. My consciousness that I was aware of would be constricted.

The ‘A Day With The Mountain’ narrative also describes the experience of expanded self-movement. My expanded self-movement experience is an experience of deep integrated consciousness. In this experience thoughts would come and go smoothly. I was present in my body but not locked within my skin. My consciousness would expand beyond my thoughts, and my body, into my surrounding environment. Van Den Berg (1952) calls this expanded self-movement experience silently-passing-beyond-oneself into the landscape of movement. According to Csikszentmihalyi(1990, 1997, 2000) this expanded experience of self-movement is a state of flow. Curiously Csikszentmihalyisays that expanding beyond awareness of our thoughts and our physical bodies is a decrease of consciousness, where we become less conscious of elements of our self-movement i.e.

our thoughts or physical bodies. Drawing upon the likes of Merleau-Ponty (1962), Sheets-Johnstone (1999) and Smith (2007) consciousness is a chiasmic experience. Consciousness is an intersection of a web of relations where I am touching and being touched by the world. In this conscious, web of relations is like two hands touching each other, and I can ask which hand is touching and which is being touched? Consciousness is a criss-crossing of the flesh of being which reminds me "both of my implication in the world and of my inevitable separation at times from it" (Merleau-Ponty, 1962, p. 130). Within this chiasmic web of consciousness we have various elements of consciousness such as cerebral, corporeal, synaesthetic, mimetic, and collective consciousness. It is my tentative understanding that self-movement experience fluctuates within that chiasmic web of relations and when I experience expanded self-movement experience I am becoming *more* conscious of my self-movement rather than less conscious, as proposed by Csikszentmihalyi(1990, 1997, 2000).

The landscape of movement involves an enormous variety of possible experiences, a realm of possibility.I have come to understand that as we engage in self-movement, we create new degrees of freedom as we open to previously unknown possibilities of movement. Yet the vastness of possibilities of movement extends beyond the horizons of our self-movement experience. Beyond the horizons of our self-movement experience there seems to lie a great cavern of unknown possibilities, a mysterious void, the space between the visible and the invisible. For the understandings, the concepts, the experience of self-movement that have surfaced in this inquiry there continues to exist or at least I believe there exists potential fields, forces, possibilities, and experiences in movement that are beyond measure, that are incalculable, and that

remain mysterious.Moving towards unknown mysterious possibilities is magical, is a part of development, and growth, and learning, it is a part of being alive a part of being animated.

Turning Towards Wonder

How can we celebrate, challenge, and nurture our self-movement connection with movement? How does one continue to discover oneself in movement? How does one continue to expand her or his self-movement degrees of freedom? What has surfaced in this inquiry is that wonder plays a vital role in the ongoing celebration, challenge, and nurturing of one's self-movement experience.

Wonder opens me up, pulls me, amidst fear and longing, into the mysterious cavern of unknown possibilities. Occupying the space between, moving into the cavern of the unknown is an experience of being vulnerable, and that vulnerability contributes to discovering and creating my self-movement capacities in movement. Moving into this cavern I re-discover myself anew in movement. Ire-turnto being an apprentice of my body, my movements, andmy capacities.

Wonder expands my movement consciousness. Wonder is a spontaneous experience of fear and longing both deep and shallow. Shallow wonder passes like a shooting star while deep wonder seduces me to the edge of my understanding. Seduced to the edge of what I consider possible. Upon the liminal ledge between known and unknown I am invited, and at times I am compelled to peer over the edge of the known to look into the vastness of the unknown into the untouched snowfield of my possibilities. In wonder I lean into the unknown with longing while simultaneously fleeing with fear of

the very same field of possibility that draws me in. At times the tension in wonder feels like it will rip me in two where the longing aspect of me will tumble into the cavern of the unknown and the fearful aspect of me will tumble into the cavern of the known.

> Acceding to feelings of deep wonder, we are consistently and concurrently driven "into the creative poverty of not yet knowing" and into "the great longing". Indeed, only in holding on to wonder, thus to our creative poverty and to our great longing "to see if inside there is something wonderful. (Sheets-Johnstone, 1999, p. 333)

I am stirred by these words. For without wonder it seems vows of creative poverty can hardly be taken and "the result is that life, as it is actually lived, recedes into an experiential oblivion" (Ibid, p. 334). I wonder if I am creating vows of creative poverty with vulnerability, with risk, with wonder? Am I engaged in a dance of creative labour? And is an experiential oblivion present while I splash around in the shallows and dive deep into the depth of movement and self-movement?

Where Is the Space for Wonder In Physical Education?

Throughout this inquiry into the experience of self-movement I have noticed conceptual development in three main areas; movement, self-movement, and wonder. A deep appreciation for self-movement experience is what has occurred though development of my conceptual understanding of self-movement and movement. My intention is to continue to nurture my appreciation by continuing my inquiry into self-movement by challenging, questioning, and most important living self-movement experience. In addition I have a sense that a strong potential for self-movement educational experiences is emerging from this inquiry. My sense is that a curriculum created with movement as a realm of possibility, self-movement as possible degrees of

freedom within movement, and wonder as the pedagogical base could strongly affect the way self-movement is taught.

Asking what is the impact of Physical Education, sport, and physical activity on the individual and society is very important indeed. Yet for me within physical education, sport, and physical activity lies the experience of *self-movement*. And the question I am interested in asking is what is the experience of self-movement for the self-mover within any context. Additionally I wonderif the self-mover wonders about her or his self-movement capabilities?

The skier skis, pressing his form in the field of possibility of movement spraying words…

…simultaneously movement presses its form on the skier injecting words.

As I ski I press my form
into movement and words are born
shaped in the moment,
dissolved into the ineffable.
As I sink and rise
within the depths and shallows of movement
movement presses her form
on me.

The ebb
and flow.
Wordy and wordless
experience
seeping into the stitching of my soul
into the fabric of my flesh
accumulation
threshold
Sink, surrender, let go

Breakthrough

Release
My being is stirred with a

sense of possibility as I gaze
out my frosted window and
see a snowflake gently
floating to the earth.

In this accumulation
of possibility
light is scarce.
I curl
into myself;
movement seems
limited

a claustrophobic darkness
sets in as physical
fluctuates and mental frustrates
trying to birth the
pregnant possibilities of the moment

Corporeal thinking deepens my contact with
the
choreography of the movement field,
openings into the depths of movement are presented

Through the clearing I move.
Following the curling of my fingers, the flexing of my legs,
andturning towards the unknown.
I plunge into movements' atmosphere
giving rise to a whole cascade of events.

Kinetic energy is transformed into a shower of possibilities,
absorbed and penetrating deeper undergoing multiple collisions
a continual flow of energy going through a great variety of
possibilities in a rhythmic dance of creation and destruction.

Thinking loses itself, going very deeply into the body
Sinking deeper into body thinking releases a wonderful intelligence inwrought in
being flesh and bone of the world

A body of ontological understanding emerges with the clearing of space meeting in
the enchantment of presence.

Time and space are to the moment, as mind and body are to the spirit.

Self-movement is encountered, as an intentional arc
a melodic gathering and laying down,
a momentum of movement extends anatomical, physiological, and mental,
experience stimulated by the birth of possibility, an invitation,
a potent acceleration

Wonder pierces through the clouds
And as the clouds begin to part,

I extend,
brought beyond the edges of myself,
brought into the expanse of my gaze
Each instant of the movement embraces its whole span
movement continues to call for fulfillment
through the ongoing cultivation,
and deepening of an
individualappreciation of being and becoming
within the field of movement.

The pulse of possibility sets an anthmic rhythm,
A voice familiarly alien swoops into the atmosphere
Twirling and twisting through the medium of movement
dancing and defying gravity.

Light refracts off the surface of the single flake,
Turning in suspended mystery,
the suns rays penetrate its crystallized contours
entering as the spectrum of colour,
of reds,
oranges,
yellows,
greens,
blue,
indigo,
violet.
Exiting as the spectrum of wonder,
as the ray passes through this prism of possibility
transcending the surface and is altered.
Now magic,
mystery,
fear,
love,
pain,

tension
balance.

The light refracts filling the atmosphere
with colours beyond words spoken, written,
or imagined,
they are felt and the feeling is ineffable.

The voice fades, as does the pounding pulse
of possibility,
The turn shifts, the snowflake comes to rest
on the earth,
light on its surface,
darkness smothered under its weight.

What is the experience of self-movement?

I wonder…

References

Arnold, Peter. (1979). *Meaning in movement, sport & physical education.* Heinemann: London.

Benswanger, Ellen. (1979). A contribution to the phenomenology of lived-space in early childhood. *Duquesne studies in phenomenological psychology,3*, 111-121.

Csikszentmihalyi, Mihaly. (1990). *Flow: The psychology of optimal experience*. New York: Harper and Row.

Csikszentmihalyi, Mihaly. (1997). *Finding flow: The psychology of engagement with everyday life.* New York: Basic Books.

Csikszentmihalyi, Mihaly. (2000). *Beyond boredom and anxiety: Experiencing flow in work and play*. San Francisco: Jossey-Bass.

Marcel, Gabriel. (1950). *Mystery of being.* South Bend, Indiana: Gateway editions.

Merleau-Ponty, Maurice. (1962). *Phenomenology of perception.*(C. Smith, Trans.). London: Routledge&Kegan Paul.

Merleau-Ponty, Maurice.(1964a).*The primacy of perception, and other essays on phenomenological psychology, the philosophy of art, history and politics* J. M. Edie, (Ed.). Evanston: Northwestern University Press.

Sheets-Johnstone, Maxine.(1999).*The primacy of movement.*Philadelphia: John Benjamins Publishing Company.

Smith, Stephen. J. (2007). The first rush of movement: A phenomenological preface to movement education. *Phenomenology & Practice, 1*(1),47-75.

Van Den Berg, Jan.Hendrik. (1952). The human body and the significance of human movement, *Philosophy and Phenomenological Research*, 13, 159-183.

van Manen, Max. (1997). *Researching Lived Experience*: *Human science for an action sensitive pedagogy.* London, Ont. The Althouse Press.

10

Learning 'in', 'through' and 'about' movement in senior physical education? The new VCE PE

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Abstract

Over the past decade there has been significant international interest in senior secondary examination in physical education. In the state of Victoria, Australia, a new physical education study design has been implemented in 2011. Using the new Victorian Certificate of Education Physical Education (VCE PE) as a case for our investigation this paper presents a critical analysis of the changes associated with the new study design. The research reported is a theoretically oriented study that draws on Arnold's (1979) three dimensions of movement to explore the new VCE PE course in relation to the representation and prospective expression of 'theoretical' and 'practical' knowledge. The research has three aims: (i) to re-articulate Arnold's dimensions of movement as a framework for inquiry, particularly in relation to curriculum developments in senior physical education; (ii) to critically examine the pedagogical intent inherent in the new VCEPE text and examine the prospective 'slippage' that may feature in interpretation and implementation; and (iii) to connect with and extend recent national and international debates about senior secondary physical education.

"Physical Education is being studied but only occasionally experienced" (Thorburn, 2007, p. 179)

1. Introduction

Over the past decade, the knowledges (and 'ways of knowing'[1]) that are addressed and recognized in various contexts of senior secondary examination physical education have attracted considerable attention internationally. The nature of 'appropriate' and/or 'worthwhile knowledge', the educational status of the subject and 'academic' issues related to a subject defined by practical/body work which may be seen as essentially 'non-academic', have a well established history of debate in the field (see for example Fitzclarence & Tinning, 1990; Green, 2005; Peters, 1966). Research focusing on curriculum developments in the UK and Australia in particular has provided valuable insights into the ways in which various course developments and associated assessment requirements have sought to extend the integration of 'theoretical' and 'practical' components of content (see for example Thorburn, 2007; Thorburn & Collins, 2003) and/or seek to enable the expression and recognition of varied abilities in senior physical education (Penney & Hay, 2008). That research has also highlighted, however, that for various reasons, changes to course specifications do not necessarily prompt the changes to pedagogy that may have been intended or envisaged by course developers – a scenario perhaps best illustrated by experiences in Scotland (MacPhail, 2007; Thorburn, 2009; Thorburn & Collins, 2003).

The position offered by Thorburn (2007) that "merging experiential learning with subject knowledge imperatives in ways which lead to authentic rather than contrived assessments of practical performance and subject knowledge" (p. 264) is important here, if different knowledges are to be thought of, and expressed in curriculum, pedagogy and assessment, as *mutually inclusive* and *inter-related*. Fahlberg and Fahlberg (1994) use the example of a runner to explain that running is both physiological and phenomenological, and that furthermore, that the physiological and phenomenological are inherently linked. In this paper we fore ground Arnold's (1979) work, and in particular, his emphasis of the *interdependency* of different dimensions of movement, as a conceptual reference point in

critical analysis of recently announced changes to the Victorian Certificate of Education Physical Education (VCE PE) course design and specifications. As we discuss further below, many of the curriculum developments in senior physical education and much of the associated research have made direct or indirect reference to Arnold's (1979) conceptualisation of learning 'in', 'through' and 'about' movement. In this paper we seek to re-articulate the Arnoldian dimensions of movement as a framework for inquiry, particularly in relation to curriculum developments in senior physical education and in so doing, connect with and extend recent debates about senior secondary physical education. We specifically examine the VCE PE course changes from two perspectives. Firstly, we focus on *the pedagogical intent* that is embedded in the changes. In so doing we examine the notions of learning 'in', 'through' and 'about' movement (Arnold, 1979) expressed in the new VCE PE, and therefore, also address the potential integration of 'theoretical' and 'practical' knowledges in learning experiences and assessment tasks. In considering these issues we also draw attention to the significance of course specifications from an equity perspective, in terms of the extent to which the changes can be seen as potentially enabling 'more and different' abilities to be recognised in senior physical education (Penney & Hay, 2008). Secondly, our analysis acknowledges and actively engages with the 'scope for slippage' (Bowe, Ball, & Gold, 1992; Penney & Evans, 1999) that is inherent in the new specifications, and that is acknowledged as an inevitable feature of interpretation and implementation of official texts. Here our focus turns to the 'likely' and potential pedagogic enactment of the changes, while maintaining Arnold's dimensions as the central point of reference. We address the respective roles that we foresee curriculum, pedagogy and assessment playing in determining how the three

dimensions will be expressed in practice, and consider both pedagogic possibilities and likely constraints amidst implementation of the new course in Victorian schools.

Before addressing the VCE PE, and also before specifically focusing attention on Arnold's (Arnold, 1979) three dimensions of movement, we provide a broader theoretically oriented commentary pertinent to the issues being pursued in this paper.

2. Physical Education and 'ways of knowing' physical activity and movement

"In the most extreme case, the nature of physical education is distorted, for example, when attempts are made to justify its value on the same criteria appropriate for an academic subject" (Wright, 2000, p. 273) (Wright, p. 273, 2000)

It has been widely acknowledged in the physical education and kinesiology literature that Descartes cogito ergo sum, 'I think, therefore I am' – the Cartesian dualism, has plausibly diminished the educational status of physical education (Kirk, Nauright, Hanrahan, MacDonald, & Jobling, 1996). In line with this thinking, Kretchmar (2005) asserts that the knowledge dualism of 'knowing that' is superior to 'knowing how', resulting in a tendency for intelligence with only one form of knowing that devalues action, particularly when it is physical. Unfortunately this binary that privileges theoretical or propositional/declarative knowledge over practical knowledge continues to pervade areas such as physical education teacher education (PETE) preparation programs, professional learning, and curricula; and arguably, particularly in senior school PE. In the state of Victoria, as has happened internationally (Green, 2005), such an approach was used to further 'academise' the study of physical education in early incarnations of VCE Physical education. Furthermore, we note that the form of theoretical knowledge that has invariably been privileged in such attempts to make an 'academic case' for PE is often a scientised, objective way of knowing, drawn from the biophysical sub-disciplines[2], which marginalises 'other' (Tinning, 2004) and alternate 'ways of knowing

We acknowledge that a call for a broadening of 'ways of knowing' movement has existed in physical education consciousness for decades, but also, that clear articulation of such understandings is still lacking in many physical education curriculum texts and

pedagogical practices. First and foremost, it is important to acknowledge that we believe that if we are to truly educate students about the breadth of understanding of human movement then it is essential all perspectives or ways of knowing are understood. Fahlberg and Fahlberg (1994) have written that we are in an era of science known as post-positivism. They suggest that multiple epistemologies (knowledges) are acceptable and if used in an integrated way correspond to respective aspects of ontologies (realities). In presenting an integrated framework for human movement research, they propose a model where meaning and matter are integrated, not as two separate realities, but one reality that is integrated with different levels. This approach shares similarities with Tinning (1998) and Loland (1992) who state that the teaching of physical education must be both a mechanistic/analytical and holistic/phenomenological; it is not an either-or situation.

On one hand such a (realities based approach) dualism is appropriate for analysis, as it provides some legitimacy to the often marginalised study of holistic/phenomenology. Bain (1995) has argued that "because of its philosophic assumptions, phenomenology has particular relevance to the study or movement" (p. 241), while Fahlberg and Fahlberg (1994) go one step further and suggest that understanding "…meaning in human movement can be facilitated through the study of consciousness via phenomenology and the study of meaning via hermeneutics" (p. 103). Thorburn (2007) has previously advocated for further exploration of phenomenological approaches and pedagogy as a means to enhance conceptual coherency of senior physical education. In exploring how such phenomenological approaches might be 'framed' within physical education, Brown and Payne (Brown & Payne, 2009) provide some historical and contemporary understanding, via the presentation of postmodern social science literature related to physical education. They draw on work of Sparkes (1992) who opened up perspectives, approaches and 'ways of knowing', examining how researchers might represent interpretive, phenomenological and hermeneutical methodologies. More recently, Hopper et al's (2008) polyvocal review provides some additional insights into the philosophy of social science and truth claims about knowledge. Such 'voices', genres of inquiry and 'ways of knowing'; realist tales, confessional tales, poetic representations, fictional representations, narrative inquiry,

auto-biographical, auto-ethnographical sit concomitantly with Thorburn's (2007) statement on senior physical education that "…the phenomenological route…is not the only route possible, and within an increasingly global and culturally pluralistic world, other writers might like to theorize about other viable philosophical options" (p. 272).

We also feel that research beyond physical education/kinesiology can usefully inform debates and provide new insight into 'other ways of knowing'. Two significant examples support such a premise. The work of Belenky, Clinchy, Goldberger, and Tarule (1986) and that of Payne and Riddell (1999), the first from education, the second from environmental education highlight the importance of epistemological and ontological pluralism as it applies to scholarly inquiry, curriculum development/planning and pedagogical practice. For example, the work of Belenky et. al.'s (1986) examining women's experiences, identity and intellectual development of a diverse group is seminal to the field and theory of knowledge as it situates and privileges in language/text the often marginalized embodied experiences of the participants. In (re)presenting ways of knowing, being and understanding the environment, Payne interviews Riddell on the meaning of "environment". In discussing how she understands different ways of knowing and sources of this knowledge, Riddell answers:

> Let me offer an example. I spent much of my childhood at the "Sorrento back beach." I knew it as an infant explorer where, with bucket and spade, I waded through, dug up and splashed in every rockpool and sand dune. I knew it as a child, where with the assistance of the ranger, learnt to name the animals and plants. I knew it as a secondary student, where on a fieldtrip I observed, researched, and drew coastal processes. As a sun-baking, boy-kissing, parent-eluding teenager I found private, sometimes special places on that beach, that I can remember in a way different from others. My point is that you can come to "know" a place by visiting it, living in it, reading about it, researching it, being taught about it, being affected by it and in many other ways. The source can be internal or external, private or public, general or specific, scientific, artistic, geographic, recreational, spiritual, and so on. (Payne & Riddell, 1999, p. 251)

Although these studies present diverse findings, it is their commonality and application to senior physical education which is worthy of comment. They serve to affirm the importance of experiential and plausibly notions of inter-disciplinary learning. In line with van Manen's (1977) suggestion that curriculum concerns are practical concerns, we agree with Payne's (2005) suggestion that "…for curriculum developers

and teachers…it is important to 'invite' students into different ways of knowing/doing" (p. 121-122). Such diversity and 'ways of knowing' have arguably been 'lost' in much of the academicasation and scientisation of senior physical education. We are optimistic that re-engaging conceptually with the Arnoldian dimensions may challenge physical educators to once again consider alternative 'ways of knowing'.

3. Revisiting the Arnoldian dimensions of Learning 'in' 'through' and 'about' movement

In two seminal texts; *Meaning in Movement Sport and Physical Education* (Arnold, 1979) and *Education, Movement and the Curriculum* (Arnold, 1988), Arnold articulated "…the place of movement in the curriculum" (Arnold, 1988, p. 103). As indicated above, his curriculum design, appropriate for the curriculum planner (read teacher) is premised on the concept of three dimensions of movement. These concepts of 'about', 'through', and *'in'* movement particularly, are the framework through which a model for physical education that is underpinned by, and expresses, a holistic understanding of physical education, is articulated. Our desire to revisit Arnold's work reflects that (i) several international curriculum documents, including senior physical education are premised on Arnoldian dimensions; (ii) given the ways in which Arnold's work has variously been (re) interpreted and (re)presented over the past 30 years (in curriculum and academic texts), there is a case for further elucidating the dimensions and underpinning conceptualization/s. Our intention is, therefore, to highlight how re-engaging with the Arnoldian dimensions, primarily as applied to senior physical education, can potentially provide important insights for future developments of curriculum, pedagogy and assessment in physical education, and senior physical education particularly. This section provides a brief outline of Arnold's dimensions of education 'about, through and in' movement (Arnold, 1979, 1988), prior to elaboration and critique of their application in senior physical education courses. This then leads us to our (re)framing of Arnoldian dimensions as a framework of analysis for our investigation of the pedagogical intent and possibilities inherent in the new study design for the VCE Physical Education curriculum.

Arnold's (1985) concepts of "in, through and about"

Education, Movement and the Curriculum (Arnold, 1988) and the earlier text *Meaning in Movement Sport and Physical Education* (Arnold, 1979) are seminal within the scholarship of physical education. Due to the brevity of our presentation here, we encourage readers to return to the original texts and particularly, to engage with the extended discussion that they offer in relation to the philosophical and ontological perspectives informing conceptualisation of the dimensions. Briefly, (i) Education 'about' movement is the form of enquiry that manifests in many versions of physical education primarily concerned with rationalism; (ii) Education 'through' movement is the form of movement that is concerned with functionalist views - in other words it uses the activity/movement in physical education as a way of meeting another aim/goal or objective; as a means to an end; and (iii) Education 'in' movement is those activities of movement/physical activity that are worthwhile in and of themselves from the perspective of the moving agent. The importance of movement educationally is that allows the agent to actualise himself/herself in distinctive, pleasing and bodily related contexts as a process of understanding their own embodied consciousness (Arnold, 1979, 1988; Brown, 2008).

If we focus on learning and furthermore, the considerations raised from a curriculum perspective:

- Learning *about* physical activity refers to a rational form of inquiry, where students directly acquire knowledge and understandings as a result of studying and participating in physical activity (e.g. examining the impact of gender stereotypes on participation in physical activity and planning psychological strategies for pre-match preparation). In the context of senior physical education, these understandings are typically applied in the interpretation, analysis, synthesis and evaluation of experiences in studying physical activity;
- Learning *through* physical activity refers to instrumental outcomes where students indirectly acquire understandings, capacities and attitudes as a result of studying and participating in physical activity (including for example, increased physical fitness, aesthetic appreciation of a performance, continued participation in a physical activity);
- Learning *in* physical activity refers to experiential outcomes, where students directly acquire knowledge, understandings and skills as a result of thoughtful participation in physical activity (e.g. applying tactics and strategies in a game, appraising the physical capacities and requirements of an activity).

Arnold (1979) emphasised the importance of the inter-connectedness of these dimensions, saying that; "It should be stressed that these three dimensions of movement

are not mutually exclusive. On the contrary they overlap and interrelate with one another". (p. 106). While Arnold clearly *differentiates* the dimensions, he retains the emphasis of their *inherent inter-dependency*. They are in his words, "conceptually discrete but functionally related. Each dimension is not exclusive of the others, but overlaps and merges into them" (Arnold, 1979, p. 177). A key question that we pose of recent developments in senior physical education, and also then pursue in our exploration of the new VCE PE below, is the way in which each of the dimensions have *individually and collectively* been represented in senior secondary course requirements (for teaching and learning and assessment). Our interest is, therefore, in the curriculum and pedagogical implications of thinking about *learning* about, through, and in movement, with in each instance, an emphasis of the inherent inter-dependency between the three dimensions. There are, then, implications for learning (in terms of scope and focus and the nature of the learning experiences), and thus, for official texts (such as senior physical education syllabus documents) and the expressions of those in school curricula, teacher pedagogy and assessment, if senior physical education is to adequately and appropriately reflect the conceptualisation of movement *and* education that is inherent in Arnold's work. As Arnold (1979, p. 178) argued, "For the curriculum [and we would contend, pedagogical] implications of the concept of movement to be grasped in an adequate way it must be seen not only as a field of study, and as an instrumental value, but as a worthwhile group of physical activities to be engaged in for their own sake". Engaging with and expressing all of the dimensions and simultaneously, their inter-relatedness, is the challenge posed.

The articulation and application of Arnold's dimensions in senior physical education: Are there some notable limitations?

As many readers will be aware, some curriculum developments in senior physical education internationally have made direct reference to Arnold's (1979) three dimensions of movement in articulating the conceptual thinking that has informed course design and associated specifications for programmes of work and associated assessment. For example, the Senior Syllabus for Physical Education in Queensland (Queensland Studies Association, 2010) states in its rationale that "Through the interrelated concepts of learning in, about and through physical activity (Arnold 1985) students become

intelligent performers (Kirk, 1990) and physically educated" (p.1). In other instances, although not explicitly mentioned, aspects of Arnold's conceptualisation appear to have informed course development. For example, the WJEC A and A/S specification (WJEC, 2008, p. 6) explains that;

> Students will be encouraged to develop and refine knowledge, understanding and skills that make the most of innovative approaches to developing and refining performance in physical activity. As well as experiencing physical activity as thoughtful and reflective participants, students will also learn about physical activity through disciplined enquiry. Integration and synthesis of knowledge are important themes in this specification.

At one level, therefore, Arnold's dimensions appear to have been influential in senior physical education course development. We suggest, however, that there is a need to review what has become to some extent the 'familiar language' of 'in, through and about' and to revisit the meanings that were central in Arnold's conceptualisation. Some 30 years on from the publication of Arnold's seminal texts, and with inevitable reliance on secondary interpretations and representations, we question some of the ways in which Arnold's (Arnold, 1979, 1988) work has been expressed – but also 'translated', in curriculum and course design, pedagogy and assessment of senior physical education.

Of those senior syllabus physical education 'texts' that have been a focus of analysis and critique in the field, the Board of Senior Secondary Schools Studies (BSSSS) Senior Physical Education syllabus from Queensland, Australia (now superseded by the QSA text referred to above) could serve as a case in point. Based on the Arnoldian rationale, students become 'intelligent performers' (Kirk, 1990) and physically educated via the inter-related learning in, about and through physical activity. Yet, we might question whether the practical performance assessment tasks arising in senior physical education in Queensland or elsewhere have become, essentially, an alternative form of propositional knowledge representation (Wright, 2000)? Do tasks that purportedly seek to integrate theoretical and practical dimensions of knowledge in senior physical education reaffirm or challenge the dualism of propositional-practical knowledge? (Wright, 2000). As Arnold (1988) articulated:

> Practical pursuits in fact are seen as valuable only insofar as they can assist in the development of intellectual understanding. Such a view of knowledge and education is reductionist in nature, for what it amounts to is the denial that practical pursuits,

> including such physical activities as swimming, dance, and games, as well as others such as pottery, arts and craft, cookery, woodwork, and metalwork have enough about them that makes them worthwhile. (p. 118)

The analysis of practical performance often becomes instrumental in developing physiological, sociological, biomechanical, tactical knowledge, in senior physical education settings. We question the extent to which this emphasis retains an alignment with Arnold's (1979) presentation of education *in* movement, with the focus on activities of movement/physical activity that are worthwhile in and of themselves from the perspective of the moving agent. From this perspective *moving* allows the agent to actualise himself/herself in distinctive, pleasing and bodily related contexts as a process of understanding their own embodied consciousness. These perspectives are subjective and a 'good-in-themselves' as well as being 'good-for-me' (Brown, 2008).

We are by no means the first to question ways in which learning in, through and about movement are represented in contemporary senior physical education texts and/or practice (see for example Thorburn, 2007, 2009; Thorburn & Collins, 2003) or indeed, in physical education more broadly (Kirk, 2009). We see a renewed need, however, for further critical engagement with both official texts that claim Arnoldian underpinnings and secondly, the pedagogical texts arising from them as senior physical education in schools. Notions of intelligent and/or reflective performance have, as illustrated above, been fore grounded in course documentation and embedded in the academic and professional discourses of senior physical education. But, do those discourses adequately and appropriately represent Arnold's conceptualisation/s? Brown (in preparation) contends that elements of Arnold's vision have been 'lost' or at best has been confused or misinterpreted from its 'original' conception. In the sections that follow, we pursue this representation and the issues we have raised in turning attention to a new senior secondary syllabus development in Victoria, Australia; - the new VCE PE.

4. Senior Physical Education in Victoria

Across Australia, state and territory based government departments and/or curriculum and assessment authorities (quasi-government agencies) departments publish frameworks/learning standards, for years K-12. These are operationalised in Government schools within the state/territory, and also by the Independent and Catholic school

systems. There is, therefore, considerable diversity in the curriculum, content and pedagogies in the practice of physical education across Australia. While the development of a new Australian Curriculum is in process and is in part a direct response to such differences in curriculum content (Ministerial Council on Education, 1999; The States and Territories, 2007), for now at least, the senior secondary years remain the domain of state authorities.

In Victoria the Victorian Curriculum and Assessment Authority (VCAA) publishes and is responsible for the administration of the VCE Study Design within all schools. The new VCE Physical Education Study Design was presented by VCAA in 2010 and accredited for a three-year period, 2011-2014. Here we examine key aspects of the study design and accompanying assessment arrangements.

The VCAA published a Study Summary that outlined the rationale, structure, units and assessment within the new VCE PE. The rationale was presented thus:

> VCE Physical Education examines the biological, physiological, psychological, social and cultural influences on performance and participation in physical activity. It focuses on the interrelationship between motor learning and psychological, biomechanical, physiological and sociological factors that influence physical performances, and participation in physical activity.
>
> The study enables the integration of theoretical knowledge with practical application through participation in physical activities. There are opportunities for students to apply theoretical concepts and reflect critically on factors that affect all levels of performance and participation.
>
> (Victorian Curriculum and Assessment Authority, 2010b)

It appears from the above statement that for physical education to "count" (Rink & Mitchell, 2002, p. 209) amongst other VCE subjects, it must conform to the 'official' theoretical/academic discourses, in line with what Green (Green, 2005) notes as the 'academicisation', 'professionalisation' and 'scientisation' of the subject. In elucidating these concepts 'in action', we use Fitzclarence and Tinning's (1990) analysis of curricula change at senior study level, written two decades ago, as a poignant reminder that policy and curricula change is never neat nor logical.

> To give physical education the academic credibility they desperately wanted, the subject committee created a programme which virtually excluded all physical activity and which echoed the pedagogy of high status academic subjects of the

> hegemonic curriculum, emphasising in particular propositional knowledge that had an empirical and scientific flavour. (Fitzclarence & Tinning, 1990, p. 177)

Although this reference is over two decades old, it is reflective of the state of senior physical education here in Victoria with the new Study Design. The rhetoric presented to teachers[3] was that this revised study design "…reflects current directions in physical education" (Victorian Curriculum and Assessment Authority, 2010a) and that it is an example of current research and practice elsewhere. We feel, however that this Study Design does not achieve this implicit aim. Arguably it does little in terms of recognizing the diversity that is evident in literature and discourses of senior physical education worldwide, beyond narrowly conceived 'ways of knowing'.

The senior curriculum in Victoria is made up of four discrete units that are grouped together as a 'study' of which physical education is one of over 90. For students there are no prerequisites for entry to Units 1, 2 and 3, however students must undertake Unit 3 prior to undertaking Unit 4. Each unit is equivalent of 50 hours of study. According to all study designs "units 1 to 4 are designed to a standard equivalent to the final two years of secondary education" (p. 8). Content topic areas are presented in Table 1, which highlights the main topics of study for the current and previous four Study Designs. In presentations given by the VCAA that complement the introduction of the Study Design, the importance of practical activity is highlighted as one rationale, amongst several for re-conceptualising the curriculum. For the study of physical education it is advocated and re-emphasised within the 'new' Study Design that practical activity is used appropriately to support learning. Teachers are guided by the comment within the study design which states that "Teachers must allocate sufficient time to ensure that the practical component of Physical Education is adequately covered. As a guide, between 10 and 15 hours of class time should be devoted to student practical work across each unit" (Victorian Curriculum and Assessment Authority, 2010b, p. 32). Examples of practical activities, as suggested in the Study Design 'Advice to Teachers', include but are not limited to:

- use heart rate monitors, or take a pulse manually, to collect heart rate data to analyse in relation to the response of the cardiovascular system at rest and during exercise;
- participate in a variety of activities to record and report on the acute effects of

exercise on the cardiovascular and respiratory systems;

- play a game of 'Simon Says' to investigate factors affecting balance and stability;
- wear a pedometer for a week to monitor physical activity levels; keep a diary or log of the steps taken;
- use a valid observational instrument, for example SOFIT, to assess the amount of time students engage in moderate to vigorous physical activity during a physical education lesson;
- visit a tertiary institution to experience use of high technology fitness testing equipment to analyse fitness components;
- perform a battery of fitness tests testing a range of health and skill-related fitness components

INSERT TABLES 1 & 2 HERE

We now look briefly look at both content and assessment for VCE Physical Education, via an Arnoldian informed analysis of aspects of the new official text, as the requirements for assessment tasks relate to the interpretation and expression of content, via the pedagogical practice and decisions of the teacher. The focus will primarily be on Units 3 and 4 of the text as the student's level of achievement in both units 3 and 4 is determined by School-Assessed Coursework (SAC), 25% for unit 3 and 25% for unit 4 with an end of year examination, worth 50% of a student's total mark and grade. There are three prescribed SAC tasks at both unit 3 and unit 4 which can include: written report, a practical laboratory report, case study analysis, data analysis, test or critically reflective folio/diary of participation in practical activities.

We offer some critical engagement with the text (refer to Tables 1 & 2) with a focus on the extent to which each of Arnold's dimensions are represented – individually and in terms of the inter-dependency that he so emphasised. We start with Arnold's dimension of 'about' movement. Activities in this dimension focus on theoretical knowledge. If we refer to Area of Study 2 and Outcome 2 of Unit 3 we find that students '…should be able to explain and to analyse how the major body and energy systems work together to enable movements to occur, and explain fatigue mechanisms and recovery strategies" (p. 24, VCAA). If we look at the key knowledge of the "…characteristics and interplay of the three energy systems (ATP-CP, anaerobic glycolysis, aerobic system) for physical activity" which is often expressed via 'a practical laboratory report analysing the relative contribution of the energy systems and associated fatigue mechanisms and

recovery strategies used in vigorous activities" (Victorian Curriculum and Assessment Authority, 2010b, p. 26).

There are many opportunities for students to "learn *through* physical activity" via the new Study Design. A majority of these practical activities occur weekly as part of the nominated 10-15 hours of practical activities and are described in the 'Key Skills', such as "…participate in and evaluate a range of nutritional, physiological or psychological strategies that potentially enhance performance and aid recover" (Victorian Curriculum and Assessment Authority, 2010b, p. 29). We acknowledge that these activities are designed for instrumental outcomes 'where students indirectly acquire understandings, capacities and attitudes as a result of studying and participating in physical activity' (Arnold, 1988, p. 176) and as such reinforce our concern about the practical-theoretical debates raised by Wright (2000).

The difficulties in presenting how Arnold's 'in' movement is expressed in the official text of the VCEPE may be partially explained in that the dimensions integral to the preamble about physical education that is presented in the text.. We see limited conceptual coherence along the decision making chain from rationale to assessment of student outcomes in a planned and meaningful way (Thorburn, 2007). The 'experiential nature' espoused by Arnold *may* be enacted via the assessment task of 'a critically reflective folio/diary of participation in practical activities' (Victorian Curriculum and Assessment Authority, 2010b, p. 30) in outcome 1 and 2 (unit 3) or outcome 1 (unit 4) should the teacher be able to clearly plan and execute the appropriate pedagogical strategies. Yet, there is no assurance of such expression of learning 'in' movement. These issues have been raised by Thorburn and Collins (2003) and Brown (2011) who suggest that teacher content knowledge about authentic accounts of students 'experiential learning' and subjective/embodied learning is often very restricted, primarily as a result of limited physical education teacher education preparation and professional learning opportunities.

Finally, there are some opportunities via the official text to demonstrate how each of the dimensions are expressed inter-dependently, especially if a broader understanding of Arnold's 'in' movement is considered. We illustrate this via the following example; the SAC "…which links chronic adaptations of the cardiovascular, respiratory and

muscular systems to training methods and improved performance" (Victorian Curriculum and Assessment Authority, 2010b, p. 30), where students design and participate in and evaluate a six week training program, (see Table 2; unit 4 AOS 1 outcome 1) provides the opportunity for each dimensions to be expressed should appropriate pedagogies be utilized by the teacher. We are confident that the rich experiential learning environments planned for in Study Design, as evidenced in this example, are likely to occur in some form, although further understanding of the nature of practical, moving experiences may be further enhanced which supports how each of the dimensions operate at a deeper 'inter-dependent' level is likely to be further enhanced by an ongoing research program. In the final section we develop some of these ideas further by examining the likely and potential pedagogies and how these can be interpreted and enacted in the future.

5. Interpreting and enacting the new VCE PE: Likely and potential pedagogies

As our preceding discussion has acknowledged, internationally the development of senior physical education courses is recognised as presenting physical education with some fundamental dilemmas and challenges relating to the nexus between propositional and experiential knowledge. Recent commentaries have reaffirmed that successfully addressing this nexus, in course designs and furthermore, in enacted curriculum, pedagogy and assessment, remains a challenge (see for example Kirk, 2009; Thorburn, 2008; Thorburn & Collins, 2003). Curriculum developments worldwide reaffirm the complexity of policy processes in education and specifically the scope for varied and unintended readings of curriculum texts amidst the influence of broader political imperatives and dominant discourses (of for example, standards and performativity), and given the professional knowledge and beliefs that teachers bring to the text (see for example Ennis, 1994; Thorburn & Collins, 2003). Our purpose, here, therefore, is to consider how the new VCE PE may, and is likely, to be read by physical education teachers in schools in Victoria, with a particular focus on the Arnoldian dimensions of movement.

Likely pedagogies

It is anticipated that with the explicit statement within the new Study Design pertaining to "use of practical activities to underpin theoretical understanding" (Victorian Curriculum and Assessment Authority, 2010b, p. 7) in both the unit's rationale and aim,

as well as from material presented from associated workshops[4] is likely to result in some form of pedagogical change. The renewed vigor and importance of practical activity is plausibly as a response to (i) the study review, conducted in 2008-2009, identifying issues associated with practical work in the Study Design, (ii) empirical research demonstrating lack of student engagement in classroom versus practically based sessions in senior physical education (Thorburn, 2008); and (iii) philosophical discussions on the theoretical-practical nexus (Wright, 2000) and its importance to knowledge in physical education (Reid, 1996a, 1996b).

Crucially, the unequivocal statement in the Study Design 'Advice for Teachers' related to developing a course further highlights the how the intended policy we feel will be enacted in practice:

> *In order to meet the requirement of the outcome statements and key skills it is essential that practical activities [emphasis added] are used in conjunction with the teaching of theoretical concepts throughout Units 1 to 4. Practical activities may include laboratory work, data collection, physical activity, sports and games…Teachers must allocate sufficient time to ensure that the practical component of Physical Education is adequately covered (p. 32)*

We are cautious about what these changes may mean for student learning and assessment. The assessment structure of the VCEPE in Victoria is propositional and theoretical; it is as an example of "performance-led practically based learning that underpins teaching contexts, assessment that requires language-based oral or written evidence" (Thorburn, 2007, p. 165)(p. 165). As a result some student's understanding of the theoretical concepts may benefit, if teachers can present meaningful practical activities with which they can engage with. However, the concern, at least from our perspective, is that they must be able to translate their understanding 'in' practical activities to appropriate theoretical language in the school-based assessments tasks and end of year examination. Some preliminary evidence from Scotland seems to support our concern, in that "…a majority of students can implicitly achieve a high practical performance standard, although explicitly, when they are asked to verbalise their thoughts through written answers, their work is often poor" (Thorburn & Collins, 2003, p. 191).

Research internationally has highlighted that there is no assurance that

pedagogical and/or assessment practices will express progressive intentions embedded/inherent in curriculum reforms, aside from minor changes that teachers must abide by. There is, therefore, little to suggest that established pedagogical practices associated with teaching VCE PE will dramatically change. Furthermore, given the historical and contemporary content of the units which make up the Study Design for VCEPE (see Table 1), it is evident that the major content has remained relatively stable for nearly two decades, influenced by those discourses of biophysical ways of knowing (Johns, 2005; Kirk, 1990). This we feel is a reflection, on the 'conservative' nature of profession, those that make up the profession, and the political and policy contexts in which 'reforms' are set, read and must be enacted. While the latter deny teachers time and support to engage deeply and critically with alternatives ways of thinking about knowing, learning, pedagogy and assessment in physical education, we can anticipate that we may well see 'more of the same' (Curtner-Smith, 1999; Kirk, 2009) in VCE PE in Victoria. We acknowledge, however, that the scenario may not be, and need not be, 'status quo'.

Potential pedagogies

Here we take up the challenge posed by Thorburn (2007, 2008) to outline various alternatives or 'futures', we see as being beneficial to senior curriculum and to the profession. These include: (i) (re) privileging the body-subject, socio-cultural-historical understandings and the experiential aspect of learning; and (ii) extending debates about representation of experience as an approach to authenticate experience and as an assessment tool. We acknowledge that the commentary presented here is necessarily brief and that the proposals are worthy of far more extensive development than this paper allows for.

In the Victorian senior syllabus context, the advice offered some years ago by Fitzclarence and Tinning (1990) remains a pertinent point of reference:

> …we were concerned with the trend in physical education to define the subject in increasingly narrow and fragmented ways with knowledge drawn primarily from the biological/physical sciences. Our response was to place biophysical/physical science understandings alongside knowledge drawn from sociocultural understandings. (1990, p. 181)

This we feel is evidence of how the curriculum 'pendulum' has swung, in our

view, too far in favour of those knowledges and pedagogies with biophysical discourses. We can see that Fitzclarence and Tinning (1990) were attempting to broaden those 'ways of *knowing* and *doing*' amidst and through curriculum innovation. We see this as important as the potential of discourses beyond the biophysical, for example socio-cultural and experiential, that are often marginalised, are still examples of important content consistent with the understandings and curriculum theorizing of Arnold's 'about' and 'through' dimensions. We feel that for the future of senior physical education in Victoria the potential of such innovation and the conditions required to support it, should be (re)considered.

We contend that the logical starting point for thinking about curriculum and pedagogy, in senior physical education must be the (moving) body. The 'primacies of 'practice' (Archer, 2000) and 'movement' (Sheets-Johnstone, 1999) not only address the ontological aspects of 'being and becoming' for the individual, but serve to highlight the importance of its epistemological contribution, via language, terminology, meaning and representation of 'bodily' experiences as it pertains to the meaning-making of movement. Not the body informed by overweightness/obesity, physical inactivity/sedentary behavior or diabetes, but one where "…it is a pleasurable site for ecstatic, aesthetic, vertiginous, autotelic, sensuous and holistic experiences" (Mckay, Kirk, & Gore, 1990, p. 60). These notions are implicit in Arnold's 'in' movement, in that they are part of language often used to describe 'activities in and of themselves' (Arnold, 1979, p. 181). Such a stance is also consistent with Thorburn's (2008) call for 'phenomenologically oriented experiential learning via auto-biographical writing' as one method of assessment. We feel that this idea has yet to be adequately discussed within the literature, as hoped for by Thorburn. Nor has it been adequately explored in relation to the role it may have to play in supporting the *inter-connected* expression of learning in, through and about movement. We therefore continue the conversations about these matters, reminding readers of the varied and multiple forms of representation presented by Sparkes (2008). This is also in keeping with Brown and Payne's (2009) call to "'raise the stakes' about the importance of meaning, meaning-making through movement experiences, and their ecologies and what it entails for being and becoming educated physically. (p. 434)". We suggest these forms (poetic representations, ethnodrama, fictional representations, narrative inquiry)

are also appropriate as tools of assessment of senior physical education as they can 'authenticate *moving-related* experiences'. Our modest position is that there is a place for students to be "…storytellers, to acquire and nurture their own voices, and to view writing as a process of discovery, understanding and analysis" (Sparkes, 2008, p. 655). We are at the same time reserved, taking a position that is cognizant of the difficulties associated with using language and writing which may reduce any movement experience to an object of analysis (Denison & Markula, 2003). In their book, *Moving Writing – Crafting Movement in Sport Research*, they acknowledge this and provide a counterpoint; "…it seems unlikely that we will ever be able to produce truly embodied accounts of people's movement experiences given the current research climate and emphasis on language and texts, we did [sic] acknowledge that more evocative ways of writing might approximate closer interpretations of people's movement experiences" (p. 18).

Issues for future consideration

The Arnoldian dimensions of movement are in essence considerate of multiple ways of knowing. We have already noted that Arnold wished his conceptualisation of 'about', 'through' and 'in' to be inclusive of each other. However, he also cautioned against senior syllabuses which attempted to mix the aims and purposes of education (intrinsic and worthwhile), as he saw it, with those of schooling (extrinsic and instrumental). We note that VCEPE Study Design does not possess an 'overarching' philosophical rationale, similar to for example, the QSA Senior Physical Education document. The ramifications, as we see it are two-fold and will have a direct bearing upon the prospective expression of Arnold's dimensions in the new VCE PE. Firstly, conceptual coherency from policy to assessment of student outcomes may be compromised; and secondly, the lack of a philosophy of practical activity within a senior study continues to reinforce the theoretical-practical binary. Until this second point is challenged it is likely that senior study in physical education in Victorian will remain an essentially propositional/theoretical subject. In further elucidating our thoughts here, the fact that most SAC do not engage with each of the Arnoldian dimensions – in/through/about, with their 'fullest' meaning, further reiterates this point. The challenge is for those within the

profession to find a 'modest' position that engages positively with positions of Fahlberg and Fahlberg (1994), Fitzclarence and Tinning (1990) and Thorburn (2007, 2008).

6. Final comments

This paper has attempted to comment critically on the 'new' official text, known as the VCEPE Study Design. It has discussed aspects of this official text through the lens of Arnoldian dimensions of movement. The importance of alternative 'ways of knowing' and philosophical/conceptual issues related to theoretical-practical knowledge(s) have been raised with respect to how the Study Design, as an aspect of policy was designed and intended. It is argued that, to date, while there are examples of each of the Arnoldian dimensions throughout Study Design, both exclusively and inter-dependently, that in fact the *enacted* pedagogical practices that result from the *intended* areas of study, outcomes, key knowledge and key skills become narrowly defined. We offer that major pedagogical change currently seems unlikely to ensue following the introduction of the Study Design and have presented discussion centering on potential pedagogies, that if taken up may broaden and deepen the ways of knowing as it is currently practiced in senior physical education in Victoria. We recognise that work within Physical Education Teacher Education and in contexts of professional learning will be key in determining whether or not such potential is advanced in future practice. We also recognise that the analysis and discussion presented here is exploratory and is grounded in our reading and interpretation of the new VCE PE study design. It is presented as a preliminary comment on this curriculum development and as a conceptual foundation for empirical work with VCE PE teachers.

Notes

[1] Belenky (1986) used this term in addressing and presenting her findings of research where the classification comprised of silence, received knowledge, subjective knowledge, procedural knowledge, constructed knowledge. We do not employ this conceptualization directly but rather, regard the notion of 'ways of knowing' as potentially useful in prompting thinking about the representation of 'different knowledges' in physical education.

[2] For critiques of this way of knowing see Johns, Tinning, others (Johns, 2005; Kirk, 2009; Tinning, 1997)

[3] One of the co-authors attended a workshop on the new VCEPE, where one of several rationales for the introduction of this document was that it was that the new VCEPE Study Design was a world class curriculum document when compared with other senior physical education courses.

[4] At two workshops, one presented by the Victorian Curriculum and Assessment Authority and the other by an author of a VCEPE text, the importance of increasing and utilising practical activity as part of the pedagogical practice within the teaching of senior study of physical education was to be encouraged.

References

Archer, M. S. (2000). *Being human - The problem of agency*. Cambridge: Cambridge University Press.

Arnold, P. J. (1979). *Meaning in movement, sport and physical education*. London: Heinemann.

Arnold, P. J. (1988). *Education, Movement and the Curriculum - a philosophic inquiry*. London: The Falmer Press.

Bain, L. L. (1995). Mindfulness and subjective knowledge *Quest, 47*, 238-253.

Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Mattuck, J. (1986). *Women's ways of knowing: the development of self, voice, and mind*. New York: Basic Books.

Bowe, R., Ball, S. J., & Gold, A. (1992). *Reforming education and changing schools. Case studies in policy sociology*. London: Routledge.

Brown, T. D. (2008). Movement and meaning-making in physical education. *ACHPER Healthy Lifestyles Journal, 55*(2/3), 1-5.

Brown, T. D. (2011). *Yeah its a hard one isn't it" - Physical Education Teachers Understandings and Conceptions of Children's Subjective Movement Experiences.* Paper presented at the 27th Australian Council for Health, Physical Education and Recreation International Conference, Adelaide, Australia.

Brown, T. D. (in preparation). A vision lost? (Re)articulating an Arnoldian conception of education ‘in’ movement in physical education.

Brown, T. D., & Payne, P. G. (2009). Conceptualizing the phenomenology of movement in physical education: Implications for pedagogical inquiry and development. *Quest, 61*(4), 418-441.

Curtner-Smith, M. D. (1999). The more things change the more they stay the same: Factors influencing teachers' interpretations and delivery of national curriculum physical education. *Sport, Education and Society, 4*(1), 75-97.

Denison, J., & Markula, P. (2003). *Moving writing - crafting movement in sport research*. New York: Peter Lang.

Ennis, C. D. (1994). Knowledge and beliefs underlying curricular expertise. *Quest, 46*(2), 164-175.

Fahlberg, L. L., & Fahlberg, L. A. (1994). A human science for the study of movement: an integration of multiple ways of knowing *Research Quarterly for Exercise and Sport, 65*(2), 100-109.

Fitzclarence, L., & Tinning, R. (1990). Challenging hegemonic physical education: contextualising physical education as an examinable subject. In D. Kirk & R. Tinning (Eds.), *Physical Education, curriculum and culture: critical issues in the contemporary crises* (pp. 169-191). London: Falmer Press.

Green, K. (2005). Examinations: A 'new orthodoxy' in Physical Education. In K. Green & K. Hardman (Eds.), *Physical Education: Essential issues* (pp. 143-160). London: Sage.

Hopper, T. F., Madill, L. E., Bratseth, C. D., Cameron, K. A., Coble, J. D., & Nimmon, L. E. (2008). Multiple voices in health, sport, recreation, and physical education research: revealing unfamiliar spaces in a polyvocal review of qualitative research genres. *Quest, 60*, 214-235.

Johns, D. P. (2005). Recontextualising and delivering the biomedical model as a physical education curriculum. *Sport, Education and Society, 10*(1), 69-84.

Kirk, D. (1990). Knowledge and science and the rise of human movement studies. *Australian Council for Physical Education and Recreation National Journal, 12*(7), 8-11.

Kirk, D. (2009). *Physical education futures*. London: Routledge.

Kirk, D., Nauright, I., Hanrahan, S., MacDonald, D., & Jobling, I. (1996). *The Sociocultural Foundations of Human Movement*. Melbourne: Macmillan.

Kretchmar, R. S. (2005). *Practical philosophy of sport and physical activity* (2nd ed.). Champaign, IL: Human Kinetics.

Loland, S. (1992). The mechanics and meaning of alpine skiing: methodological and epistemological notes on the study of sport technique. *Journal of Philosophy of Sport, 14*, 55-77.

MacPhail, A. (2007). Teachers' views on the construction, management and delivery of an externally prescribed physical education curriculum: Higher Grade Physical Education. *Physical Education and Sport Pedagogy, 12*(1), 43-60.

Mckay, J., Kirk, D., & Gore, J. (1990). Beyond the limits of technocratic physical education *Quest, 42*(1), 52-76.

Ministerial Council on Education, E., Training and Youth Affairs (MCEETYA),. (1999). The Adelaide declaration on National Goals for Schooling in the twenty-first century (Publication. Retrieved 05/06/2011: http://www.mceetya.edu.au/mceetya/nationalgoals/natgoals.htm

Payne, P., & Riddell, K. (1999). Thinking the Environment: The Written Epistemology of Enquiry. , . *Canadian Journal of Environmental Education, 4*(1), 243-261.

Payne, P. G. (2005). Ways of doing learning, teaching and researching. *Canadian Journal of Environmental Education, 10*, 108-124.

Penney, D., & Evans, J. (1999). *Politics, Policy and Practice in Physical Education*. London: FN Spon, an Imprint of Routledge.

Penney, D., & Hay, P. (2008). Inclusivity and Senior Physical Education. Insights from Queensland and Western Australia. *Sport, Education and Society, 13*(4), 431-452.

Peters, R. S. (1966). *Ethics and Education*. London: Allen and Unwin.

Queensland Studies Association. (2010). *Physical Education Senior Syllabus 2010*. Retrieved. from http://www.qsa.qld.edu.au/11366.html#syllabus.

Reid, A. (1996a). The concept of physical education in current curriculum and assessment policy in Scotland. *European Journal of Physical Education, 2*, 7-18.

Reid, A. (1996b). Knowledge, practice and theory in physical education. *European Physical Education Review, 2*, 94-104.

Rink, J., & Mitchell, M. (2002). High stakes assessment: a journey into unknown territory. *Quest, 3*, 205-223.

Sheets-Johnstone, M. (1999). *The primacy of movement*. Philadelphia: John Benjamins Publishing Company.

Sparkes, A. C. (1992). The paradigms debate: An extended review and a celebration of difference. In A. C. Sparkes (Ed.), *Research in Physical Education and Sport : Exploring Alternative Visions*. London: The Falmer Press.

Sparkes, A. C. (2008). Sport and physical education - embracing new forms of representation. In J. Knowles & A. Cole (Eds.), *Handbook of Arts in Qualitative Research* (pp. 653-664). London: Sage.

The States and Territories. (2007). *Federalist paper 2. The Future of Schooling in Australia. A report by the States and Territories.* Melbourne: Department of Premier and Cabinet.

Thorburn, M. (2007). Achieving conceptual and curriculum coherence in high-stakes school examinations. *Physical Education and Sport Pedagogy, 12*(2), 163-184.

Thorburn, M. (2008). Articulating a Merleau-Pontian phenomenology of physical education: the quest for student engagement and authentic assessment in high-stakes examination awards. *European Physical Education Review, 14*, 263-280.

Thorburn, M. (2009). Official and unofficial views of physical education. In M. Thorburn & S. Gray (Eds.), *Physical Education: Picking up the baton.* (pp. 8-29). Edinburgh: Dunedin Academic Press.

Thorburn, M., & Collins, D. (2003). Integrated curriculum models and their effects on teachers' pedagogy practices. *European Physical Education Review, 9*(2), 185-209.

Tinning, R. (1997). Performance and participation discourses in human movement: toward a socially critical physical education. In J.-M. Fernandez-Balboa (Ed.), *Critical Postmodernism in Human Movement, Physical Education and Sport*. Albany, New York: State University of New York Press.

Tinning, R. (1998). Reinventing physical education and health in schools: lessons from trainspotting and Deepak Chopra. *Journal of Physical Education New Zealand, 31*(1), 6-7.

Tinning, R. (2004). Rethinking the preparation of HPE teachers: ruminations on knowledge, identity, and ways of thinking. *Asia-Pacific Journal of Teacher Education, 32*(3), 241-253.

Van Manen, M. (1977). Linking ways of knowing with being practical. *Curriculum Inquiry, 6*(3), 205-228.

Victorian Curriculum and Assessment Authority. (2010a). VCE PE Workshop presentation.

Victorian Curriculum and Assessment Authority. (2010b). *Victorian Certificate of Education - Physical Education Study Design*. Carlton, VIC: Victorian Curriculum and Assessment Authority.

WJEC. (2008). *GCE Examinations from 2009. First As Award: Summer 2009. First A Level Award: Summer 2010. Physical Education*. Retrieved 10/06/2011. from http://www.wjec.co.uk/index.php?subject=94&level=21.

Wright, L. J. M. (2000). Practical knowledge, performance and physical education. *Quest, 52*, 273-283.

Table 1 – Content topic areas of VCE Study designs					
Unit/Year published (accreditation period)	**1990 (1991-1994)**	**1994 (1995-1999)**	**1999 (2000-2005)**	**2005 (2006-2010)**	**2010 (2011-2014)**
1	Physical Activity and Lifestyle	Physical Activity and Lifestyle	The nature of physical activity	Learning and improving skill	Bodies in motion
2	Analysing Physical Activity	Analysing Physical Activity	Improving physical activity	The active body	Sports Coaching and physically active lifestyles
3	Perspectives on Fitness	Perspectives on Fitness	The physiology of fitness	Physiological and participatory perspectives of physical activity	Physical Activity participation and physiological performance
4	Physical Activity: A Biosocial Analysis	Physical Activity: A Biosocial Analysis	Participation and performance	Enhancing physical performance	Enhancing performance

Table 2 VCEPE Study Design (accreditation period 2011-2014)				
Unit	**Title of unit**	**Areas of Study**	**Outcomes of core study**	**Key knowledge**
1	*Bodies in motion*	o AOS 1 – Body systems and human movement* o AOS 2 – Biomechanical movement principles* o AOS 3.1 – Technological advancements from a biomechanical perspective OR o AOS 3.2 – Injury prevention and rehabilitation	AOS 1- to explain how the musculoskeletal, cardiovascular and respiratory systems function, and how the aerobic and anaerobic pathways interact with the systems to enable human movement AOS 2 - how to develop and refine movement in a variety of sporting actions through the application of biomechanical principles	AOS 1 - bones of the human body, major muscles and muscle structure, classification of joints and joint action, characteristics of aerobic and anaerobic pathways (with or without oxygen) and their contribution to movement; AOS 2 - Newton's Laws of motion, components of levers, the principles of conservation and transfer of momentum,
2	*Sports Coaching and physically active lifestyles*	o AOS 1 – Effective coaching practices* o AOS 2 – Physically active lifestyles* o AOS 3.1 – Decision making in sport OR o AOS 3.2 – Promoting active living	AOS 1 - the skills and behaviours of an exemplary coach, and explain the application of a range of skill learning principles used by a coach AOS 2 – individual and population levels of participation in physical activity, and sedentary behaviour, and create and implement strategies that promote adherence to the National Physical Activity Guidelines	AOS 1 – roles, responsibilities, skills, behaviours of the coach, codes of conduct, coaching methods & techniques, skill learning principles; AOS 2 - concepts of physical activity, inactivity and sedentary behaviour, benefits of regular participation in physical activity, factors & barriers (demographic, social and environmental) to participation in physical activity
3	*Physical Activity participation and physiological performance*	o AOS 1 – Monitoring and promotion of physical activity* o AOS 2 – Physiological responses to physical activity*	AOS 1 – to analyse individual and population levels of sedentary behaviour and participation in physical activity ad evaluate initiatives and strategies that promote adherence to the National Physical Activity Guidelines AOS 2 – to analyse how the major body and energy systems work together to enable movements to occur, and explain fatigue mechanisms and recovery strategies	AOS 1 - subjective and objective methods of assessing physical activity and sedentary behaviour, social-ecological models, role of government and non-government organisations in promoting adherence to physical activity; AOS 2 - mechanisms responsible for the acute responses to exercise, characteristics and interplay of the three energy systems, fuels (both chemical and food), passive and active recovery methods
4	*Enhancing performance*	o AOS 1 – Planning, implementing and evaluating a training program* o AOS 2 – Performance enhancement and recovery practices*	AOS 1 – plan, implement and evaluate training programs to enhance specific fitness components AOS 2 - to analyse and evaluate strategies designed to enhance performance or promote recovery.	AOS 1 - fitness components, assessment of fitness, fitness training principles & methods, chronic adaptations; AOS 2 - nutritional strategies, hydration techniques, physiological strategies, psychological strategies, benefits and potential harms to the athlete of legal and illegal substances, anti-doping codes
NB Those units marked with an asterisk * are core units in VCEPE study design				

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Managing pupils misbehavior to increase the physical activity in French Compensatory Policy*

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Abstract

Background: Since 2010, secondary schools welcoming the most difficult pupils of France are the head of compensatory policy called "« école Collèges et Lycées pour l'Ambition, l'Innovation et la Réussite » (éCLAIR). Those difficult pupils frequently misbehave and drop-out during the scholar task. Teachers face great difficulties in maintaining the difficult students engaged and active. Thence efficient time of physical practice is very low; "academic learning time" is less than 13 minutes for a 2 hours lesson (Vors, Gal-Petitfaux and Cizeron 2010). So, it is problematic to cope with the healthy mission of Physical Education (PE) situated between physical practices and motor skills' acquisitions.

Purpose: Teacher misbehavior management. The purpose of this paper is to understand how experienced teachers manage to keep students physically engaged without long dropping in these classes from compensatory policy.

Participants and setting: The case study is conducted by two secondary schools from éCLAIR with four experienced PE teachers, four pupils between 12 and 16 in a gymnastic workshop pedagogical format.

Research design: This research is led on the cognitive anthropology framework, under the "situated action" model (Lave 1988; Suchman 1987).

Data collection: On the one hand, the extrinsic data in class were made from ethnographic notes and from audio-visuals recordings. On the other hand, intrinsic data were made from self-confronting interviews held after lessons (Theureau 2010).

Data analysis: The materials were processed in four stages: (a) the students activity was categorized with ALT-PE method (Siedentop 1983); (b) the teacher activity was reconstruct with a two-level protocol paralleling the time course of extrinsic and intrinsic data; (c) the identification of significant elements of teacher experience; and (d) the identification of archetypal structure of teacher management misbehavior.

Findings: The results reveal that in spite of constant agitation in classrooms, a leading physical activity time with only short drop-out. Teachers' managing behavior has a typical form by tolerating certain misbehavior allows pupils to stay in practice. Despite various misbehaviors, the teacher's interventions focus on learning aims as the student work time remains the majority compared to the games.

Conclusions: These results raise the question of healthy lifestyles in PE into Compensatory Policy linked to managing student misbehaviour. Empathy and tolerance of the teacher facing some misbehavior allow students to remain engaged in the course and thus increase their physical activity time. In this particular environment of compensatory education, the learning activity of students is composed inseparably of on-task behaviors associated with off-task behavior allowing students to remain engaged and active.

Keywords: disengagement; physical education; management student misbehavior; physical activity

Compensatory education policies

USA, UK, France, among others, have developed actions to compensatory education in the late sixties. Initially these policies are based on the concept of "cultural deprivation", i.e. the "deficit theory" and then moving towards the management of school disorder. In the U.S., the compensatory education is a policy of "positive discrimination" since the 1960s with the decision of President Lyndon B.

Johnson's to the "War on Poverty". Various programs were succeeded: Economic Opportunity Act (EOA) in 1962, The Elementary and Secondary Education Act (ESEA): Title 1 in 1965, which the most famous are Follow-through Head Start and No Child Left Behind Act (NCLB 2001). In the United Kingdom, compensatory education is a policy area focusing on "Disadvantage areas"; it has been updated by the Plowden Report (1967). The main ones were the Education Priority Area (EPA) in the 60s and Excellence in Cities (EiC) in 1999. In France, the compensatory policy lies between USA and UK policies', articulating a policy area and positive discrimination. However according Senac (2000), the emergence in 1981 by A. Savary of "Zone d'Éducation Prioritaire" (ZEP) is specific to France. "Indeed, foreign experiences have not influenced the base of the Alain Savary's team reflection, the majors influences were the ideas of the SGEN-CFDT (General Trade Union of Education and public research in France) and educational research in France" (Senac, 2000, 17). The programs have succeeded from the ZEP in 1981 then the éCLAIR (écoles Collèges et Lycées pour l'Ambition, l'Innovation et la Réussite) in 2010. This development follow a shift from political orientation concerns initially focused on helping disadvantaged students, then assembling with the students misbehavior management (Kherroubi and Rochex 2002; Millet 2004).

In France, the majority of researches on compensatory policies are quantitative (Kherroubi and Rochex 2002, 2004). The purpose of these researches is to evaluate the effectiveness of this compensatory policy by comparing changes in student performance during their schooling by national tests in French and Mathematics (Bénabou et al. 2005; Demeuse et al. 2008). Qualitative research is less common, they relate to the misbehavior at school, but few are focused on the class. The few studies in the classroom context indicate that it is difficult to make and keep students engaged

in the course (Armand and Gille 2006). In these contexts, setting students at work and keeping them working is a challenge for teachers (Rouve and Ria 2008). "Managing the class in satisfactory conditions of communication in a specific location during a given time is not the starting point of the classroom but one of its aims"(Kherroubi and Rochex 2004, 172). The management conditions in PE (Physical Education) reinforce those problems (Vors and Gal-Petitfaux 2008). “The structure of a traditional academic classroom often gives students a private environment to complete work and confines social opportunities because students spend a majority of their time in desks. Teacher directed activities are also common in the traditional classroom setting. By comparison, PE classes are usually centered on physical abilities and often related to sport activities. This changes the dynamic from a teacher-student interaction to more of a student-student interaction. PE classes tend to be public in terms of peer groups and also performance-based, which amplifies the self-conscious changes that adolescents experience” (Garn et al. 2011, 86).

Classroom management and misbehavior in PE

Little researches on compensatory policies in PE deal with what happens in class with many misbehaviors. Nevertheless, studies of classroom situations with difficult students are less rare, especially in three research fields (behavioral, ecological and situated action). They show that in these difficult classes, teachers hardly manage to cope with drop-outs.

Behavioral researches were the first to look at the effectiveness of teaching practices in these difficult contexts. As part of the PE, the class management follows a double aim: "here the goal has been to reduce off-task behavior and increase on-task behavior "(Ward 2006, 9). In difficult situations the problems are exacerbated, the teacher must manage a multitude of off-task behaviors (Kounin 1970). To limit the student

misbehavior, researches are “focused on teaching social skills to student proactively using a sportsmanship curriculum (Sharpe et al. 1995), and social skills training (Giebink and McKenzie 1985)" (Ward 2006, 9). Moreover, this research pointed out two typical features of student misbehavior in practice time and in social behavior. First, the Academic Learning Time in Physical Education (ALT-PE) is particularly low; it goes down to 7% of the lesson time (Vors, Gal-Petitfaux and Cizeron 2010). Various studies have shown that "the more difficult students spend a quarter less time practicing during the lesson” (e.g. Pieron 1993, 57). These results are explained by constant drop-outs. Students are unable to stay on-task and are constantly involved in various deviant behaviors. "One of the strongest indicators of disengagement is physical withdrawal from schooling, which includes such behaviors as tardiness, cutting classes, chronic truancy and dropping-out” (Pellerin 2005, 1159). Secondly, this kind of study on students in the class gives an important place in their social behavior as a main factor explaining the drop-outs of students in the school task. The results show firstly, that social relationships are highly valued by students, particularly in PE and especially for difficult students; "establishing and maintaining meaningful relationships with peers is a critical social skill for students" (Ward 2006, 13). On the other hand, some students are struggling in the classroom because they do not master the social skills, "socially incompetent children engage in behaviors that can lead them to become increasingly with-drawn and in some instances aggressive” (Sheridan 1998). The lack of social code in the class, makes the students misunderstood, frustrated, which often leads them to oppose to the teacher or even to behave violently. In conclusion, behavioral researches in the classroom prioritize the different behaviors of the teacher and students in analyzing them separately, without accounting for interactions.

Ecological's researches exceed this statement and have a more dynamic vision of the classroom (Doyle 1977). Social misbehaviors are not opposed to work behaviors, but appear as components in the classroom interaction. In class, on-task and off-task behaviors are integrated into one system in interrelation, linking managerial (Maintaining order) - instructional (Promoting learning) and student social interactions (socializing) (for a review in PE: Hastie and Siedentop 2006). The managerial system provides rules, routines, and expectations for students to follow to allow learning to take place. The instructional system involves the presentation and practice of subject matter. And the social task system was first emphasized by Allen (1986), who described the social system as having two major goals, that of socializing and that of passing the course (Dyson et al. 2010, 115). Research from Sport Education and Adventure Education in PE has extended Allen's (1986) work to argue that the social task system can actually enhance, not necessarily impede student learning (Carlson and Hastie 1997; Hastie 1995, 2000). Studies show those problematic relationships between teacher and students in difficult classrooms. From the teacher's view point, their instruction activity is constantly thwarted, hindered, interrupted by the students' misbehaviors (e.g. Hastie and Siedentop 2006). They are constrained to allow certain student social interaction and to informally accepted certain misbehavior provided it did not interrupt the smooth running of the lesson (Hastie and Pickwell 1996). More the context is difficult, more the teachers have a large "zone of acceptable responses" and tolerate off-task behavior (Sanders and Graham 1995). The part of students, their classroom activity is marked by numerous disengagement opposing to the teacher expectations "to reduce the demands of a task, to lessen the chances of being held accountable, to seek a more interesting task, to engage socially with peers, or even out of boredom" (Sanders and Graham 1995,

215). Within the "system class", teachers and students are necessarily brought to cooperate, "trading-off" (negotiate); this is something particularly common and not easy in difficult classes (Hastie and Pickwell 1996). These ecological researches report on the life of the classroom as a dynamic system of interaction; yet they do not give access to the actors signification in interactions.

Another field of research based on the situated approach complements the analysis of classroom interaction given by the ecological approach. It is interested in the sense that the teacher assigns to his interactions with students. The results show that in difficult classes, activities of teachers and students are prevented; their preoccupations enter in competition (Monnier and Amade-Escot 2009). On the one hand, the activity of difficult students is hindered by the teacher that prevents them from doing what they want. Often they do not understand why and develop a strong sense of frustration and injustice that led them to enter into conflicts with the teacher (Flavier et al. 2002). On the other hand, the activity of the teacher is upset by the actions of students. Reynolds (1992) reports on this subject that expert teachers do not perceive themselves as master of authority but rather as responsible for establishing and maintaining the class of conditions conducive to learning. Durand (1996) also shows that the management of classroom order is a primary preoccupation for the teachers, even before the student engagement in learning tasks. The teacher is brought to enter into open conflict with some students; after various ineffective interventions, he must interrupt the flow of the lesson to manage misbehavior (Flavier et al. 2002). In the urgency of his PE classes, he is shared between conflicting preoccupations "relative to the lesson under way versus management of the disciplinary incident" (Flavier et al. 2002, 29). The teachers live these classroom situations as particularly unstable; they are exhausted by the need to constantly try to coordinate them actions with those of

students. A few studies show that experienced teachers (Chauveau 2001) set students at work and keep them working in the classroom (Gal-Petitfaux and Vors 2008) and coordinate their preoccupations apparently incompatible with those of students.

Purpose

Although the study of classroom management in the classroom is common, little researches focus in the activity of experienced teachers in the difficult classes' context belonging to the compensatory education policies. The purpose of this paper is to understand how experienced teachers manage to keep students physically engaged without long dropping in these difficult classes.

Theorical framework: situated action and cognition

This study is part of an approach to the activity of actors in context described as "situated approach" (for a review in PE, Rovegno 2006) and with reference to a theory based on the principles of situated action and situated cognition: semiotic framework of the "course of action" (Theureau 2003, 2006, 2009; Theureau and Filippi 2000). This theory, inspired by situated cognitive anthropology (Durand 1996; Gal-Petitfaux et al. 2010), is the basic of a large amount of French research over the past ten years in various fields related to sports practices: Collective activity in high level sports (Bourbousson, Poizat, Saury and Sève 2011), Coach and elite athletes activity (Sève, Saury, Leblanc and Durand 2005 ; Hauw, Renault and Durand 2008) ; Student activity in sport practices (Guillou and Durny 2008) ; Activity configurations, interactions and cognitive artifacts (Veyrunes, Gal-petitfaux and Durand 2009); Novice teachers and PETE programs (Ria, Sève, Theureau, Saury and Durand 2003); Experience and professional knowledge construction (Flavier, Bertone, Hauw and Durand 2002 ; Méard, Bertone and Flavier 2008); Pedagogical supervision, pre-service/mentor interactions (Chaliès, Bruno, Méard and Bertone Forthcoming).

This study builds on the theories of situated action (Suchman 1987, 2007) and distributed cognition (Hutchins 1995; Lave 1988) following the assumption that the action is physically, temporally, spatially and socially situated. These assumptions add to the hypothesis of "course of action", which emphasizes the subjectivity of the actor and the collective activity (Theureau 2006, 2009). Under this framework, the interactions between actor and his environment are considered as unbalanced; in the sense that the actor selects in the environment, only things relevant at each moment to his own internal organization. For the course of action theory, the level of individual action is meaningful for the agent, i.e. the level that can be shown, told, and commented on. This theory is based on the assumption that the level of experience that is significant from the standpoint of the actor is a level of organization relatively independent of other possible levels of activity analysis and that it may give rise to observations, descriptions and explanations valid and useful.

Thus, to account for the interactions between the actor and the environment, the course of action suggested to achieve the meanings constructed by the actors during their activity. The choice of this theoretical framework also allows us to simultaneously access individual and collective components of the activity in the classroom. The group activity is regarded as a double component: social and individual. It is "not a totality constituted but a totality constantly detotalized" by the activity of its individual components or smaller collectives (Theureau 2006). This view leads to approach the collective activity in the classroom from the individual activity. Under this approach, the activity is regarded as an experience composed by subjective preoccupations, perceptions and knowledge. This experience is described as an individual-social activity, i.e. others persons belongs to the pre-reflexive consciousness of the actor (Theureau 2006).

Methods

Participants and setting

Our research was conducted in four difficult middle schools ranked "éCLAIR" at the head of French compensatory policy (i.e. belonging to the most troubled schools in France), in which students demonstrate daily major incivilities. The two selected classes are considered by the teaching staff as difficult classes by unrest and misbehavior of students. Four PE experienced teachers (Chauveau 2001) have agreed to partner with the study after being briefed on the research topic and protocol. The four students selected for the study were selected by both teachers as children with the greatest problem of misbehavior. To keep the anonymity, the names of the participants have been change. A total of 20 hours of physical education lessons were observed and filmed in gymnastic workshop pedagogical format.

Data collection

Two kinds of data were collected: extrinsic and intrinsic data. On the one hand, the extrinsic data in class were made from ethnographic notes and from audio-visuals recordings. The recorded data were collected by video camera and a high-frequency micro-phone worn by the teacher. After a period of 2-lessons to allow teachers and students to become familiar with the recording material, which was located in a corner of the gym, we began recording all teachers' and students' actions and communications during physical education lessons. These data have identified traces of classroom behaviors of teachers, students, and their interactions.

On the other hand, intrinsic data were made from self-confronting interviews held after lessons (Theureau 2010). During these interviews the researcher and teacher

viewed the videotape of the lesson. The teacher partner was asked to comment on his or her practical actions, communications, interpretations, feelings, and focus during the recorded activity. Either party could stop the tape or backtrack at any time to facilitate descriptions and comments. The researcher's prompts were concerned with eliciting descriptions of the actions and events as experienced by the teachers; requests for interpretations and generalizations were avoided. The prompts were designed to focus teachers' attention on interaction with student misbehaviors (i.e. on event where student misbehaviors makes sense to him), encourage him to be more specific, and to obtain additional information.

Data analysis

The materials were processed in four stages: (a) the students activity was categorized with ALT-PE method (Siedentop 1983); (b) the teacher activity was reconstruct with a two-level protocol paralleling the time course of extrinsic and intrinsic data; (c) the identification of significant elements of teacher experience; and (d) the identification of archetypal structure of teacher management misbehavior.

ALT-PE. Students and teacher behaviors were coded using the observation system "Academic Learning Time interval recording instrument" (ALT) in Physical Education (ALT-PE) (Siedentop 1983). Thus, the pattern of behavior of different actors in lessons and their on-task time have been identified. Using the video, students' behaviors were cut every 10 seconds to encode: (a) their nature, (b) their duration (coded behavior is that which is most representative of the interval time). The ALT-PE instrument gives an accurate description of quantitative and qualitative behavior of the teacher and students during PE lessons. The time engagement of each student has been extracted.

(Insert Table 1)

Then the behaviors were presented in graphical form (Table 2). These data are used to identify patterns of time engagement for all the exercises and the students studied.

(Insert table 2)

Construction of a two-level protocol. This stage consisted of presenting the recordings and interview materials in a synthetic and exploitable way. The two-level protocol first entailed the description of the observable activity of the student and teacher (using ethnographic notes and audio-visuals recordings), in the dynamic context of his interactions and secondly the retranscription verbatim of the self-confrontation interview. Then, these two kinds of materials were put in parallel (Table 3).

(Insert table 3)

Identification of significant elements of teacher experience. The individual-social activity of teacher and students has been studied from the constitutive components of their experience. Based on certain elements of Theureau semiotics (2006), the components selected to reflect the teacher-student interactions are the basic Unit (U), the Preoccupation (eR), the Interpretant (I), the Representamen (R). The "unit of the course of action" (U) includes the components of the experience (eR, I, R). It may be an interpretation, physical action, communicative exchange, or emotion. It is identified by asking the following questions about the collected and transcribed data: What is the acteur doing? What is he thinking? What is he feeling? In the example (Table 3), the commented action for the teacher W. was Maureen's help.

- The Preoccupations (ER) are the salient interests that engage the actor in the situation, which mobilize the teacher in his misbehavior management. They are identified by asking the following question about the collected and transcribed data: what are the main preoccupations for the actor linked with

what makes a sign for him in this situation? What is the theme that plays in the situation? In our example, the teacher acting is preoccupied to help Maureen and to control discretely the games between Sourak and Aris.

- The Interpretant (I) refers to the elements of generality (i.e., knowledge) present in cognition in the present situation, but arising from past actions. It is identified by asking the following question about the collected and transcribed data: What knowledge is being constructed, validated, or invalidated by the actor during classroom management? In the example, the teacher knows that Sourak and Aris are playing.

- The Representamen (R) refers to that which is meaningful to the agent in a given situation and which will be taken into account to act. It is identified by asking the following questions about the collected and transcribed data: What is the meaningful misbehavior in the situation for the teacher? What element of the situation is the actor considering? In our example, the teacher sees that two students are playing and considers this to be a meaningful element.

The four components of the actor experience constitute a narrative of the individual-social activity from the cutting action of teachers in elementary units (Table 4).

(Insert Table 4)

Identification of archetypal structures of teacher misbehavior management. This last step permitted us to demonstrate the typical character of teachers' misbehavior management during PE lesson in tree steps:

1) Identification of the typical form taken by the teacher activity pinpointed from their recurrent misbehavior management,

2) Identification of the typical form taken by the activity of all teachers surveyed by

them way of taking into account the student misbehaves : typical "Preoccupations" (eR) and the kinds of knowledge implemented (I), as well as the situational elements that typically function as signs for them (R)

3) Characterization of the archetypal structure of teacher misbehavior management, by matching the typical behavior of students with the activity typical of teachers until data saturation (i.e. until the teacher materials on management misbehavior brings nothing new).

Data Validity. The two researchers coded the data separately and systematically obtained an agreement rate better than 83% at the end of each step. Points of disagreement were discussed by all researchers until they reached agreement.

Main results

The results show that the class is engaged in a relatively studious activity during lessons studied. The course of lesson is rarely broken in a sustainable manner by interventions of the teacher to punish the students severely. However, students' work is marked by numerous drop-outs corresponding to off-task behaviors. Two typical results are presented, first the behavior of students is mainly oriented to work, and secondly the teacher management tolerates some off-task behaviors so that the students remain active.

1. Students behaviors: An important physical activity time

The categorization of student behavior over time reveals a typical organization founded on unstable behavior and dominant physical engagement in the task (Table 5).

(Insert Table 5)

1.1. A wide variety of student behavior

During the lesson, the four students studied produce a broad spectrum of behaviors (Table 5) divided into five categories presented in Table 1. All categories are composed by many kinds of behaviors. For example, when the students are engaged in a task accompanying the motor task (coded as “Other conform”, 59% for Yasmine, 50% for Sourak, 29% for Rachid, 50% for Kevin) this manifests itself in different ways, when students: getting ready to go, waits his turn to go through, replace or set up equipment, talking to the teacher, helps a friend, or fills the exercise sheet ... More, the dynamics of student engagement is typical. It is marked by a succession of sequences lasting no more than fifteen seconds. Students never stay long to do the same thing, they change constantly. For example in one minute in the gym, Sourak makes a correct jump, puts equipment, discusses with friends, gives a kick in a mat, makes another jump, wanders, waits idly, does off-task exercises, reads the exercise sheet, calls the teacher.

The off-task behaviors appear rarely more than a minute. Even if students drop-out of the prescribed task that remains a minority. All misbehaviors (coded as “Motor off-task" added to "passivity": 23% Yasmine; 29% Sourak, 67% for Rachid, 31% for Kevin), set apart for Rachid, are less represented that the studious behaviors. On average, they represent one third of class time. Moreover, what characterizes these off-task behaviors is their furtiveness, although they may be frequent, they remain short. The students do one or two actions off-task, and then they go back to the work required. There is no sustainable disengagement, even when students are passive, apathetic (coded "passivity": 5% Yasmine, 1% Sourak, 29% Rachid, 9% Kevin) this does not exceed thirty seconds. They engage again as soon as they find an occupation or are taken back by the teacher. On average, these passive behaviors represent 11%

of the total time. They occur when students allow themselves to doubling in the queue, lie on the carpet, and wander through the gym in search of opportunity for change. Although physically inactive, students scan their environment looking for opportunities to escape boredom. Beyond off-task behavior, work engagement remains dominant.

1.2. A dominant physical activity

Behaviors consistent with the requirements of the teacher are mostly represented in three out of four students. They represent approximately two thirds of their actions (average 62.5%). These are the moments when students are engaged in carrying out the motor task, i.e. the gymnastic exercises required: somersault, jump and cross. In addition, students will periodically look at the exercise sheet on which the exercises are explained. More, they watch what others are doing to succeed. This kind of behavior reflects their ability to work with relative autonomy.

The physical activity of students is very high (on average 43.75%, shown in dark gray in Table 5: "Motor off-task", "Motor on-task success" and "Motor on-task Failure"). Even when students drop-out, they stay active, they have high energy expenditure. Most behaviors coded as “motor off-task” correspond to redefinitions of task, when the student changes the teacher's initial instructions to make things more fun. The playful redefinitions of the task take two typical forms. On the one hand, students are looking for movement, dynamism to break the boredom of inaction of certain exercises. For example, in the workshop “somersault”, students run, after every exercise, they have fun making a speed circuit. On the other hand, they seek sensations by changing the task to make it more dangerous, dizzying. For example, they use the properties of the trampoline to do jumps "kamikaze"; they laugh were looking jumping the most dangerous possible.

The nature of students behaviors that we just presented can be understood only in direct link with interventions from the teacher. Work time majority and the dominant physical activity in these difficult students are partly attributable to the teacher misbehavior management in the class.

2. Classroom management: Teacher uses off-task games to keep students active

Although the classes are considered by the teaching staff as "difficult, preferring to play than work", the lesson goes smoothly and without major clash. The experienced teachers manage to set students at work and to keep them engaged in the classroom. Obtaining a working group activity in class emerged as the primary preoccupation of the teachers. The activity of the teachers is typical in two aspects: a) it is based on off-task activities gaming as a source of student engagement; b) the teachers know how to judge the engagement viability of the class at work.

2.1. Tolerance as a source of student engagement

Faced with these episodic deviances, teacher does not always intervene; on the contrary it is a fulcrum for him to keep students active avoiding drop-out. For him this margin of freedom, this autonomy left to the students is a requirement to engage them in the task and maintain their work without disengagement. Even if the teacher admits that he cannot see all the off-task students behaviors, he is aware of them and understands their need. He considers that these short games allow durably student engagement. About the workshop "somersault", the teacher said explicitly:

> **Teacher W.:** *"If it was not these games ... a time of fun and it was work, work ... it does not interest the students and they'll drop-out. So rather than seeing them do nothing, I prefer that there are some work and some game. If I said no game,*

no misbehavior, they would say "oh, if that's, I'm doing nothing, I put myself out”.”

The teacher has learned to identify and tolerate some drop-out "benign"; he knows they will not weaken the collective activity of the working class. Paradoxically, off-task behaviors are considered necessary for the collective work: for the teacher, they allow students to remain active in the course.

Teacher D.: *"Ultimately it's almost better that (motor misbehavior), instead they do nothing, at least they are moving, at least they are active, so for me if they have a little fun for 30 seconds, then they will back to work. It’s their safety valve. "*

For the teacher, the students passivity is a source of sustainable dropping-out and it puts at risk the work in the classroom. In the interaction, he occurs more on the passivity of students than on certain off-task behaviors judged unimportant. The teacher knows that such amusements are between two working time and that they will often disappear by themselves. In other words, he knows the *modus operandi* of the students, he knows they will try to do the exercise; then they will get to off-task behaviors; and then they'll return to work. Moreover, analysis of student behavior in class, according to the audio-visual, shows repeatedly that students returning from themselves, spontaneously, in the exercise required. The teacher explains about this:

Teacher J.: *"With this kind of children, if you were very hard with all off-task games; and if you stay in front of them, they will do: one pass, two passes (then they will tell you): "ah, is boring, I want to do anything"."*

Finally, the teacher tolerates these furtive off-task games to avoid a definitive disengagement. For him, the deviant behaviors are still in a register of acceptable activity or slightly wrong as they do not exceed certain limits.

2.2. Working time as an indicator threshold

The teacher knows how to judge the engagement viability of the class at work. He continuously monitors the deviations remain ephemeral. He then monitors the progress of the class situation and he intervenes when students exceed a boundary related to working time. When this threshold is crossed the teacher intervenes quickly; i.e. the teacher intervenes when he finds that the proportion of deviant behavior exceeds the expected behaviors. For him, the duration of behaviors is a key indicator that guides his actions.

> **Teacher W.:** *"I saw them, I saw they were doing the sly devils and I see that it does not degenerate, I let him go. As long as it doesn't last very long."*

When he observes off-task behaviors, he tries to estimate whether it is likely to last or not. He stops to tolerate off-task games, when he finds that students exceed the time threshold that might endanger the balance of work, causing: (a) a spread of deviance, (b) conflicts between students and (c) physical danger. The teacher misbehavior management has a typical character: he exploits the deviant games to keep students active and he intervenes only if the duration of off-task behaviors exceeds a threshold of tolerance.

Discussion and Conclusion

This study of teacher misbehavior managing sought to understand how experienced PE teachers manage to keep students physically involved in these

difficult classes without sustainable drop-out. It analyzed the interactions of teachers from the meanings attributed to the students misbehaviors. The results revealed a teacher management tolerating some off-task games to keep students active in the lesson. These results lead us to discuss two fundamental characteristics of management misbehavior in classrooms belonging to compensatory policies.

Empathy and tolerance to keep difficult students engaged in class

Keep students engaged in the compensatory education is an important teacher mission due to the very high rate of school drop-out (Glasman and Oeuvrard 2004). Studies show that one of the criteria premonitory of school drop-out is the disengagement, the inactivity and the frequent classroom drop-outs (Glasman and Oeuvrard 2004). The study presented showed that the teacher manages to keep students engaged in learning situations without long drop-out, thanks to (a) empathy and (b) tolerance. His empathic allows him to interpret the behavior of deviant students (Yilmaz et al. 2010). In his experience, the teacher understands what is mobilizing students, particularly their propensity to get bored with the repetition, and to seek constantly playful interaction with their peers. By trying to understand children, the teacher can recognize the potential danger of misbehavior. Thus, he identifies and regulates conflicts before they occur (Flavier et al. 2002).

In addition, the results showed that the typical teacher's activity was organized around a threshold tolerance. The experienced teacher avoids entering in an authoritarian relationship which would exclude the construction of a true relationship to each other, and will affect negatively on the installation of a collective activity of work in the class. Assertiveness is often a source of misunderstanding and hostility on the part of students (Pellerin 2005). The results of this study provide some new leads

to understanding. The first emphasizes the fact that the repeated use or abuse of the power to impose penalties relating to the authority may paradoxically contribute to its weakening. It also updates the need for teachers to install compromises essential to avoid the emergence of open conflict and threatening to their authority. This notion of compromise joined the concept of "trading-off" present in the ecological approach to the class (Hastie and Pickwell 1996). The class is regarded as a system, teachers and students are necessarily brought to cooperate, "trading-off", something easy and not particularly widespread in the difficult classes (Hastie and Pickwell 1996). These concessions are hitting the ethos of many teachers faced with the question of the moral acceptability of deviant behavior of these students, but they become a vital necessity for them to succeed in "doing" their work in a zone of acceptable responses. These results complement the work of Sanders and Graham (1995) speaking of "zone of acceptable responses". These authors show that more the class is difficult; more teachers tolerate the use of off-task behaviors (Sanders and Graham 1995).

Increase physical activity time

The disengagement of students from the compensatory education induces low practice time. Studies have shown that the more students have difficulties, the more practice time decreases (Pieron 1993), the Academic Learning Time in Physical Education is less than 7% in difficult classes (Vors, Gal-Petitfaux and Cizeron 2010). So, it is problematic to cope with the healthy mission of PE. Low levels of physical activity are a major contributor to current overweight and obesity problems in children and adolescents; and middle school is a great place to take action (Xu et al. 2010). The present study has demonstrated a high rate of physical activity. On the one hand, the teacher management allows students to remain engaged, increasing their practice time in the task at 17%. On the other hand, the teacher tolerates off-task

behaviors to keep students active. This tolerance increases physical activity to 43.75% by adding on-task and off-task motor behaviors. The added value of such a health management is evident; however, the educational value of off-task physical activity is questionable. These deviations have a cathartic effect on students; they will cause an energy expenditure that will soothe their instincts and their violence (Fitch and Marshall 2000). But even for health reasons, the PE class cannot be seen simply as a place for emotional release. Tolerance of deviant physical activities serves learning. Teachers tolerate insofar it allows these particularly difficult students to not dropped-out definitely and coming back to work. The learning activity in its particular settings of compensatory education is questioned; it would indissolubly consist of on-task and off-task behaviors. The idea behind is that if there were no occasional off-task behaviors, those difficult students will drop-out or will be in conflict with the teacher (Vors and Gal-Petitfaux 2008). These results show that deviance and work should be considered systemically in a relationship of complementarity rather than opposition. The great difficulty is to find the right proportions in this delicate balance.

References

Allen, J.D. 1986. Classroom management: Student's perspectives, goals and strategies. *American Educational Research Journal 23:* 437-459.

Armand, A., and Gille, B., ed. 2006. *Rapport IGEN, IGAENR. La contribution de l'éducation prioritaire à l'égalité des chances des élèves*. France : Ministère de l'éducation nationale, de l'enseignement supérieur et de la recherche.

Bénabou, R, Kramarz, F., and Prost, C. 2005. "The French Zones d'Education Prioritaire: much ado about nothing?," *Labor economics and public policy*, Discussion Papers 5085.

Bourbousson, J., Poizat, G., Saury, J., and Sève, C. 2011. Description of dynamic shared knowledge: an exploratory study during a competitive sports interaction. *Ergonomics* 54: 120-138.

Demeuse, M., Frandji, D., Greger, D., and Rochex, J.Y., ed. 2008. *Évolution des politiques d'éducation prioritaire en Europe. Conceptions, mises en œuvre, débats*. Lyon : INRP.

Carlson, T.B., and Hastie, P.A. 1997. The student social system within sport education. *Journal of Teaching in Physical Education* 16: 176–195.

Chaliès, S., Bruno, F., Méard, J., and Bertone, S. Forthcoming. Training preservice teachers rapidly: the need to articulate the training given by university supervisors and cooperating teachers. *Teaching and Teacher Education*.

Chauveau, G. 2001. La réussite scolaire dans les ZEP. *Éducation et Formations* 61: 147-151.

Doyle, W. 1977. Learning the classroom environment : An ecological analysis. *Journal of Teacher Education* 28: 51-55.

Durand, M. 1996. *L'enseignement scolaire*. Paris : PUF

Dyson, B., Linehan, N., and Hastie, P. A. 2010. The ecology of cooperative learning in elementary physical education classes. *Journal of Teaching in Physical Education* 29: 113-130.

Flavier, E., Bertone, S., Hauw, D., and Durand, M. 2002. The meaning and organization of physical education teachers' actions during conflict with students. *Journal of Teaching in Physical Education* 22: 20-38.

Fitch T.J., and Marshall J.L., 2000. Faces of violence in sports. In *Faces of violence: psychological correlates, concepts and intervention strategies,* ed. D.S. SANDHU, 87-102. New-York : Nova Science Publishers.

Gal-Petitfaux, N., Sève, C., Cizeron, M., and Adé, D. 2010. Activité et expérience des acteurs en situation : les apports de l'anthropologie cognitive. In *Sciences de l'intervention en EPS et en sport*, ed. M. Musard, G. Carlier and M. Loquet, 67-85. Paris : Editions Revue EP.S.

Gal-Petitfaux, N., and Vors, O. 2010. Le rôle des objets dans l'articulation d'activités publiques et masquées participant à la viabilité d'une situation d'enseignement : une étude en gymnastique scolaire. In *Les objets dans la formation et l'apprentissage : usages, rôles et significations dans des contextes variés*, ed. D. Adé and I. de Saint-Georges, 161-185. Toulouse: Octarès.

Garn, A.C., Ware D.R., and Solmon, M.A. 2011. Student Engagement in High School Physical Education: Do Social Motivation Orientations Matter? *Journal of Teaching in Physical Education* 30: 84-98.

Glasman, D., and Oeuvrard, F., ed. 2004. *La déscolarisation*. Paris: La Dispute.
Guillou, J., and Durny, A. 2008. Students' situated action in physical education: Analysis of typical concerns and their relations with mobilized knowledge in table tennis. *Physical Education and Sport Pedagogy* 13, no. 2: 153-169.
Hastie, P.A. 1995. An ecology of a secondary school outdoor adventure camp. *Journal of Teaching in Physical Education* 15: 79–97.
Hastie, P.A. 2000. An ecological analysis of a sport education season. *Journal of Teaching in Physical Education* 19: 355–373.
Hastie, P. A., and Pickwell, A. 1996. Take your partners: a description of a student social system in a secondary school dance class, *Journal of Teaching in Physical Education* 15: 171-187.
Hastie, P. A., and Siedentop, D. 2006. The classroom ecology paradigm. In *The handbook of physical education,* ed. D. Kirk, D. Macdonald and M. O'Sullivan, 214-225. London: Sage Publications.
Hauw, D., Renault, G., and Durand, M. 2008. How do aerial freestyler skiers land on their feet? A situated analysis of athletes' activity related to new forms of acrobatic performance. *Journal of Science and Medicine in Sport* 11: 481-488.
Hutchins, E.A. 1995. *Cognition in the wild*. Cambridge: The MIT Press.
Jones, V.F., and Jones, L.S. 1981. *Responsible classroom discipline*. Boston : Allyn and Bacon.
Kherroubi M., and Rochex J.Y., 2002, Note de synthèse. La recherche en éducation et les ZEP en France. *Revue Française de Pédagogie* 146 : 115-190.
Kherroubi M., and Rochex J.Y. 2004. Note de synthèse. La recherche en éducation et les ZEP en France. Apprentissages et exercice professionnel en ZEP : résultats, analyses, interprétations. *Revue Française de Pédagogie* 146 : 115-190.
Kounin J.S. 1970. *Discipline and group management in classrooms*. New York: Holt Rinehardt and Winston.
Lave, J. 1988. *Cognition in practice: Mind, mathematics and culture in everyday life.* Cambridge: Cambridge University Press.
Méard, J., Bertone, S., and Flavier, E. 2008. How second-grade students internalize rules during teacher-student transactions: case study. *British Journal of Educational Psychology* 78, no. 3 : 395-410.
Millet, M. 2004. Des élèves "en difficulté" aux élèves "difficiles" : l'exemple des collégiens de milieux populaires en "ruptures scolaires". Paper presented at *Les jeunes en difficulté : leur place dans les politiques et dans la cité*, CNAM, Paris.
Monnier, N., and Amade-Escot, C. 2009. L'activité didactique empêchée : un outil d'intelligibilité de la pratique enseignante en milieu difficile. *Revue Française de Pédagogie* 168 : 59-73.
Pellerin, L. A. 2005. Student Disengagement and the Socialization Styles of High Schools. *Social Forces* 84, no. 2 : 1159-1179.
Pieron, M. 1993. *Analyser l'enseignement pour mieux enseigner*. Dossier EPS, 16, 1-145 Paris: Ed. Revue E.P.S.
Reynolds, A. 1992. What is competent beginning teaching? A review of the literature. *Review of Educational Research* 62*,* no. 1: 1-35.
Ria, L., Sève, C., Theureau, J., Saury, J., and Durand, M. 2003. Beginning teacher's situated emotions: study about first classroom's experiences. *Journal of Education for Teaching* 29, no. 3: 219-233.

Rouve, M.E., and Ria, L. 2008. Analyse de l'activité professionnelle d'enseignants néo-titulaires en réseau « ambition réussite » : études de cas. *Travail et formation en éducation* 1.

Rovegno, I. 2006. Situated Perspectives on Learning. In *Handbook of Physical Education,* ed. D. Kirk, D. Macdonald and M. O'Sullivan, 262-274. London: Sage Publications.

Sanders, S., and Graham, G. 1995. Kindergarten children's initial experience in physical education: The relentless persistence for play clashes with the zone of acceptable responses. *Journal of Teaching in Physical Education* 14: 372-383.

Senac R. 2000. Zones d'Éducation Prioritaires : enjeux d'une politique. *Revue européenne de migrations internationales* 16, no. 3: 7-28.

Sève, C., Saury, J., Leblanc, S., and Durand, M. 2005. Course of action in table tennis: A qualitative analysis of knowledge used by three elite players during matches. *European Reviwew of Applied Psychology* 55: 145-155.

Sheridan, S. M. 1998. Building social skills in the classroom. *In Attention deficit hyperactivity disorder in children: A guide for practitioners*, ed. S. Goldstein and M. Goldstein, 2nd ed., 592–612. New York: Wiley.

Siedentop, D., 1983. Academic Learning Time: Reflections and Prospects. *Journal of Teaching in Physical Education* 2: 3-7.

Suchman, L. 1987. *Plans and situated actions: The problem of human-machine communication*. Cambridge: Cambridge University Press.

Suchman, L. 2007. *Human – Machine reconfigurations. Plans and situated actions 2nd Edition*. Cambridge: Cambridge University Press.

Theureau, J., and Filippi, G. 2000. Analysing cooperative work in an urban traffic control room for the design of a coordination support system. In *Workplace studies*, ed. P. Luff, J. Hindmarsh and C. Heath, 68-91. Cambridge: Cambridge University Press.

Theureau, J. 2003. Course of action analysis and course of action centred design. In *Handbook of cognitive task design*, ed. E. Hollnagel, 55-81. Mahwah: Lawrence Erlbaum Associates.

Theureau, J. 2006. *Le cours d'action. Méthode développée*. Toulouse : Octarès.

Theureau, J. 2009. *Le cours d'action. Méthode réfléchie.* Toulouse : Octarès.

Theureau, J. 2010. Les entretiens d'autoconfrontation et de remise en situation par les traces matérielles et le programme de recherche 'cours d'action'. *Revue d'Anthropologie des Connaissances* 4, no. 2: 287-322.

Veyrunes, P., Gal-Petitfaux, N., and Durand, M. 2009. Configurations of activity: from the coupling of individual actions to the emergence of collective activity. A study of mathematics teaching situation in primary school. *Research papers in Education* 24, no. 1: 95-113.

Vors, O., and Gal-Petitfaux, N. 2008. Mettre une classe au travail en Réseau Ambition Réussite : des formes typiques d'interaction enseignant-élèves lors de leçons d'EPS. *Travail et formation en éducation*, 2.

Vors, O., Gal-Petitfaux, N., and Cizeron, M. 2010. Signification des comportements à connotation violente et gestion des interactions dans une classe RAR. *International Journal on Violence and Schools*, 11: 2-32.

Yilmaz, S., and Sahinkaya, N. 2010. The relationship between the methods teachers use against the misbehaviour performed in the classroom and emphatic tendencies of teachers. *Procedia Social and Behavioral Sciences* 2: 2932–2936.

Ward, P. 2006. The philosophy, science and application of behavior analysis in physical education. In *The Handbook of Physical Education*, ed. D. Kirk., D. Macdonald and M. O'Sullivan, 3-21. London: Sage Publications.

Teacher behaviors	Position of teachers with the students observed	Close to the student (in the space of his workshop)	"I"
		Teacher away from students (outside of his workshop)	"O"
	Speaker who addressed the teacher	The whole class	"CL"
		A group of students	"GR"
		Student observed	"SC"
		A different student from the student observed	"S"

Student behaviors	The student is engaged in the motor task required by the teacher	The motor activity of the student is appropriate	Motor on-task success
		The motor activity of the student is inappropriate	Motor on-task failure
	The student is engaged in a task accompanying the motor task required by the teacher	The student has a cognitive activity such as thinking, observing, listening carefully to the teacher, complete a worksheet	Other conform
		The student has a social activity to advise or assist another student	
		The student supports the equipment	
		The student waits his turn to pass by staying focused	
	The student is not engaged in a task required by the teacher	The student waits passively, without disturbing the lesson	Passivity
		The student engages in a task physically deviant	Motor off-task

Table 1: Categories of behavior coding based tool ALT-PE (Gal-Petitfaux and Cizeron, 2005)

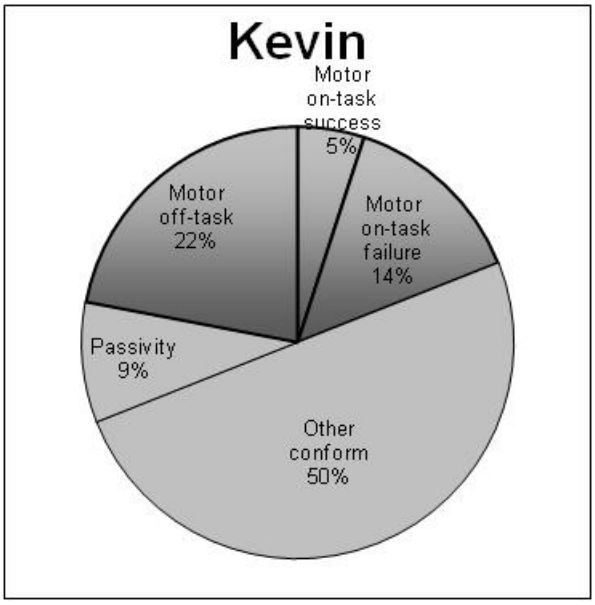

Table 2: Example of categorization behavior of Kevin in Lesson 1 and distribution (in %) of the time engagement in each category.

Time	Student's actions	Teacher's actions	Teacher self-confronting data
22'00''	In the workshop "jump", Sourak executes a jump and falls away at the reception.	The teacher takes care of another group of students. He asks students to show him where they are in the execution of the gymnastic somersault.	Teacher: "there, I help Maureen, she doesn't like gymnastic. At the same time, I watch quietly in Sourak and Aris direction. Because they are playing, they don't do the exercise." Researcher: so what are you doing with Sourak and Aris? Teacher: nothing there, they have fun. Researcher: Yes but then, Aris grabs Sourak and gives him a hit? Teacher: That's the game, one insult, then the other run after and retaliates by giving him a shot. All this, it's part of the same game. It's not bad, they have fun. "
22'10''	Then he returned in the file.	He helps Maureen to execute his exercise. He puts his hand behind her head: "Go courage, you'll get there."	
22'20''	Sourak looks toward the teacher. He insults Aris, when Aris preparing to make his jump over the horse. Aris misses his jump and fell to the reception, which causes the hilarity of the group.	The teacher watches carefully Maureen rotation. After her reception, he said, "Enters the head. It's important, otherwise we will not turn!". In the same time, he looks in the direction of Sourak and Aris at the bottom of the gym.	
22'30''	Sourak short to flee Aris who pursues him. Aris catches him and gives him a violent blow on the shoulder. Sourak shouted while laughing "stop, stop!".		
22'40''			
22'50''	Then Sourak and Aris returned to the file of their workshop to work.	Then he looks at Eva who was ready for the somersault. Then he said "I want to see you Miriam".	

Table 3: Extract from W. Teacher's two-level protocol

Time	eR	R	I
22’00’’ to 22’50’’	-Assisting in the realization of Maureen performance -Check discreetly the game between Sourak and Aris	-The placement of the head of Maureen during the somersault -The reaction of Aris	-Knows they are playing -Knows that the game is to tease and then to revenge

Table 4: Illustration of the components of teacher experience W. for a block.

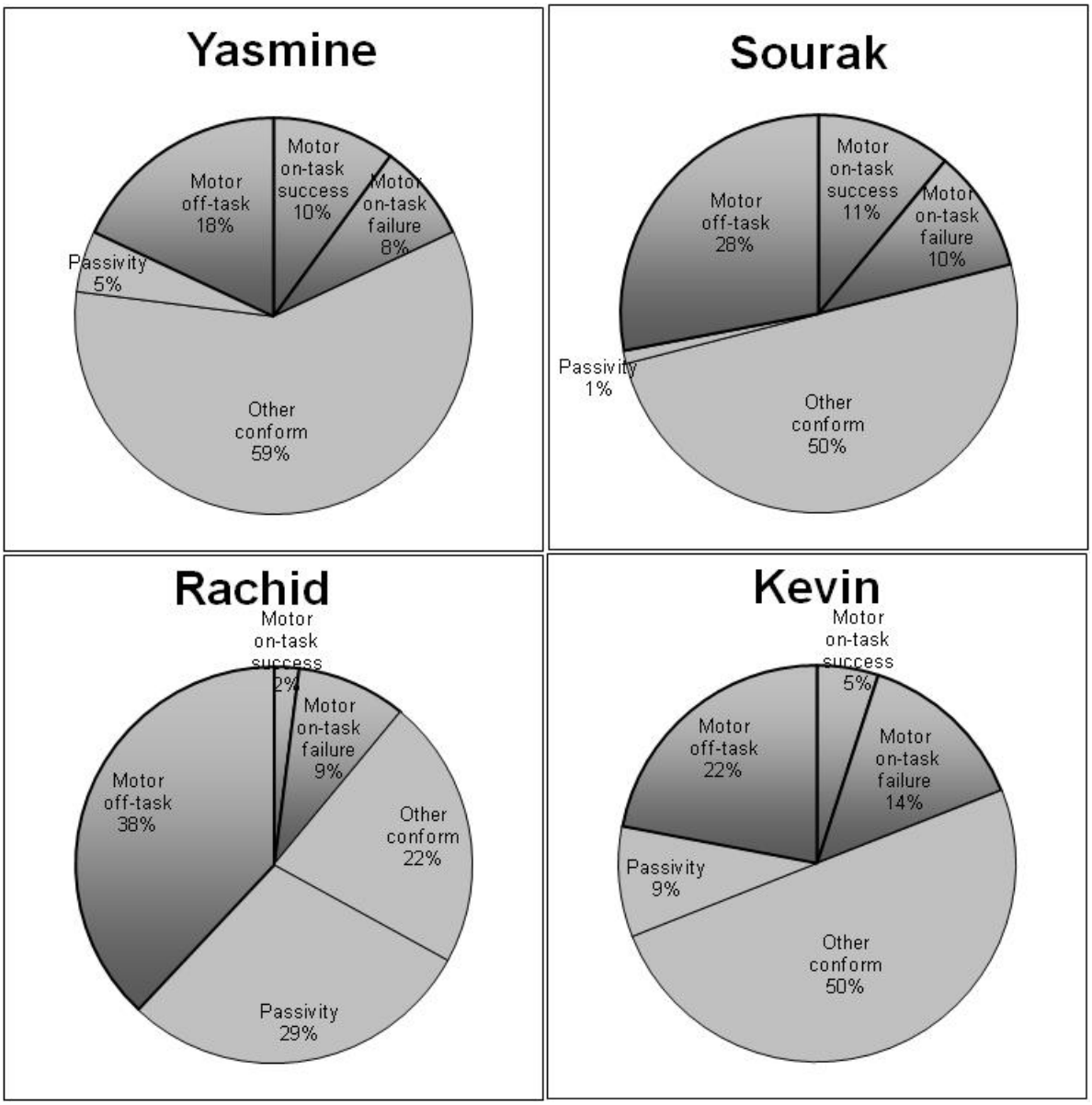

Table 5. Categorization behavior of the four students (Yasmine, Sourak, Rachid and Kevin) in the cycle and distribution (in %) of their time commitment in each category.

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Using Exergames to Promote Children's Physical Activity

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The goal of this study was to provide a comprehensive review of researches using exergames to promote children's physical activity. In exergames, players use movement to interact with the game. A systematic review on international databases was conducted. The twenty-five articles selected was categorized intotwo categories related to expected outcomes. The results show that (1) energy expenditure during exergame play is not high enough to prevent childhood obesity and, (2) the potential of exergames to decrease children's time spent in sedentary activity at home is not demonstrated. Authors suggested for future research in physical education and physical activityto use the potential of virtual reality technology.

Keywords: exergames ; physical activity ; review

Introduction

In developed countries, childhood obesity has reached a epidemic point. According to Jolliffe (2004), between the early 70's and 90's children obesity rates increased by 182%. Similar results have been reported for others countries (Tremblay & Williams, 2001 ; Kautiainen, Rimpela, Vikat & Virtanen, 2002 ; Luo & Hu, 2002 ; Treppoz, 2010). Obesity has been associated with type II diabetes, cardiovascular disease, cancer (Spear, Barlow, Ervin, Ludwig, Saelens, Schetzina & Taveras, 2007) and also related to children inactivity (Tremblay & Willms, 2003 ; Zoeller, 2007). The American Academy of Pediatrics (AAP) have recommended 60 minutes daily of moderate-to-vigourous physical activity (American Academy of Pediatrics Policy Statement, 2006) to prevent chilhood obesity. Children in developed countries struggle to meet this recommandation because of changes in physical and social

environments. Physical activity programs have been designed and implemented toavoid these constraints and increase children'sphysical activity through daily physical education classes (Sallis, McKenzie, Alcaraz, Kolody, Hovell,& Nader, 1993).

Playing video games is a successful free-time activity for children and play an important role in the culture of young people. According to Robertand Barnard (2005), children between eight and ten play video games approximately 60 minutes daily. Playing video games have been traditionnally associated to a sedentary activity and various risks for both mental and physical health (Gentile, Lynch, Linder, & Wlash, 2004 ; Porter, Starcevic, Berle, & Fenech, 2010). In the last five years however, a new generation of video games call "active video games" or "exergames" have been launchedwhich involve physical activity as a means to interact with the game. Konani's *Dance Dance Revolution*, which usesan electronic dancepad interface,is probably the most well-know example and more popular among young people. On the variety of songs, players try to synchonize their step on the dance pad with scrolling directional arrows on the screen.Playing these video games is not clearly a sedentary activity.

Researchers have seen exergames as anopportunity to bring together children's motivation for video games with society'sgoal to prevent childhood obesity by increasingchildren's daily physical activity time. In recent years, research studies have been conducted to examine in which extent exergames can be used to promote children's physical activity. The goal of this study is to review these research results and answer the question: does it work?

Method

A systematic literature search was conducted in September 2010 in databases ISI Web of Science, PubMed and EBSCO Host (Academic Search Premier ; Eric ; PsyInfo ; PsyArticles ; Science Reference Center ; SportDiscus ; Teacher Reference Center ; E-Journals ; CINAHL with Full Text ; CINAHL Plus with Full Text) using combinations of the following keywords : “active video gam*”, “exergam*”, “dance dance revolution”, “eyetoy” or “wii” and “physical activity”. The search was limited to studies(1) published in English peer-review journals between January 2000 and September 2010, (2) involving youth 21 and younger, (3) reporting energy expenditure or energy cost, (4) promoting physical activity, enjoyment or motivation to play.

Each article was readto identify data extraction. Data extracted was (1) research design and description, (2) exergames type, (3) sample size and characteristics, (4) measures (eg, heart rate, energy expenditure, oxygen consumption) and,(5) key findings.These data were summarized, tabulated and compared. Quantitatives physiological measures were compiled in reference to exergames types.Physical activity expected outcomes from exergames practice was used to classify studies into two categories : physiological changes or behavioral changes.

Results

Table 1 presents identification, selection and categorization procedure. Twenty-five articles were included in the review: Seventeen for physiological changes category and nine for behavioral changes.

Table 1. Identification, selection and categorization procedure

	Selection criteria	ISI Web of Knowledge	PubMed	EBSCO Host
1. Identification	Key-words : (« Active Vidéo Gam* » or « Exergam* » or « Dance Dance Revolution » or « EyeToy » or « Wii ») and (« Physical Activity »)	76	18	44
2. Selection	- English language - January 2000 to September 2010 - Peer-review journal - Experimental studies	19	12	14
3. Eligibility	- Youth 21 and younger samples - Duplicates removed	12	5	9
4. Categorization	- Physiological changes - Behavorial changes	17 9		

Physiological changes

Table 2 provides data extracted from studies reporting physiological changes from exergames practice.

Table 2. Data extracted from studies exploring physiological changes during exergames play

Source	Description	Exergames	Sample	Data collected	Key findings
White &al., 2010	Comparison of EE between exergame play, sedentary activities, walking and a running including a maximal oxygen test	Wii bowling, boxe, tennis and Wii Fit ski and step	26 M age 11.4 (0.8) yr.	Anth, EE, VO_2, HR	EE was significantly higher during exergame play compare to sedentary activities(63-190%); no significant difference between EE during exergame play and walking ; exergame play is not vigourous enough to contribute to the daily 60min of PA recommand for children.
Fawkner & al., 2010	Comparison of EE during rest and exergame play during 30min in three practice levels	Dance simulation	20 F (BMI, 19.6 [3.3] age 14.0 (0.3) yr.	Anth, EE, HR, perceived exertion	EE was significantly higher compare to rest for the three levels.
Leatherdale & al., 2010	Comparison of EE during a passive game and an exergame	Game cube (passive game) Wii Sports Tennis	30 M (BMI, 24.3 [3.5] ; 21 F (BMI, 22.5 [2.8] age 18.9 (0.9) yr.	Anth, EE, HR	EE was significantly higher during exergame play compare to passive game ; EE was higher for male than female for the two games.
Penko & al., 2010	Comparison of EE of two groups (lean and overweight/obese) between rest, treadmill walking, passive game and exergame	Nintendo PunchOut ! (passive game) Wii Sports boxing	12 M (4 lean, age 10.8 (1.5) and 8 obese, age 10.3 (1.8) ; 12 F (7 lean, age 10.1 (1.8) and 5 obese, 10.4 (1.3))	Anth, VO_2, HR, perceived exertion	EE was significantly higher during exergame play than all others activities ; EE during exergame play classified as a moderate intensity ; the two groups prefer playing exergame than walking ; the lean group prefer playing exergame than playing passive game ; this result was reverse for the obese group.
Graf &al., 2009	Comparison of EE during exergame play, treadmill walking and rest	DDR, Wii Sports bowling and boxe	14 M (BMI, 19.1 [3.1]) age 11.9 (1.2) yr. ; 9 F (BMI, 19.9 [2.5]) age 11.8 (1.5) yr.	Anth, EE, HR, perceived exertion, arterial elasticity	The higher level of EE is measured for exergame play (3 times higher than rest). EE was 19 to 33% higher for male during exergame play. Arterial elasticity decreased immediately after playing.
Haddock & al., 2009	Comparison of EE between a stationary cycling with and without a video game	CatEye™ Gamebike-USA	13 M (BMI, 29.2 [9.2]) ; 7 F (BMI, 34 [5.5]) age 7-14 yr.	Anth, EE, HR, VO_2, perceived exertion	EE was significantly higher with the video game than without ; no significant difference between the two practices in PE ; EE level during exergame play classified as moderate intensity.
Lanningham-Foster& al., 2009	Comparison of youth and adults EE duringpassive video game, rest and exergame play	Disney's Extreme Skate Adventure, PlayStation 2 (passive video game) Wii Sports boxe	11 M and 11 F youths age 12 (+/-2) yr. BMI, 20.2 [3.3] 10 H and 10 F adults age 34 (+/- 11) yr. BMI, 27.7 [5.5]	Anth, Accelerometry, EE, VO_2	EE was significantly higher during exergame play compare to others activities ; youths move more than adults during exergame play.

Graves & al., 2008	Comparison of EE between a passive video game and three exergames	XBox 360, Project Gotham Racing 3 (passive video game) Wii Sports bowling, tennis and boxe	7 M (BMI, 21.8 [3.1]) age 15.0 (1.7) yr. ; 6 F (BMI, 22.2 [2.0]) age 15.2 (1.2) an	Anth, EE, HR, upper and lower body movement (Accelerometry)	EE was significantly higher during exergame play compare to passive game play ; higher EE measured for Wii Sports boxe ; upper body movement was significantly higher in all games.
Sell &al, 2008	Comparison of novices and experts EE during exergame play.	DDR	12 H experts (BMI, 26.5 [6.1]) age 19.7 (2.1) yr. 7 M novices (BMI, 22.8 [6.7]) age 25.6 (1.6) yr.	Anth, EE, VO_2, HR	Experts EE was higher than novices ; experts EE level during exergame play classified as moderate intensity ; novices EE during exergame play classified as light intensity.
Mellecker & MacManus, 2008	Comparison of EE between rest and exergame play	XaviX Bowling and XaviX J-Mat, SSD Company, Japan	11 M and 7 F (BMI, 35.5 [9.2]) age 9.6 (1.7) yr.	Anth, EE, HR	EE was significantly higher during games compare to rest ; variance in EE was high ; EE during XaviX J-Mat classified as vigourous intensity.
Graves & al., 2007	Comparison of EE between a passive video game and three exergames	XBox 360, Project Gotham Racing 3 (passive video game) Wii Sports bowling, tennis and boxe	6 M (BMI, 20.7 [2.6]) age 14.9 (0.3) yr. ; 5 F (BMI, 21.7 [2.6]) age 14.3 (0.5) yr.	Anth, EE	EE was at least 51% higher during exergame play compare to passive video game play ; Highest EE measured for Wii Sports tennis ; EE was higher for male compare to female.
Maddison & al., 2007	Comparison of EE between rest and exergame play	PlayStation 2, EyeToy Games	11 H (BMI, 21.2 [4.0]) age 12.6 (1.1) yr. ; 10 F (BMI, 19.3 [4.0]) age 12.2 (1.0) yr.	Acc, EE, HR, VO_2	EE was significantly higher during exergame play compare to rest ; highest EE measured for Boxe and Base-ball games ; no EE difference measured based on gender ; EE during exergame play classified as moderate intensity.
Straker & Abbott, 2007	Comparison of cardiovascular responses and EE between rest, passive video game play and exergame play.	Nintendo Game Boy (passive video game) PlayStation 2, EyeToy Cascade	12 M and 8 F age 9-12 yr.	Anth, EE, HR	HR and EE were comparable between rest and passive video gaming ; exergame play increased EE by 224% and HR by 59% compare to rest ; EE during exergame play classified as moderate intenstity.
Lanningham-Foster & al., 2006	Comparison of EE between passive video gaming, treadmill walking and exergame play.	PlayStation 2, Disney's Extreme Skate Adventure (passive video game) PlayStation 2, EyeToy, Nicktoons Movin' DDR Ultramix 2	12 M and 13 F age 9.7 (1.6) yr. ; 10 overweight obesity (BMI, 23 [4.0]), 15 nonoverweight (BMI, 18 [2.0])	Anth, EE	EE increase during games playing compare to rest (22 to 172%); no significant difference in EE during exergame play between overweight and nonoverweight children.
Unnithan & al., 2006	Comparison of EE between overweight and nonoverweight children during exergame play	DDR	16 M and 6 F age 11-17 yr. ; 10 overweight (BMI, 27.4 [3.3]) age 13.5 (3.3) yr. and 12 nonoverweight (BMI, 18.6 [2.9]) age 12.3 (1.5) yr.	Anth, EE, HR	No significant difference in EE during exergame play between overweight and nonoverweight ; HR rates measured during exergame was sufficient for developing and maintaining cardiorespiratory fitness.
Tan & al., 2002	Comparison of energy costs between an exercise on treadmill (moderate activity) and exergame play after two weeks of familiarization	DDR	21 M and 19 F age 17.5 (0.7) yr.	Anth, VO_2, Ventilation rate, HR	EE during exergame play classified as a moderate activity. HR intensity levels meet standards for developing and maintaining cardiorespiratory fitness in adults. VO_2 intensity levels do not meet standards.
Ridley & Olds, 2001	Comparison of energy cost between rest and an arcade exergame	Daytona, Air Hockey, Final Furlong, Mini Dunxx	5 M and 5 F age 12.5 (0.5) yr.	Anth, VO_2, HR, Ventilation rate	EE was significantly higher during exergame compare to rest ; EE was higher for male than female from 9 to 41%. EE during exergame play classified as a moderate intensity,

Note .M, Male ; F, Female ; EE, Energy Expenditure ; HR, Heart Rate ; Anth, Anthropometry ; VO2, Oxygen Consumption ; Yr, Year ; DDR, Dance Dance Revolution ; BMI, Body Mass Index ; PA, Physical Activity.

Several studies have demonstrated exergames' potential (the potential of exergames) to increase youth energy expenditure compared to levels measured during sedentaries activities. Therefore, vigourous-level of physical activity was not found

during exergames play. Playing exergames increases children and adolescents' energy expenditure from light to moderate levels (eg, stairwalking, bicycling, gardening).As Graves, Stratton, Ridgers and Cable (2007) pointed out : "*Playing new generation active computer games uses significantly more energy than playing sedentary computer games but not as much energy as playing the sport itself. The energy used when playing active Wii Sports games was not of high enough intensity to contribute towards the recommended daily amount of exercise in children*" (Graves and al., 2007).

Behavioral changes

Table 3 presents data extracted from studies based on behavioral changes.

Table 3. Data extracted from studies exploring children's physical activity behavorial changes through exergame play in the home

Source	Description	Exergame	Sample	Measures	Key findings
Duncan & Staples, 2010	Exergame-based intervention study during 6 weeks (2 times a week). Control group comparison.	Wii Sports Tennis ; Sonic and Mario at the Olympics ; Celebrity Sports Showdown	Exp grp : 6M and 9F, age 10.4 (0.5) Cont grp : 6M and 9F, age 10.4 (0.51) 2 primary school	Anth, Ped, HR,	Daily steps per minute was significantly higher for exp grp compare to cont grp during the first week but significantly lower from the second to the last week. Pourcentage of time spent in HR intensity levels consistent with standard recommandations was significantly lower for exp grp compare to cont grp. No significant difference between the two schools.
Gao, Z. & al., 2009	Exergame-based intervention study during 2 weeks in PE class.	DDR	100 M, 95 F age 13.54 (0.94)	Acc, Motivation	Students are motivated to play exergame. Pourcentage of time spent in target zone consistent with standard recommandations for developing and maintaining cardiovascular fitness was below 50%.
Maddison & al., 2009	Exergame-based intervention study with overweight children during 24 weeks (2h per week)	Sony EyeToy	330 separate into two groups (exp and control)	Anth, Acc, cardiovascular endurance test, BMI Motivation	BMI decrease between the 12st and 14st week for exp grp. Pourcentage of time spent in light to vigourous exercice intensity levels was higher for exp grp compare to cont grp. Motivation level was higher for exp grp.
Paez & al., 2009	Exergame-based intervention study with parents support during 10 weeks (120min per week). Control group comparison.	DDR	Exp grp : 21M and 19F (BMI, 17.2 [2.4]) age 7.5 (0.5) Cont grp : 9M and 11F (BMI, 18.0 [3.3]) age 7.6 (0.5)	Acc, self-reported use, parents involvement, questionnaire	Parents support was highly correlated with children physical activity during exergame play. Parents support was not related to children physical activity intensity during the exergame play. Parents participation play an important role in children dropout rate.
Chin A Paw &al., 2008	Exergame-based intervention study using multiplayer mode during 12 weeks in PE class (60min per week). Comparison with a cont grp using exergame in the home	Dance game	Exp grp : 14 Cont grp : 13 age 10.6 (0.8) yr.	Anth, BMI, self-reported use, focus group.	Dropout rate was significantly lower for the exp grp compare to cont grp ; multiplayer mode increase children motivation to play ;
Ni Mchurchu & al., 2008	Exergame-based intervention study during 12 weeks. Control group using exergame in the home.	Sony EyeToy Knockout	Exp grp : 10, 6M and 4F (BMI, 20.4 [3.6]) age 11 (1.0) Cont grp : 6M and 4F (BMI, 19.0 [3.6]) age 13.0 (1.0)	Acc, BMI, self-reported use, questionnaire	Exp grp spent less time to play compare to cont grp ; physical activity intensity levels was significantly higher for exp grp compare to cont grp.
Maloney & al., 2008	Exergame-based intervention study during 28	DDR	Same than Paez & al, 2009 study	Anth, BMI, ped, self-	Exp grp time practice (89min per week) was significantly higher compare to cont grp ;

	weeks. Cont grp start playing exergame 10 weeks after exp grp.			reported, questionnaire	Exp grp PA intensity levels increase between the 10st and the 28st ; vigourous PA levels increase significantly for exp grp.
Mc Dougall & Duncan, 2008	Exergame-based intervention study during lunch time for a week	NA	5M and 7F, age 8-11 yr.	Pedometer, HR, focus group	Average exergame play duration (24min per day) resulted in 10% of the daily recommanded steps and 11min of the daily recommanded moderate to vigourous physical activity
Madsen & al., 2007	Exergame-based intervention study with overweight children during 3 months (5 days a week ; 30min per day)	DDR	12M and 18F (BMI, 38.3 [9.0] age 13 (2.6)	Anth, BMI, video memory card, self-reported, telephone interview	Dropout rates increase significantly ; after 12 weeks, only 2 children play 2 times a week or more ; 13 children reported the game was boring ; no significant changes in BMI

Note. M, Male ; F, Female ; HR, Heart Rate ; Anth, Anthropometry ; Acc, Accelerometer ; Yr, Year ; Exp. Grp., Experimental Group ; Cont. Grp., Control Group ; DDR, Dance Dance Revolution ; BMI, Body Mass Index ; PA, Physical Activity.

These intervention studies used exergames to promote children's physical activity in the home. Results do not support exergames' impact on children's physical activity time at home. Measures reported to evaluate the result of exergames play, such as changes in body mass index, are not significant. Studies have shown significant levels of dropout after few weeks of intervention using exergames at home. Exergames' potential to decrease children time spent in sedentary activity at home is not demonstrated.

Conclusion and future directions

Results reported in the review suggested the low potential of exergames to increase children'sphysical activity to vigourous levelsand meet the AAP recommandations to prevent childhood obesity. At some point, these results are not surprising if we considered the games' industry goalto create funny games for families. Exergames are not designed to promote vigourous physical activity level.

We suggested future researches to use the potential of virtual reality learning environnements (VRLEs), which immerge users in a real-time 3D interactive environment for a learning purpose. We illustrate with CopéFoot, a VRLE to improve youth player decision-making in team sports

References

American Academy of Pediatrics Policy Statement (2006). Active Health Living: Prevention of childhood obesity through increased physical activity. *Pediatrics, 117* (5), 1834-1842.

Chin A Paw, M.J.M., Jacobs, W.M., Vaessen, E.P.G., Titze, S., & Mechelen, W.V. (2008). The motivation of children to play an active video game. *Journal of Science and Medicine in Sport, 11,* 163-166.

Duncan, M.J., & Staples, V. (2010). The impact of school-based active video game play intervention on children's physical activity during recess. *Human Movement, 11,* 95-99.

Fawkner, S.G., Niven, A., Thin, A.G., MacDonald, M.J., & Oakes, J. (2010). Adolescent girls' energy expenditure during dance simulation active computer gaming. *Journal of Sports Sciences, 28,* 61-65.

Gao, Z., Huang, CQ & Hannon, JC (2009). Students' physical activity levels and motivation in dance dance revolution. *Research Quarterly for Exercise and Sport*, 80, A57-A57.

Graf, D.L., Pratt, L.V., Hester, C.N., & Short, K.R. (2009). Playing active video games increases energy expenditure in children. *Pediatrics, 124,* 534-540.

Graves, L.E.F., Ridgers, N.D., & Stratton, G. (2008). The contribution of upper limb and total body movement to adolescents' energy expenditure whilst playing Nintendo Wii. *European Journal of Applied Physiology, 104,* 617-623.

Graves, L., Stratton, G., Ridgers, N.D., & Cable, N.T. (2007). Energy expenditure in adolescents playing new generation computer games. *British Journal of Sports Medecine, 42,* 592-594.

Haddock, B.L., Siegel, S.R., & Wikin, L.D. (2009). The addition of a video game to stationary cycling : The impact on energy expenditure in overweight children. *Open Sports Sciences Journal, 1,* 42-46.

Jolliffe, D. (2004). Extent of overweight among US children and adolescents from 1971 to 2000. *International Journal of Obesity, 28*, 4-9.

Kautiainen, S., Rimpela, A., Vikat, A. and Virtanen, S.M. (2002). Secular trends in overweight and obesity among Finnish adolescents in 1977-1999. *International Journal of Obesity and Related Metabolic Disorders, 26*, 544-552.

Lanningham-Foster, L., Foster, R.C., McCrady, S.K., Jensen, T.B., Mitre, N., & Levine, J.A. (2009). Activity-promoting video games and increased energy expenditure. *The Journal of Pediatrics, 154,* 819-823.

Lanningham-Foster, L., Jensen, T.B., Foster, R.C., & Redmond, A.B. (2006). Energy expenditure of sedentary screen time compared with active screen time for children. *Pediatrics, 118,* E1831-E1835.

Leatherdale, S.T., Woodruff, S.J., Manske, S.R. (2010). Energy expenditure while playing active and Iinactive video games. *American Journal of Health Behavior, 34,* 31-35.

Luo, J., and Hu, F.B. (2002). Time trends of obesity in pre-school children in China from 1989 to 1997. *International Journal of Obesity and Related Metabolic Disorders, 26*, 533-538.

Maddison, R., Foley, L., Ni Mhurchu, C., Jull, A., Jiang, Y., Prapavessis, H., Rodgers, A., Hoorn, S.V., Hohepa, M., & Schaaf, D. (2009). Feasibility, design and conduct of a pragmatic randomized controlled trial to reduce overweight and obesity in children : The electronic games to aid motivation to exercise (eGame) study. *BMC Public Health, 9,* 1-9.

Maddison, R., Ni Mhurchu, C., Jull, A., Jiang, Y., Prapavessis, H., & Rodgers, A. (2007). Energy expended playing video console games : An opportunity to increase children's physical activity ? *Pediatric Exercise Science, 19,* 334-343.

Madsen, K.A., Yen, S., Walsiuk, L., Newman, T.B., & Lustig, R. (2007). Feasibility of a dance videogame to promote weight loss among overweight children and adolescents. *Archives of Pediatrics & Adolescent Medicine, 161,* 105-107.

Maloney, A.E., Bethea, T.C., Kelsey, K.S., Marks, J.T., Paez, S., Rosenberg, A.M., Catellier, D.J., Hamer, R.M., & Sikich, L. (2008). A pilot of a video game (DDR) to promote physical activity and decrease sedentary screen time. *Obesity, 16,* 2074-2080.

McDougall, J., & Duncan, M.J. (2008). Children, video games and physical activity : An exploratory study. *International Journal on Disability and Human Development, 7,* 88-94.

Mellecker, R.R., & McManus, A.M. (2008). Energy expenditure and cardiovascular responses to seated and active gaming in children. *Archives of Pediatrics & Adolescent Medicine*, 162, 886-891.

Ni Mhurchu, C., Maddison, R., Jiang, Y., Jull, A., Prapavessis, H., & Rodgers, A. (2008). Couch potatoes to jumping beans : A pilot study of the effect of active video games on physical activity in children. *International Journal of Behavioral Nutrition and Physical Activity, 5,* 5-8.

Paez, S., Maloney, A., Kelsey, K., Wiesen, C., & Rosenberg, A. (2009). Parental and environmental factors associated with physical activity among children participating in an active video game. *Pediatric Physical Therapy, 21,* 254-260.

Penko, A.L., Barkley, J.E. (2010). Motivation and physiologic responses of playing a physically interactive video game relative to a sedentary alternative in children. *Annals of Behavioral Medicine, 39,* 162-169.

Roberts, C.K., & Barnard, R.J. (2005). Effects of exercise and diet on chronic disease. *Journal of Applied Physiology, 98,* 3-30.

Ridley, K., & Olds, T. (2001). Video center games: Energy cost and children's behaviors. *Pediatric Exercise Science, 13,* 413-421.

Sallis, J.F., McKenzie, T.L., Alcaraz, J.E., Kolody, B., Hovell, M., & Nader, P.R. (1993). Project SPARK: Effects of physical education on adiposity in children. *Annals of the New York Academy of Sciences, 699*, 127-136.

Sell, K., Lillie, T., & Taylor, J. (2008). Energy expenditure during physically interactive video game playing in male college students with different playing experience. *Journal of American College Health, 56,* 505-511.

Spear, B.A., Barlow, S.E., Ervin, C. Ludwig, D.S., Saelens, B.E., Schetzina, K.E. and Taveras, E.M. (2007). Recommendations for treatment of child and adolescent overweight and obesity. *Pediatrics, 120*, supplement 4, S254-S288.

Straker, L., & Abbott, R. (2007). Effect of screen-based media on energy expenditure and heart rate in 9- to 12-year-old children. *Pediatric Exercise Science, 19,* 459-471.

Tan, B., Aziz, A.R., Chua, K., & Teh, K.C. (2002). Aerobic demand of the dance simulation game. *International Journal of Sports Medicine, 23,* 125-129.

Tremblay, M.S., and Williams, J.D. (2001). Secular trends in the body mass index of Canadian children. *Canadian Medical Association Journal, 163*, 1429-1433.

Tremblay, M.S. & Williams, J.D. (2003). Is the Canadian childhood obesity epidemic related to physical inactivity ? *International Journal of Obesity and Related Metabolic Disorders, 27*(9), 1100-1105.

Treppoz, S. (2010). Childhood obesity: what's happening in France ? some news… *Archive de Pédiatrie, 17*(6), 896-897.

Unnithan, V.B., Houser, W., & Fernhall, B. (2006). Evaluation of the energy cost of playing a dance simulation video game in overweight and non-overweight children and adolescents. *International Journal of Sports Medicine, 27,* 804-809.

White, K., Schofield, G., & Kilding, A.E. (in press). Energy expended by boys playing active video games. *Journal of Science and Medicine in Sport.*

Zoeller, R.F. (2007). Physical activity and obesity: their interaction and implications for disease risk and the role of physical activity in healthy weight management. *American Journal of Lifestyle Medicine, 1*(6), 437-446.

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"You don't have fun if you are not with your friends". What students say about participating in physical education?

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Abstract

Background: The issue of non-participation in physical education for high school students has been recognised at government level in Scotland.

Purpose: The purpose of this study was to listen to student voices with the aim of investigating experiential and other issues surrounding engagement in compulsory (also known as core) and elective physical education for a group of high school students.

Participants and setting: Participants (n = 36) were aged between 14 and 15 years and were from one Scottish high school.

Data collection and analysis: Qualitative data from six focus groups were analysed using aspects of grounded theory and phenomenology to systematically categorise recurring themes.

Findings: There is an indication that gender is influential on how physical education experiences are interpreted and that there are four key issues surrounding engagement in physical education for students. These are: a) being with friends; b) the teacher; c) having a say in the selection of activities; and d) institutional issues that the school controls.

Keywords: Physical Education Student Voice Motivation Gender

Introduction

It has been argued that there is a dearth of research of students' perspectives on physical education (Graber, 2001). This has resulted in limited evidence of what might be considered good practice (Brooker & Macdonald, 1999; Ennis & McCauley, 2002).

In the last few years however, the situation appears to be changing and there are examples of teachers listening to what students have to say about their physical education experiences (Cothran, 2010). These include students' views on teaching styles (Cothran & Kulinna, 2006) and on asking for assistance (Nye, 2008). However more research is needed to develop strategies that will increase levels of participation amongst young people in a number of activity contexts, including physical education (Hohepa, Schofield, & Kolt, 2006). Improving levels of participation in physical education in Scotland is required because Scottish teenagers' participation in physical activity is a national issue and the grouping with the lowest figures is students in the 14 to 15 age band (Scottish Executive, 2003; Scottish Government, 2009). Physical education has been identified as the main curricular vehicle to educate young people about the importance of being physically active in relation to personal health (Cavill, Biddle, & Sallis, 2001; K Fox & Harris, 2003; O'Sullivan, 2004; Scottish Executive, 2002, 2004).

For many young people however, their physical education experience is an uncomfortable one (Dyson, 2006; Graham, 1995; Lake, 2001). Scenes in many Scottish high schools reflect this (Scottish Executive, 2002, 2004). Students opt out of physical education classes. For example they forget their physical education kit. More than often this results in sitting out at the side of the activity and their consequent total disengagement from learning.

There is a persuasive argument that future educational policy ought to be led by classroom research. It should be educationally sound and be inclusive of student voices (Dyson, 2006; Rikard & Banville, 2006). Policy developed in this way should result in improved student motivation and student participation in physical education.

Contemporary research into motivation in the physical domains of sport, exercise and physical education has witnessed the growth in popularity of Self-determination Theory

(Deci & Ryan, 1985, 2000; Ryan & Deci, 2000). Central to the theory is the discrimination between autonomous and controlling forms of motivation (Hagger & Chatzisarantis, 2008). Due to the former being associated with successful engagement in activities sustained over a period of time (Chatzisarantis, Hagger, Biddle, Smith, & & Wang, 2003; Vansteenkiste, Simons, Soenens, & Lens, 2004) Self-determination Theory was employed to quantify the levels of autonomous motivation found in students at a Scottish high school (Forsyth, Lowry, Rowe, & Mutrie, 2009a, 2009b, 2010). The measurement of autonomous motivation was derived from the Behavioural Regulation in Exercise Questionnaire 2 (BREQ 2) (Markland & Tobin, 2004). Findings from the preliminary quantitative study established that male students had higher levels of autonomous motivation than female students and that those male and female students who had opted for an (additional) elective course in physical education had higher levels of autonomous motivation than those male and female students who had not. The purpose of the current study was to listen to student voices with the aim of investigating experiential and other issues surrounding engagement in compulsory (also known as core) and elective physical education for a group of high school students.

Student voices in physical education

Listening to students is an important mechanism for creating and delivering quality physical education experiences that have value and meaning for every student (Solmon, 2003). These experiences encourage young people to be physically active and to embrace a lifestyle that promotes their health and well-being (MacPhail, 2010; MacPhail & O'Sullivan, 2010). Importantly, physical education environments lend themselves to social interaction among students and between students and teachers. This provides unique opportunities to access information about student opinions and perspectives. The investigation of students' subjective interpretations of their physical

education experiences can lead to an increased understanding of teaching and learning within physical education (Dyson, 2006).

Method

Setting and participants

A total of 36 students aged between 14 and 15 years participated in this research. Focus groups were allocated to students on the basis of their score on an adapted version of the BREQ 2 (Markland & Tobin, 2004; Mullan, Markland, & Ingledew, 1997). The school chosen for the current study was a mixed gender, state funded, integrated community school. It is located in an urban area close to Glasgow and has a population of 1771 students. All procedures were approved by the University Ethics Committee. Participants provided informed parental consent and their own consent prior to participation. Written permission was also obtained from the Local Education Authority.

Data collection

The decision to use focus groups as a data gathering mechanism was based on their ability to provide a range of different views on a particular issue (Bryman, 2008). In the current study this related to male and female students' views on physical education as well as views from students who have high levels of autonomous motivation for physical education and those who do not. Other advantages of focus groups are that the open ended nature of the questions posed allows facilitators to relinquish control to participants, resulting in more issues surfacing. Also within the focus group context, individual members are able to listen to what other members of the group have to say on the topic, enabling more thoughtful, rounded responses to emerge from individuals in contrast to those that come from a personal interview (Finch & Lewis, 2009; Krueger, 1994). Three focus groups of students with high levels of autonomous motivation (a female group, a male group and a group of mixed gender[1])

were created from the cohort who had scored at the high end of the BREQ 2. Focus groups of students with low levels of autonomous motivation (again one female group, one male group and a group of mixed gender) were created from the cohort who had scored at the bottom end of the same scale. There is no consensus regarding the appropriate number of focus groups required in this type of research (Krueger, 1994). The rationale for focus group characteristics in the current study was applied to accurately reflect the three different ways in which physical education classes were organised in the school where the data were collected.

Each focus group was facilitated by one of two physical education teachers who had been trained in focus group methodology. These teachers were previously known to the first author for their proven ability to communicate and build trust quickly with students in this age range. This was an influential factor in their selection for this important role. Neither of the facilitators was known to the students. Both were in their late 20s and had taught physical education for three years in similar schools to the research school.

Before discussions commenced, ground rules were established. All discussion was recorded using a digital voice recorder. No physical education teachers from the school were present. The first author later transcribed all recordings with pseudonyms used to identify students.

A topic guide for use with the focus groups emerged from initial meetings of the research team. The five topics identified had their origins in the first author's extensive experience in high school physical education. This includes teaching for 18 years and working in pre-service teacher education for 9 years. The five topics also had their basis in issues surrounding the physical education experiences of Scottish high school students debated at national policy level (Scottish Executive, 2002, 2004). The topic guide was piloted by both facilitators as part of their focus group training, ensuring that

facilitators would cover the same topics, prompts and associated questions with all six focus groups.

The relationship between focus group topics and research questions is shown in Table 1. An additional research question addressed potential differences between male and female students' subjective views in each of the previous five questions.

Table 1 Focus group topics and research questions

Focus Group Topic	Research Question
Experiences of PE	What are students' experiences of physical education?
Barriers to Involvement in PE	What are barriers for students to participation in physical education?
Facilitators of Involvement in PE	What are facilitators of participation for students in physical education?
Perceived Benefits of PE	What do students view as benefits of participation in physical education?
Aspirations for PE	What are students' aspirations for physical education?
Additional Question	What is the evidence of gender differences in each of the previous questions?

Data analysis

In broad terms the analysis process drew on interpretivism (Bryman, 2008). This qualitative research tradition makes a number of ontological and epistemological assumptions emphasising that social reality is subjective and that social research cannot explain things in terms of grand theories and universal truths (Denscombe, 2010). More specifically the analysis of the raw data collected from the focus groups had elements of both phenomenology (Churchill & Wertz, 2001; Creswell, 1998) and grounded theory (Bryman, 2008; Creswell, 1998). The former because there was a sustained attempt to describe the students' experiences without aligning understanding of them to

metaphysical and theoretical considerations and the latter because the process of analysis created recurring themes that were systematically categorised as they emerged from within the raw data. NVivo 8 software was used for all aspects of data management.

The first stage of the analysis process used data reduction (Miles & Huberman, 1994). Open coding was used to transform the raw qualitative data into themes within each of the five topics (as shown in Tables 2, 3, 4, 5 and 6). Each theme was subsequently coded under female or male responses. A process of axial coding (Strauss & Corbin, 1990) was then used to establish links between themes both in and across topics to offer a deeper insight into what students said about participating in physical education.

Trustworthiness of data

The trustworthiness of the data analysis process was established firstly by each facilitator individually checking the transcripts of their focus group meetings for accuracy. Secondly, a colleague with experience of using open coding in her own research was provided with the raw data from the focus group transcripts and asked to make an analysis within the topic of Perceived Benefits of PE. This colleague was instructed to independently follow the procedure outlined above for data analysis. In this repeat analysis, four out of the five themes identified by the first author were systematically categorised under the same or similar headings. Data from the one theme that did not emerge materialised in a related sub-theme. Finally a Professor with 20 years of expertise in grounded theory methodology independently examined the data and concluded that the analysis process was sound, rigorous and well developed.

Results

Experiences of physical education

Students were asked, "What has your experience of physical education been like?" The themes that emerged from open coding are shown in Table 2 and each one is paired with an example of a student response, from a male or a female student, drawn from the theme. The number of responses to each theme is also broken down by gender.

Table 2 Experiences of physical education themes and student response examples

Theme	Number of References Male/Female	Example of Student Response (Gender)
Enjoyment	10/3	I look forward to it. I just like playing football in PE (Male)
Lack of Enjoyment	1/9	I have hated it (Female)
Competition	2/4	I was really competitive then (Female)
Experiencing Sport	3/2	You learn to do sports you have never done before (Female)
A Break from Other Classes	2/1	It is a break from sitting in a classroom (Male)
No Value in Core PE	0/2	..they don't take it seriously in core PE (Female)

In terms of students talking about their Experiences of Physical Education, further analysis showed that some individual student statements linked across themes:

> It's like a break from other subjects. You learn to do sports you have never done before. (Female student, high motivation)

This comment brought together the themes of Experiencing Sport and A Break from Other Classes.

> I like the amount of activities you get, it's not just….there is something for everyone. (Male student, high motivation)

This comment illustrated a relationship between the themes of Enjoyment and Experiencing Sport. For another student there was a link between the themes of Competition and Enjoyment when he reflected on his experiences:

Em, yeah, I like competing against people but I think it is a laugh an

all, so aye, I do enjoy it. (Male student, low motivation)

Evidence of gender differences in relation to students' Experiences of Physical Education emerged in three themes. Female students in three focus groups (high motivation, low motivation and mixed low motivation had a lot to say about their Lack of Enjoyment in physical education with comments such as:

Like Netball was OK in first year, but now it is just boring.

(Female student, high motivation)

In contrast, male students from two focus groups (high motivation and low motivation) made many points about their Enjoyment in physical education including:

Em, good (laughs) you get to do a lot of stuff.

(Male student, high motivation)

Only female students (from the high and mixed low motivation focus groups) commented that they thought there was No Value in Core PE. No male students in this study felt this way whatever their motivation for physical education.

Barriers to involvement in physical education

Students were asked, "What makes taking part hard for you in physical education?" The themes that emerged from open coding are shown in Table 3 and each one is paired with an example of a student response, from a male or a female student, drawn from the theme. The number of responses to each theme is also broken down by gender.

Table 3 Barriers to involvement themes and student response examples

Theme	Number of References Male/Female	Example of Student Response (Gender)
Institutional Issues	3/13	I dunno it's just like cos PE is like usually first thing in the morning so when you come in you just feel tired and you can't be bothered doing it and they make you do it

		(Female)
Male Student Behaviour	0/10	Like all the other girls are confident but when the guys are there I just stand at the back and do as little as I can (Female)
Not Being with Friends	6/4	You don't have fun if you are not with your friends (Female)
The Teacher	4/5	Aye, cos if like their teacher is always getting on at them and like telling them they are like not good at it or like not encouraging them a lot they are gonna get down and not enjoy it as much (Male)
Competition	7/2	Yeah, like if you are not good at it, like the whole competitive people will probably shout at you (Male)
Not Having a Say in the Selection of Activities	1/7	You get forced in to doing stuff you don't want all the time (Male)
PE is Pointless	5/3	I think people see it as a kinda pointless subject (Male)
PE Kit	0/6	I hate the PE uniform you know when we get told we cannot wear a top (Female)
Lack Ability/Confidence	4/2	Sometimes, cos sometimes you just feel like humiliated and stuff if you can't do it (Female)
Lazy Students	6/0	They don't care if they are getting punishment exercises or detention or whatever, they just don't want to run (Male)

In terms of students talking about Barriers to Involvement in Physical Education, further analysis showed that some individual student statements linked across themes:

> You make a mistake, you are playing in with people who are really competitive, they are on your back constantly about it. It puts their

confidence right down and things like that. (Male student, high motivation)

This comment linked the themes of Competition and Lack of Ability/Confidence. Female students twice made comments that brought together the themes of Competition and Male Student Behaviour:

Boys are too competitive. (Female student, low motivation)

and

No well in our last real class in second year and stuff, all the guys would be really competitive so we would just stand there and do nothing cos they would think we were rubbish and stuff. (Female student, low motivation)

One female student felt that there was a relationship between when students have A Lack of Ability or Confidence and Male Student Behaviour towards them:

Like it is better when there's not guys there to like criticize like what you do cos like girls are still pathetic. (Female student, high motivation)

Another female student provided comments that supported the relationship between the themes of PE Kit and Institutional Issues:

….well if it was hockey or something and you have to go outdoors, your hair gets wrecked and we always get hockey in winter. Girls like to pamper themselves and stuff; then you have got to carry stuff with you for the whole day cos of the fact you get it first and if it's been pouring or something, I wouldn't mind if it was last thing. Your clothes are soaking ….and you have a change with you the whole day so that kinda puts you off. (Female student, high motivation)

Female students also provided evidence for the link between the themes of Lazy Students and PE Kit providing group agreement to the statement:

A lot of people just can't be bothered so they don't bring their stuff.

(Female student, high motivation)

Evidence of gender differences in relation to Barriers to Involvement in Physical Education emerged in six themes. Only female students (with both high and low motivation) highlighted the negative impact of Male Student Behaviour and comments included:

…so we would just stand there and do nothing

cos they would think we were rubbish and stuff. (Female student, low motivation)

Many more comments were made by female students within the theme of Not Having a Say in the Selection of Activities as a Barrier to Involvement in Physical Education. For example one female student commented:

Oh I hate being told what to do. (Female student, low motivation)

Females with high motivation also had concerns about Not Having a Say in the Selection of Activities and made over half of the comments in this instance. In relation to Institutional Issues that were Barriers to Involvement in Physical Education, male students with low motivation and female students with both high and low motivation identified the same two issues. These were going outdoors and the scheduling of lessons as either first or last class in the school day. However the female students made many more comments in this instance. Only female students and especially those with high motivation had an issue with PE Kit. Comments left no doubt about how the school policy on PE kit was viewed:

Why can't we wear like whatever like as

long as it fits me. (Female student, high motivation)

No male students in this study felt that PE Kit was a Barrier to Involvement in Physical Education. However there were two themes where male students made many more comments than female students. Firstly, male students with high and low motivation

identified Competition to be a Barrier to Involvement in Physical Education. One student stated:

Yeah like I hate it if someone gets annoyed at me

cos I didn't do very well……. (Male student, low motivation)

Secondly, male students and mainly those with high motivation believed that because some of their peers were lazy, this was a Barrier to Involvement in Physical Education. Comments on this included:

Yeah, they can't be bothered doing it. (Male student, high motivation)

Facilitators of involvement in physical education

Students were asked, "What is it about physical education that makes joining in good for you?" The themes that emerged from open coding are shown in Table 4 and each one is paired with an example of a student response, from a male or a female student, drawn from the theme. The number of responses to each theme is also broken down by gender.

Table 4 Facilitators of involvement themes and student response examples

Theme	Number of References Male/Female	Example of Student Response (Gender)
Being with Friends	11/4	Banter is good like you are always with your mates (Male)
Valuing the Activity	5/1	I agree with Trent, do the things that I'd like to do (Male)
The Teacher	3/3	Eh, yeah, I am not really keen on those who just like stand at the side and tell you what to do. I like it when teachers are more involved in it (Male)
Enjoyment	4/0	I just probably want to do stuff I enjoy and have a laugh in (Male)
Institutional Issues	1/3	Having PE late in the afternoon (Female)
Opportunities to be	3/0	You are like out and active and

Active		enjoying yourself (Male)
Having a Say in the Selection of Activities	1/0	Being able to choose your activities (Male)

In terms of students discussing the Facilitators of Involvement in Physical Education further analysis showed that some individual student statements linked across one theme in particular. Being With Friends linked with both Enjoyment and Having a Say in the Selection of Activities. A male student commented:

> I think you enjoy it more if you are playing with your friends. (Male student, high motivation)

While a female student indicated:

> You don't have fun if you are not with your friends. (Female student, low motivation)

Being With Friends was so important for one male student that he specifically valued it over Having a Say in the Selection of Activities:

> Yeah, at first we were all allowed to choose what group we could go into and most likely you go with your mates. (Male student, high motivation)

This point was also made by a female student with low motivation in response to a question about whether Being with Friends was more important than doing an activity she enjoyed.

Evidence of gender differences in relation to the Facilitators of Involvement in Physical Education emerged in five themes. There were many more comments from male students with high and low motivation about Being with Friends than from female students. Comments about Valuing the Activity, Enjoyment and Opportunities to be

Active only came from male students with low motivation. One comment from each of the themes is shown below:

Better than like sitting in Maths and doing work….(male student, low motivation)

and

Aye for the fun of it…….(Male student, low motivation)

and

…people that don't take part in English or Maths would

Probably quite like to take part in PE. It's a more active thing. (male student, low motivation)

These comments from male students were made in a positive vein in relation to Facilitators of Involvement for Physical Education. Female students did not do this. In addition, the sole comment that endorsed Having a Say in the Selection of Activities came from a male student with high motivation. No female students in this study commented that they felt this way about Facilitators of Involvement for Physical Education.

Perceived benefits of physical education

Students were asked," If you always took part in physical education, what benefits would there be for you?" The themes that emerged from open coding are shown in Table 5 and each one is paired with an example of a student response, from a male or a female student, drawn from the theme. The number of responses to each theme is also broken down by gender.

Table 5 Perceived benefits themes and student response examples

Theme	Number of References Male/Female	Example of Student Response (Gender)
Social Benefits	8/5	Well you can talk to people easier in PE, like people you have never met before (Male)
No Benefits	0/5	What is the point in it? (Female)

Fitness Benefits	2/1	It improves your fitness for other sports like out of school (Male)
A Break from Other Classes	0/1	It's like a break from other subjects (Female)
Skill Development	1/0	You get better at sport cos you learn about techniques and stuff (Male)

In terms of students discussing the Perceived Benefits of Physical Education further analysis showed that some individual student statements linked across themes. A female student espoused a view that linked the themes of Fitness and No Benefits:

> We are not really getting exercise in PE. We get more walking to and from school every day. (Female student, low motivation)

A male student coupled the themes of Social Benefits with A Break from Other Subjects:

> …cos you are not allowed to talk in Maths. (Male student, high motivation)

The theme of Social Benefits was also linked with the theme of Fitness when a male student offered the following:

> Fitness, you just enjoy it and it makes you happy. (Male student, low motivation)

Evidence of gender differences in relation to the Perceived Benefits of Physical Education emerged in three themes. Female students with low motivation were exclusive in their opinion that physical education had No Benefits and made comments that for example rejected the role of physical education in tackling obesity. A sole comment was made regarding a Perceived Benefit of Physical Education being A Break from Other Classes by a female student with high motivation. No male students indicated this although male students did offer this point in earlier comments describing their Experiences of Physical Education. Only one male commented on Skill

Development being a Perceived Benefit of Physical Education.

Aspirations for physical education

Students were given the scenario of imagining they were in charge of physical education at school and were asked, "What would make physical education good for them and help them join in every lesson?" The themes that emerged from open coding are shown in Table 6 and each one is paired with an example of a student response, from a male or a female student, drawn from the theme. The number of responses to each theme is also broken down by gender.

Table 6 Aspirations themes and student response examples

Theme	Number of References Male/Female	Example of Student Response (Gender)
More Facilities and Equipment	6/7	Larger facilities and like the equipment to be like the best (Male)
Having a Say in the Selection of Activities	6/6	Let them like make their own choices so they are responsible for what they do (Male)
PE Kit	0/10	If the class were in more colours it would be more fun. Like when you walk in and everyone is in black or white or grey and you are like… (Female)
The Teacher	3/7	They'd be like understanding, em so if you don't want to do it they would just kinda leave it (Female)
Institutional Issues	2/7	Longer time to get changed (Female)
Staying Indoors	4/1	If it is raining outside I think you should have the choice to like stay in (Male)
Bigger Choice of Activities	2/1	Eh, I am just thinking like, PE classes could take us out to the Sport Centre or something, you could do stuff there apart from doing PE in school (Male)

Being with Friends	0/1	It doesn't matter what you are doing as long as you are with your pals (Female)

In terms of students discussing their Aspirations for Physical Education further analysis showed that individual student statements linked across themes. A male student made a comment linking the theme of Having a Say in the Selection of Activities with the theme of The Teacher:

> ….wouldn't nag at the pupils and give the pupils what they wanted to do. (Male student, low motivation)

Another male student wanted to see More Facilities and Equipment that would mean Staying Indoors would be possible at all times:

> Have indoor courts or something so if it is raining like that you can have your sport inside. (Male student, high motivation)

The Aspirations for Physical Education of female students with high and low motivation indicated a link between the themes of Institutional Issues and PE Kit that perhaps helped to provide understanding of their earlier comments regarding the timing of physical education lessons. One female student commented:

> If they had it first lesson you would let pupils come in dressed in their PE kit. If they had it last lesson let them go out of the school in their PE kit. (Female student, high motivation)

Evidence of gender differences in relation to Aspirations for Physical Education emerged in five themes. In concordance with the earlier link identified between the themes of Institutional Issues and PE Kit, only female students wanted to be allowed to come to school in their PE kit if they had lessons at the start of the school day and also to go home in their physical education kit it if they had lessons at the end of the school day. Comments made by students in relation to the theme of PE Kit were exclusively

female. Unlike their male counterparts, female students with high and low motivation had an Aspiration for Physical Education that mentioned the removal of the mandatory wearing of school colours for physical education. A female student stated:

> Do away with colours and you would try harder…..(Female student, high motivation)

Female students with high and low motivation made many more comments about The Teacher being an Aspiration for Physical Education. Their comments indicated that in terms of an Aspiration for Physical Education they wanted a teacher who got involved, demonstrated things, had a good relationship with them and who made physical education fun. The comments made by female students with low motivation provided examples of Aspirations for Physical Education in relation to The Teacher:

> If they did more than stand, like they just stand there and not
>
> do anything. If they got involved. (Female student, low motivation)

and

> …just like get on with you and be fun. (Female student, low motivation)

and

> Yeah, they would demonstrate things. (Female student, low motivation)

One comment was made by a female student with low motivation that Being with Friends as an Aspiration for Involvement in Physical Education was more important than the activity itself. There were more comments within the theme of Staying Indoors from Male students than from female students, including:

> I just think like if it's raining outside, then you don't
>
> want to go out for any reason. (Male student, high motivation)

and

> Have indoor courts or something. So if it is raining

like that, you can have your sport inside. (Male student, low motivation)

Within the theme of More Facilities and Equipment, although there were a similar number of comments made by male and female students, male students with both high and low motivation made exclusive comments regarding the school having better facilities for games. In contrast to this, female students with low motivation concentrated their Aspirations for Physical Education regarding More Facilities and Equipment on the school acquiring a fitness suite.

Discussion

The purpose of the current study was to listen to student voices with the aim of investigating experiential and other issues surrounding engagement in compulsory (also known as core) and elective physical education for a group of high school students.

The paper represents a small scale study located in one high school and as such its limitations are recognised. Most of the findings were consistent with previous research on student voices in physical education. Some findings were not.

In terms of Experiences of Physical Education, students' responses in the current study reflected considerable differences. Many students had enjoyed physical education but for many it had been unenjoyable. This replicated findings of other researchers (Graham, 1995; Rice, 1988; Tinning & Fitzclarence, 1992). In the current study, the factor that was common to all but one student who had had an unenjoyable physical education experience was female gender. Gender has previously been found to be influential on how physical education experiences are interpreted by students (Pissanos & Allison, 1993). In addition female students, some with high and some with low motivation for physical education, saw No Value in Core PE. Negative experiences of physical education have previously been found in young females (Mulvihill, Rivers, & Aggleton, 2000; Oliver, Hamzeh, & McCaughtry, 2009). This finding also corroborates the Scottish Government's decision to target the improvement of physical activity levels

in young women (Scottish Government, 2009). In concurrence with other researchers (Cothran & Ennis, 2001; Morey & Goc-Karp, 1998) those students who valued physical education saw one benefit as A Break from Other Subjects. In the current study these were male and female students with high motivation for physical education.

Students made almost twice as many references to Barriers to Involvement in Physical Education in comparison to their responses to other topics. The different themes that emerged strongly suggest that there are critical and complex issues for teachers of physical education to overcome. When students with low motivation perceived they had a Lack of Ability or Confidence and consequently did not enjoy an emphasis on Competition, taking part in physical education was hard for them. This finding is supported by other researchers (Carlson, 1995; K Fox, 1996; Lake, 2001; Robinson, 1990). The point was also suggested in the current study by students with high motivation as an explanation as to why other students may find participation difficult. Male Student Behaviour was a Barrier to Involvement in Physical Education for female students in the current study, regardless of their level of motivation. Findings similar to this have been replicated by previous researchers (Flintoff & Scraton, 2001; Garrett, 2004).

The analysis process in the current study revealed the existence of four prominent themes. All four were common denominators within the topics of Barriers to Involvement in Physical Education, Facilitators of Involvement in Physical Education and Aspirations for Physical Education. The first of these prominent themes was Being with Friends. Male and female students with high and low motivation for physical education commented this was a Barrier to Involvement in Physical Education if friends were not there and a Facilitator of Involvement in Physical Education when they were. One female student with low motivation indicated that Being with Friends was also a Aspiration for Physical Education. Previous researchers have found that being with

friends is something that students liked in physical education (Cothran & Ennis, 1998; Hohepa, et al., 2006; Schofield, 2004) and that physical education content can be used to actively support peer relationships (Cothran & Ennis, 1999). The importance of having friends in physical education was further emphasised in this study when male students and female students with low motivation admitted that Being with Friends was more important than Having a Say in the Selection of Activities. An earlier study with young people in the related fields of health, fitness and exercise unearthed a similar finding (Harris, 1995). Researchers have found that students value the social aspects of physical education (Dyson, 2006; Graham, 1995). This is strongly supported by the findings of the current study with Social Benefits listed as the most popular Perceived Benefit of Physical Education by male students with high and low motivation and by female students with high and low motivation.

The second prominent theme that was a common denominator across the topics of Barriers to Involvement in Physical Education, Facilitators of Involvement in Physical Education and Aspirations for Physical Education was The Teacher. Other researchers have found that the teacher is the main influence on student attitudes to physical education (Luke & Sinclair, 1991; Morey & Goc-Karp, 1998). The findings in the current study concurred with this. Male students with low motivation and female students with both high and low motivation regarded the influence of the teacher as so vital that their comments identified the teacher as a Barrier to Involvement in Physical Education when the teacher failed to respect them as an individual and as a Facilitator of Involvement in Physical Education when the teacher was friendly towards them. In this study more comments were made by female students with both high and low motivation in relation to ways that The Teacher was an Aspiration for Physical Education. These female students specifically wanted a teacher who made physical education fun, who had a good relation ship with them and who participated beside

them in class. Earlier researchers have recorded similar findings to these. When a teacher lacked detailed knowledge about their students, this impacted negatively on the amount of student effort (Morey & Goc-Karp, 1998). A teacher who cared and respected students was a key factor in getting students to participate in physical education (Cothran & Ennis, 1999). Positive student teacher relationships created motivated students (Reeve, Jang, Hardre, & Omura, 2002). The teacher has been viewed as being an important aspect of making physical education enjoyable for students (Mulvihill, et al., 2000).

The third prominent theme that was a common denominator across the topics of Barriers to Involvement in Physical Education, Facilitators of Involvement in Physical Education and Aspirations for Physical Education was students Having a Say in the Selection of Activities. This replicated findings of other researchers (Couturier, Chepko, & Coughlin, 2005). Having a Say in the Selection of Activities emerged as a Barrier to Involvement in Physical Education when female students with high and low motivation and male students with low motivation felt they were compelled to do activities they did not want to do, as a Facilitator of Involvement in Physical Education for male students with high motivation when they were able to choose their own activities and as an Aspiration for Physical Education when female students with high and low motivation and male and students with low motivation were keen to take on the responsibility to make their own choices in physical education. Having a Say in the Selection of Activities affected female students regardless of their motivation for physical education. An explanation of this may come from the view that particular forms of masculinity remain dominant in many sporting contexts including physical education (Kirk, 2002). Thus in the current study, male students with high motivation for physical education may have been content with the choice of activities they were able to make because the school's provision of physical education activities matched their own expectations of

the subject. Recognition of this male culture of provision may help physical education teachers acknowledge that, in making decisions about strategies needed to improve levels of female student participation, activities that match the expectations of female students need to be on offer too. To put these in place, a mechanism for listening to what female students say they need from physical education is required. Failure to do this can result in an accurate perception by female students that their voices are being ignored (Gordon, 2006).

In the open coding process, the label Institutional Issues was used to categorise students' comments that related to the myriad of things that the school made decisions about and the students themselves had no influence over. This was the fourth prominent theme that was a common denominator across the topics of Barriers to Involvement in Physical Education, Facilitators of Involvement in Physical Education and Aspirations for Physical Education. Within this theme many more female students with both high and low motivation identified ways in which the school created Barriers to Involvement in Physical Education, including having to go outdoors for physical education and the scheduling of lessons. Correspondingly Institutional Issues were a Facilitator of Involvement in Physical Education for male and female students with low motivation when physical education took place indoors and also provided Aspirations for Physical Education for female students with low and high motivation when they got more time to get changed before and after lessons.

One Institutional Issue that merited its own theme but clearly related to something the school had control over was that of PE Kit. Mentioned as both a Barrier to Involvement in Physical Education and as an Aspiration for Physical Education exclusively by female students of both high and low motivation, their numerous comments emphasised being allowed to wear what they wanted for physical education. This finding is consistent with previous researchers (Flintoff & Scraton, 2001;

O'Donovan & Kirk, 2008; Whitehead & Biddle, 2008) who found that the wearing of specific kit for physical education was a barrier for female students. This may be explained by the need for female adolescents to feel they look good (Coleman & Hendry, 1999) and to address issues relating to popularity among peers (O'Donovan & Kirk, 2008). Other comments made in relation to the theme of PE Kit as an Aspiration for Physical Education exclusively by female students with both high and low motivation related to coming to school wearing PE kit if physical education was scheduled first thing in the day and leaving school wearing kit if it was scheduled last thing in the day. The organisation of physical education by schools has previously been perceived as a barrier by female high school students (Hohepa, et al., 2006).

Only one student, a male with high motivation, felt that Skill Development was a Perceived Benefit of Physical Education. This is not consistent with the findings of other researchers (Tannehill & Zakrajsek, 1993; Tjeerdsma, Rink, & Graham, 1996; Walling & Duda, 1995) who found that students who enjoyed sport, enjoyed physical education when they were taught about skills and tactical awareness.

Finally in the current study male students of both high and low motivation and female students of low motivation indicated only brief acknowledgement of the Fitness Benefits that physical education can provide and of their wish to have a Bigger Choice of Activities on offer. In previous studies these factors were found to have more importance for students to improve their motivation to participate in physical education (Dyson, 1995; Hohepa, et al., 2006; Tjeerdsma, et al., 1996; Wilson, Williams, Evans, Mixon, & Rheaume, 2005).

Conclusion

Generally speaking, four key issues that surround engagement in physical education for high school students stand out. Their prominence is as a result of all four being commonly identified by students as themes within the topics of Barriers of

Involvement, Facilitators of Involvement and Aspirations for Physical Education. The four key issues are: a) being with friends; b) the teacher; c) having a say in the selection of activities; and d) institutional issues that the school controls.

Findings also show that gender is influential on how physical education experiences are interpreted. In the main male students regardless of their level of motivation to participate find physical education enjoyable. In contrast to this (in the main) female students regardless of their level of motivation to participate find physical education unenjoyable. Another gender difference that is a Barrier of Involvement in Physical Education to many female students' participation and at the same time an Aspiration for Physical Education for all female students, is PE kit. Females with high and low motivation dislike wearing mandatory school colours and want to be able to choose what to wear for physical education. This issue is not mentioned by any male students in this study.

Some male and female students with high motivation value physical education and as such find it a Break from Other Subjects. There are many Barriers to Involvement in Physical Education. When male and female students with low motivation believe students have A Lack of Ability or Confidence, they find taking part hard due to an emphasis on Competition. A key barrier for many female students is Male Student Behaviour during physical education classes.

In this study there is brief acknowledgement by some students of the importance of Skill Development in physical education, the Fitness Benefits associated with physical education and their wish for a Bigger Choice of (physical education) Activities.

References

Brooker, R., & Macdonald, D. (1999). Did we hear you ?: issues of student voice in a curriculum innovation. *Journal of Curriculum Studies, 31*(1), 83 - 97.

Bryman, A. (2008). *Social Research Methods* (3rd ed.). Oxford: Oxford University Press.

Carlson, T. B. (1995). We hate gym: Student alienation from physical education. *Journal of Teaching in Physical Education, 14*(4), 467-477.

Cavill, N., Biddle, S., & Sallis, J. F. (2001). Health Enhancing Physical Activity for Young People: Statement of the United Kingdom Expert Consensus Conference. *Pediatric Exercise Science, 13*, 12-25.

Chatzisarantis, N. L. D., Hagger, M. S., Biddle, S. J. H., Smith, B., & & Wang, J. C. K. (2003). A meta-analysis of the perceived locus of causality in exercise, sport and physical education contexts. *Journal of Sport & Exercise Psychology, 25*, 284-306.

Churchill, F., & Wertz, F. J. (2001). An introduction to phenomenological research in psychology: Historical, conceptual, and methodological foundations. In K. J. Schneider, J. F. T. Bugental & J. F. Pierson (Eds.), *The Handbook of Humanistic Psychology: Leading Edges in Theory, Practice, and Research* (pp. 247-262). Thousand Oaks, CA: Sage.

Coleman, J., & Hendry, L. B. (1999). *The Nature of Adolescence*. London: Routledge.

Cothran, D. J. (2010). Students' curricular values and experiences. In A. MacPhail & M. O'Sullivan (Eds.), *Young People's Voices in Physical Education and Youth Sport*. London: Routledge.

Cothran, D. J., & Ennis, C. D. (1998). Curricula of mutual worth: comparisons of students' and teachers' curricular goals. *Journal of Teaching in Physical Education., 17*, 307-327.

Cothran, D. J., & Ennis, C. D. (1999). Alone in a crowd: Meeting students' needs for relevence and connection in urban high school physical education. *The Journal of Teaching in Physical Education, 31*.

Cothran, D. J., & Ennis, C. D. (2001). "Nobody said anything about learning stuff": students, teachers and curricular change. *Journal of Classroom Interaction, 36*, 1-5.

Cothran, D. J., & Kulinna, P. H. (2006). Students' perspectives on direct, peer and inquiry teaching strategies. *Journal of Teaching in Physical Education., 25*, 166-181.

Couturier, L. E., Chepko, S., & Coughlin, M. A. (2005). Student voices-what middle and high school students have to say about physical education. *The Physical Educator, 62*, 170-177.

Creswell, J. W. (1998). *Qualitative Inquiry and Research Design.* London: Sage.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Denscombe, M. (2010). *Ground Rules for Social Research*. Berkshire: OU Press.

Dyson, B. P. (1995). Students' voices in two alternative elementary physical education programs. *Journal of Teaching in Physical Education., 14*(4), 394-407.

Dyson, B. P. (2006). Students' perspectives in physical education. In D. Kirk, D. MacDonald & M. O'Sullivan (Eds.), *The Handbook of Physical Education* (pp. 326-346.). London: Sage.

Ennis, C. D., & McCauley, T. (2002). Creating urban classroom communities worthy of trust. *Journal of Curriculum Studies, 34*(2), 149-172.

Finch, H., & Lewis, J. (2009). Focus Groups. In J. Ritchie & J. Lewis (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London: Sage.

Flintoff, A., & Scraton, S. (2001). Stepping into active leisure? Young women's perception of active lifestyles and their experiences of school physical education classes. *Sport, Education and Society, 6*, 5-21.

Forsyth, S., Lowry, R., Rowe, D., & Mutrie, N. (2009a). *The motivation of students at a Scottish high school to participate in physical education.* Paper presented at the Physical Education, Physical Activity and Youth Sport, University of Limerick, Ireland.

Forsyth, S., Lowry, R., Rowe, D., & Mutrie, N. (2009b). *The motivation of students in a Scottish high school to participate in physical education.* Paper presented at the Scottish Educational Research Association Conference, Perth, Scotland.

Forsyth, S., Lowry, R., Rowe, D., & Mutrie, N. (2010). *The motivation of students in a Scottish high school to participate in physical education.* Paper presented at the National Physical Education Conference, University of Edinburgh, Scotland.

Fox, K. (1996). Physical activity promotion and the active school. In M. Armstrong (Ed.), *New Directions in Physical Education. London, Cassell Education* (pp. 94-109).

Fox, K., & Harris, J. (2003). Promoting physical activity through schools. In J. McKenna & C. Riddoch (Eds.), *Perspectives on Health and Exercise* (pp. 181-202). Basingstoke: Palgrave-MacMillan.

Garrett, R. (2004). Negotiating a physical identity: girls, bodies and physical education. *Sport, Education and Society, 9*(2), 223-237.

Gordon, T. (2006). Girls in education: citizenship, agency and emotions. *Gender and Education, 18*(1), 1 - 15.

Graber, K. C. (2001). Research on teaching in physical education. In V. Richardson (Ed.), *Handbook of Research on Teaching* (pp. 491-519). Washinton DC: American Educational Research Association.

Graham, G. (1995). Physical education through students' eyes and in students' voices: Implications for teachers and researchers. *Journal of Teaching in Physical Education., 14*(4), 478-482.

Hagger, M. S., & Chatzisarantis, N. L. D. (2008). Self-determination Theory and the psychology of exercise. *International Review of Sport and Exercise Psychology, 1*, 79-103.

Harris, H. (1995). Young people's perceptions of health, fitness and exercise. *British Journal of Physical Education Research Supplement, 13*, 5-9.

Hohepa, M., Schofield, G., & Kolt, G. S. (2006). Physical Activity: What Do High School Students Think? *The Journal of adolescent health : official publication of the Society for Adolescent Medicine, 39*(3), 328-336.

Kirk, D. (2002). Physical education: a gendered history. In D. Penney (Ed.), *Gender and physical education: contemporary issues and future directions* (pp. 24-37). London: Routledge.

Krueger, R. (1994). *Focus Groups: A Practical Guide for Applied Research*. Thousand Oaks, CA: Sage Publications.

Lake, J. (2001). Young people's conceptions of sport, physical education and exercise: Implicationsfor physical education and the promotion of health-related exercise. *European Physical Education Review, 7*(1), 80.

Luke, M. D., & Sinclair, G. D. (1991). Gender differences in adolescents attitudes toward school physical education. *Journal of Teaching in Physical Education, 11*(1), 31-46.

MacPhail, A. (2010). Listening to Pupils' Voices. In R. Bailey (Ed.), *Physical Education for Learning. A Guide for Secondary Schools.* (pp. 228-238.). London: Continuum International.

MacPhail, A., & O'Sullivan, M. (Eds.). (2010). *Young People's Voices in Physical Education and Youth Sport*. London: Routledge.

Markland, D., & Tobin, V. (2004). A modification to the behavioural regulation in exercise questionnaire to include an assessment of amotivation. *Journal of Sport & Exercise Psychology, 26*, 191-196.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook.* (2nd. ed.). London: Sage Publications.

Morey, R. S., & Goc-Karp, G. (1998). Why some students who are good at physical education dislike it so much? *The Physical Educator, 55*, 89-100.

Mullan, E., Markland, D., & Ingledew, D. K. (1997). A graded conceptualisation of self-determination in the regulation of exercise behaviour: Development of a measure using confirmatory factor analytic procedures. *Personality and Individual Differences, 23*(5), 745-752.

Mulvihill, C., Rivers, K., & Aggleton, P. (2000). Views of young people towards physical activity: Determinants and barriers to involvement. *Health Education, 100*(5), 190-199.

Nye, S. B. (2008). Students' help seeking during physical education. *Journal of Teaching in Physical Education., 27*, 368-384.

O'Donovan, T., & Kirk, D. (2008). Reconceptualizing student motivation in physical education: An examination of what resources are valued by pre-adolescent girls in contemporary society. *European Physical Education Review, 14*(1), 71-91.

O'Sullivan, M. (2004). Possibilities and pitfalls of a publc health agenda for physical education. *Journal of Teaching in Physical Education, 23*, 392-404.

Oliver, K. L., Hamzeh, M., & McCaughtry, N. (2009). Girly girls can play games too/Las ninas pueden jugar tambien. Co-creating a curriculum of possibilities with 5th grade girls. *Journal of Teaching in Physical Education., 28*, 90-110.

Pissanos, B. W., & Allison, P. C. (1993). Students' constructs of elementary school physical education. *Research Quarterly for Exercise and Sport, 64*, 425.

Reeve, J., Jang, H., Hardre, P., & Omura, M. (2002). Providing a rationale in an autonomy-supportive way as a strategy to motivate others during an uninteresting activity. *Motivation and Emotion, 26*(3), 183-207.

Rice, P. L. (1988). Attitudes of high school students towards physical education activities, teachers and personal health. *The Physical Educator, 45*(2), 94-99.

Rikard, G. L., & Banville, D. (2006). High school student attitudes about physical education. [Article]. *Sport Education and Society, 11*(4), 385-400. doi: 10.1080/13573320600924882

Robinson, D. W. (1990). An attributional analysis of student demoralization in a physical education setting. *Quest, 42*, 27-39.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.

Schofield, L. (2004). 146 Go girlfriend! Socioenvironmental factors predict physical activity level in adolescent girls. *Journal of Science and Medicine in Sport, 7*(4, Supplement 1), 86-86. doi: Doi: 10.1016/s1440-2440(04)80205-6

Scottish Executive. (2002). Let's make Scotland more active; A national strategy for physical activity. Edinburgh.
Scottish Executive. (2003). The Scottish Health Survey 2003. Edinburgh.
Scottish Executive. (2004). The Report of the Review Group on Physical Education. Edinburgh.
Scottish Government. (2009). The Scottish Health Survey 2008. Edinburgh.
Solmon, M. A. (2003). Student issues in physical education classes: Attitude, cognition and motivation. In S. Silverman & C. Ennis (Eds.), *Student Learning in Physical Education: Applying Research to Enhance Instruction* (pp. 147-164). Champaign, IL: Human Kinetics.
Strauss, A. L., & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage.
Tannehill, D., & Zakrajsek, D. (1993). Student attitudes towards physical education: a multicultural study. *Journal of Teaching in Physical Education., 13*, 78-84.
Tinning, R., & Fitzclarence, L. (1992). Postmodern youth culture and the crisis in Australian secondary school physical education. *Quest, 42*, 287-303.
Tjeerdsma, B., Rink, J., & Graham, K. (1996). Students perceptions, values and beliefs prior to, during and after badminton instruction. *Journal of Teaching in Physical Education., 15*, 464-476.
Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy-supportive way. *Journal of Sport & Exercise Psychology, 26*, 232-249.
Walling, M. D., & Duda, J. L. (1995). Goals and their associations with beliefs about success in and perceptions of the purposes of physical education. *Journal of Teaching in Physical Education., 14*, 140-156.
Whitehead, S., & Biddle, S. (2008). Adolescent girls' perception of physical activity: A focus group study. / Die Wahrnehmung der körperlichen Aktivität bei jugendlichen Mädchen: Eine Zielgruppenanalyse. / Percepciones de la actividad física en la adolescentes: Estudio de un grupo de discusión. / Les perceptions des adolescentes de l'activité physique,une étude de groupe de ciblée. *European Physical Education Review, 14*(2), 243-262.
Wilson, D. K., Williams, J., Evans, A., Mixon, G., & Rheaume, C. (2005). Brief Report: A Qualitative Study of Gender Preferences and Motivational Factors for Physical Activity in Underserved Adolescents. *J. Pediatr. Psychol., 30*(3), 293-297. doi: 10.1093/jpepsy/jsi039

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[2] (Facilitator error with equipment resulted in the tape recording from the high motivation, mixed gender group being of very poor quality. As a result these data were omitted from the data analysis).

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Tiered Reciprocal Learning and Teaching in the Context of Physical Education Teacher Education (PETE)

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Abstract

Introduction to the topic or context and/or mapping of the literature - Reciprocal learning is gaining in popularity in schools as its unique collaborative and cooperative features particularly lend themselves to social learning situations. Reciprocal learning and teaching has been a feature of PETE at the University of Chester for several years and this study seeks to illustrate the impact of a two tiered reciprocal learning and teaching model in the context of Secondary PETE.

Aims of the project or research questions and/or focus of enquiry - The project design set out to explore approaches to reciprocal learning and teaching and the impact or contribution for both trainee teacher and pupil learning. The aims of the project were: (i) to enhance the trainee teacher subject and pedagogical knowledge of physical education through a reciprocal planning, teaching and review process; (ii) to improve pupil cognitive understanding, communication skills, and aquatic skills through peer teaching.

Research methods and/or analytical and/or theoretical frame – Trainee teachers were presented with a model of reciprocal learning and teaching as part of their University Based-Training. Subsequently, as part of their school-based training trainees worked in reciprocal groups, planning, teaching and reviewing a unit of work for swimming with Year 8 pupils. During this four week teaching period, pupils also worked reciprocally to peer teach and review their learning. Reciprocal learning/teaching cards were a key feature of the project.

Altogether 16 trainee PE teachers from a PGCE course and 32 (mixed gender) Year 8 pupils from a University partnership school were questioned. The questionnaire was designed to explore their views about their involvement in reciprocal learning and teaching.

Research findings and/or contribution to the field – Emerging results from trainee teachers indicate that the reciprocal project had a positive impact on their subject and pedagogical knowledge. In addition, pupil feedback showed that they valued the opportunity for social learning. Further research is planned to explore reciprocal learning and teaching in other physical education activities including games.

Relevance / alignment to conference theme(s) - Conference sub-theme: Initial Teacher Education (ITE)

Introduction

This work was largely the result of a learning and teaching project between the University and two of its leading partnership schools. It is part of a larger on-going partnership plan where the focus is on identifying and sharing best practice in the teaching of physical education (PE).

The project design was developed to build on a previous investigation into reciprocal teaching and learning. In this initial project trainee teachers worked in groups of three, planning, teaching and reviewing a unit of work for swimming with Year 8 pupils. Over a period of four weeks each trainee had the opportunity to lead the teaching, act as an assistant teacher and act as an observer to provide written feedback to their peers. A reciprocal teaching approach was adopted by trainees throughout the unit so that they could explore the potential of this teaching style when delivering to a smaller number of pupils with a supportive group of peers. This approach was shown to impact on learning at different levels. It enhanced trainee teachers' subject and

pedagogical knowledge of swimming while also improving pupils' cognitive understanding, communication skills and aquatic skills.

The success of the initial project prompted further discussion into the work of Mosston and Ashworth, and in particular into the potential of collaborative reciprocal teaching as a means of developing trainees pedagogical skills and impacting on pupil learning within games. Mosston and Ashworths' spectrum of teaching styles (2002) presents a continuum of teaching approaches ranging from teacher led to more pupil orientated learning. The reciprocal approach features within this spectrum, but following the initial investigation, we are suggesting that it may also have its own continuum based onopen and closed skills. At one end is a more conventional use of the reciprocal approach, where isolated practice allows the reproductive nature of skill learning to be maintained. At the other end of the continuum is a more contextualised situation, where skills are applied within conditioned games. At this end the complexity inevitably increases to incorporate greater demands that are evident around decision making and responding to others in changing situations.

This study reports, therefore, on reciprocal teaching and learning within both swimming and games. Trainee teachers worked in small collaborative groups to plan and teach a series of lessons, with the aim being to explore the impact of this approach on their pedagogical skills and understanding, while also monitoring pupil learning.

Reciprocal Teaching and Learning

The concept of teaching styles is a well-established aspect of pedagogy within the subject area of physical education. Mosston and Ashworth 'Spectrum of Teaching Styles' has been refined since its inception in the mid-1960s and is now well integrated into physical education programmes as a means of understanding approaches to teaching. In the 'Spectrum of teaching styles' Mosston and Ashworth (2002) outlined a continuum of approaches to teaching, which ranged from a teacher dominated

'command style' through to a learner orientated 'self-teaching' approach. Between these extremes a range of teaching styles have been systematically identified, based on the extent of responsibility and decision making that is given to the teacher and/or pupil in the learning process. Two broad clusters have been identified within the continuum; reproductive and productive. In the former, decision making lies with the teacher, and pupils are asked to reproduce known knowledge and skills often through a process dependant on demonstration, practice and feedback. In the latter, productive cluster, more responsibility is given to pupils to engage in creative problem solving as they are challenged cognitively to discover and produce new knowledge and skills.

Reciprocal Learning is seen as *"a unique partnership that is forged between pairs of students working together to practice previously presented skills and information"* (Silver, Hanson, Strong, and Schwartz, 2003, p.200). As such reciprocal learning is positioned within the reproductive cluster as it features aspect of teacher centred approaches, namely a focus on pupils reproducing motor skills and known information. While the reciprocal style is categorised in this way, it also arguably reflectssome aspectsof more pupil centred styles;specifically the social and cognitive aspects of collaborative learning (Morgan, Sproule& Kingston, 2005).

The use of the reciprocal style

In adopting the reciprocal style the teacher retains responsibility for designing the learning tasks and preparing a task sheet. They also introduce the skill being learnt with verbal and visual cues, before allowing the pupils to practice (Byra, 2004). This aspect of reciprocal learning is often overlooked, but is a critical feature of the approach, as higher order cognitive tasks such as evaluation depend on developing a clear understanding. Observing and performing the motor skill to be evaluated allows pupils to enhance their awareness of the thought processes involved in learning a new skill (Murdoch, 2005).

Pupils are then given greater responsibility for their own learning, as the peer teacher observes performance and is guided to giving feedback in relation to the stated teaching points. This aspect depends on pupils learning how to analyse performance, as without accurate observation feedback will be limited. The teacher must therefore monitor this cognitive process and determine where support is needed to help pupils to be successful in analysing their peers. This aspect is in itself important as pupils are encouraged to become aware of the learning processes and to think critically about what feedback would be most beneficial to the performer.

Having established the technical nature of the information, pupils must then engage in a constructive process of giving and receiving feedback. Again the observing pupil is led through a supportive process of giving specific and focused information that either reinforces or corrects technical aspects of performance. Teachers should be prepared to observe and facilitate this process rather than intervene directly with the performer if the integrity of reciprocal learning, with a focus on the social and cognitive rather than purely technical aspects of skill learning, is to be preserved. Finally, pupils record the results of a partner's motor skill performance on task sheets, which have been designed to facilitate the learning and peer teaching process. They typically outline the selected learning activities, give the specific teaching points and also explain the method of assessment being used (Byra, 2004). In adopting the reciprocal approach, pupils will have been introduced to the motor skill, had the opportunity to give feedback based on observation and analysis, and completed the task sheet before changing roles and repeating the process.

The value of reciprocal learning

It is claimed by Byra (2004) that teachers who use the reciprocal style of teaching value social and cognitive learning as much as they value movement skill development. This is consistent with the requirements of the National Curriculum for

Physical Education (NCPE) (QCA, 2007) which shows that teachers are being asked to focus on not only developing pupils' motor skills in physical activity, but also their cognitive understanding and ability to learn from working with others.

The ability to 'select', 'respond with body and mind', 'evaluate and improve', 'refine and adapt', 'analyse', 'identify', 'make decisions about what others need to do to improve' are all cognitive aspects of learning that are identified as essential skills that pupils need to learn to make progress in PE. In addition, the curriculum guidance for PE also emphasises social learning with the expectation that all pupils experience a range of roles and become responsible citizens who make a positive contribution (QCA, 2007). Cognitive and social aspects of learning also underpin the broader aims of the curriculum through the development of personal, learning and thinking skills (PLTS). These are described by the National Curriculum as generic skills which are 'essential to success in life, learning and work' (QCA, 2008). The PLTs framework groups these skills and qualities into six areas; amongst them being the aspiration to develop 'team workers', 'independent enquirers' and 'reflective learners'. The former highlights social learning and the value of collaborative relationships where pupils work together, manage discussions, show consideration and provide constructive support and feedback to others. The other two categories highlight more cognitive aspects and describe the requirement for learners to analyze and evaluate information, review progress, invite feedback and communicate their learning in relevant ways (Tones and Jones, 2009).

If the PE programme of study is to be taught in a way which incorporates these broader requirements of the national curriculum, then the reciprocal learning style is arguably an obvious and familiar approach to use. In the reciprocal style pupils are engaged in motor skill development, by having the opportunity to practice and refine their skills with the help of specific technical feedback from a peer teacher. Pupils also take a turn to observe and analyse motor skill performance against a set criteria and in

doing so can develop a better understanding of the learning task (Byra, 2004). The process of thinking through and organising information before communicating to a peer is thought to consolidate understanding, as explanations are considered to have more impact on the peer teacher than on the recipient (Mascret, 2011, p.3). Finally this approach inevitably generates social interactions through the process of giving and receiving feedback. Pupils are able to develop cooperative skills and help one another to become successful in completing a task (Silver, Hanson, Strong, & Schwartz, 1996). The result of successfully adopting the reciprocal style is potentially a physically educated individual, who can work collaboratively with others to reflect and comment on motor skill learning.

The reciprocal style is therefore, ostensibly consistent with the demands of the current national curriculum, as while pupils are engaged in skill development there is also the potential for other powerful aspects of learning. The value of reciprocal approaches is however founded on its use as a reproductive teaching style where pupils are shown an accurate model of a closed skill, which they then aim to replicate and refine with the help of peer feedback. Less is knownof the value of this approach when used as a promptto encourage and support problem solving, where pupils are asked to produce their own solution to tactical questions in conditioned open games.

Methodology

Aim

The project design set out to explore approaches to reciprocal learning and teaching and the impact or contribution for both trainee teacher and pupil learning. The aims of the project were: (i) to enhance the trainee teacher subject and pedagogical knowledge of physical education through a reciprocal planning, teaching and review process; (ii) to improve pupil cognitive understanding, communication skills, and movement skills through peer teaching.

Data collection

The particular teaching styles that we routinely come to adopt would seemingly reflect our own individual context, our preferences and the relationships we have with others. Within initial teacher training however, the responsibility is more about challenging trainees to master a wider range of pedagogical approaches so that they can then decide on the most appropriate method based on an evaluation of pupils' prior learning and the particular objectives that they have for the lesson.

In introducing different teaching styles to trainees it's important according to Joyce, Weil, and Showers, (1992) to plan a sequence of progressive experiences which allows for the gradual adoption of the new approach. Initially trainees should explore underpinning theory and observe demonstrations. They should then practice teaching using the particular style in protected conditions before finally transferring the approach to a more realistic school setting; while working alongside, and getting feedback from, a peer coach.

Sixteen trainee PE teachers from the University of Chester were consequently presented with a model of reciprocal learning and teaching as part of their University Based-Training. Subsequently, as part of their school-based training trainees worked in collaborative groups, planning, teaching and reviewing a unit of work for swimming and later games with Year 8 pupils. During this four week teaching period, pupils also used reciprocal cards to help them peer teach and review learning.

A questionnaire was designed and completed anonymously by the trainees and pupils to explore their views about their involvement in reciprocal learning and teaching. This provided a broad range of data, while also minimising the potential for bias (Gratton and Jones, 2004, p.117). While questionnaires allow anonymity and may improve validity of responses the relativelysmall number of the question asked, did however limit the depth of data obtained. In order to support data gathered by the questionnaires,

each reciprocal lesson taught by the trainees to pupils was observed by a University Tutor or school mentor. Each lesson was recorded on a 'Lesson Observation Form' (University of Chester, 2010) using a narrative or continual recording system (Burton and Bartlett, 2005).

Data analysis

Using open ended questions can produce a wide range of responses that are difficult to analyse; as they can be interpreted in many ways. Content analysis is a qualitative approach used to identify patterns within a range of responses via categorization of content. According to Gratton and Jones (2004, p.167) it involves the use of systematic procedures to describe the content of a text and generally involves the researcher determining the presence, meaning and relationships of certain words or concepts. Despite this systematic approach, content analysis is still heavily dependent on the researchers' interpretation, and as such, it is open to subjective bias and misinterpretation. The priority, however, is the attempt to gain a better understanding of thesubjects' perspective and by recognising its limitations an attempt is made to minimize the weaknesses that are evident in this approach.

In this instance analysis of data involved identifying the key comments from the questionnaires and arranging them in clusters based on the core themes or meanings. The first order themes were then refined and general dimensions established which summarised the key findings of the investigation. This approach is supported by Gratton and Jones, (2004) who suggest that data should be organised so that common themes can be identified. The most prominent findings from this investigation were grouped in to different dimensions which are shown in the following tables.

Findings

Table 1 Trainee question: What do you perceive to be the impact of reciprocal teaching on pupil learning in swimming?

Raw Themes	First Order themes	General Dimensions
Cognitive learning was the strongest part of pupil learning as they really came to understand the technique	Promoted understanding	Cognitive learning
Wider understanding developed and helped improve overall performance		
Leads to brilliant levels of understanding. Pupils are able to remember the main teaching points		
Promotes understanding of the technique and principles		
Makes sure pupils understand what they are trying to achieve		
Useful as you can pose questions which allows pupils to think about their performance	Developed thinking skills	
Pupils have to think about the skill being performed		
Develops higher order thinking		
Helps provide a mental image of what is required	Able to visualise	
They can explain better how to do something (but not necessarily do it)	Able to explain	
Pupils learnt key words	Learnt key words	Literacy
Pupils learn key words for sports vocabulary		
Developed understanding of sport specific words by seeing them written down and repeating them		
Helps to widen the vocabulary of pupils		
In my experience a lot of discussion is generated thus allowing pupils to develop spoken English – often using technical language		
Good for literacy – language on the cards can be differentiated	Opportunity for literacy development	
Focuses literacy development		
Excellent tool for literacy teaching		
I don't consider language development to be one of the main advantages	Not significant	
Provides a fantastic opportunity for working together and sharing ideas/feedback	Learning form working with each other	Social Learning
Enables pupils to work together, develops communication and teamwork skills and interaction with others		
Greatly improved social interaction – pupils learn to		

cooperate, lead and coach		
Enables class discussion, peer feedback and group work		
Communication is developed between pupils who may not usually work together	Developed social interaction	
Helped pupils interact with each other		
Gives confidence as pupils discuss and engage with others	Developed social skills	
I have seen pupils' communication and confidence improve.		
Engagement is higher. I found more pupils stayed on task		
It provides pupils with high quality teaching points to improve their movement	Developed movement skills	Skill Learning
Great for refining fine and closed skills		
Using cards allows pupils to refer back to them and constantly correct their skills		
Makes it easier for pupils to break action down into sub-routines	Learning aid	
Performer is aware what they need to improve on – teacher can't always give this		
Skill learning depends on the quality of the resources produced	Depends on resource	
Less time is spent practicing the skill which can take away from competence	Not significant	
Doesn't impact greatly – pupils are more focussed on giving feedback than developing skill level		

Table 2 Pupil question: What, if anything, did you find useful about using the cards to teach each other in swimming?

I enjoyed using them, because of the pictures I found them helpful there was a step by step guide to show you	Made it easier	Cognitive learning
They were easy to follow with the pictures		
That the cards were easy to use, could do it at my own pace and set out well with pictures		
That it was easier using the different picture stages to see what to do		
I really enjoyed using the laminated cards, with the diagram; it's so much easier to understand	Developed understanding	
That it made me understand the important parts better and also made the lessons fun and interesting		
That they were helpful for learning or improving the specific body position or movement	Improved movement	Skill learning

That it showed us how our partner should be moving	skill	
I found some of it easy and quick and there wasn't much challenge, but it did help improve technique posture and position		
That it let us teach ourselves	Let pupils work together	Social learning
Me and my partner could help each other		
It's good because your friend could teach you instead of a teacher, listen to a friend more than a teacher.		
It was good, because we worked in partners and we had fun		
When the teacher is performing we just watch but with the cards we can teach ourselves		

Table 3 Trainee question: What are your views on the use of a reciprocal teaching and learning approach in games?

Raw Themes	**First Order themes**	**General Dimensions**
Tactical understanding is an area where pupils lack significant understanding. While it has been complex, this approach has helped	Developed tactical understanding	Cognitive - Pupil understanding
Decision making in games became more specific – started to understand tactics		
Used effectively to develop understanding of netball positions and responsibilities		
Reciprocal approaches allow pupils to develop tactics and share ideas with others		
I think they can be used to break the game down to focus on specific aspects		
I feel reciprocal works better in a skill based practice	Not significant	
I have found this useful to help prepare questions around tactical development	Helped prepare questions	Trainee understanding
Really helps to scaffold learning by thinking through tactical questions before hand		
Provides a really useful structure for lessons – and ensure clarity from planning tactical questions		
With time and planning the reciprocal approach really helped me to understand games for understanding techniques	Helped trainee develop understanding	
I think the reciprocal approach has a great deal of potential for developing tactical understanding - for me as much as the pupils		

Table 4 Pupil question: Did this approach impact on your learning in games? If so why?

Yes, because it helped me understand the movement better	Developed game based understanding	Cognitive learning
Yes it did because you know the different positions and when to do them		
Yes, because it says which tactics you should use		
Yes, it did because it helped me understand how to attack properly		
I am almost certain this helped me improve my knowledge and understanding of the key points for attacking, I found it an easier way of learning		
Yes, it did help my understanding because it had some writing telling you what to do on it, was a lot easier	Developed understanding	
Yes, because I could understand it clearly and remember the key points from the diagrams	Developed understanding and memory	
Yes, because it was easier to understand and remember		
Yes, it made it easier to remember as it was shorter	Helped memory	
Yes it helped me improve because I did not know how to do some of the things and the cards explained it very well	Resource was helpful	Helpful learning aid
Yes, because the information was very knowledgeable		
It didn't really help but it made things clearer		
Yes, because if you forgot them you wouldn't have to go to a teacher – you could just look at the sheet	Allowed pupil independence	Social learning
Yes, because you listen to a friend more than a teacher		

Table 5 Trainee question: How did the cooperative teaching model, adopted by the PE cohort as part of your School Based Training for swimming and games, prepare you to use the reciprocal approach in your own teaching?

Raw Themes	**First Order themes**	**General Dimensions**
The work with other trainees helped a lot – it gave me many ideas to adapt myself	Share ideas	Social Learning
Allowed us to share good practice and see each other's ideas		
Working with peers allowed me to share ideas – that could be adapted to other sports		
After our reciprocal work, I understood what the cards should look like and how they should be used	Developed understanding	Pedagogical learning

Working together was very useful as it allowed understanding of the reciprocal style and resources to be developed	
Working with other trainees provided a good base of understanding to further my use of such an approach in my lessons	Enabled use of reciprocal teaching
Adopted ideas and implemented them into my own practice	
It gave me an insight into reciprocal teaching which I used in other areas	

Table 6 Trainee question: To what extent, if any, have you adopted reciprocal teaching and learning approaches in your own work in the classroom?

Raw Themes	First Order themes	General Dimensions
Used often in my lessons – allows pupils to take responsibility for their learning	Embedded in teaching approaches	Widely used pedagogical approach
I try to include some sort of reciprocal work in nearly all lessons		
I have used a variety of teaching cards for pupils to check technique		
I have used it in a variety of activities that incorporate closed and open skills	Used in closed and open skill teaching	
I have used cards in gymnastics, swimming, football and athletics		
I have used reciprocal approaches in swimming, gym, games – netball and badminton		
Have incorporated reciprocal approaches into my teaching of athletics, swimming and rugby		
I often used reciprocal cards when teaching closed skills or continuous movements	Used in closed skill teaching	More restricted use as a pedagogical approach
Worked well in swimming and gym – where there are set techniques to learn		
I have used reciprocal teaching on many occasions – more so recently in athletics		

Discussion of Results

Impact of reciprocal teaching on pupil learning in swimming

Trainees' perceptions of the impact of the reciprocal style (table 1) clearly identified four different dimensions of pupil learning. Of these, cognitive, skill and social learning also emerged as themes from pupils own evaluation of the usefulness of the reciprocal style (table 2).

Cognitive

The cognitive aspect featured prominently, with a view from trainees and pupils, that reciprocal teaching enabled the development of understanding, allowed an opportunity for pupils to think and explain, and also improved their ability to remember key teaching points. This is consistent with the findings of Byra (2006) who noted the capacity for pupils to learn and identify critical skill elements,and of Mosston and Ashworth (2002, p.326) who similarly pointed to the knowledge gains that transpire when pupils are taught in this way.

Literacy

The findings from trainees highlighted the opportunity for literacy development and the learning of key words that often involve specific and technical language. From our own observations, pupils when presented with reciprocal learning opportunities begin to ask each other questions; explain and describe each other's movements and decisions, and reflect on what they and their partners do well. This aspect did not emerge, however, in pupils own evaluation of the approach.

Reciprocal approaches to learning and teaching in PE fit well with holistic literacy development, as talk is a vital part of the acquisition of any language. In addition, and as part of the reciprocal process, pupils are asked to read and comprehend specific information in relation to skill acquisition and decision making. This whole process is helpful in that the Framework for Secondary English (DCSF, 2008) clearly identifies the cross-curricular nature of language learning and reiterates the requirement

that pupils are taught to explore, develop and respond to a range of skills and strategies, in a variety of contexts, adapting language according to task, audience and purpose.

Social

The opportunity provided by reciprocal teaching to work with others and interact socially was again raised by the trainees and pupils asa significant aspect of learning; along with the potential for the development of some social skills. By its nature reciprocal learning involves social interaction as pupils give and receive feedback from one another. Our observations confirmed the positive and focussed nature of this interaction as pupils tended to stay on task and work through the peer teaching activities. These findings support Cox's (1986 cited in Byra, 2006) contention that the reciprocal teaching style elicits a greater number of pupil exchanges than the command or practice style, and that these interactions are also more positive in their nature. Antisocial behaviours were far less evident when using this approach (Mosston and Ashworth, 2002).

Skill learning

The learning of movement skills has been shown to improve when pupils are taught through the reciprocal style, with the increased provision of accurate, individualised feedback being seen as critical to this process (Byra, 2006). These findings are consistent with some of the trainee comments, but they also note that giving feedback and being focused on this process actually limits practice time and the attention given to refining personal skills.

These reservations reflected some of the established thinking about Physical Education; being rooted in the belief that the subject is about the 'body' and little else. The programme of study for PE presented in the new national curriculum (QCA, 2007) however, puts cognitive and social aspects of learning at the core of the experience along with the more traditional notion of motor skill development. In adopting

reciprocal learning, it seems that pupils are engaged in skill development but also other potentially powerful aspects of learning. If the aim is to go beyond the physical and also incorporate other aspects of learning, it is seemingly appropriate for PE teachers to adopt reciprocal approaches as part of their regular classroom practice.

Impact of reciprocal teaching on pupil and trainee learning in games activities

When asked specifically about the role of reciprocal teaching in an open games based environment, trainees again showed that in their view understanding was the main area of pupil learning. The same response emerged from pupils, with the cognitive aspect being the most prominent domain in table 4. Some reservations were expressed by traineesaround the complexity of using the approach and a feeling that it was better suited to a closed skill environment, however, it also came to be valued as a means of 'breaking down a game' and developing tactical understanding and awareness.

The impact on learning wasn't however, limited to pupils as trainees also showed that their own appreciation of tactics had improved. They valued the opportunity to structure and plan questions which helped them to teach within what became more of a teaching games for understanding approach (TGfU).

Research by Wang and Ha (2009) showed that trainees commonly have problems clarifying the concept of TGfU, particularly in relation to planning units of work, selecting content and designing questions. This is influenced by trainees own limited knowledge and lack of experience in thinking about games from a tactical perspective. Indeed this approach is often in conflict with their own experience of games teaching in PE lessons. Wang and Ha (2009) conclude that trainees need greater theoretical knowledge around TGfU and the opportunity to observe demonstrations if they are to adopt this approach. These findings are consistent with those of Joyce, Weil, and Showers (1992) who also advise that trainees should then practice teaching a new

style in protected conditions before finally transferring the approach to a more realistic school setting.

By adopting a reciprocal approach within a games setting, trainees were also given the opportunity to explore the theory behind TGfU and to observe demonstrations. They also collaborated to plan the content of a series of lessons, designing conditioned games and preparing questions. The opportunity to plan a series of questions has emerged as being of particular value to trainees and has been a key feature of the cohorts' on-going 'classroom' teaching. Designing well-structured open-ended questions that build on existing pupil knowledge is seen as key in constructivist pedagogies such as TGfU, but is also part of good teaching in any approach to games teaching (Light, 2002). It would seem that by planning to teach pupils to adopt a peer teaching role in the reciprocal style, the trainees themselves gained confidence and understanding of a TGfU approach.

Impact of the cooperative peer teaching model on trainees' use of the reciprocal style

Cooperative learning is defined by Dyson and Grineski (2001, cited in Mascret 2011, p.3) as 'a way of thinking about and implementing physical education that leads to improvements in both teaching and learning. It is defined as small-group instruction and practice that uses positive student interactions as a means of achieving instructional goals'. The cooperative teaching model adopted by the PE cohort was part of a sequence of progressive experiences that aimed to establish the reciprocal style as part of trainees' range of teaching approaches. In accordance with Joyce, Weil, and Showers, (1992) this followed an observation period where underpinning theory was also explored, and was designed to allow for more favourable protected 'classroom' conditions.

The questionnaire responses showed that trainees were overwhelmingly positive in their view of this model, citing the opportunity for social learning and sharing of ideas and resources, along with the opportunity to develop pedagogical skills. A number noted that their understanding and confidence in using reciprocal approaches had developed and that as a consequence they would be able to implement this teaching style in other activity areas. This is confirmed in the sixth table. This shows that some trainees have adopted reciprocal teaching in a narrower range of activities, limiting its use to more closed, skill based environments. The majority, however, have embraced this approach and have included it in a full range of activities, including more complex open activities, where the focus changes to more of a tactical decision making process. The extent to which the trainees have adopted this practice would suggest that they value the favourable impact that the reciprocal style has on pupil learning in PE.

Conclusion

Within this study trainees were exposed to a sequence of progressive experiences which allowed for the gradual adoption of the new teaching approach (Joyce, Weil, & Showers, 1992). They explored the theory of reciprocal teaching and observed lessons that were taught using this style, before teaching themselves in protected conditions. This model was initially introduced within a closed skill swimming environment and then repeated withinan open games based setting. This reflected our developing theory that the reciprocal style may have its own continuum, within the broader Mosston and Ashworths (2002) spectrum. At one end is a more simple and basic use of a reciprocal approach, where a closed skill is being examined to develop a technically correct model. At the other end of the continuum we have a focus on open, less predictable skills which may be part of a game or competitive situation. The emphasis is now less on technique, but more on decision making; which may draw this approach further towards the productive cluster of teaching styles.

Our findings in relation to pupil learning highlighted again that the reciprocal approach impacted on pupils' cognitive understanding, communication and movement skills. When adopted within a games environment the cognitive aspect ostensibly became more prominent as trainees raised this aspect as a key feature of pupil learning.

While the aim of the study included monitoring pupil learning, the main focus was to explore the impact of this approach on trainees' pedagogical skills and understanding. The trainees' response wasoverwhelmingly positive in their view of this model, citing the opportunity for social learning and sharing of ideas and resources, along with the opportunity to develop pedagogical skills. A number noted that their understanding and confidence in using reciprocal approaches had developed and that they would be able to implement this teaching style in other activity areas.Some trainees have onlyadopted reciprocal teaching in a narrower range of activities, limiting its use to more closed, skill based environments. The majority, however, have embraced this approach and have included it in a full range of activities, including more complex open activities, where the focus changes to more of a tactical decision making process.

The adoption of a collaborative teaching model for the reciprocal style in a games environment had the additional impact of not only reinforcing confidence in the approach, but also extending trainees own understanding and awareness of tactical decision making. Limited knowledge and lack of experience in thinking about games from a tactical perspective is supposedly common amongst trainee teachers and is thought to be a significant barrier to their adoption of TGfU approaches (Wang & Ha, 2009). By working collaboratively with peers, to select content and, in particular, design questions, trainees were emerged in a staged process which supported the development of their tactical understanding and pedagogical skills. It would seem that by planning to teach pupils to adopt a peer teaching role within a reciprocal frame, the trainees themselves gained confidence and understanding of tactical decision making in games.

While few studies have explored teachers' perceptions of, and receptivity to, innovation (Ha et al., 2008b cited in Wang & Ha, 2009), it's clear that many physical education teachers have not changed the way in which they teach the subject (Capel, cited in Green & Hardman 2005, p.111). Teacher training programmes clearly offer an opportunity for trainees to be challenged to embrace different and potentially more unconventional pedagogical approaches. Research would suggest, however, that more innovative practice may evenconflict with the trainees own established values and experiences of what constitutes good teaching (Light, 2002). None theless, teacher training programmes remain as an opportunity to challenge conceptions and explore the value of more creative pedagogy in the teaching of physical education.The outcomes of this study have prompted us to re-evaluate the range of teaching approaches being used, taking us back to a broader study of the range of approaches that are adopted within the teaching year.

Reference List

Burton, D., & Bartlett, S. (2005). *Practitioner Research for Teachers*. London: SAGE.

Byra, M. (2000). A coherent PETE program: Spectrum style. *Journal of Physical Education, Recreation, and Dance, 71*(9), 40-43.

Byra, M. (2004).Applying a task progression to the reciprocal style of teaching.*Journal of Physical Education, Recreation, and Dance*, 75(2), 42-46.

Byra, M. (2006).Teaching styles and inclusive pedagogies.In D. Kirk, M.O'Sullivan, & D.

Macdonald (Eds.), *Handbook of research in physical education* (449-466). London: SAGE

Publications.

Capel, S. (2005).Teachers, Teaching and Pedagogy in Physical Education.In K. Green & K. Hardman (Eds.), *Physical Education Essential Issues* (pp.111-127). London: Sage.

Casey, A., & Dyson, B. (2009).The implementation of models-based practice in physical education through action research.*European Physical Education Review*, 15(2), 175–199.

Claxton, G. (2002). *Building learning power*. London: Routledge.

Cothran, D.J., Kulinna, P.H., & Ward, E. (2000).Students' experiences with and perceptions of Mosston's teachingstyles.*Journal of Research and Development in Education, 34*, 93-103.

Department for Children, Schools and Families. (2008) The Framework for Secondary English. London: DCSF.

Department for Education and Skills.(2002) Access and engagement in physical education. London: DfES

Gratton, C., & Jones, I. (2004).*Research Methods for Sports Studies*. London: Routledge.

Kirk, D. (2005). Model Based Teaching and Assessment in Physical Education: The Tactical Games Model. In K. Green & K. Hardman (Eds.), *Physical Education: Essential Issues* (pp. 128–43). London: SAGE.

Light, R. (2002). The social nature of games: Australian preservice primary teachers' first experiences of Teaching Games for Understanding. *European Physical Education Review*, 8(3), 286-304.

Mandigo, J., Holt, N., Anderson, A. & Sheppard, J. (2008). Children's motivational experiences following autonomy-supportive games lessons. *European Physical Education Review*, 4(3), 407–425.

Mascret, N. (2011) 'Badminton player-coach' interactions between failing students, *Physical*

Education & Sport Pedagogy, 16(1), 1 — 13.

Morgan, K., Sproule, J., & Kingston, K. (2005).Effects of different teaching styles on the teacher behaviours that influence motivational climate and pupils' motivation in physical education.*European Physical Education Review,* 11(3), 257-285.

Mosston, M., & Ashworth, S. (2002).*Teaching Physical Education. (*5th ed.). San Francisco: Benjamin Cummings.

Murdoch, E. (2005). Physical Education – What do you think about it? *The British Journal of Teaching Physical Education*, 36 (3), 40-44.

Qualification and Curriculum Authority. (2007). *The New Secondary Curriculum*. London: QCA.

Qualification and Curriculum Authority. (2008). *The New Secondary Curriculum: Personal, learning and thinking skills: Supporting successful learners, confident individuals and responsible citizens*. London: QCA.

Silver, H. F., Hanson, J. R., Strong, R. W., & Schwartz, P. B. (1996).*Teaching styles and strategies.* (3rd ed.). Woodbridge, NJ: Thoughtful Education Press.

Tones, S., & Jones, L. (2009). Revisiting Reciprocal Learning and Teaching with a focus on Key Stage 3 Swimming. *Physical Education Matters*, 4(1), 14-16.

Vygotsky, L. (1978). *Mind in society: the development of higher psychological processes*. Cambridge: Harvard University Press.

Wang, C. L., & Ha, A. (2009). Pre-service teachers' perception of Teaching Games for Understanding: A Hong Kong perspective. *European Physical Education Review*, 15(3), 407–429.

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The contribution of Physical Education lessons to Physical Activity levels of primary aged children

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Abstract

Background: There is currently much debate surrounding the levels and extent of children's physical activity, with subsequent pressure placed upon the education system to rectify this *problem* (Waring et al 2007). However, the opportunities for children to be physically active during school time are limited (Dale 2000) and, as a consequence, Physical Education lessons have been increasingly seen as "the most suitable vehicle" (Green 2002) to encourage healthy and physically active lifestyles. Research has also shown that daily Physical Education performed in primary schools has a long term effect on physical activity throughout the day (Trudeau et al 1999) and on into later life (Howells et al 2010).

Purpose: The question still remains, however, whether Physical Education lessons are (or can be) solely responsible for increasing the overall levels of childhood physical activity. This paper reports on research designed to map children's physical activity levels within the school day so questions relating to the extent to which Physical Education lessons contribute to physical activity levels, can be explored further.

Participants and Setting: The physical activity levels of children (N = 20) from infants and junior classes (6 – 9 years old) were longitudinally tracked throughout one academic year. ActiGraph accelerometers were used during days that

included a Physical Education lesson and on days that did not include a Physical Education lesson.

Data analysis: Overall children reached significantly higher (F = 92.317) levels of moderate to vigorous physical activity, 53 minutes on days including a Physical Education lesson and 43 minutes on days that did not include a Physical Education lesson. There was also a significant effect for gender (F = 9.04) with boys being more physically active than girls at a moderate to vigorous level. There was also a significant interaction noted for year group and type of day, with juniors being more active than infants on days that included a Physical Education lesson (F = 6.770).

Conclusions: The paper provides a more detailed exploration of the data in order to consider other opportunities within the school day, within and outside the Physical Education lesson, for increasing physical activity levels and assess the implications of these findings on Physical Education provision.

Keywords: Physical activity levels, Physical Education lessons, Primary Education

Introduction

Sometimes it appears, that if newspapers, televisions and some academic research are to be believed, all the World's health problems can be put down to our lack of physical activity, or if not all problems we are assured that the growing incidences in the western world of cancer, type 2 diabetes, heart disease and obesity are due to inactivity. But what is physical activity exactly, how much is enough to stave off these impending disasters and when should we start? Physical activity has been defined in numerous

ways, the World Health Organisation (WHO) (2010) defined physical activity for children aged 5 – 17 as activities that include: "play, games, sports, transportation, recreation, physical education or planned exercise, in the context of family, school and community activities" (p.7). Plaqui and Westerterp (2007) agree and suggest that physical activity is a complex behaviour and includes "sports as well as non sports activities" (p.2371). Winsley and Armstrong (2005) extend the definition of physical activity and states that it is a "complex behaviour variable" which can vary "from day to day, in intensity, frequency and duration and consists of both unavoidable activity and variable activity" (p.65). These suggestions follow Armstrong's (1998) work in which he defines physical activity "complex behaviour" and where "accurate assessment of young people's physical activity patterns is extremely difficult" (p.s9). Whilst Booth et al (2001) suggest that any changes in this complex behaviour are dependent on different influences. Recent national TV adverts and local campaigns have focused on encouraging individuals and groups to be more physically active to help benefit our health and wellbeing. There is a substantial body of evidence on the benefits to health for adults, however the physical activity levels of children have not been so extensively explored. Especially as childhood is a time when habits, likes and dislikes are being formed and it is important that research is generated that will seek to fill in some of the gaps and assess the extent to which Physical Education lessons may contribute to overall physical activity levels of primary aged children.

Background: Physical Education and Physical Activity

There is currently much debate surrounding the levels and extent of children's physical activity, with subsequent pressure placed upon the education system to rectify this problem (Waring et al 2007). Yet Kirk (2006) has argued prior to Waring et al (2007) that the obesity crisis we are experiencing "is almost entirely without

foundation" (p.121) whilst at the same time acknowledging that it is "increasingly difficult to resist calls for Physical Education lessons to be held accountable for children's health (p.121). The World Health Organisation (WHO 2008) suggested that by increasing the number of Physical Education lessons students have, is the most direct way to increase students' physical activity, but Physical Education lessons are not just about being physical active, but about developing and educating the child in a holistic manner (Doherty and Brennan 2009). Through this whole embodied education process, the child's attitudes and interests in physical development and physical activity can be fostered and an understanding of the importance of diets and healthy lifestyles can be imparted, rather than simply providing exercising opportunities for every child. Physical Education lessons should encompass individual physical development, health and wellbeing and has a crucial role in primary school education (Howells 2011, in press). However Johns (2005) suggests that "...when children are mentioned in the obesity crisis discourse, school Physical Education, [physical development, health and wellbeing]...are implicated immediately, both as a source of and as a possible solution to the problem" (p.122). McMinn et al (2010) provide support for Johns' (2005) argument by suggesting that "school settings have been identified as key social establishments in which to promote physical activity and wellbeing, particularly through the medium of school clubs and Physical Education lessons" (p.68).

Dale (2000) suggests that opportunities for children to be physically active during school time are limited. Yet Cox et al (2010) suggest that schools may be "attributed responsibility for children's physical activity" (p.46) in a number of ways due to the school being able to provide "access to equipment / facilities, number of Physical Education hours, time outdoors, trained / supportive staff" (p.46) Trost (2007) also suggests that "schools serves as an excellent venue to provide students with the opportunities" (p.1), but he highlights that this is often not the case and that "most

children get little or no physical activity in school" (p.1), therefore impacting on the child's physical development health and wellbeing. Copeland et al (2005) found that children's physical activity levels may have declined over time and Rowlands et al (2008) suggest that this decline in physical activity levels has "led to an increased focus on the quantity and quality of physical activity that children experience in school Physical Education lessons" (p.26) They go on to highlight however that there has also been a decline in the amount of timetable Physical Education with English schools due to the increased pressures from other areas of the curriculum. This has meant that there has been an increased pressure on the Physical Education lessons to deliver the "optimal opportunity for participation in physical activity (p.26)…. and also to encourage "physical activity outside of classroom time" (Rowlands et al 2008, p.26). Green (2002) also emphasises the importance of Physical Education lessons and suggests that Physical Education is 'the most suitable vehicle for the encouragement of a lifestyle which is both healthy and physically active'(p.97). Trudeau et al (1999) found that those primary school children who participated in daily Physical Education lessons had a long term positive effect on increasing overall physical activity throughout the school day and continuing this physical activity later on in life (Howells et al 2010).

In the UK, the recommendations by the Government in power at time of the data collection (DofH 2005) as well as those suggested by WHO (2010) will be referred to within this research. The guidelines were that children (aged 5 – 18) should be physically active at a moderate to vigorous level for 60 minutes a day within lifestyle activities, structured exercise or sport or a combination of these (DofH 2005). This is equivalent to 3 METs or above each day, where 1 MET is defined as the rate of energy expernditure while at rest. Therefore, 3 METs activity or above would expend three times more energy than used by the body at rest, which is defined as "exercise that results in an increase in breathing rate, an increase in heart rate to the level where the

pulse can be felt and feeling warmer possibly accompanied by sweating" (KNOSR 2006). The 60 minutes of physical activity does not have to be in one single bout, it can be accumulated throughout the day. Gilson et al (2001) and WHO (2010) do not stipulate how this can be accumulated, whilst NICE (2009) suggests that the accumulation had to be in 10 minute bouts as a minimum. However Kolle et al (2009) suggest that children's physical activity participation is rarely lengthy and is more often compromised of intermittent and spontaneous patterns. Therefore within this research all moderate to vigorous (at and over 3 METs) physical activity was recorded through an accumulation method and not limited to 10 minute bouts.

Gaud (2004) believes that both primary and secondary Physical Education lessons' contribution to health in general is "at best, impossible to assess and at worst, marginal or zero" (p.77). His belief comes from the current value that Physical Education lessons are given in school, with other activities, for example rehearsals for the nativity play, being given a greater priority and time allocation. Trost (2007) acknowledges that schools have the potential to provide opportunities for daily physical activity, but highlights this is not always possible for all children. Cardon et al (2002) suggests that limited Physical Education time and limited promotion of physical activity may mean children are not able to reach recommended targets. Ridgers et al (2010) suggests that studies on physical activity have reported a wide range of proportion of children being able to reach the recommended guidelines (DofH 2005, WHO 2010) of 60 minutes of moderate to vigorous physical activity from "2.5 to 97%" (p.638) of children. They also promote that more research is needed to understand physical activity levels of children. Therefore emphasising how important this research is.

Physical activity is difficult to judge visually and Kolle et al (2009) suggests that children also find it difficult to estimate. Therefore questions still remain, what physical activity can children complete within the school day and whether Physical Education

lessons are or should solely be responsible for increasing the overall levels of childhood physical activity? This paper reports on research designed to map children's physical activity within the school day, the opportunities for where physical activity can occur and questions the extent to which Physical Education lessons contribute to physical activity levels.

Method

Participants

20 children (10 male, 10 female) aged between 6 years 2 months and 9 years 9 months at the start of the research (mean age 7 years 10 months) participated in this mixed methodology research (case study, action research, longitudinal, ethnographical and ecological). The children volunteered from two different classes, infants (year 2) and juniors (year 5). The children were all from the same school and were chosen randomly, by the class teacher selecting out of hat their name, a process the children were used to, which they felt was fair, familiar and transparent method of selecting children. The two class teachers who would lead the Physical Education lessons were the classes' normal class teachers they were also specialists in Physical Education, with one being the Physical Education coordinator for the school. A specialist teacher of primary Physical Education can be considered crucial in ensuring that the quality of Physical Education experience for the children is as high as possible. Price (2008) suggests a specialist can model good practice. Carney and Howells (2008) echo this view suggesting that a specialist is needed to understand how children work within Physical Education by having appropriate pedagogical as well as Physical Education knowledge. Ethical permission was gained from the school (head teacher), class

teachers, parents, and children and the Ethics Committee of the Canterbury Christ Church University, England.

Methodology

The questions and "search for the truth" (Cohen et al 2007, p.5) forms an umbrella to all acts of investigation within this research, which seeks to explore, enquire, investigate and map out the answers to the question. In this case; what physical activity levels are the children able to complete within a school day and what is the contribution of Physical Education to children's physical activity levels. Silverman (2006) suggests that by using a mixed methodology can allow for a "deeper understanding of social phenomena" (p.56), in such cases as understanding the school setting and the physical activity that can occur within such a setting. Greig et al (2007) also supports the notion of mixed methodology as they suggest research which involves children needs to be seen from as many different directions or angles as possible, as children are very complex. Therefore a case study approach was used to "provide detailed information" (Thomas et al 2005, p.19) on the current levels of children's physical activity and the contribution Physical Education lessons make to these physical activity levels, within this one school setting. The longitudinal approach was used as they are powerful according to Thomas et al (2005) and provide a wealth of information about the children's physical activity levels. Previous research in primary school physical activity have been over a shorter time frame of between 3 and 7 days such as Duncan et al (2007) and Belton et al (2009). This research was over a period of one academic school year. Elements of ecological and ethnographical style of research were also used as the classroom life was studied as it "naturally unfolded" (p.395), which Hastie and Sidentop (2009) defined as an ecological model. This model is often used by teachers to help them understand the behaviour and dynamics that occur within the

classroom. This was used alongside an ethnographical approach where the researcher participated within the school and classrooms to study the "natural occurring setting" (Brewer 2000, p.1). The final style of research used is the action research of which McNiff and Whitehead (2002) defined as "a way of researching your own learning" (p.15). Pearce (2010) adds that action research is "often carried out by practitioners within their own working contexts" (p.503), the primary school setting and Physical Education, is the researcher's working context.

Setting

Radford (2006) suggested that schools are "complex and chaotic" (p.182) but he valued the importance of evaluating the school and classroom. The research was conducted in a primary school which followed the English National Curriculum (DfE 1999). Geographically the school is set on the outside of a large town, in the South East of England. The school is relatively small rural Church of England school with 180 children and only seven classes. The school day runs from 9am until 3.10pm which is also the time that the children's physical activity was measured within the research. Potential opportunities for physical activity within the school day other than Physical Education lessons (60 minutes) are break times however these vary according to age group. For the junior children they have morning break time (20 minutes) and lunch time (60 minutes). For the infant children they have morning break time (20 minutes), lunch time (60 minutes) and afternoon break time (15 minutes). The school was chosen due to familiarity with the researcher. Thomas et al (2005) suggest "rapport is everything" (p.349) with research. The classes have specialist class teachers in Physical Education and school had achieved healthy school mark (Healthy Schools 1999) through their physical activity policy and healthy school dinners. Therefore the school felt they had provided the children with as many opportunities to be as physically active

as possible, but they did not know what the children were actually able to achieve within the school setting.

Data Collection

Janz (1994) and Janz et al (1995) found in their research the ActiGraph accelerometers to be a valid, reliable and objective method for monitoring physical activity in children. In this research this type of accelerometer (ActiGraph, model 7164) was also used. The ActiGraph accelerometer weights only one and half ounces (MTI Health Systems no date) and therefore due to the lightness of the tool, would not impact on the children's normal physical activity routines. Welk (2002) suggested that the preferred site for wearing the accelerometers was around the hip as it picks up "normal locomotor movements and participants find it less obtrusive for sitting and moving around", an important factor that needed to be considered when using such a tool with children. The children wore the accelerometers around their hips and data was collected from 9am until 3.10pm for 60 days. 30 of which were days that included a Physical Education lesson and 30 days that did not. The accelerometer data recorded acceleration counts in a one minute cycle time sampling interval. This sampling interval would consider sustained accumulated physical activity and would filter out noise of the children potentially fiddling with the accelerometers, which was expected due to the age of the children involved in the research. The one minute activity counts were downloaded and converted into METs and then analysed using SPSS 17.0 for Windows. An Analysis of Variance (ANOVA) was used to compare the physical activity levels of children according to the type of day, year group and gender. A P level of <0.05 was accepted as statistically significant.

Data analysis and results

Reaching recommended targets?

If all the children's physical activity levels are considered within the school day then 'no' children are not able to reach the recommended physical activity targets at a moderate to vigorous level (DofH 2005, WHO 2010). Overall children reached significantly higher ($F = 92.32$, $P<0.05$) levels of moderate to vigorous physical activity on days that included a Physical Education lesson with 53 minutes of moderate to vigorous physical activity, as opposed to 43 minutes of moderate to vigorous physical activity on a day that did not include a Physical Education lesson.

If year group and gender are also analysed (see table 1). It was found that junior boys were able to reach the recommended physical activity targets (DofH 2005, WHO 2010), but only on days that included a Physical Education lesson. Following statistical analysis, it was found that there was a significant main effect of gender ($F = 9.04$, $P< 0.05$) with boys completing between 5 and 9 minutes more physical activity at a moderate to vigorous level than girls. It was found that there was a significant interaction between type of day and year group ($F =6.77$ $P<0.05$) and a significant interaction between type of day and gender ($F = 4.47$, $P <0.05$). Interestingly there was no significant main effect for year group.

Contribution of Physical Education lesson?

A Physical Education lesson lasts 60 minutes, of which 8 – 9 minutes was spent at a moderate to vigorous physical activity level (see table 2). From the table it is possible to see there is very little difference for year group and gender during a Physical Education lesson. Following statistical analysis there was no significant main effects or

interactions, however overall days that included a Physical Education lesson were more physically active than those days that did not.

Other opportunities for physical activity during break times

Morning break

For morning break there was a significant main effect of type of day ($F = 18.96$, $P<0.05$) with the children completing more physical activity at a moderate to vigorous physical activity level during morning breaks on days that included a Physical Education lesson (see table 3). There was also a significant main effect of gender ($F = 22.02$, $P<0.05$) with boys completing more physical activity at a moderate to vigorous level than girls during morning break. There was also an interaction between type of day and year group ($F = 14.60$, $P<0.05$) with infants completing more physical activity at a moderate to vigorous level than juniors.

Lunch time

From the results at lunch time, (see table 4) it is possible to see that there is very little difference in the number of minutes the children spent being moderate to vigorously physically active according to the type of day. There was however a significant main effect of year group, ($F = 4.89$, $P<0.05$) with juniors completing more physical activity than infants, at a moderate to vigorous level during lunch time. There was also a significant main effect of gender ($F = 24.34$, $P<0.05$) with boys completing more physical activity at a moderate to vigorous level during lunchtime than girls.

Afternoon break time

Afternoon break time occurs only for infants (see table 5). From the statistical analysis there was a significant interaction between gender and type of day ($F = 12.57$, $P<0.05$), with girls interestingly completing more physical activity during afternoon break on days that do not include Physical Education lesson.

Other opportunities for physical activity outside of Physical Education lessons and break times.

The only other place within the school day (9am – 3.10pm) that physical activity could occur is within the curriculum time that does not include Physical Education lesson. The curriculum time was considered as a percentage number of minutes of physical activity rather than number of minutes of physical activity, this allowed for year groups to be compared, as juniors had extra curriculum time due to the infants having afternoon break time (see table 6). For curriculum time there was a significant main effect of type of day ($F = 18.75$, $P<0.05$) with children reading a higher percentage of physical activity at a moderate to vigorous level on days that included a Physical Education lesson. There was a significant interaction between gender and type of day ($F = 5.87$, $P<0.05$), with boys reaching a higher percentage of moderate to vigorous physical activity on days that included a Physical Education lesson. There was also a significant interaction between type of day and year group ($F = 21.28$, $P<0.05$ with infants reaching a higher percentage of physical activity at moderate to vigorous level during curriculum time on days that did not include a Physical Education lesson compared to juniors.

Discussion

Reaching the targets

From the results it is found that junior boys are able to reach the recommended moderate to vigorous physical activity targets of 60 minutes (DofH 2005, WHO 2010), within school time, but only on days that included a Physical Education lesson. These findings are unlike Waring et al (2007) who from their results suggests that primary school days that included a Physical Education lesson had minimal affect on overall physical activity levels, they also suggested that the "primary school is not delivering on its potential to be a good setting to promote physical activity" (p.25). This links to Trost (2007) who acknowledges that schools have the potential to provide opportunities for daily physical activity, but highlights that this is not always possible for all children. However from this research it could be argued children are accessing opportunities within the school day to be physically active at a moderate to vigorous level. Up to 47% of the time during morning break; up to 37% of the time during lunch time (time in which also includes sedentary eating of lunch, within the school hall); up to 20% of the time during afternoon break and 23% of a Physical Education lesson is spent at this moderate to vigorous level.

Contribution of Physical Education

Fairclough and Stratton (2005) observed the heart rates of children of an older age range than those within this research, aged between 11 and 14 years and found very similar results. On average children engaged in moderate to vigorous physical activity for 21.8% of the Physical Education lesson time. They also noted that boys reached a higher physical activity than girls, again similar to the results found in this research and they found that high ability children were more active than lower abilities. In this

research there was however no significant differences found in the physical activity levels according to ability levels. Fairclough and Stratton (2005) continue and suggest that Physical Education lessons had the potential to make a "significant contribution" (p.14) if lessons were planned and delivered with physical activity as the main focus of the lesson. However it could be argued that in this case study school the lessons were potentially planned and delivered with physical activity as a key focus of the lesson, due to the class teachers knowing that this was a focus of the research, yet the teachers were not given any formative feedback as to how physically active the children were being within their lessons until the end of the study. Gaud (2004) argues and questions all physical activity research in terms of validity as the participants know their physical activity is being measured and the class teacher's Physical Education was being examined. However these levels of physical activity had to be sustained over a long period of time within this research. The children and class teachers did not receive any feedback as to their own personal results during the whole academic year, though the subjective bias is acknowledged, this was kept to as close to minimum as possible, but not sharing the results until the end of the research. Yet the children within this research were able to spend very similar time, only on average a 1.2% difference at a moderate to vigorous level than Fairclough and Stratton (2005) were able to observe.

Is it enough?

The overall contribution Physical Education lessons makes to the overall physical activity levels at a moderate to vigorous level, within the school day is 10 minutes and a 2% difference. It could be questioned is this enough? Is 23% of the Physical Education lesson at moderate to vigorous level enough for primary aged children? If the results are compared to those of Yelling et al (2000) who found in their observation of physical activity within the Physical Education lesson when using heart rate they found that girls

spent 60% of the lesson at a moderate to vigorous physical activity level, the results seem very low. However the research could be considere limited because of the size of sample, they only used 6 girls and over 6 lessons all of which were "able and interested" (p.49). 5 of which were high ability and one of average ability and therefore due to their background, it is difficult to generalise from their results. Mersh and Fairclough (2010) found similar results to Yelling et al (2000) when they examined the physical activity within secondary school children aged 11 – 12 years, during 15 Physical Education lessons, they found that moderate to vigorous physical activity levels varied from 38.7% to 63% of the lesson time, dependent on the type and focus of the lesson. They found that lessons that focused on outwitting the opponents produced the highest physical activity at a moderate to vigorous level, however the skills needed to complete such tasks need to be developed and learnt within the primary school setting. So it could be argued that for primary school it is realistic to accept a lower level of physical activity at a moderate to vigorous level to allow for the children to develop and progress in these skills.

More similar results to this research were also suggested by Wang et al (2005) who found that only 30% of the total time of Physical Education lesson was being physically active when they assessed the lessons through use of heart rate monitors. They found that a total of 21.1 minutes of a 45 minute lesson was spent at moderate and vigorous physical activity lesson. However it could be argued that their results are dependent upon the ability levels of the children when using heart rate monitors. As those children who are not as able, will take greater effort and therefore record a higher heart rate than those children who have a higher ability and once their heart rate increases, during the lesson, it takes longer for the heart rate to lower, which might explain the differences in results found. Whilst Simons-Morton (1994) observed levels of physical activity in

Physical Education lessons for children aged 10 and 11 in primary and middle schools in America, who had identified themselves as having excellent Physical Education programmes. Simons-Morton (1994) found that only a staggering 8.6% of time was at a moderate to vigorous physical activity level within Physical Education. This highlights the difficulties in judging what physical activity is occurring within the classroom, in Physical Education programmes that were regarded as excellent and shows the importance of not just assuming, but using research to examine the physical activity which is actually occurring within school. Hannon (2008) examined physical activity through use of pedometer measurements, within a Physical Education lesson and found that there was no difference in the physical activity accumulated by those children who were regarded as overweight or nonoverweight. He emphasised the importance of Physical Education lessons for a time within school that was dedicated to providing an opportunity for physical activity, which he suggested "may be their only source of regular" (p.425) opportunity for physical activity.

Therefore it was important for the Physical Education co-ordinator and class teachers within the case study school to be questioned for their reaction to the findings of the overall physical activity levels of the children within the school and within the Physical Education lesson. This allowed for the action research cycle to be completed as McNiff and Whitehead (2002) emphasised the importance of reflecting on the enquiry. The aim of the feedback loop as described by Bell (2005) was to "generate possibilities to change" (p.9), therefore it was important to feedback to the two class teachers involved in the research. This action research cycle is also supported by Radford (2006) who suggested that the type of research completed within this study was specific and useful in particular to the case study school, teachers, children and parents. The Physical Education coordinator and class teacher's reaction were important in terms of the results

and follows Hargreaves' (1996) notion of the teacher being a habitual tinker. Similarly McKernan (1996) suggests that systematic self reflection of the practice that was occurring within their classroom settings is an important aspect of teaching. The class teachers felt that the amount of overall physical activity, at moderate to vigorous within a Physical Education lesson was not enough, and they were surprised how little time was spent at this level as they had been expecting more time. As a consequence, the school is now going to examine their practice, planning and delivery within the Physical Education lessons and look at how they could get more physical activity at higher levels into the lessons. This should be possible, as McKenzie et al (2004) were able to increase the amount of moderate to vigorous physical activity by 3 minutes per Physical Education lesson, a staggering increase of 18%. Rowlands et al (2008) found that by using a specialist sports coach increased moderate and vigorous levels of physical activity by 7.5 minutes on average, though the case study school felt that they already possessed the pedagogical and activity specific knowledge and understanding needed for the Physical Education lessons (Carney and Howells, 2008) and did not wish to release their Physical Education lessons to external sports coaches, whom they felt would not have the pedagogical understanding to help motivate the children. It could however be argued that Physical Education lessons are more than just being physically active.

Should Physical Education lessons focus on physical activity?

Zeigler (1994) and Malina and Bouchard (1991) suggest that Physical Education lessons should provide and be able to provide a context for regular and structured physical activity participation which would ultimately help children's health. The Physical Education Review Group in Scotland (2004) recommends increased participation in Physical Education lessons through positively impacting on pupil's

engagement to improve physical activity levels. Green (2002) also agrees and suggests that Physical Education is the most suitable "vehicle" (p.97) for the encouragement of healthy and physically active lifestyle. Fairclough and Stratton (2006) also consider Physical Education lessons as a being a pure opportunity to get children physically active. Waring et al (2007) suggest that the place for getting children active is within the Physical Education lessons and that primary schools have the potential to be good settings to promote children's physical activity. They also emphasise the importance of continuing to promote Physical Education lessons as a target area within the school day for enhancing and increasing physical activity levels of children. Sollerhead and Ejlertsson (2008) agrees with Waring et al (2007) and suggest expanding the time allocated for Physical Education lessons, with a particular focus on aerobic fitness so that there would be an increased level of physical activity, which they suggested would help combat increases in BMI. Harris et al (2004) and Gregory and Lave (2000) also support the place for physical activity to be within the Physical Education lesson. McMinn et al (2010) provides support also for Physical Education lessons being the place to promote physical activity, however they do also suggest school clubs as a place for this promotion to also occur. Cox et al (2010) argues that schools have the time in terms of number of Physical Education lessons and trained staff for physical activity to occur within school. Cardon and De Bourdeaudhuij (2007) suggests that Physical Education lessons and playtimes are responsible for promoting physical activity which they believed could then promote an active lifestyle to continue outside of the school gates, yet at the same time they recognised that that Physical Education lesson time was limited within the week and there was also limited promotion of physical activity outside of the school, both of which they suggest needed to be improved.

Interestingly Mallam et al (2003) in their comparative research of 3 different schools that physical activity when measured by accelerometers that the amount of physical activity does not depend on how much Physical Education is timetabled however this is contrary to my research in which I found that the type of day did make a significant difference and that more physical activity occurred on a day that included a Physical Education lesson. Within the research girls had the biggest increase in their physical activity levels on days that included Physical Education lessons, which supports the claims of Cawley et al (2007) who found that by increasing the amount of Physical Education lessons also increased the physical activity of girls. Therefore it could be argued that for the girls in particular that Physical Education lessons are very beneficial.

Other opportunities to be physically active within the school day.

Goran et al (1999) suggested that children's levels of physical activity are highly variable, and may be influenced by a multitude of factors including physiological, psychological, sociocultural and environmental determinants, therefore it is important to consider other opportunities within the school day, where the child may be physical active, other than just the Physical Education lesson. Shaljean (2011) agrees with Goran et al (1999) and states that children need to do physical activity in addition to Physical Education lessons. Green (2004) argues against recent media views and states that children since 1980s have shown an increase in willingness and participation in opportunities to be physical activity when such activities are offered. Within the case study school setting there are outdoor environments, which Ridgers et al (2011, p.no none yet in press) suggests “time spent outdoors is associated with increased physical activity”. The outdoor environment is where the children are able to participate in being physically active during break times and lunch times.

Ridgers et al (2010) found that lunch time is an important part of the school day in terms of providing opportunities for children to be physically active, which was similar result to this research where 37% of time at lunch time was spent a moderate to vigorous physical activity. It could be therefore argued that the children within this particular case study school are effectively using other opportunities, such as lunch time (as suggested by Ridgers et al, 2010) within the school day for the children to be physically active. This research results links to Ridgers et al (2006) previous suggestions of the contribution playtime can make to daily physical activity of which they suggested between 5 to 40% of recommended physical activity can be achieved within playtimes. If all break times are considered within the school day, on average up to 38% of playtimes is being spent at a moderate to vigorous physical activity level within the case study school. Ridgers et al (2011) also recently have observed physical activity during school break time over a period of one academic year, and found that when observed, children are highly physically active and that "children engaged in moderate to vigorous physical activity for at least half of the intervals observed" (no page number *currently this is ahead of being printed*).

Whilst Waring et al (2007) argue against Ridgers et al (2006, 2010, 2011) and the results found in this research. They suggest that free time in lunch time and break times are clearly underutilised in terms of promoting physical activity, yet they do not state how much physical activity currently occurs within break and lunch times within their research. It could be argued that from the results in this research it has shown that these opportunities for physical activity are clearly being ultilised by the children. However this can not be generalised to all primary school settings, in particular to those primary schools Academies such as in East Anglia. Where they do not have any playgrounds or play areas, feel this is justified as the children will be stimulated within the classroom setting and will not need to let off steam as the lessons are so that the

children will not get bored (Beckford 2007). Blatchford and Sumpner (1998) argues against Beckford (2007) and suggest one of the main values of break times was to "let off steam" (p.92). On discussion with the two class teachers, they felt that break times and lunch times could still be improved further by introducing playground equipment for example skipping ropes, netball and footballs available for the children and lines on the playground such as hopscotch grids. These playground equipment ideas from the class teachers are similar to those suggested by the Kent NHS Overview and Scrutiny Report (KNOSR 2006). Children within the case study school potentially spend 26% of the whole school day in the playground and therefore the class teachers felt it was important to ensure all possible opportunities were made available for the children to participate in physical activity. Since the research had been collected, a balance area, a trim trail and a small area including adventure equipment has been introduced to the playground, which was suggested by the local council (KCC 2006) as a way to increase movement and physical activity within the playground. The school had to save and fund raise for this equipment, over several years. The class teachers have noted that the children seem to be physically engaged with the new equipment, but they would also like to introduce more physical activity through playground equipment to ensure that it is not just the novelty of the new equipment that is potentially increasing the children's physical activity levels. These physical activity levels would need to be measured again using accelerometers to see if they are increasing the overall physical activity levels and the amount of time spent at a moderate to vigorous level.

Conclusion

In conclusion children were able to achieve the recommended targets of 60 minutes of moderate to vigorous physical activity (DofH 2005, WHO 2010) within the

school day (9am – 3.10pm). There was also significant increase in the physical activity levels of the children on days that included Physical Education lessons, therefore implying that Physical Education lessons do contribute to overall physical activity levels of the children. Also within the school day play times, in the form of morning break, afternoon break and lunch time have found similar results to previous research (Ridgers et al 2006). It could be argued whether the contribution of Physical Education lessons is enough, with 23% of the Physical Education lesson at moderate to vigorous level. The class teachers within the school still feel these levels within Physical Education lessons could be improved further, though they feel it is important this not to be at the detriment of the holistic learning of the children, nor the pedagogical principles of Physical Education. They also feel that levels of physical activity could also be improved through further opportunities within the play times, by introducing more playground equipment as suggested by KNOSR (2006). Further analysis is needed as to what other forms of physical activity such as the amount of light physical activity occurs within a Physical Education lesson to help analyse what else occurs within the lesson situation.

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References

Armstrong N. (1998) Young people's physical activity patterns as assessed by heart rate monitoring. *Journal of Sports Sciences* 16 p.s9 - s16

Beckford M (2007) School without play area bans break times. http://www.telegraph.co.uk/news/uknews/1550808/School-without-play-area-bans-break-times.html accessed 21st Dec 2007.

Belton SJ., Meegan S., Brady P. and Woods C (2009) An examination of step count, BMI and physical activity participation in Irish primary school children, presented at Physical Education Physical Activity Youth Sport Conference, University of Limerick, June 2009.

Bell J. (2005) *Doing your Research Project. A guide for first-time researchers in education, health and social science.* 4th edition Open University Press. McGraw-Hill Education.

Blatchford P and Sumpner C (1998) What do we know about breaktime? Results from a national survey of breaktime and lunchtime in primary and secondary schools. *British Educational Research Journal* 24 (1) p79 – 94

Booth S.L., Sallis J.F., Ritenbaugh C., Hill J.O., Birch L.L., Frank L.D., Glanz K., Himmelgreen D.A., Mudd M., Popkin B.M., Rickard K.A., St. Jeor S., Hays N.P. (2001) Environmental and Societal Factors Affect Food Choice and Physical Activity: Rationale, Influences, and Leverage Points. *Nutrition Reviews* 59, (3), pS21–S36.

Brewer (2000) Ethnography. Buckingham: Open University Press.

Carney P. and Howells K. (2008) The primary physical education specialist. *Primary Physical Education Matters*. Autumn Vol 3 (3) p.iii – iv.

Cawley J., Meyerhoefer C., Newhouse D. (2007) The impact of state physical education requirements on youth physical activity and overweight. *Health Economics* Vol 16 (2) p.1287 – 1301.

Cohen L., Manion L. and Morrison K. (2007) Research Methods in Education 6th edition. Routledge; Taylor and Francis Group. London.

Cardon G.M. and De Bourdeaudhuij I.M.M (2002) Physical Education and Physical Activity in Elementary Schools in Flanders *European Journal of Physical Education* 7 5 – 18.

Cardon G.M and De Bourdeaudhuij I.M.M. (2007) Comparison of pedometer and accelerometer measures of physical activity in preschool children *Pediatric Exercise Science* 19 (2) 205 – 214.

Copeland, J.L., D.W. Esliger, J.D. Barnes, and M.S. Tremblay (2005). Physical activity guidelines for children: are they relevant? Paediatric Exercise Science 17(1):73-74. North American Society of Pediatric Medicine Biennial Meeting, St. Andrews, New Brunswick.

Cox M., Schofield G. and Kolt G.S. (2010) (p.46) Responsibility for children's physical activity: Parental, child and teacher perspectives. *Journal of Science and Medicine in Sport* 13, p.46 – 52.

Dale D, Corbin C.B., Dale K.S. (2000) Restricting opportunities to be active during school time: do children compensate by increasing physical activity levels after school? Research Quarterly for Exercise & Sport, Sept: Vol. 71 Issue 3. p. 240-248.

DfEE – Department of Education and Employment (1999) The National Curriculum. Handbook for primary teachers in England. Key stages 1 and 2. Qualifications and Curriculum Authority. London.

Department of Health (2005) Choosing Activity: a physical activity action plan (p.6). Retrieved October 26, 2009 from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4105710.pdf

Doherty J. and Brennan P. (2008) Physical education and development 3 – 11 a guide for teachers. Routledge. Taylor and Francis Group. Abingdon.

Duncan, M., Al-Nakeeb, Y., Woodfield, L., Lyons, M. (2007) Pedometer determined Physical Activity levels in primary school children from central England. Prev Med. 44; 416–420

Fairclough S. and Stratton G. (2005) Physical education makes you fit and healthy. Physical education's contribution to young people's physical activity levels. *Health Education Research* Vol 20 No 1 p.14 - 23

Gaud M (2004) Chapter 5 An elephant in the room and a bridge too far, or physical education and the 'obesity epidemic' in Evans, J., Davies B., and Wright J. (2004) (editors) Body Knowledge and Control Studies in the Sociology of Physical Education and Health.

Gilson N.D., Cooke C.B. and Mahoney C.A. (2001) A comparison of adolescent moderate-to-vigorous physical activity participation in relation to a sustained or accumulated criterion. *Health Education Research* 16: 335 – 341.

Goran M. I., Reynolds, K. D. and Lindquist C. H. (1999) Role of physical activity in the prevention of obesity in children. *International journal of obesity and related metabolic disorders* Volume: 23 Suppl 3, Pages: S18-S33 Publisher: Scientific & Medical Division, Macmillan Press Ltd,

Gregory J. and Lave S. (2000*) National Diet and Nutrition Survey: Young People Aged 4 to 18 Years*. London Stationary Office

Green K (2002) Physical Education and "the Couch Potato Society" – Part one. *European Journal of Physical Education* 7 p.95 - 107.

Green K (2004) Physical education, lifelong participation and 'the couch potato society'. *Physical Education and Sport Pedagogy* 9 (1) p.73-86.

Greig A, Taylor J and MacKay T (2007) Doing Research with Children (2nd edition). Sage: London.

Hannon J.C. (2008) Physical activity levels of overweight and nonoverweight high school students during physical education classes. *The Journal of School Health* 78 (8) p.425-431.

Hargreaves D. (1999) Revitalising educational research: lessons from the past and proposals of the future. *Cambridge Journal of Education* 29 (2) p.239 – 249.

Harris J. Cale L. and Bromell N. (2004) (p.123 – 124) in Kirk D. (2006) The 'obesity crisis' and school physical education. *Sport, Education and Society.* Vol 11, No. 2 p. 121 – 133

Hastie P. and Sidentop P. (2009) Reading 21 An Ecological Perspective on Physical Education in Bailey R. and Kirk D. (editors) *The Routledge Physical Education Reader*. Routledge: London.

Healthy Schools initiative (2009) Physical Activity Guidance Documents. Accessed online December 2009 http://resources.healthyschools.gov.uk/v/32f5e04c-9d22-4d55-9f8d-9cbc00f37ae8 last updated November 2009.

Howells K., Caple A. and Jones M. (2010) Are boys more physically active than girls during a primary school day? *Primary Physical Education Matters* Autumn 5 (3) p.xvii – xix.

Howells K (2011) Chapter 7 An Introduction to Physical Education in Driscoll, P., Lambirth A. and Roden J (2011) *The Primary Curriculum. A Creative Approach*. Sage Publications Ltd

Janz K.F. (1994) Validation of the CSA accelerometer for assessing children's Physical Activity. *Medicine and Science in Sports and Exercise;* 26: 369 - 75.

Janz KF, Witt J, Mahoney LT. (1995) The stability of children's Physical Activity as measured by accelerometry and self report. *Medicine and Science in Sports and Exercise*, 27: 1326–32.

Johns D. P. (2005) Recontextualizing and delivering the biomedical model as a physical education curriculum. *Sport, Education and Society* 10 (1) 69 – 84.

KCC (2006) Kent County Council, Sports Development Unit, PE and School Sport, Playground Improvement Scheme, Impact and Monitoring Report, retrieved from http://209.85.229.132/search?q=cache:XZZ70sYYdygJ:www.kentsport.org/schools/documents/PlaygroundMonitoringReportex-photos.doc+kent+children%27s+physical+activity+levels&cd=3&hl=en&ct=clnk&gl=uk last updated March 2006, accessed 25th October 2009

Kent NHS *Overview and Scrutiny Report (KNOSR 2006) Tackling Obesity*, NHS Overview and Scrutiny, Joint Select Committee Report, Parts I and II from

https://shareweb.kent.gov.uk/Documents/Council-and-democracy/select%20committees/tackling-obesity-jan08.pdf accessed online August 2009, last updated December 2006

Kirk D. (2006) The 'obesity crisis' and school physical education. *Sport, Education and Society.* Vol 11, No. 2 p. 121 – 133

Kolle E., Steene-Johannessen J., Klasson-Heggebø L., Andersen L.B., Anderssen S.A. (2009) A 5-yr Change in Norwegian 9-yr Olds' Objectively Assessed Physical Activity Level. *Medicine and Science in Sports and Exercise.* 41 (7) p. 1368 – 1373.

Malina R.M. and Bouchard C. (1991) (p.6) *Growth, Maturation and Physical Activity*. Human Kinetics. Champaign, IL.

Mallam K.M., Metcalf B.S., Kirkby J., Voss L.D., Wilkin T.J. (2003) Contribution of timetabled physical education to total physical activity in primary school children: cross sectional study. *British Medical Journal* Vol 327 (7415) p.592 – 593.

McKenzie TL, Sallis JF, Prochaska JJ, Conway TL, Marshall SJ, Rosengard P (2004). Evaluation of a two-year middle-school physical education intervention: M-SPAN. *Medicine Science Sport and Exercise* 36:1382–8.

McKernan J. (1996) *Curriculum Action Research*. Kogan Page, London.

McMinn D., Rowe D.A., Stark M., Nicol L. (2010) (p.68) Validity of the New Lifestyles NL-1000 Accelerometer for Measuring Time Spent in Moderate-to-Vigorous Physical Activity in School Settings. *Measurement in Physical Education and Exercise Science* 14: p.67-78.

McNiff J. with Whitehead J (2002) *Action Research Principles and Practice.* 2nd Edition, Routledge Falmer: London.

McMinn D., Rowe D.A., Stark M., Nicol L. (2010) Validitiy of the New Lifestyles NL-1000 Accelerometer for Measuring Time Spent in Moderate to Vigorous Physical Activity in School Settings. *Measurement in Physical Education and Exercise Science.* 14: p.67 – 78.

Mersh R. and Fairclough S.J. (2010) Physical activity, lesson context and teacher behaviours within the revised English National Curriculum for Physical Education: A case study of one school. *European Physical Education Review* 16 (1) p.29 – 45.

MTI Health Services, Manufacturing Technologies – www.mtiactigraph.com accessed Feb 09, last updated no date

National Institute for Health and Clinical Excellence (2009). NICE Public health guidance 17. Promoting physical activity, active play and sport for pre-school and school-age children and young people in family, pre-school, school and community settings. Accessed online November 2010

http://www.nice.org.uk/nicemedia/pdf/PH017Guidance.pdf

Pearce C. (2010) Teaching, research and further qualifications in Arthur J. and Cremin T. (eds) (2010) *Learning to Teach in the Primary School*. 2nd edition. Routledge, London.

Physical Education Review Group (2004) as cited in HMIE (no date) Developing the four capacities through physical education: focusing on successful learners in primary schools. Accessed online http://www.hmie.gov.uk/documents/publication/dpeps.html

Plasqui G. and Westerterp K.R. (2007) Physical Activity Assessment with Accelerometers: An Evaluation Against Doubly Labeled Water. *Obesity* 15 (10), 2371 – 2379.

Price (2008) as cited in Carney P. and Howells K (2008) *The Primary Physical Education Specialist.* Primary Physical Education Matters Autumn Vol 3 (3) p. iii – iv.

Radford M (2006) Researching classrooms: complexity and chaos. *British Educational Research Journal* 32 (2) p.177 – 190.

Ridgers N. Stratton G. and Fairclough S. J. (2006) Physical Activity Levels of Children during School Playtime. *Sports Med*icine 36 (4): 359-371

Rigers N.D., Graves L.E.F., Foweather L. and Stratton G. (2010) Examining Influences on Boy's and Girls' Physical Activity Patterns: The A-CLASS Project *Pediatric Exercise Science* 22 p.638 – 650

Ridgers N.D., Carter L.M., Stratton G., and McKenzie T.L. (In Press) Examining children's physical activity and play behaviours during playtime over time. *Health Education Research.*

Rowlands A.V., Esliger D.W., Pilgrim E.L., Middlebrooke A.R., Eston R.G., (2008) Physical Activity Content of Motive8 PE Compared To Primary School PE Lessons In The Context Of Children's Overall Daily Activity Levels. *Journal of Exercise Science and Fitness* Vol 6 (1) p. 26 – 33.

Shaljean J. (2011) Keeping your child active. Learning, Parents Supporting your child's education. Accessed online April 2011, last updated 25th March 2011, http://www.bbc.co.uk/blogs/parents/2011/03/adding-value-to-school-sport.shtml

Simons-Morton B.G., Taylor W.C., Snider S.A., Huang I.W., and Fulton J.E., (1994) Observed Levels of Elementary and Middle School Children's Physical Activity during Physical Education Classes. *Preventative Medicine* Vol 23 (4) p.437 – 441.

Silverman D. (2006) Interpreting Qualitative Data (3rd edition) Sage, London.

Sollerhed A.-C. and Ejlertsson G. (2008) Physical benefits of expanded physical education in primary school: findings from a 3 –year intervention study in Sweden. *Scandinavian Journal of Medicine and Science in Sports.* 18 p.102 – 107.

Thomas J.R., Nelson J.K., Silverman S.J. (2005) 5th edition. Research Methods in Physical Activity. Human Kinetics: Champaign.

Trost S. G. (2007) (p.1) Active Education, Physical Education, Physical Activity and Academic Performance. Research Brief. Active Living Research. A national program of the Robert Wood Johnson Foundation. Accessed online October 2010, https://folio.iupui.edu/bitstream/handle/10244/587/Active_Ed.pdf?sequence=2

Trudeau F., Laurencelle L., Tremblay J., Rajic M., Shepherd R.J. (1999) Daily primary school physical education: effects on physical activity during adult life. *Medicine and Science in Sports and Exercise* 31 (1), 111 – 117.

Wang G.Y., Pereia B., Mota J., (2005) Indoor physical education measured by heart rate monitor. A case study in Portugal. *Journal of Sports Medicine and Physical Fitness* Vol 45 (2) p.171 – 177.

Waring M., Warburton P., and Coy M. (2007) Observation of children's physical activity levels in primary school: Is the school an ideal setting for meeting government activity targets? *European Physical Education Review* 13 (1) p.25 – 40.

Welk G.J., Corbin C.B., Dale D. (2000) Measurement issues in the assessment of physical activity in children. *Research Quarterly Exercise and Sport* 71 (2 Suppl) S59 – 73.

WHO (2008) School Policy Framework: Implementation of the Global Strategy on Diet, Physical Activity and Health. Accessed online October 2010, http://www.who.int/dietphysicalactivity/SPF-en-2008.pdf

WHO (2010) Global Recommendations on Physical Activity for Health. Accessed online October 2010, http://whqlibdoc.who.int/publications/2010/9789241599979_eng.pdf

Winsley R., and Armstrong N. (2005) Chapter 4, Physical Activity, Physical Fitness, Health and Young People. In Green K. and Hardman K. (editors) *Physical Education Essential Issues*. Sage: London.

Yelling M., Penney D., and Swaine I.L., (2000) Physical Activity in Physical Education: A Case Study Investigation. *European Journal of Physical Education* 5, 45 – 66.

Zeigler E. (1994) Physical Education's 13 principal principles. *Journal of Physical Education, Recreation and Dance* 65 4 – 5.

Table 1 Overall mean number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender according to type of day.

		Type of Day (number of minutes at and over 3 METs)	
Year group	**Gender**	**PE**	**NON PE**
Infants	Boys	53 (23)	46 (17)
Infants	Girls	42 (13)	38 (11)
Juniors	Boys	60 (13)	45 (12)
Juniors	Girls	53 (15)	40 (13)

Table 2 Overall mean number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender during Physical Education.

		Number of minutes at and over 3 METs
Year group	**Gender**	**PE**
Infants	Boys	9 (3)
Infants	Girls	8 (2)
Juniors	Boys	9 (2)
Juniors	Girls	9 (2)

Table 3 Overall mean number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender during morning break.

		Type of Day (number of minutes at and over 3 METs)	
Year group	**Gender**	**PE**	**NON PE**
Infants	Boys	10 (3)	8 (3)
Infants	Girls	8 (1)	5 (1)
Juniors	Boys	10 (4)	10 (4)
Juniors	Girls	8 (4)	8 (4)

Table 4 Overall mean number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender during lunch time.

		Type of Day (number of minutes at and over 3 METs)	
Year group	**Gender**	**PE**	**NON PE**
Infants	Boys	15 (6)	15 (7)
Infants	Girls	11 (4)	11 (4)
Juniors	Boys	23 (7)	22 (7)
Juniors	Girls	20 (8)	19 (7)

Table 5 Overall mean number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender during afternoon break time.

		Type of Day (number of minutes at and over 3 METs)	
Year group	**Gender**	**PE**	**NON PE**

Infants	Boys	3 (1)	3 (1)
Infants	Girls	2 (1)	3 (1)

Table 6 Overall mean percentage number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender during curriculum time.

		Type of Day (number of minutes at and over 3 METs)	
Year group	**Gender**	**PE**	**NON PE**
Infants	Boys	7 (4)	7 (3)
Infants	Girls	6 (2)	7 (2)
Juniors	Boys	7 (2)	4 (1)
Juniors	Girls	7 (2)	4 (1)

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Reflexivity in Physical Education (PE)

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Introduction.

In the current (circle of) influence, physical education teachers are willing to enrol students in a reflexive approach, no longer in the aim of acting, but also understanding "what is going on" during acting. The teacher is looking for a realization of the student which specificity is to aim the "action's verbalization". The carried out action has to be understood/ captured another time/anew just like it had been lived and felt by the student. We want to move the "action object" from pre-considered to considered register. Why that kind of process in physical education? Vincent (1980) brings up a specificity in the transmission/communication which would organize the logical asset of practice/practicing and school learnings with on the one hand know-how conveyed by experience and reaching hardly/with difficulty knowledge status, and on the other hand objectivized school learnings in books, which have acquired culture legitimacy. According to him, action learnings bodies with practical ones/ action learnings and practice are indivisible, while school knowledge are objectivized knowledge in and by writing. In the same way, Lahire (Lahire & al. 1994), contrasts school mode/way of appropriation and practical oral one of activities which takes place in and by practice, without necessarily having recourse to writing objectification. The practical transmission of practice knowledge is consequently opposed to a more rationalized transmission. There is the paradoxical situation of physical education : School discipline forced to respect the rational mode of transmission while having for object of the practical knowledges requiring a mode of transmission more anchored in the practice. So, we can emit the hypothesis that research of a reflexive approach in P. E (in direct link with the verbalization and the objectification by written work) is a consequence of this paradox.

In this perspective, our project aims at describing the strategies developed by the teachers to put the students in a reflexive approach in front of practical know-how. Two perspectives are proposed: (1) to identify the various present types of reflexivity in PE as well from the point of view of the contents as the practises in work, (2) to locate if there are links enter the forms developed in PE and the "school reflexivity ".

1. Theorical framework.

The objective is to clarify the central notion of reflexivity first of all in the broad sense then more exactly in the "school" sense of the term to be able to place the reflexivity identified in PE and be able to extract the possible common points from it as well as its specificity.

1.1. The notion of “reflexivity”

This concept finds its origin in works recovering from the occupational psychology and from the sociology. In this perspective, the reflexivity would be a process allowing to identify knowledge, theories stemming from the practice at professionals. It became gradually a central concept to study the knowledges of action (used during the action) or stemming from the action which the professionals use. Bautier and al. (2005) explain that the reflexivity would be seized in the cultures. This activity and the techniques which are connected with it should be envisaged within a group by leaving of the dialectical report linking the individual to this group, to its culture. The authors develop a rather anthropological acceptance, making reference to the processes which produce of the shared and divisable sense by one certain number of individuals.

They go even farther, developing a large significance of the reflexivity covering three main areas:

- reflexivity towards itself, as individual and more particularly individual learning (psychological dimension).
- reflexivity towards itself, considered as social actor or representing of a group, a community (sociological or anthropological dimension).
- reflexivity towards the knowledge generally (dimension épistémologique) possible at a more individual or collective level.

So the reflexivity turns out to be a very vast and complex concept, finding a meaning in several theoretical fields. It seems unthinkable to be able to transpose this concept as a whole into the educational act. The question is thus going to be to know how the reflexivity was able to penetrate into the school field and which adaptations will have undergone its definition.

1.2. The notion of school reflexivity.

The concept of reflexivity seems to have been broadcasted in the school field thanks to the emergence of the notion "of formative evaluation" developed in the 70s with the aim

of democratizing the teaching. The logic was to place the student in the center of the process of learning and to favor the development of its autonomy: learn to auto-analyze, to evaluate its learning and so learn to learn. The concepts of metacognition and of reflexivity allowed to supply the theoretical, empirical and methodological foundations in these new practices. The school reflexive activity could be defined as a process inciting the students to stand back with regard to their learnings, to make a reflexive reading to suit them better; it is globally a question of helping them to make sense. However, Bautier and al (2005) notes that the reflexivity developed in the school field is specific and corresponds only to a tiny part of the general concept evoked above. Mr Derycke (2005) abounds in this sense by speaking " about a prescriptif model of vulgarized reflexivity in the domain of education which envisages, on one hand, a return towards action according to structure : description, analysis, conceptualisation, and on the other one, it's preparation in order: anticipation, planification, control of performance and evaluation ". So, the student is perceived in his only status of learner with the implicit postulate of a universal process of acquisition and a regulation of the learnings. We can thus say that the school reflexivity eliminates the sociological dimension of the subject as well as its status of member of a cultural group; but it is not its only specificity there. This concept is confidentially connected to the awareness, which finds a way through its perceptible proof. Among these the indication privileged by the school is the verbalization; this choice bases on a double hypothesis: on one hand the student explains spontaneously "his action" (what supposes that this action in narrative is faithful to the reality) and on the other hand that the word is the good tool.
This precision being given, we are going to try to see if the reflexivity in PE is complying with these school characteristics or on the contrary distances itself from it.

2. Method.

This research was led with two teachers, the one teaching in a fifth year of high school vocational class, the other one with a first year class both during a cycle of basketball. The data are constituted by all filmed sequences of every cycle (N=10) as well as the semi-directive interviews with every teacher at the beginning and at the end of cycle.

The first part of the work allowed to analyze all filmed sequences in the form of synopses, boards containing several different information: the hour, the working modalities (organization), what is made (instructions, purposes of the tasks, the presentation of these), the remarkable events.

This stage allowed us to identify what we shall call "the reflexive moments" during the lessons and to identify then their durations, the various stakes in work used and the mobilized contents. We define the reflexive moments as being moments when the teacher seeks the reflection of his pupils on their learnings; this one being able to concern the given instructions, the proposed situation or still the action of the students in situation. We have been able to distinguish two big types of reflexive moments:

- reflexive moments which we shall call formal: which are prepared by the teacher benefiting from a situation support reflected, of a specific organization and specific media.
- reflexive moments which we shall call informal: less structured, passing by a spontaneous questioning of the teacher.

The second part of the work leans on the analysis of the interviews of both teachers allowing to confront the conclusions brought by videos to the speech of the teachers.

3. Results.

3.1. Informal reflexive moments.

We were able to notice the presence of these moments in a recurring way in every session at both observed teachers. Indeed these teachers declare to carry a lot of importance on thought students, they want to build an exchange having noticed a rather "passive" attitude of the students in class, which they define as "conductors" position. So they take place in the optics to bring the students to question, to develop their critical spirit, their autonomy. This approach is the same at both teachers, these moments appear frequently after a first phase of action of the students in the situation, very rarely before the beginning of this. They take the shape of collective groupings (sat or standing, the place matters little) and during which the teacher questions the students in touch with what they have just realized. The questions concern essentially the understanding of the instructions, the understanding of the situation or the interest of this one. We can say that these moments have for essential function the regulation of the situation, the indirect regulation suggested by the questions of the teacher and the implementation thanks to the answers of the pupils.

3.2. Formal reflexive moments.

The approach of both teachers are rather different however a very strong common point unites them, it is about the importance tuned to the organization. Indeed, at these two teachers the space is very structured during these exchanges, they have places always in the same place, the students sit group in front of the teacher there who

remains standing. The roles of the students are exactly and clearly defined, there is always a part of them in action and the other one in observer's role. The observations realized by the students are every time the starting point of these exchanges. This report is not harmless, both teachers declare during the interview that a clear, precise organization and a creature of habit establishes a condition of efficiency for these moments of reflexive exchanges in order to " not to stay on interventions on the current attitude " and to make understand to the students that " if they do not fill their part it risks to engender an error in the group functioning".

We were able to identify at both teachers two types of formal reflexive moments, those who base on a situation of specific learning and those who base on the reference situation (situation of match). The first ones being present punctually during certain lessons, the second presents in a recurring way in every lesson.

3.2.1. The formal reflexive moments base on a situation of specific learning.

Both teachers have a rather different approach. The teacher A sets up what we could call an inductive approach. The observations asked the students are precise and in direct link with the situation of learning. For example a situation of offensive in 3 where the observers have to note the made number of passes and the number of forward passes. The observations are always made on a paper support (index form to be filled), during the sequence the teacher doesn't intervene, he has superintendent's role. Every group passes in the situation and the assessment is made in classy group at the end. During the exchange it is the teacher who leads the debate, he questions the students about their index forms, takes some in example to arrive at his teaching contents (for example: to go up effectively the ball it is necessary to make a maximum of forwards passes).

The teacher B sets up what we could call a deductive approach. He proposes to his students a situation of learning based on the challenge. For example by team of 3, a situation of shootings in running during 2 minutes, the objective being to mark most points possible. The observation is left free, no particular instruction and no support: 2 teams make the situation and 2 teams observe then we change role. During the action the teacher questions the students who observe (what you think of their organization? Do you think that it is effective?). When all the teams are crossed the teacher announces the scores and asks the team which realized the best score to begin again 2 minutes in front of the whole class. And during this time he questions the students "why they are the best? Why they often make a success their shooting?" Then he uses to the answers

of the students and formulates his teaching's contents (for example: the importance of double supports, to aim at the black square, to coordinate their roles and their rotation). Both approaches seem different in their logic, in their practice and the used media. That of the teacher A seems more directed to precise contents, the observation is guided and more taken away from the aim of the task, the teacher builds his intervention so as to infer the reflection of the students towards the objective which he looks for. The approach of the teacher B is more opened, the observation is left free, he is only boosting the students by taking supports on the identification of the effective behavior in the situation. The link between the observation and the aim of the task is more clear; the action is the support of the exchanges (the exchanges have live place during the realization of the most effective team). Whatever is the approach we were able to observe that the reflection concerned the analysis of the students' action. These moments aim at building the teaching contents so that they have sense of the students, indeed, in both cases the attention of the teacher concerns to the construction by the students of the link between the identified contents and the efficiency in the action.

3.2.2. The formal reflexive moments base on the reference situation (situation of match).

In that case also the approaches of both teatchers are not completely similar. The teacher A sets up a big "board of remarks", the observers have to register it all the information which they were able to identify during the phases of game and which they seem relevant ("so-and-so plays as for myself", "so-and-so turns thumbs", "the blue team misses many shoots" etc.). The observation is free, no precise instruction is given to the observers, only the score of every match must be noted. During the phases of game and observation, the teacher takes place in superintendent and does not intervene, he manages the time and just verifies the right rotation of the teams in the various roles (players, arbitrators and observers). Once all the matches realized, the teacher groups together the class in front of the board and exchanges with them from the various remarks. This assessment turns out general, it describes the general evolution of the classy group.

The teacher B proposes an observation more guided from statistics of matches. The observers use a system of coding of the actions with beacons: in every ownership of ball they take a beacon, if the team loses the ball they return it to the ground, if the team tries a shooting without standing out they put it straight ahead on the ground, if the team marks, they put it straight ahead on the bench. During the phases of game and

observation, the teacher takes place in superintendent, he comments however frequently the match in a loud voice to help the observers ("a red ownership, a red tried shooting, a blue ownership"). From the ended match, team captains comment live on their statistics in a loud voice, the teacher helps them by questioning if need be (" how many tried shootings ? How much shooting made a success ? What that gives in percentage?"). The scores of matches and statistical are then noted on the index forms of every team. Once all the made matches, the teacher groups together the students for a general assessment. The exchange is livened up by the teacher who resumes the index forms of the previous lessons and questions successively the teams about their evolution to arrive at an objective of specific work in each for the following lesson.

Both approaches differ on several points, that of the teacher A is opened, the students can comment on several themes (the game, the attitude, the arbitration), however he uses only the written support asking to the students an effort of formulation. Of more the analysis is postponed in the time what asks to the students to try to remember the match which they observed to justify their remark. The assessment is collective, he allows the teacher to formulate axes of teamwork for the following lessons. The approach of the teacher B is more closed, the observation limits itself to the statistics of match, however the use of beacons countered more accessible than the passage by writing. The immediate aspect of the analysis allows the students to make faster the link between the statistics and their match. The assessment is collective but allows to build specifics axes of work to every team for the following session. In both cases the reflection concerns the students' action in game rather from a collective point of view, the objective of both teachers being that the students are capable of identifying their game's profile. In view of these, working axes will be proposed for the whole class in the case of the teacher A, for every team in that of the teacher B.

4. Discussion.

4.1. Different reflexivity in Physical Education.

We were able to identify two different modalities: the informal reflexive moments and the formal reflexive moments. For the first ones we were able to see that there were no differences between both teachers. These moments are characterized by a phase of collective exchanges led by the teacher during which he questions the students about their understanding of the instructions and / or the proposed situations. For the second, which they base on situations of learning or on reference situation, the methods of the teachers diverge. Indeed, the logics, the practice and the media are different. We were

able to identify inductive, deductive, more or less opened or closed approaches. Both teachers asserted the particular interest that they concerned on students' reflection on their actions, however the interviews allowed us to distinguish differences of points of view on the capacity of their students to reflect, what could bring tracks of explanation to their differences of approaches.

The teacher A asserts that his students are capable of reflecting, that they can go far to this reflection, "they miss only a help". The inductive approach has of the sense, these students being competent according to him, they will be capable of making they even links. In the same perspective, he proposes them an opened game's observation and adopts an attitude of supervision bringing no help to the observation. He regrets however their passive attitude and their trend "copying only" if a demonstration is made. For him, the passage of the speech in the action is essential to spot what the students understood, what explains the absence of demonstration as support of the observation as well as the temporal gap between the phases of action and the assessment.

The teacher B declares that his students have difficulties reflecting, that they are in resistance in front of this approach of questioning which is foreign to them. The deductive approach seems justified, his students being in difficulties the links must be very explicit. In the same optics, he tries to facilitate the entrance of the students to the reflection, for him the use of beacons is more accessible than writing because they offer a concrete, handleable support. He identifies moreover that the translation in words, in statistics is very difficult for the students. The anchoring in the action also goes to this sense, according to him more the observation bases on the immediate action more it is facilitated. In the same way his attitude of questioning of the observers, his analysis of the matches in a loud voice aims at helping these in their role.

We remind that the carried attention on the organization of these moments is essential for both teachers, precision, the clarity and the aspect creature of habit of this last one appear as wages of efficiency.

If in term of practices and approaches there seem be various types of reflexivity, in term of contents these differences disappear. Indeed, we were able to observe that the contents attributed at the various reflexive moments were even about is the teachers. We can then identify that:

- The informal reflexive moments concern the understanding of the students, to verify if they understood well what was asked them. These moments have a function of regulation.
- The formal reflexive moments allow the students to analyze their action, to be capable of identifying what they made. As they base on a situation of learning or on a reference situation they will allow the students to build teaching contents which have of the sense, or the relevant working objectives towards their profile of game.

We can say that there are two types of reflexive, formal and informal moments, having each a role and an appropriate objective which are the regulation and the analysis of actions. The practice of these moments can be different to adapt itself to the characteristics of the students.

4.2. Reflexivity in PE and school reflexivity.

The reflexivity in PE is in compliance with the school reflexivity? In the views of our results we can assert first of all that the reflexivity in PE follows the logic evoked by Mr Derycke (2005) to know the return about the action following the order: description-analyse-conceptualisation. Indeed, during the exchanges, the students begin by describing their action then try to explain it by making links with their efficiency and finally conceptualize by the construction of teaching contents of education or working axes.

In the same way we were able to notice thanks to the videos that the verbalization was the privileged support of reflexive moments in PE. All the assessments pass by the verbalization, the oral exchange. But, the analysis of the interviews brought interesting nuances. Indeed, both teachers declare to use the verbalization to improve the listening of their students as well as their vocabulary (" They do not listen to, they have big problems of listening ", " they know how to speak to itself only by scolding, the verbalization is important because in their ordinary language the vocabulary misses enormously). So the use of the verbalization does not make debate, however no reference is made for its efficiency in term of awareness of the students, the teacher B declares even: "the verbalization is an indispensable condition so that there is change of behavior later, it is not always the case". His interest would be more connected to the development of the abilities to students' listen and to the enrichment of their vocabulary.

Finally as regards the interest of the reflexivity the point of view of the teachers suits to the definition of the school reflexivity. The teachers declare that they want that the students think because it allows them to make sense of their learnings, to understand better what they make, and finally develop their autonomy.

If it is clear that the reflexivity in PE is in accordance with the school reflexivity, it not on guard not less its specificity which is the recourse to the action. Indeed, we were able to notice that the action was central in the reflexive moments, it is always the start point of the debates. The links are direct during informal reflexive moments (action reflection-action), and more or less direct during formal reflexive moments following the chosen implementation. We also think that this specificity of the recourse to the action allows to make more accessible the reflexive approach as shows it the use of the demonstration or still the beacons proposed by the teacher B.

5. Conclusion.

We were able to identify two various types of reflexivity in PE :

- Informal reflexive moments, which are rather spontaneous actions of the teachers to verify the understanding of the students.
- Formal reflexive moments, prepared, having a structured organization, to allow the students to analyze their actions and to make sense of their learnings. If the practice of these last ones can differ it is with the aim of an adaptation for the students'characteristics.

This reflexivity is in compliance with the characteristics of the school reflexivity. It follows the order "description-analyse-conceptualisation", uses the verbalization and aims at allowing the students to make sense. However it keeps its specificity by the recourse to the action allowing to make the reflexive approach more accessible and more concrete.

This research allows for all that no generalization, the objective was to observe in concrete situation how an reflexive teaching approach could join PE ; which were the forms of reflexivity which we could observe in PE. A perspective could be to identify at the moment the impact of such an approach on the success of the students. What practice turns out to be the most effective to favor the learning and the progress of the students? For what kind of students? Does this type of approach make sense at the students?

References:

Bautier, B. Derycke, M. (2005). *Culture et réflexivité*. Université de Saint Etienne.

Flavell J. H. (1976) « Metacognitive aspects of problem solving », dans B. Resnick éd, *The nature of intelligence*. Hillsdale, NJ, Lawrence Erlbaum Associate

Lahire, B. (ED). (1994). *« Sur l'histoire et la théorie de la forme scolaire », L'éducation prisonnière de la forme scolaire*. Lyon : PUL.

Vermersch, P. (2000). « Conscience directe et conscience réfléchie » in Intellectica n° 31, pp 269-311

Vincent, G. (1980). *L'école primaire française*. Lyon : PUL

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Perceptions of Elementary Obese Students about their Experiences in Physical Education: An Intervention Study

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The purpose of this study was to examine the perceptions of four elementary obese girls about their experiences, before and after an intervention physical education program. The study was based on the theory of learned helplessness, which states that when effort routinely does not produce success, a person can learn to be helpless in a situation (Maier & Seligman, 1976). This learned helplessness can be transferred in other situations, such as in elementary physical education. In this case, if student's effort routinely leads to failure, he could experience learned helplessness and eventually terminate his effort. An initial and a follow up interview took place before and after the intervention, both for students and their parents. The questions of the initial interview focused on students' cumulative experiences in school physical education. The follow up interview was conducted to clarify any issues raised from the initial interview and allow the participants to add additional information. Students' parents were interviewed to give more in-depth to the study and to use the data collected for triangulation purposes. The intervention consisted of 90-minute sessions that were scheduled four times a week. The duration of the intervention was 24 weeks. The goals of the intervention included decrease of body weight, adoption to physical activity routine and healthy nutritional patterns. Data were coded into categories by scanning transcripts, from interviews and field notes, for repetition of concepts, for commonalities, content structures and shifts from content. To establish credibility and trustworthiness of data, beyond peer debriefing, member checking and negative case analysis were conducted. Data from students' interviews were triangulated by comparing responses from individual interviews against responses from the group and by analyzing them in

relation to parents' interviews. Coding and analysis of data demonstrated that learned helplessness characterized all students in this study. Three major themes emerged from the results of this study: a) Physical education class was perceived to be of little benefit, b) Participants felt abandoned, helpless and wanted to disappear from class, and c) Benefits from physical education were identified, after the intervention. School physical education may positively influence students prone to learned helplessness. Creating a positive learning environment where all students, especially obese students, would experience success in physical education, seems to be of great importance. If teachers understand issues related to body image and self-esteem, when working with obese students, it will help them design more beneficial programs for these students, helping them make a turn in their life towards a healthier lifestyle.
Keywords: physical education, intervention, learned helplessness, elementary school

Introduction

The prevalence of overweight and obesity among children seems to be rising rapidly worldwide, reaching epidemic levels, especially in the developed countries. Children who are overweight are twice more likely to be obese when they grow up than children who aren't overweight. This means that in adulthood, they will be at an increased risk of serious health diseases, such as high blood pressure, coronary heart disease, strokes, type 2 diabetes, osteoarthritis, and certain cancers (American Diabetes Association, 2000; Munter, He, Cutler, et al., 2003; Schwimmer, Burwinkle, Varni, 2003; Weiss, Dzuira, & Burgert, 2004). In addition, emotional problems arise when others are teasing, ignoring or avoiding a child about his appearance, affecting his confidence and self-esteem, and leading to isolation and depression (National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP], 2004).Paragraph: use this for

the first paragraph in a section, or to continue after an extract.

There are multiple factors underlying the rapid rise in child overweight including family history, shared eating and activity habits with parents, an increase in sedentary lifestyles (Miller & Dunstan, 2004) and diets comprised of high-calorie foods (Weker, 2006). High-calorie foods such as chocolates, sweets and fast food are cheap and readily available to children. Beyond this, physical activity and exercise are no longer a part of children's daily routine. Instead, many of them spend hours in front of a television, a computer or an electronic device playing games.

Given these diverse contributors to childhood overweight, school physical education (PE) programs can be effective in reducing this incidence. Research on overweight in young children (United States Department of Health and Human Services [USDHHS], 2005), finds that early intervention can be effective in reducing the incidence of childhood overweight and that schools can be influential partners in childhood healthy weight initiatives.

In Eastern Europe, 25% of children are overweight and 25% of children are obese (Children Health Institute, 2008). Physical education in elementary schools is offered twice a week for 40 minutes, however, teachers may find several reasons to skip this class, usually in favor of another class, or they may use the time for free play. In addition, classes are taught by classroom teachers, instead of physical education teachers, and it is questionable if they possess the knowledge and skills for quality physical education programs (Constantinides, Silverman, & Montalvo, 2009).

No study has evaluated the impact of school physical education in reducing childhood overweight in Eastern Europe. In addition, no intervention study has ever been conducted, in an effort to reduce childhood overweight and obesity. Therefore, the present study aims to give light on the perceptions of elementary obese students

concerning their cumulative experiences in physical education, before and after an intervention.

Theoretical Framework

The current study is based on the theory of learned helplessness, which states that when effort routinely does not produce success, a person can learn to be helpless in a situation (Maier & Seligman, 1976). This learned helplessness can be transferred to other situations. In the case of an obese student in elementary physical education, if student's effort routinely leads to failure, he could experience learned helplessness and eventually terminate his effort.

The theory of learned helplessness has been applied in a study with tennis athletes (Prapavessis & Caron, 1988) which found that learned helpless athletes attributed their failure to internal, stable and persistent causes, such as lack of ability. On the other hand, the nonhelpless athletes attributed failure to external and unstable causes, such as difficulty of task. This theory fit well with the purpose of the current study, because students who display characteristics of learned helplessness often attribute their performance outcomes to uncomfortable factors, especially, the lack of ability (Portman, 1995). A previous study (Abramson, Seligman, & Teasdale, 1978) suggested that learned helpless individuals also make causal attributions that are internal, stable or both. This study highlights factors such as excess weight, which may chronically affect overweight students' performance and influence their attributions to success and failure. Berenson et al. (1997) state that even if learned helpless students are in a situation where success could possibly be achieved, their past failed experiences could transfer into their current learning and eliminate their motivation and effort.

Method

Procedure

This study consisted of two phases: The first phase included an initial 90-minute interview, both for the participants and their parents. Students' parents were also interviewed to give more in-depth to the study and to use the data collected for triangulation purposes. In the second phase, a follow up interview, both for the participants and their parents, was conducted to see if there were any changes after a six month period of aerobic and theory physical education classes. The purpose of the study was clearly explained to the participants, their parents and the school principal and details were given about the procedure. Students were free to drop whenever they wanted. The participants were encouraged to bring their suggestions and express their feelings, both for the school physical education program and the intervention program.

Participants

The participants in this study were 4 obese females, 11-12 years of age, in an urban elementary school. Participant selection was conducted based on their BMI, which was higher than the gender and age 85th percentile, based on CDC growth charts. The participants were all students in 6th grade, but not in the same class. Before their participation, their parents signed a consent form.

Data Collection

A 90-minute initial interview was conducted with each one of the participants, with the questions focusing on participants' experiences in physical education, throughout their school years. In addition, questions concerned their perceptions of how they were treated by classmates and teachers and their attributions to success and

failure. Participants were interviewed using the standardized open-ended interview (Patton, 2002). All interviews were tape recorded and transcribed for later analysis. The same procedure was followed for their parents' initial interview.

The follow-up interview, both for the participants and their parents, was used to clarify any issues raised from the first interview and allow them to add additional information. In addition, they were encouraged to express their feelings, concerns, possible fears and perceptions, during and after the intervention. In addition to the initial and follow-up interview, field notes were collected by the investigator, as well as notes from informal discussions with their regular physical education teacher.

Data Analysis

Data were coded into categories by scanning transcripts, from interviews and field notes, for repetition of concepts or ideas, for commonalities, content structures and shifts from content. Coding and analysis of data demonstrated that learned helplessness characterized all students in this study. In addition, perceived failure and success of participants was categorized according to stability, causality point and control point.

Before the coding procedure, a thematic log was created, to keep both the author and his assistant on the same track during peer debriefing. To establish credibility and trustworthiness of data, beyond peer debriefing, member checking and negative case analysis were conducted. Data from students' interviews were triangulated by comparing responses from individual interviews against responses from the group and by analyzing them in relation to parents' interviews.

Although bias can never be completely removed from a qualitative study, the investigator in this study reflected on his biases before data collection to eliminate bias. Generally speaking, the investigator expected to hear stereotype behaviors against overweight students, such as classmate harassment, poor teaching methods by teachers

and a rather negative and unsafe environment. Investigators' bias was reduced by asking a couple of colleagues who deal with qualitative research, to review the interview guide and identify key questions before interviews. In addition, during both interviews, the investigator provided participants with adequate time to express themselves and give comments to the questions. Finally, data were analyzed from opposing perspectives to investigate if different results would emerge, for this study.

Results

Participants had the opportunity to express their feelings for traumatic events, state their opinion about physical education and provide powerful testimonies about their cumulative experiences. Mary, Arleen, Larisa and Cynthia (all names are pseudonyms) have shown extremely low self- esteem. Boredom expressions such as "OK…let's do it…", or "Again here for that…" were not uncommon among these students.

From the participants' initial and follow up interviews, as well as their parents' interviews, three major themes emerged: a) Physical education class was perceived to be of little benefit, b) Participants felt abandoned, helpless and wanted to disappear from class, and c) Benefits from physical education were identified, after the intervention.

Physical education class was perceived to be of little benefit

The first theme to emerge from this study was that all four participants more likely agreed that a physical education class had nothing to offer them. Although they recognized few classes where they had fun, all of them mentioned that school physical education did not help them lose weight, or improve their skills.

> PE didn't make me good in anything. I couldn't do anything in this class. It was useless for me. (Arleen)

PE didn't do anything for me. I gained weight every year. PE was supposed to help me lose weight. It never did! (Mary)

PE didn't teach me anything. You just get a ball and play games. I didn't know how to play all games. Nobody showed me how to play. Sometimes my classmate Cynthia helped me learn some staff. (Larisa)

They say PE is good. It helps you lose weight. It's not true. It never helped me lose a kilo! (Cynthia)

When asked if they would choose any other class if they had a choice, this is how they responded:

PE is different. You don't have to sit down quietly. You can talk to others, you know, you can socialize and the teacher will not say anything. I wouldn't choose any other class. (Arleen)

Well, I'm good in Art. It's a class I enjoy. (Mary)

When asked why she enjoys the Art class, Mary viewed herself as a future famous artist:

You know, in this class you create things. You get a piece of paper and you create a painting. Some of my paintings are used to decorate our classroom. Last year I won the school competition in that. They say I have a talent, you know? When I grow up I will become a famous artist!

So you perceive yourself as a successful student in the Art class.

Oh, yes! Not like in PE.

When the other participants were asked how they perceived themselves in PE class, successful or unsuccessful, this is how they responded:

Unsuccessful! That's for sure! I'm always the last in running, jumping and other activities. Not to mention fitness testing. (Cynthia)

Definitely unsuccessful! I'm the worst student in this class. Not in behavior. In

things you have to do. I can't do anything. (Larisa)

Unsuccessful! It's a nightmare for someone like me. I never won a competition in this class. I'm always last in running. I have never completed a fitness test. I'm telling you, it's a nightmare. (Arleen)

Participants' negative experiences linked with ineffective teaching

According to the participants in this study, they did not value school PE for numerous reasons. Participants stated that PE class was not an actual class, like other classes. "It's like a game or something." All of them had negative experiences to describe in detail. Their descriptions picture ineffective teaching methods and procedures, which in turn leaded to negative feelings and perceptions about PE.

Cynthia described PE class, as a class that boys usually have fun. It was not unusual for girls to stay out of it. To sit on the side and watch, or do other things until the class was over.

When we had running or jumping activities, the teacher would probably tell me "well, you might want to sit down for a few minutes, until we begin a different activity" and then, when a different activity would begin he would say "that one might be too hard for you, so stay on the side and watch how they do it." He never said "let me help you try" or "effort counts." There were activities that I really wanted to participate, but I was never encouraged to do so.

Sometimes we played interesting games and I wanted to get involved with. But the teacher would tell me that this game it's too hard, or it demands a lot of running and I might want to avoid it. Other times I'm waiting in a line for my turn to throw the ball in the basket, but other students skip the line and the teacher doesn't say anything. (Larisa)

Literature clearly states that teachers should avoid never ending lines for a turn to participate in physical education (Constantinides, Silverman, & Montalvo, 2009). These lines do not allow for multiple practice trials. Students need reasonable time for practice and should be allowed for multiple practice trials to learn.

> I think the school should have PE for fat girls like me. You know, things that fat girls can do. What we do in PE works for other students. Not me. There should be a class that a teacher would be patient and help me try all these things. It's frustrating, but that's how it is. (Mary)

> Sometimes I'm willing to participate, even if it's too hard. But the teacher made me believe that the class is physically too demanding and I should avoid such things because I'm fat. When we do running for a long time, I stop because I get tired. The teacher then will tell me to sit down and rest. (Arleen)

What Arleen has described above, contradicts what the USDHHS (2001) recommends. The teacher is expected to encourage all students to participate, to challenge them according to their abilities, to keep them accountable and reward them for their effort. The teacher behavior described from Arleen, inhibits her participation in PE and develops negative feelings.

Participants felt abandoned, helpless and wanted to disappear from class

When the four participants were asked to describe what they disliked in physical education, they mentioned that sometimes it was too embarrassing to practice in front of others. The school physical education environment was not that safe for them, probably because the teacher did not manage to do so. Students understood their weakness in performing several activities, however, that made them feel uncomfortable to practice in front of others. Their weakness seems to be more obvious, than the weakness of any other student in the class. Being slow in running or being lower skilled than others,

makes them want to stay on the side and watch, fake their participation, or practice somewhere alone, so that their weakness and low abilities, will not be noticed by others

Arleen stated that her classmates call her several names when she's the last to complete running. "Come on you fat ass", or "Look at Miss Picky" are usual names that make me don't want to run with them. I understand that not all of us can be good in everything. And definitely I'm not good in physical education.

Creating a safe environment for all students in the class, should be one of the goals of every teacher, who wants to be an effective teacher. Allowing some students to behave like this, causes emotional trauma and leads to isolation for overweight and obese students. The teacher could allow some time from his classes to explain everyone, that overweight and obese students need more effort and more energy to complete the same distance in running. Physical education it's not a matter of competition among students, it is rather an effort to learn skills, to maintain your body weight, to keep yourself active and enjoy all the benefits of a healthy lifestyle.

Did you experience this behavior from most of your classmates?

It's not all of them, but I'm sure others may think the same way. Probably they will never let me know, but I feel there are many others.

Cynthia described an activity during which students had to complete a series of exercises in the less possible time. This activity included rolling, jumping, running and other things. Each student had to complete the whole activity, while the rest of the students were watching.

In my class, most of the students' weight is normal, which means they can do such activities without much trouble. For me, rolling or jumping is hard. And it gets harder when others are watching…if you know what I mean. Sometimes, a couple of classmates encourage me to put as much effort as I can, where others, may say things about me like "it will take forever" or "do we have to wait for her?" And then, when we

play basketball or soccer, I will be the last one to be picked from the captains. I rarely get the ball, and if I do, the boys will start screaming to me to give them the ball. Sometimes I just stand there talking to other girls or looking around.

Sometimes the teacher gives me a choice to decide whether to participate or not. Most of the times I try to avoid it. He doesn't complain and I don't give him trouble. Fair enough. When I have to participate, I fake a lot. I prefer to exercise by myself, or do that at home with my sister and its more fun! Sometimes when I participate I would like someone to let me know what I do wrong. I rarely get such tips. Other kids do! (Larisa)

The worse thing is when we do relay race. I feel nobody wants me in his team because I run slowly. I know that if I participate, my team will lose and I will be the one to blame. So I prefer to stay out of it. The same thing happens when we play games. If I participate, I just stand there. I never get the ball. (Mary)

Benefits from physical education were indentified, after the intervention

The 4 participants perceived many aspects of physical education to be of little or no value for them. However, when they were "challenged" to see things from a different side of view, they discovered benefits from physical education classes that were not visible to them at first. All 4 participants stated that they learned skills, they learned games and sometimes classes were not that bad. Mary stressed the social component when she said that learning games gave her the opportunity to be able to play and socialize with other students in the afternoon. Larisa stated that she didn't like running at all, however, she realized she had to be able to run since she was always late and she had to run to catch up the school bus. Arleen mentioned that she could not bear it, in the beginning, when other students used to call her names. By the time, she managed to tolerate this behavior. "What if they call me Miss Picky? Let them say whatever."

Cynthia, the fourth participant, mentioned that although she was one of the last students to be picked from the captains, when they were making teams, when she was asked to be the referee in several games, she felt important. “Although I didn’t get to play much, I had the responsibility to make quick decisions about the game, using the whistle, giving fouls, giving the beginning and the end of the game, making decisions that student-players had to follow.”

It was interesting to note that for the 4 participants, the above descriptions were perceived as positive experiences in physical education. However, experts in the field classify some of the above experiences, as negative outcomes of the lesson.

The participants in this study described perceptions and beliefs that were associated with characteristics of learned helplessness. Cynthia stated that she would never be good in running, in throwing, in playing games, or anything else. Similar data were collected for the other three participants. All participants showed a consistent pattern of attributing for past failures in past physical education classes.

Discussion

The results from this study suggest that several factors contribute to the profile of obese students’ experiences in physical education, including appropriateness of instruction and visibility to peers. For the time being, little is known about overweight and obese elementary students in Eastern Europe; however, this study was an initial attempt to get a picture of their perceptions concerning elementary physical education.

The first theme that emerged form this study was that participants perceived physical education to be of little or no benefit to them. Given the importance of an active lifestyle for everybody, but mostly for overweight and obese individuals, the four girls unfortunately viewed physical education as a subject with limited value. They all brought up examples of past classes and highlighted negative experiences in physical education, including negative teaching practices, negative learning environments and

unsupportive teachers and classmates. Hassandra, Goudas, & Chroni (2003) similarly with the results of this study, suggested that students who find no value in a class, would not be willing to participate. Probably, teachers who are assigned to teach physical education should find a way to make their classes more "friendly" to these categories of students and provide lessons that will be more valuable to their students.

The second theme that emerged from this study was students' desire to become invisible during the lesson. They highlighted activities in physical education, which made them feel uncomfortable to perform in front of their classmates. In addition, participating in these activities, allowed their peers to view their weaknesses, such as running slowly or having limited skills in a variety of activities. They all admitted that they were looking for excuses to avoid participation in physical education. They purposely forgot their gym clothes a lot of times or they carried notes from parents saying they were sick. Possibly, participating in classes they felt uncomfortable, contributed to the development of learned helplessness. Griffin (1985) reported a similar behavior in physical education, where students were just standing there, without actually participating in any activity. Students were labelled as invisible players, since they were just filling the space.

The fact that the four girls in this study desired to be invisible, could lead to the assumption that participants placed high importance on how they were perceived by their classmates. This is consistent with the literature which suggests that students are concerned about their appearance in physical education (Azzarito & Solmon, 2006).

The last theme that emerged was the fact that after discussing the answers they gave for physical education, and considering their needs, the benefits of being active in their bodies as well as social factors, such as making friends, students realized that they could benefit from a physical education class, in a regular basis. In addition, they discovered that they could benefit themselves if they were physically active, not only in

school, but also in the afternoon. The lack of support from teachers and peers, however, was an issue raised also from these discussions.

Creating a positive learning environment where all students, especially overweight and obese students, experience success in physical education, it is a very important task for teachers. School physical education may positively influence students prone to learned helplessness. If teachers understand issues related to body image and self-esteem, when working with overweight and obese students, it will help them design more beneficial programs for these students, helping them make a turn in their life towards a healthier lifestyle. Teachers' challenge must be to adapt activities that these children would perform successfully, or that would help them recognize their potential strengths. Keeping in mind that obesity is considered to be a disease (Downey, 2001), teachers need to come up with specific programs for these students. Programs that could be performed individually or in groups for learned helplessness children. According to students' suggestions, these programs should be performed in schools, without highlighting students' "inability" because of their body weight. Students recommended, for example, that fitness testing could be performed privately. In addition, teachers can structure tasks that encourage students to focus on their own abilities, instead of structuring tasks that allow students to compare their own abilities, with the abilities of their classmates.

This study made the first attempt to understand learned helplessness children's point of view, concerning their school physical education classes. Follow up research should address this issue, considering overweight students' needs and probably taking a look from a motivational point of view. Future studies may investigate successful strategies for maintaining a healthy weight status, as a result of appropriate physical activity, and ways to enjoy participation without having negative feelings about their physical appearance.

References

Abramson, L., Seligman, M., & Teasdale, J. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*, 49-74.

American Diabetes Association. Type 2 Diabetes in Children and Adolescents. *Pediatrics* March 2000; 105(3):671-680.

Azzarito, L., & Solmon, M. (2006). A post-structural analysis of high school students' gendered and racialized bodily meanings. *Journal of Teaching in Physical Education, 25*, 75-98.

Children Health Institute, (2008). Childhood obesity in Cyprus. Available at: http://85.196.26.26/index.php?cat_id=407&article_id=1327

Constantinides, P., Silverman, S., & Montalvo, R. (2009). Comparison of teaching processes in elementary physical education classes taught by specialists and nonspecialists. Paper presented at the 2009 AERA Annual Meeting in San Diego.

Downey, M. (2001). Obesity as a disease entity. *American Heart Journal, 142*, 1091-1094.

Griffin, P. (1985). Boy's participation styles in a middle school physical education team sports unit. *Journal of Teaching in Physical Education, 4*, 100-110.

Hassandra, M., Goudas, M., & Chroni, S. (2003). Examining factors associated with intrinsic motivation in physical education: *A qualitative approach. Psychology of Sport and Exercise, 4*, 211-223.

Maier, S. F., & Seligman, M.E. (1976). Learned helplessness: Theory and evidence. *Journal of Experimental Psychology. General*, 105, 3-46.

Miller, Y.D., & Dunstan, D.W. (2004). The effectiveness of physical activity interventions for the treatment of overweight and obesity and type 2 diabetes. *Journal of Science and Medicine in Sport, 7*, 52-59.

Munter P., He J., Cutler J.A., (2004). Trends in Blood Pressure Among Children and Adolescents. *Journal of the American Medical Association* 291(17):2107-13.

Mokdad A.H., Marks J.S., & Stroup D.F. (2004). Actual Causes of Death in the United States, 2000. *Journal of the American Medical Association,* 291(10):1238-45.

National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). (2004). *Physical Activity and Good Nutrition: Essential Elements to Prevent Chronic Diseases and Obesity*. Atlanta, GA: Centers for Disease Control and Prevention. http://www.cdc.gov/nccdphp/aag/aag_dnpa.htm. (2004).

Patton, M.Q. (2002). *Qualitative Research and evaluation methods* (3rd edition). Thousand Oaks, CA: Sage.

Portman, P.A. (1995). Who is having fun in physical education classes? Experiences of 6th grade students in elementary middle schools. *Journal of Teaching in physical education, 14*, 445-453.

Schwimmer JB, Burwinkle TM, Varni JW. Health-Related Quality of Life of Severely Obese Children and Adolescents. *Journal of the American Medical Association* April 9, 2003; 289(14):1813-1819.

Styne, D.M. (2005). Obesity in Childhood: what's activity got to do with it? *American Journal of Clinical Nutrition, 81*: 337-338.

United States Department of Health and Human Services (USDHHS). (2001). *The surgeon general's call to action to prevent and decrease overweight and obesity*. Washington, DC: US. Government Printing Office.

United States Department of Health and Human Services (USDHHS). (2005). *Health, United States, 2005*. Hyattsville, MD: Author.

Weiss R., Dzuira J.D., Burgert T.S., (2004). Obesity and the Metabolic Syndrome in

Children and Adolescents. *New England Journal of Medicine* 350(23):2362-74.
Weker, H. (2006). Simple obesity in children. A study on the role of nutritional factors. *Medycyna Wieku Rozwojowego*, 10, 3-191.

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Move it, use it: university-school collaboration for learning to teach physical education in primary schools

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Abstract

Reports of increasing numbers of obese Australian children and adolescents have raised the alarm to be proactive in reducing this so called epidemic. It has evoked a call for greater emphasis on teaching physical education in schools, as a measure for attaining fitness not only with obese students but for all students. This paper emphasises how preservice teachers need to be a key target for implementing physical education (PE) reform in schools, as many primary teachers will be generalists and may not be confident enough to implement PE effectively. Through a review of existing literature, teaching practices essential for the effective promotion and implementation of PE were identified under six broad categories: personal-professional skills development, addressing system requirements, pedagogical practices, managing student behaviour, providing feedback to students, and reflecting on practice. Subsequently, the development of these practices in preservice teachers is considered in the context of a university-school collaboration where preservice teachers taught physical education to primary school students for one day per week over a four week period. These authentic teaching experiences provided the preservice teachers with vital opportunities to put theory into practice and interact with "real-world" students. Self-evaluative data from 38 of these preservice teachers, in the form of a five-part Likert scale survey and extended response survey, demonstrated that they were able to develop the majority of the essential teaching practices identified by literature. In particular, the preservice teachers developed self efficacy, enthusiasm, and motivation for teaching PE, facets which are often found to be lacking in generalist primary teachers and yet are essential if children's perceptions and habits regarding physical activity are to be changed.

Keywords: physical education, fitness, preservice teachers, university-school collaboration

Introduction

Obesity has been declared one of the world's biggest problems by the World Health Organisation (WHO), with approximately 42 million children under the age of five estimated to be overweight world-wide (WHO, 2010). In the US, statistics show that about 17% of children and adolescents (2-19 years of age) were obese between 2007-2008 (Centers for Disease Control and Prevention, 2011). Obesity levels in England rose 5% from 1995-2008 and this rate was higher for boys between 11-15 years of age, which is about 20% of the total cohort (The NHS Information Centre, 2010). However, obesity rates in Australia have some of the most significant increases, with an estimated 1.5 million young people under the age of 18 counted as overweight or obese (National Obesity Taskforce & Australian Department of Health and Aging, 2008). This is approximately one quarter of Australian children and adolescents, and these levels appear similar for both boys and girls. Additionally, lower socioeconomic status students and those from European and Middle-Eastern backgrounds appear to have higher levels of obesity compared with other sections of the Australian population (Australian Institute of Health and Welfare, 2004).

Causes of obesity tend to point towards lifestyles, diet and exercise rather than genetic predispositions. More specifically, the factors attributed to rising obesity include increasingly sedentary lifestyles, increased energy intake, and changes in family structure and dynamics that may adversely affect activity levels and diet (Australian Institute of Health and Welfare, 2004). The health implication of obesity in children may present as raised blood pressure and/or blood cholesterol, both of which are risk factors for heart disease, or raised blood sugar levels associated with Type 2 diabetes. However, of greatest concern is the link between childhood obesity and adulthood health. Overweight children have a 50% chance of being overweight adults and obese adults who were overweight as adolescents have higher levels of weight-related ill-health and a higher risk of early death than those who only became obese in adulthood (National Obesity Taskforce & Australian Department of Health and Aging, 2008). Furthermore, there can also be drastic psychological effects with extended social consequences for those suffering from obesity (Australian Institute of Health and Welfare, 2004; Martínez-López, Zagalaz Sánchez, Ramos-Álvarez, & Torre-Cruz, 2010). Since people who are overweight, including obesity, are responsibility for 5% of global deaths, and physical inactivity is listed as the fourth leading risk factor for human

deaths (WHO, 2010), taskforces have stepped up to provide preventative measures that target youth, schools, and communities.

Increasing physical activity is deemed to be a key for reducing and preventing childhood obesity and overweight conditions. Given the inverse relationship between weight and physical activity (Belcher, Berrigan, Dodd, Emken, Chou, & Spruijt-Metz, 2010), recommendations of a minimum 60 minutes moderate to vigorous daily exercise have been made internationally (e.g., see Fairclough & Stratton, 2006). Within Australia, a National Obesity Taskforce was established in 2003 to address the broader social and environmental issues that contribute to obesity, such as poor lifestyle, inadequate diets, and limited physical activity (Australian Institute of Health and Welfare, 2004). Their recommendations aligned with recommendations in other countries, namely: at least 60 minutes exercise per day that works cardiovascular systems sufficiently; education about healthy lifestyles and diets; and effective use of recreational time and so forth (National Obesity Taskforce & Australian Department of Health and Aging, 2008; WHO, 2010).

Schools are in prime positions to alter the declining physical activity trends amongst children. Schools are crucial environments for promoting physical activity, since 95% of young people attend school (Webster, Monsma & Erwin, 2010) and they spend around 40-45% of their waking hours in school (Fairclough & Stratton, 2006). In particular, "primary schools physical education (PE) can make a unique contribution to the educational experience of students and may support physical, cognitive, emotional and social development" (Morgan & Bourke, 2008, p. 2). Primary schools can help children develop physical activity habits early in life (Chow, McKenzie, & Louie, 2008). Additionally, these schools can offer some flexibility in their programs and can place considerable emphasis on PE (Fairclough & Stratton, 2006). A school-wide approach to PE can present many opportunities for student engagement in these activities, such as recess and before and after-school programs (Webster, Monsma, & Erwin, 2010).

Internationally, PE is delivered in primary schools mainly by generalist primary teachers and in some cases physical education specialists (e.g., see Tsangaridou, 2008; Petrie, 2010). Although specialist primary PE teachers can develop PE programs at higher and more sustained levels (see Chow et al., 2008; Tsangaridou, 2008), primary schools generally lack funding for specialist PE teachers (Petrie, 2010). Consequently, the tasking of physical education promotion needs to be focused on those in their roles

as generalist primary teachers and those just commencing their roles. However, one study (Morgan & Bourke, 2008) found primary teachers to have low confidence, interest and knowledge for teaching PE, which gave rise to ineffective teaching. Similarly, preservice teachers can experience anxieties about teaching PE, mainly as a result of inadequate training (Herold & Waring, 2009). Through their entry at the foundation level of teaching, preservice teachers have the potential to change PE provided they are given adequate training that enables them to develop into confident and motivated teachers of PE (Petrie, 2010).

This study focuses on the development of generalist preservice teachers in their formative stages for becoming teachers of primary PE. Through a review of existing literature, the paper presents pedagogical practices that preservice teachers can use to implement PE. Subsequently, the pedagogical skill attainment of a cohort of first-year preservice teachers involved in learning to teach PE in a university-school collaboration is evaluated and discussed.

Pedagogical practices for effective PE teaching: A theoretical framework for the study

It is reported in various reviews (Bradley, Noonan, Nugent, & Scales, 2008; Nelson, 2002) that preservice teachers learn more effectively when provided with authentic opportunities to teach. Universities can simulate teaching experiences by facilitating preservice teachers' pedagogical practices through peer-teaching episodes (e.g., Hudson & Ginns, 2007). However, authentic teaching experiences must have primary students in order to experience learning development at genuine levels. Furthermore, authentic teaching experiences specific to PE are important because teachers who experience effective PE teaching can develop greater self efficacy in motivating students into PE (Martin, Mccaughtry, Hodges-Kulinna, & Cothran, 2008), whilst inadequate training can be a barrier to effective PE teaching (Morgan & Bourke, 2008). Thus, preservice teachers must have the opportunity to teach PE in authentic settings if they are to become confident and effective practitioners. Having established that authentic learning experiences are vital, it is now necessary to consider which teaching skills preservice teachers need to develop for PE. The literature investigated focuses on six key areas for developing PE teaching practices, namely: personal-professional skill development, addressing the system requirements, pedagogical practices, managing student behaviour, providing feedback to students, and reflection on practice. Each of these areas will be discussed in turn.

Every preservice teacher needs to develop a range of personal-professional skills that assist in the teaching process. PE is generally conducted outdoors, which requires effective communication, usually succinct but explained sufficiently so every student understands the learning arrangements. To be effective in teaching outdoors also requires the preservice teacher to have a positive relationship with the students (Herold & Waring, 2009). Developing a teacher-student rapport necessitates establishing a relationship built on trust, respect, and an overt willingness to be actively involved in learning. Generalist primary teachers teach across many subject areas, which infers that many would not be experts in all subject areas. Indeed, there are primary teachers who may not have positive attitudes for teaching physical education (Petrie, 2010). Preservice teachers are in their formative stages of learning how to teach and they too may not have positive attitudes in all subject areas. Hence, tertiary education need to instil not only the knowledge and skills but also the confidence and positive attitudes for teaching PE in schools. PE is conducted in more open spaces than classrooms; consequently the teacher (or preservice teacher) must exhibit a confidence in delivery and the facilitation of any physical activity within these environments. Developing communication skills, having an understanding of relationship building, and being confident and positive about teaching physical education may be noted as essential professional skills.

Everywhere throughout the world are well established education systems that have set curriculum requirements to ensure consistency in the system. First and foremost in PE, preservice teachers must be astutely aware of providing a safe and supportive learning environment (Martínez-López, Zagalaz Sánchez, Ramos-Álvarez, & Torre-Cruz, 2010). Creating safe environments means ensuring students will not be hurt during an activity, which also means understanding the level of activity and its impact on students. Student needs and abilities will be different, with many needing extra support to engage them and develop their skills. Therefore, teachers need knowledge of the aims of teaching PE activities and knowledge of the curriculum appropriate to age groups and skill levels. The curriculum guides the types of activities that can be generally conducted at a particular level.

Preservice teachers are themselves at various learning stages for teaching. Developing pedagogical practices and a pedagogical repertoire can assist in devising suitable PE lessons appropriate to the student age and ability. First steps include designing a lesson plan that is structured to cater for the system requirements and

students' needs. The structure of a PE lesson can vary but should include at least a warm up activity, a key activity, and cool down activity. Hence, content knowledge is required for each activity that can help to develop confidence in the preservice teacher (Herold & Waring, 2009). The structure of the lesson would also include micro-skills teaching, using explicit knowledge to refine the physical abilities of the students (Herold & Waring, 2009). Many PE activities require equipment and, thus, learning how to prepare equipment efficiently can assist the teacher (or preservice teacher) to secure maximum benefit for the students from the lesson. Students can enjoy hands-on activities but these need to be through appropriate educational challenges that build confidence in the student to participate effectively. Knowing students' levels of ability necessitates assessment and, although strategies for assessment can be varied, PE teachers usually rely on observation of student performances to identify strengths and needs (Goc Karp & Woods, 2008; Hay & Penney, 2009). It should be noted that implementing a planned activity may not meet with the teacher's expectations as there could be unexpected problems. Questioning students on their understandings for an activity may assist in sorting out potential problems. However, teachers need to develop a range of strategies for solving teaching problems, particularly when some students may not participate in the designed activity. There needs to be support and strategies for students who do not participate in fitness, which can include a variation of the main activity to target their needs and level of skill development. Finally, primary PE lessons need to be timetabled to ensure there is sufficient time and that they occur at the right time of the day (i.e., in areas with extreme heat early morning may be better; Chow, McKenzie, & Louie, 2008).

PE has more open parameters than classroom settings for other subjects. Instead of being in confined spaces, students have more freedom to occupy spaces. Consequently, managing student behaviour can present as problems for teachers with little or no PE teaching experience. Indeed, research shows early-career teacher "burn out" can be largely attributed to unfavourable student behaviour (Chang, 2009). Apart from devising well-designed lessons to engage students, a positive emotional climate for learning must be established. Many educators (e.g., Unal & Unal, 2009) and psychologists (Burton, Weston, & Kowalski, 2009) propose ways for establishing effective class management, including setting reasonable expectations with consistency in implementation. Students have different motivation levels for involvement in PE. While no motivational strategies from teachers are required for some students to be

involved in physical activity, motivational strategies are required for those students who are not intrinsically motivated for fitness, and this can include students who are overweight. Motivating the obese student will present difficulties for teachers and so lesson structures need to be flexible to cater for such students.

Providing feedback to students can assist in their PE development, particularly when feedback is immediate (Herold & Waring, 2009). In order to provide feedback, the preservice teacher must develop skills for monitor students' activities. Providing oral feedback to students (e.g., positive and constructive) is desirable during their involvement in activities. This feedback generally includes refining the skill development. Providing written information about the student's development will be necessary to meet the aims and long terms goals of an education system and can assist in the reporting back to parents. Thus, preservice teachers will need to develop methods for observing and documenting students' PE progress which can be used in the absence of more permanent and readily accessible evidence sources such as students' written work.

Evaluate pedagogical practices is considered the cornerstone of advancing teaching and learning. Dewey (1933) and, fifty years later, Schön (1983) highlight reflective practices as pivotal to professional growth and as an avenue for implementing new, improved practices. Ward and McCotter (2004) explain that "Seeking other viewpoints, or multiple perspectives, to gain insight on problems is another common element of reflective practice" (p. 245). The methods used to reflect on practice can be varied, for example, Davis states:

> Reflection can be promoted in many ways, including action research, teacher inquiry, dialogue, and reflective writing (Ross, 1990) as well as using on-line discussion spaces (Harrington & Hathaway, 1994), cases (Barnett, 1998; Lundeberg, Levin, & Harrington, 1999; Shulman, 1992), or other methods. (2006, p. 284)

Evaluating teaching and developing reflective practices are considered as skills that requires knowledge about evaluation and reflection methods through real-world experiences (van Halen-Faber, 1997). "Underlying the use of these reflectivity-inducing approaches is the recognition that extensive experience with real-life students in the natural classroom is the critical element in facilitating preservice teachers' reflectivity on teaching" (Amobi & Irwin, 2009, p. 27). Thus, in order to develop truly reflective practice, preservice must participate in authentic PE teaching experiences.

In summary, it is clear from the literature that primary teachers have a vital role to play in promoting physical education in schools and changing the physical activity perceptions and habits of children. It is also clear that effective tertiary education is necessary if generalist primary teachers are to have the self efficacy to teach PE and motive students. Providing preservice teachers with comprehensive training and authentic teaching experiences is vital if they are to develop the skills described in the theoretical framework section to become confident PE teachers. In order to consider how these skills are best developed we followed a cohort of first-year preservice teachers involved in learning to teach PE in a university-school collaboration. Preservice teachers' perceptions of their development at the end of the PE program were analysed to evaluate the effectiveness of the authentic learning experience. In the following sections we detail the university-school collaboration and data collection, before presenting the results and discussing the implications for training generalist primary preservice teachers in PE.

Context

As a result of the university-school collaborations that developed between a satellite campus of a large university in Queensland and its surrounding schools, the Faculty of Education was awarded an Australian federal government grant to initiate the project, Teacher Education Done Differently (TEDD). One of the aims of the TEDD project was to create real-world learning opportunities for preservice teachers by integrating school-based experiences into the existing Bachelor of Education (primary) degree offered at the campus. The notion of "benefits for all" underpinned the TEDD project activities, meaning that any school-based experience needed to demonstrate benefits for school students as well as the participating preservice teachers. Borthwick, Stirling, Nauman and Cook (2003) point out that school-university collaborations tend to be more sustained when there are mutual benefits, clear goals and a vision that promotes reform.

This study focuses upon the school-based experiences integrated into the first-year, second semester unit "Teaching Primary Health and Physical Education *(*HPE)". The unit focused upon preservice teachers developing knowledge in: the Queensland HPE curriculum; cross curricula perspectives; creating suitable lessons to cater to the diverse needs of students; the development of competencies to deliver HPE lessons and; critical and reflective practice to support preservice teachers' on-going improvement.

The school-based experiences entitled "Move it, use it" involved preservice teachers modifying a previously planned (as part of the curriculum unit assessment process) practical PE lesson for delivery to students in a grade from preparatory through to Year 7 at a designated primary school. Each lesson was conducted over a 40-minute period, with preservice teachers delivering the lessons in pairs. Whilst one preservice led the activity, the other was designated as a "buddy" who assisted in the collection of students and organisation of equipment, and who acted as a "critical friend" in terms of the reflective process. After the lesson delivery, the roles of the preservice teachers changed so that each had an opportunity to lead the activity while the other acted as a "buddy". Each preservice teacher repeated their lesson to two small groups of students (ten students in each group). This provided an opportunity for preservice teachers to refine and alter their practice in the repeat lesson. Hence, in the facilitation of the experience, preservice teachers used an approach of planning, implementing, revising and reflecting. The practical activities designed by the preservice teachers were varied, ranging from movement activities, court games, invasion games, and more formal modified sport experiences. The school-based experiences were implemented over three weeks and after each lesson preservice teachers participated in a de-brief session with their peers and tutor to discuss the suitability of the lesson, the success of the delivery and how the teaching episode may be altered in the future. The research question was: What are preservice teachers' perceptions of their developing for learning how to teach physical education?

Data collection and analysis

In order to ascertain the effectiveness of the "Move it, use it" experience to facilitate the development of essential teaching practices, self-evaluated data were collected from 38 of the participating preservice teachers upon completion of the program. Males and females comprised 18% and 82%, respectively, of the participants. The ages of the participants varied (i.e., 74% were <22yrs, 5% were 22-29yrs, 18% were 30-49yrs, and 3% were unspecified).

Quantitative and qualitative data were collected from the participants in the form of an evaluation survey and extended response questionnaire. The evaluation survey was based on a five-part Likert scale, with 27 statements linked to the aforementioned theoretical framework to determine whether the participants perceived the school-based experience developed their teaching knowledge and skills. For example, the first

statement read: “During my school-based experience in this unit, I felt I developed my understanding of creating a safe and supportive learning environment”. Each statement detailed knowledge or skills that preservice teachers were required to develop to become proficient teachers, in line with the six broad categories and supporting research presented in the literature review. The statements were randomly ordered to ensure that each was considered independently (Hittleman & Simon, 2006). The extended response questionnaire comprised nine questions, offering the preservice teachers opportunities to reflect on their highest achievements, the skills they developed, areas for self improvement and the involvement of the primary students in the “Move it, use it” experience. The questions also gave participants the chance to comment on how the program could be improved. The surveys and questionnaires were completed anonymously in order to provide participants with greater confidence to disclose their thoughts.

In order to analyse the responses of the evaluation survey, descriptive statistics were generated using SPSS. The possible responses on the five-part Likert scale were given numeric values to enable this (i.e., Strongly Disagree=1, Disagree=2, Uncertain=3, Agree=4, Strongly Agree=5). The percentage of Agree and Strongly Agree responses, together with the mean (*M*) and standard deviation (*SD*), were calculated for each statement. Whilst the Likert scale used in this study is solely ordinal, the mean and standard deviation provide useful insight into the distribution of participants’ responses (Klein, 2005). Tables 1-6 show the statements grouped according to the six broad categories and then ranked by the percentage of Agree and Strongly Agree responses to aid comparison.

The responses from the questionnaire and researcher observations of teaching practices and students’ learning in the “Teaching Primary Health and Physical Education *(*HPE)” unit were used to gain a deeper understanding of the results from the evaluation survey. These responses were collated into common themes and specific examples were used to provide further insight into the preservice teachers’ development.

Results and discussion

Many of the extended responses from the preservice teachers indicated that they believed the “Move it, use it” program was of value to them. Such comments included “it was a good experience that boosted my confidence and I had a lot of fun” and being able “to put theory into practice”. For one respondent the nexus between the school-

based experiences and their choice of university course was highlighted by the comment "fantastic program, thanks for teaching opportunities, reaffirmed my [career] choices". However, this real-world experience provided an opportunity for those to consider whether teaching was a career choice for them. For instance, there was one participant only who decided to leave the course, as this preservice teacher did not want to "teach brats HPE" and this "made me decide to not be a teacher". This was their first experience as preservice teachers in schools, consequently, career choices appeared more apt after real-life exploration of teaching in a primary school.

Despite the abundance of positive comments about the program and the enjoyment in participation experienced by the preservice teachers, it is important to evaluate the program against its main aims. Specifically, an evaluation to determine which of the essential teaching skills, described in the literature review, the "Move it, use it" program enabled the preservice teachers to develop and where it fell short. As such, the survey results and supporting evidence from the extended response questionnaires will now be considered for each of the six broad teaching skill categories in turn.

1. *Personal-professional skill development*

As shown in Table 1, 97% of the preservice teachers agreed that the "Move it, use it" experience enabled them to develop skills for communicating with students. Furthermore, communication skills were singled out by eight preservice teachers as one of the specific skills they developed in this program. While only three preservice teachers explicitly stated that they developed confidence as a result of the experience, the indication of confidence manifested in varied responses. For example, there were preservice teachers who said that their highest achievements were "teaching a class", "actually completing a lesson", "successfully teaching a PE lesson" and "successfully completing the lesson", which suggested the development of confidence and self efficacy for teaching PE. This is further embodied by the preservice teacher who stated their highest achievement as "Being able to teach a lesson that had bumps and I still finished the lesson and the children had fun".

Table 1: Personal-professional skill development

Item number and descriptor	%*	*M*	*SD*
14. Communication with students	97	4.39	0.55
22. Confidence as a teacher	95	4.42	0.60
8. Positive attitudes for teaching	92	4.39	0.64
6. Rapport with students	87	4.24	0.68

* Percentage as the sum of agreed and strongly agreed responses.

Interestingly, one preservice explicitly stated that they developed enthusiasm, while 92% agreed they developed positive attitudes for teaching PE. Positive attitudes and enthusiasm in primary students can more readily occur when their teachers are enthusiastic. At this formative stage of development, 87% of preservice teachers agreed that they developed skills for building rapport with students. Several preservice teachers wrote about "connecting with the students" and "achieving the kids' respect" as their highest achievements during the program, and another preservice teacher reported that "how to build a rapport with students" was a developed skill. Additionally, the preservice teachers' comments relating to the primary students' positive responses to the PE lessons showed that the preservice teachers were in fact successful in building rapport with students. For instance, preservice teachers reported "smiles, involvement, laughing, enthusiasm to do more" and "they said thanks and said they enjoyed it and no one got upset". Overall, these participants perceived successful attainment of personal-professional skill development (87-97%, Table 1).

2. *System requirements*

Whilst few of the preservice teachers' statements of highest achievements or specific skills developed related to the system requirement practices shown in Table 2, it was noticeable that one preservice teacher mentioned that by attending to one of these practices improved teaching experience. That is, in order to satisfy the necessity of a safe learning environment, the preservice teacher stated that they should "adjust the lesson to suit the right age group" to improve the teaching. Nearly all preservice teachers (95%, Table 2) indicated they developed knowledge of the aims for teaching PE.

Table 2: System requirements

Item number and descriptor	%	*M*	*SD*
1. Safe and supportive learning environment	97	4.42	0.55
21. Aims for teaching	95	4.39	0.60
9. Knowledge of syllabus	74	4.00	0.74

The preservice teachers' responses demonstrated that they understood the aims of teaching PE (e.g., "active participation in HPE", "fun exercise", "developed sporting skills", "improve their team work skills"). Extended responses about their responsibility in the "Move it, use it" experience suggested they were focused on the PE syllabus and aims for teaching PE, for instance, teaching: "students how to play touch", and "a lesson on netball passes in HPE", "kids fun HPE games". They realised the importance of ensuring within the safe and supportive learning environment that PE would motivate students to provide "a fun HPE experience" and "an engaging HPE experience"; yet

understood their responsibility within the system requirements was "to emphasise the importance of HPE".

The system requirements category recorded the largest range in preservice teacher agreement (74%-97%), with 26% of respondents unable to agree that their knowledge of syllabus requirements was assisted by this teaching experience. Whilst the planned learning experience was framed around the Queensland Studies Authority's (QSA) Health and Physical Education Essential Learnings, a significant number of preservice teachers claimed that teaching the primary children failed to assist them in developing an understanding of the syllabus document itself. One reason for such a response could be that the term "syllabus" was not used during the unit "Teaching Primary Health and Physical Education (HPE)", with the current "HPE Essential Learnings" replacing the defunct Years 1-10 HPE syllabus document. As such, when asked how the "Move it, use it" experience contributed to their knowledge of syllabus documents, some preservice teachers may have been unable to synthesise the question.

3. Pedagogical practices

For many of the preservice teachers, creating a lesson plan and then having the opportunity to teach it was a highlight. For example, amongst the preservice teachers' highest achievements were "creating a lesson plan and then implementing into a real class" and "learning how to plan lessons accurately and appropriately". Table 3 shows that 95% of the preservice teachers agreed that they felt the "Move it, use it" experience enabled them to develop implementation skills, with two preservice teachers stating they developed skills in "time management" and could better "adhere to time restrictions". In line with the high percentage of the preservice teachers agreeing that they felt they developed planning skills, five preservice teachers explicitly stated they had developed this skill in their extended responses.

Table 3 Pedagogical practices

Item number and descriptor	%	*M*	*SD*
3. Lesson preparation	95	4.47	0.60
7. Implementation of lesson	95	4.29	0.57
16. Hands-on lessons for learning	95	4.29	0.57
4. Appropriate educational challenges	95	4.21	0.53
24. Lesson plans for teaching	92	4.34	0.63
23. Strategies for solving teaching problems	92	4.26	0.60
2. Educational syllabus language	92	4.24	0.59
15. Questioning skills for effective teaching	92	4.18	0.56
12. Lesson structure	90	4.32	0.66
26. Strategies for assessing students' learning	90	4.13	0.58
18. Content knowledge required	84	4.11	0.65

Indeed, 92% of the preservice teachers agreed they had developed questioning skills and several preservice teachers' responses to the question "what specific evidence could you present to indicate that students learnt during this program?" demonstrated that they used questioning during their lesson for formative assessment. Examples of responses include "they were answering the questions asked of them" and "the answering of task related questions". With regard to lesson structure, one preservice teacher responded, "I learnt how to construct lessons" and another stated: "This microteaching unit is extremely helpful for students seeking some clarification and real practical application of knowledge". Most preservice teachers (90%) agreed they had developed strategies for assessing students' learning and this was further evident through observation and questioning students. Specific observations of student skill development in PE included "observation of how catching and passing improved throughout games", "kids doing different softball passes", "correct soccer dribbling" and using a "catch and throw checklist then compare". Three preservice teachers explicitly indicated development of content knowledge and the flexibility in adapting this knowledge to student needs, for instance, "being able to modify games".

These were no extended responses referring to lesson preparation, hands-on lessons, appropriate education challenges or strategies for solving teaching problems, but at least 92% of the preservice teachers agreed they had developed these pedagogical practices during the "Move it, use it" program (Table 3). Written responses indicated areas where these preservice teachers believed they could improve upon their pedagogical practices, particularly during the implementation phase with better preparation and planning. Examples of pedagogical improvements included: "better strategies for kids who get out", "practise a good way to explain the activities so I'm not on the spot", and "have a backup plan for lesson, i.e. rain, heat, extra students". Several of the preservice teachers indicated that they would wish to make improvements to the lesson structure, such as "started lesson with better intro", "more activities plans" and "diversify skills used".

4. Student behaviour

Most of these preservice teachers perceived they had developed practices for providing a positive emotional climate and motivating students through the "Move it, use it" experience (Table 4). Unsurprisingly, classroom management skills and in particular behaviour management were at the forefront of the preservice teachers' evaluations of

their own teaching. Ten preservice teachers commented they had developed behaviour management skills (87%), but an equal number claimed behaviour management was an area for improvement.

Quantitative data about the preservice teachers' perceived practices on student behaviour were supported by their extended written responses. To illustrate, three preservice teachers commented that their highest achievements were "helping students feel included", "not leaving anyone out" and "seeing the students happy and engaged". Furthermore, several preservice teachers stated they had developed skills in understanding and patience, both of which fostered a positive emotional climate. The mention of motivating and engaging "a student with hearing difficulties" and "a student with attention difficulties" demonstrated these preservice teachers' were developing skills in inclusivity and, again, highlighted skills for providing positive emotional climates for differentiated learning. Seven of the preservice teachers' highest achievements concerned motivating students (i.e., "getting the kids to participate", "getting all kids involved", "getting the kids excited about PE"), and a further four explicitly stated they had developed skills for motivating students.

Item number and descriptor	%	*M*	*SD*
19. Positive emotional climate in the classroom	97	4.37	0.54
5. Motivate students	95	4.42	0.60
10. Effective classroom management	87	4.24	0.68

Table 4 Student behaviour

5. Feedback to students

A shown in Table 5, 90% of the preservice teachers agreed they had developed skills for monitoring students' activities, including providing feedback to the students. However, there was no supporting evidence that these preservice teachers provided feedback to students in the responses to the extended questionnaire. The "Move it, use it" program was the first teaching experience for these first-year preservice teachers and the lack of evidence regarding feedback demonstrated the preservice teachers' preoccupation with pedagogical practices and student behaviour at this early stage in their teaching development. It would be more likely for preservice teachers to provide oral feedback than written feedback in an outdoor, hands-on subject such as PE (87% oral, 76% written, Table 5). Due to unseasonal inclement teaching conditions, the "Move it, use it"

program had to be delayed for three weeks, meaning students were unable to provide written feedback due to the end of semester university requirements.

Table 5 Feedback to students

Item number and descriptor	%	*M*	*SD*
27. Monitor students' activities with feedback	90	4.00	0.84
13. Provide oral feedback to students	87	4.13	0.62
17. Provide written feedback to students	76	3.95	0.66

6. Reflection on practice

Finally, 97% of the preservice teachers perceived they had developed reflective practices with 90% indicating skills in evaluating teaching practices (Table 6). Evidence of evaluation and reflection on their teaching was heavily evident in the majority of the preservice teachers' extended written responses. To respond to the question, "how could you improve upon your teaching of this program?", preservice teachers had to reflect on their teaching by evaluating the experience in relation to the desired outcomes and, subsequently, consider alternative approaches to determine how to improve their practice. There was also an indication of reflecting-in-practice (see Schön, 1983), where one preservice teacher wanted to "reflect while I am teaching to keep in mind my purpose of my lesson".

Table 6 Reflection on practice

Item number and descriptor	%	*M*	*SD*
20. Reflective practices for improving teaching	97	4.32	0.53
25. New viewpoints	92	4.34	0.63
11. Evaluate teaching practices	90	4.13	0.58

Most preservice teachers perceived they had developed new viewpoints for teaching through the "Move it, use it" program (92%, Table 6). For instance, one preservice teacher claimed better "understandings of the way children learn and behave". Others realised "teaching can be difficult if you're not prepared" and valued the program because "it gives them perspective of what it is like to be a teacher". Additionally, primary students also provided new viewpoints in the way they responded to this program, as the preservice teachers were required to consider the PE lesson from the students' perspectives. Several preservice teachers asked for and received feedback directly from the students they taught, either in oral or written format, others observed the students' PE engagement, enthusiasm and emotions as evidence.

Together the survey results and extended questionnaire responses demonstrate that, on the whole, the authentic learning experience provided by the "Move it, use it" program enabled the preservice teachers to develop teaching skills in the six identified areas (i.e., personal-professional, system requirements, teaching practices, student behaviour, feedback to students, and reflection on practice). Many preservice teachers explicitly stated the value of the program, with comment such as "it was great to have a practical opportunity in the first year" and "I enjoyed it, it was a shock but a good one to have". Suggestions for improvements to the program included multiple teaching opportunities, reflection time between teaching episodes, better knowledge of the primary students, and longer time with one class.

Conclusion

This study set out to understand preservice teachers' perceptions of their developing for learning how to teach physical education through a school-based teaching program. Evaluation data collected from the participants confirmed the high value they placed on real-world learning experiences. For several preservice teachers, their highest achievement was "working with kids in a school setting" and "interacting with real students". More general comments stated that the program "gives good real-life teaching" and "allowed us an opportunity to work one-on-one with students". For some preservice teachers their first opportunity to teach students as a preservice teacher reaffirmed their career choices and for one it brought to light the need to make a career change. The survey results and extended questionnaire responses demonstrated that through planning, implementing, and reflecting on their PE lessons implemented in a real-world setting enabled these preservice teachers to develop PE teaching skills that motivate primary students. The results demonstrated that such an opportunity appeared to enhance their curriculum knowledge, organisational and behavioural management techniques, and advance pedagogical knowledge, assessment and reflectivity.

The six broad categories or constructs (i.e., personal-professional skills development, addressing system requirements, pedagogical practices, managing student behaviour, providing feedback to students, and reflecting on practice) also presented a way to gather data on the preservice teachers' development. Written responses also showed areas that required further university-school collaboration. The "Move it, use it" program benefitted all stakeholders with preservice teachers gaining opportunities to teach PE and reflect upon their experiences while the primary school students were provided with lessons that promoted physical activity delivered by enthusiastic

facilitators. The implementation of authentic school-based experiences into educational coursework serves to heighten first-year preservice teachers' development in lesson planning, implementation and reflection and allows preservice teacher educators to facilitate experiences and authentic connections in school settings.

This study has shown that preservice teachers may develop self efficacy and motivation for teaching PE when provided with adequate scaffolding. Indeed, tackling the obesity epidemic will require confident and well-educated PE teachers to educate primary students at their vulnerable stages for adopting healthy lifestyles. Preservice teachers need to be confident to effectively and appropriately promote physical activity, with the potential to change perceptions and develop life-long exercise habits in children. Thus, strong university-school partnerships are required as an efficient and cost-effective way to commence reversing obesity trends and infuse system reform through preservice teacher development. Preservice teachers are in their formative stages of becoming practitioners, and tertiary programs that can influence the uptake of teaching PE effectively may have a significant influence on decreasing this epidemic.

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References

Amobi, F. A., & Irwin, L. (2009). Implementing on-campus microteaching to elicit preservice teachers' reflection on teaching actions: Fresh perspective on an established practice. *Journal of the Scholarship of Teaching and Learning, 9*(1), 27-34.

Australian Institute of Health and Welfare (2004). *Risk factor monitoring: A rising epidemic: obesity in Australian children and adolescents*. Retrieved 6 March, 2011, from

http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442471181&libID=6442471162

Belcher, B. R., Berrigan, D., Dodd, K. W., Emken, B. A., Chou, C-P., & Spruijt-Metz, D. (2010) Physical activity in US youth: Effect of race/ethnicity, age, gender, and weight status. *Medicine & Science in Sports & Exercise*, *42*(12), 2211-2221.

Bradley, D., Noonan, P., Nugent, H., & Scales, B. (2008). *Review of Australian higher education: Final report.* Canberra: Australian Government.

Borthwick, B. C., Stirling, T., Nauman, A. D. & Cook, D. L. (2003). Achieving successful school-university collaboration. *Urban Education*, *38*(3), 330-371.

Burton, L., Weston, D., & Kowalski, R. (2009). *Psychology*. (2nd Ed.). Milton, QLD: Wiley & Sons.

Centers for Disease Control and Prevention (2011). *Childhood overweight and obesity*. Retrieved 18 March, 2011, from http://www.cdc.gov/obesity/childhood/index.html

Chang, M.-L. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of teachers. *Educational Psychology Review, 21*(3), 193-218.

Chow, B. C., McKenzie, T. L., & Louie, L. (2008) Children's physical activity and environmental influences during elementary school physical education. *Journal of Teaching in Physical Education*, *27*(1), 38-50.

Davis, E. A. (2006). Characterizing productive reflection among preservice elementary teachers: Seeing what matters. *Teaching and Teacher Education*, *22*, 281-301.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process.* Boston, MA: Heath.

Fairclough, S. J., & Stratton, G. (2006). A review of physical activity levels during elementary school physical education. *Journal of Teaching in Physical Education*, *25*(2), 239-257.

Goc Karp, G., & Woods, M. L. (2008). Preservice teachers' perceptions about assessment and its implementation. *Journal of Teaching in Physical Education*, *27*(3), 327-346.

Hay, P., & Penney, D. (2009). Proposing conditions for assessment efficacy in physical education. *European Physical Education Review*, *15*(3), 389-405.

Herold, F., & Waring, M. (2009). Pre-service physical education teachers' perceptions of subject knowledge: Augmenting learning to teach. *European Physical Education Review*, *15*(3), 337-364.

Hittleman, D. R., & Simon, A. J. (2006). *Interpreting educational research: An introduction for consumers of research.* Upper Saddle River, NJ: Prentice-Hall.

Hudson, P., & Ginns, I. (2007). Developing an instrument to examine preservice teachers' pedagogical development. *Journal of Science Teacher Education*, *18,* 885-899.

Kline, T. J. B. (2005). *Psychological testing: A practical approach to design and evaluation*. Thousand Oaks, CA: Sage Publications.

Martin, J. J., Mccaughtry, N., Hodges-Kulinna, P., & Cothran, D. (2008). The influences of professional development on teachers' self-efficacy toward educational change. *Physical Education & Sport Pedagogy*, *13*(2), 171-190.

Martínez-López, E., Zagalaz Sánchez, M., Ramos-Álvarez, M., & Torre-Cruz, M. (2010). Self-efficacy expectations in teacher trainees and the perceived role of schools and their physical education department in the educational treatment of overweight students. *European Physical Education Review*, *16*(3), 251-266.

Morgan, P., & Bourke, S. (2008). Non-specialist teachers' confidence to teach PE: the nature and influence of personal school experiences in PE. *Physical Education and Sport Pedagogy, 13*(1), 1–29.

National Obesity Taskforce (Australia), & Australian Department of Health and Ageing (2008). *Healthy weight 2008: Australia's future: The national agenda for children and young people and their families.* Canberra: National Obesity Taskforce Secretariat, Dept. of Health and Ageing.

Nelson, B. (2002). *Quality teaching a national priority*. Australian Government Media Centre. Retrieved 22 January, 2010, from www.dest.gov.au/ministers/nelson/apr02/n42_040402.htm

Petrie, K. (2010). Creating confident, motivated teachers of physical education in primary schools. *European Physical Education Review*, *16*(1), 47-64.

Schön, D. A. (1983). *Reflective practitioner: How professionals think in action.* New York: Basic Books.

The NHS Information Centre (2010). *Statistics on obesity, physical activity and diet: England, 2010.* Retrieved 17 March, 2011, from http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/obesity/statistics-on-obesity-physical-activity-and-diet-england-2010

Tsangaridou, N. (2008). Trainee primary teachers' beliefs and practices about physical education during student teaching. *Physical Education & Sport Pedagogy*, *13*(2), 131-152.

Unal, Z., & Unal, A. (2009). Comparing beginning and experienced teachers' perceptions of classroom management beliefs and practices in elementary schools in Turkey. *The Educational Forum*, *73*(3), 256-270.

van Halen-Faber, C. (1997). Encouraging critical reflection in preservice teacher education: a narrative of a personal learning journey. *New Directions for Adult and Continuing Education*, *74*, 51-60.

Ward, J. R., & McCotter, S. S. (2004). Reflection as a visible outcome for preservice teachers. *Teaching and Teacher Education*, *20*, 243-257.

Webster, C., Monsma, E., & Erwin, H. (2010). The role of biographical characteristics in preservice classroom teachers' school physical activity promotion attitudes. *Journal of Teaching in Physical Education*, *29*(4), 358-377.

World Health Organisation (2003). *Global Strategy on Diet, Physical Activity and Health*. Geneva, Switzerland: WHO Press.

World Health Organisation (2010). *Global recommendations on physical activity for health*. Geneva, Switzerland: WHO Press.

World Health Organisation (2011). *Childhood overweight and obesity*. Retrieved 18 March, 2011, from http://www.who.int/dietphysicalactivity/childhood/en/

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EXPERT PERSPECTIVES ON THE CURRENT STATE OF PETE IN IRELAND AND FINLAND

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Introduction

The quality of teaching is the single biggest in-school influence on student learning, which in turn shapes the future of societies. (OECD, 2011) One of the priorities for EU Member States is to improve teacher quality and teacher education. Teacher education programmes, which are key factors in preparing teachers to carry out their responsibilities and in ensuring teachers' continuing professional development, need to be of high quality, relevant to needs and based on a well-balanced combination of solid academic research and extensive practical experience. It is essential that initial teacher education, early career support and continuous professional development are treated as a coherent whole. (European Council 2009/C 302/04) The aim of this exploratory international research project was to determine the perspectives of physical education teacher education (PETE) experts in Ireland and Finland on the current priorities in PETE in these countries, the challenges faced in attempting to address these priorities and the actions being taken to maximize opportunities and meet demands.

PETE in Ireland and Finland at a glance

Entry to teacher education in both Ireland and Finland is highly competitive, attracting well-qualified candidates. Teacher education, both pre-service and in-service, is well regarded in both countries. Table 1 shows physical education teacher education at a glance in both countries.

Table 1 PETE in Ireland and Finland at a glance

	Ireland	**Finland**
Basic Degree - Primary Teacher Education	3-year BEd*	5-year MEd
Number of Educating Institutions - Primary	5	8
Basic Degree - Secondary PE Teacher Education	4-year BEd/BSc*	5-year MEd
Number of Educating Institutions - Secondary	3	1
PE Contact Hours - Primary Teacher Education	36-48 hours**	28-80 hours**
Teaching Practice - Primary Teacher Education	13-16 weeks**	30-40 weeks**
Teaching Practice - Secondary PE Teacher Education	16-40 weeks**	40 weeks

* There are also a range of optional elective and post-graduate courses allowing pre- and in-service teachers to gain more specialised knowledge and qualifications in physical education at both primary and secondary level.
**Exact number depends on which institution students attend

Methodology

The research follows a qualitative research design involving semi-structured interviews with a total of eight experts in the field of PETE. The content of the interviews included an exploration of the current priorities in the field of PETE in Ireland/Finland, how these priorities are being addressed, the knowledge and skills that should be passed on to teachers to meet current demands, the challenges and opportunities facing PETE in attempting to address the priorities mentioned and suggestions for improvements to PETE in the two countries. Once complete, the interviews were transcribed and thematically analysed. The emerging themes were then categorised into priorities, challenges and current actions.

The Experts
Four experts were interviewed in each country as follows:

- One expert in the area of primary PETE
- One expert in the area of secondary PETE
- One expert with responsibility for co-ordinating teaching practice
- One expert with experience in the educational authority of the country in question

The eight experts shared a total of 155 years professional experience in the field of physical education, averaging almost 20 years each. This included experience teaching

physical education in primary and secondary schools and educating and supporting pre- and in-service teachers in the field of physical education.

Findings

Priorities and Challenges

There were some not unexpected priorities mentioned in both countries, such as ensuring adequate content knowledge and pedagogical skills of students. Some of the shared challenges were also commonly found, such as insufficient time for the teaching of PE and lack of resources/facilities. However, it was interesting to see how widespread some other themes were:

- Among the Irish experts, all mentioned the need to broaden the content of PE curricula to ensure it is capturing the student voice and is related to the interests of students and children. This was also echoed by some of the Finnish experts.

'I hate it when I go out to schools and I see physical education being taught in exactly the same way it was when I was at school because kids aren't the same.'

- Secondary Expert, Ireland

- Among the Finnish experts, the need to promote positive attitudes towards physical activity and physical education and promote lifelong physical activity habits was mentioned by all. This was also echoed by most of the Irish experts.

'Priorities deal with values, it is important to give students positive attitudes towards physical education and physical activity in order to foster positive lifelong physical activity habits.'

- Primary Expert, Finland

- A challenge noted in both countries was the time it takes for ideas to be turned into actions and be embedded in PETE programmes/school curricula.

'It really takes four or five years for [ideas] to be established and go through the processes and get approved so I do think that people genuinely are moving forward with PE and seeing that we need to change it but it just takes time.'

- Teaching Practice Expert, Ireland

- The answers of the two primary experts were strikingly similar. Both mentioned the lower status of PE relative to other subjects, the lack of time devoted to the teaching of PE, and both have been making the same efforts to link in with other academic subjects in order to ensure PE is gaining the maximal amount of curriculum time. Also, both emphasised the need to be aware of students' backgrounds and attitudes and ensure they do not pass on negative attitudes to children.

'We have so few obligatory lessons with students so we do not have a lot of time for skills but we can try to give positive experiences and thereby foster positive attitudes. This way when teachers go to schools they will not pass on negative attitudes.'

- Primary Expert, Finland

Current Actions

The current actions mentioned by the experts as being undertaken by PETE in Ireland and Finland in order to address current priorities are listed in Table 2.

Table 2 Summary of current actions being undertaken by PETE professionals in Ireland/Finland

Current Actions	Ireland	Finland
Increased co-operation between PETE and agencies with shared aims	√	√
Increased co-operation between PETE, schools and communities	√	√
Innovative PETE teaching assignments, e.g. community mapping	√	√
Making links with other subjects at primary level	√	√
Fitness/physical activity initiatives in schools e.g. Active School Flag	√	√
National Evaluation of PE Learning Outcomes		√
Training for instructors teaching PE in schools without		√

certification		
Combining PE and Health Education in same profession		√
Integrated teaching practice across five years of PETE		√
National in-service programme		√
New developments and collaboration in research (PEPAYS)	√	
Strengthened CPD support structures and services	√	
Introduction of four-year BEd at primary level	√	
Development of new Senior Cycle Syllabus for Secondary PE	√	
Work on induction for newly qualified teachers	√	

Conclusions

As OECD Secretary General, Angel Gurría, stated at the 2011 OECD Conference in New York, 'It's clear that no two countries are the same but that does not mean that we do not face the same challenges.' The educational systems in Ireland and Finland are not identical and the two countries have different approaches to education. However, this research has uncovered remarkable similarities in the priorities perceived by their PETE experts as well as the challenges they face. Most interestingly, this study reveals the actions being undertaken by PETE in the two countries to improve teacher quality and the quality of teaching and learning in the field of physical education.

School physical education has been extensively investigated by a number of international research projects (Hardman and Marshall, 2000, 2005; Pühse and Gerber, 2005). Equivalent information from the perspective of physical education teacher education has not yet been collated in a systematic way and thus remains fragmented. Joint reflection and the sharing of good practice between countries could go a long way towards effecting meaningful change and responding successfully to the changing needs of pre-service teachers, in-service teachers, children, young people, schools and society.

References

European Council (2009) Council conclusions of 26 November 2009 on the professional development of teachers and school leaders. Official Journal of the European Union. C302/04.

Hardman, K., & Marshall, J. (2005). Update on the state and status of physical education world-wide. Keynote presentation at the 2nd World Summit on Physical Education.

OECD (2011) Building a high-quality teaching profession. Lessons from around the world. Background report for the International Summit on the Teaching Profession, New York, 2011.

Pühse, U., & Gerber, M. (2005). International comparison of physical education. Concepts, problems, prospects. Aachen: Meyer & Meyer.

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The Need for Physical Education Teacher Education Change: The Use of a Web Log as a Reflective Tool in Moving Toward a Community of Practice

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***Background*:** Situated learning theory views learning as a social practice, opposed to being isolated (Lave & Wenger, 1991), and assumes knowledge is inseparable from the contexts and activities in which it is developed. As an application of situated learning, communities of practice (COP) have gained increasing acceptance as a mechanism to aid teachers in the development of meaningful knowledge. A recent trend in many teacher education programs is the movement of promoting student teachers to become reflective decision makers and not merely technicians (Behets&Vergauwen, 2006). One way to improve inquiry skills while developing habits toward critical colleagueship is early induction of teachers into COPs (Feiman-Nemser, 2001). A student-centered approach according to Smith and Rodger (2005) is necessary in a COP, however it is not the only condition for learning. While technology can be used to supplement social interaction within COPs, Wenger (1998) suggests that it does not replace personal contact. Recently the integration of web logs (blogs) as a vehicle to encourage peer group support and reflective teaching has drawn considerable attention (Killeavy&Moloney, 2010).

***Purpose*:** The purpose of this study was to explore the use of a web log (blog) in the development and impact of a COP on student teachers. The specific research questions guiding this study were: How does the use of a web log (blog) impact the reflective thinking of student teachers? What aspects of the blog proved ineffective and effective?

Participant*s*: Participants were thirteen (n= 13) physical education student teachers (7 males, 6 females) from a mid sized university located in the Western United States.

Data Collection**:** Data sources included (1) researcher field notes, (2) focus group interviews and (3) blog entries.

Data Analysis: Data were analyzed using open and axial coding (Corbin & Strauss, 2008). Trustworthiness was established through triangulation, peer review, and member checks.

Findings: The use of a blog is a worthwhile tool if thoughtfully and diligently managed; however, for this group the inconvenience outweighed the benefits. The group made progress toward developing into a COP, but never fully achieved the goal of being independent of the instructor to fully learn from and with each other. Future research needs to investigate ways to develop the blog in a user-friendly way that allows for the development of professional and social interaction among student teachers.

Keywords: communities of practice, web logs, teacher education, preservice teachers, reflect.

Introduction

Physical Education Teacher Education (PETE) programs have created peaked interest among educational scholars as the need for highly trained teachers continues to be apparent worldwide. In order to respond to educational reform efforts around the globe, instructional practices are in need of change as ambitious goals are now being set for student learning (Borko, 2004). One aspect of change involves addressing existing practices in which preservice teachers learn and construct knowledge within PETE programs. In order to improve the quality of future physical educators, a transition from

passive learning to more active learning strategies among preservice teachers must be employed.

As knowledge and research of PETE programs continues to grow, approaches to teaching and learning must also evolve. Recent interest in educational research has been placed on the social aspect of teaching and learning in which collaboration among preservice teachers within teacher education programs has fostered increased collegiality, efficacy and student achievement (Kaasila&Lauriala, 2010). Similarly Borko (2004) argues that teacher learning is a social process taking place in a variety of contexts and through practice in social systems of which they are participants. Collaboration among preservice teachers encourages individuals to seek different perspectives that allow for exploration to occur in constructing new knowledge. Increasing opportunities for social interactions among preservice teachers within PETE programs may contribute to favorable outcomes.

Shulman (1992) states that in order for students to shape their own pedagogy, teacher education programs must link theoretical concepts with practical 'real-world' settings. One way for this connection to occur is to encourage the development of learning, knowledge, and meaning in PETE programs through authentic experiences during the student teaching process.

The purpose of this paper is to highlight the social aspects of teaching and learning as it relates to constructing knowledge through the use of a web log (blog) as a mechanism to aid in the development and impact of a community of practice on student teachers. The specific research questions guiding this study were: How does the use of a web log (blog) impact the reflective thinking of student teachers? What aspects of the web log (blog) proved ineffective and effective?

Theoretical Framework

Constructivist theory in physical education research has been used in a variety of ways in recent decades and may produce positive outcomes compared with other approaches (Kirk and Macdonald, 1998). A constructivist approach is designed to allow learners the opportunity to connect their experiences from one environment or situation and be able to apply them meaningfully to their own endeavors.Constructivism espouses that learners continuously compose and reconstruct knowledge in a particular group through cognitive activity and participation (Choi, 2006). Creating a climate in which students are free to learn through exploration and sharing ideas with peers contributes to a constructivist environment (Azzarito& Ennis, 2003).

Learning in a constructivist manner is an active process, allowing individuals to grow and learn from building personal knowledge with each new experience. Research in physical education has implied that a social constructivist approach can provide authentic learning experiences which in turn create a meaningful connection to their (students') lives (Azzarito& Ennis, 2003). Furthermore, the use of constructivism can be a tool to provide meaningful learning opportunities for students within PETE programs.

According to Rovegno (1998) the constructivist pedagogical approach emphasizes the importance of constructing (new) knowledge from prior knowledge and experiences.The importance or ability to apply those previous experiences and knowledge will help enhance the person holistically as a learner (Azzarito& Ennis, 2003). A potential way to allow students to build on previous knowledge and experiences is through the use of situated learning.

Situated Learning

Situated learning is an educational perspective in which learning takes place in the same context in which it is applied (Parker, Patton, Madden, & Sinclair, 2010).According to Pattonet al. (2005) "in physical education, situated learning has been suggested as an authentic

framework in which to position teaching and learning" (p. 304).The situated learning perspective speculates that the physical and social environment in which the experience takes place is a vital part of learning.

Situated learning can benefit PETE programs by creating an authentic learning experience allowing students to learn in an environment that is conducive to the application of the knowledge within the same context. Lave and Wenger (1991)argue that learning should not be viewed as simply the transmission of theoretical or out of context knowledge from one individual to another, but a social process by means of which knowledge is constructed. This perspective on situated learning stresses that it is critical for students to be able to apply the knowledge that they have gained in a particular setting to the real world.

Learning in a social environment must allow for authentic application of knowledge in which ideas are used and applied in a specific context. Lave and Wenger's (1991) idea of situated learning takes place in several occupational contexts in which novices move to full participation in a community of practice. In order for situated learning to occur, individuals must be invested in the group, work with others through conflict and be actively engaged while accepting different viewpoints and ideas from others. A community of practice of is one example of situated learning theory whereas individual learners interact under a specific circumstance in a social setting in turn shaping the learning trajectory of each individual within the community (Kirk & Macdonald, 1998).

Communities of Practice

A community of practice can develop in a variety of contexts or environments in which individuals have a shared passion or common interest. Kirk and Macdonald (1998) define a community of practice as "any collectivity or group who together contribute to shared or public practices in a particular sphere of life" (p. 380). In short, communities of practice aid in

the exchange of knowledge and ideas when groups of people congregate to share information about a specific topic or interest.

Groups of individuals who share common interests, experiences, and resources can facilitate a deeper understanding of the common interest (Sirna, Tinning, & Rossi, 2008). Preservice teachers within a PETE program are one example of a collective group of people with a common goal or interest. In various social contexts these groups are often developed as communities of practice. According to Wenger, McDermott, and Snyder (2002) individuals involved in a community of practice contribute to a body of common knowledge, practices and approaches while developing a unique perspective on their topic. Preservice teachers in PETE programs have the ability to share knowledge and learn to grow while participating in a collective group.

The development of a community of practice can lead to increased knowledge and learning among PETE students. Learning is created through active participation in a social setting in which knowledge, expertise and experience are exchanged through interpersonal relationships (Hodgkinson-Williams, Slay &Sieborger, 2008; Sirna et al., 2008). Knowledge is shared when there is purposeful conversation around content in a specific context (Hodgkinson-Williams et al., 2008). Therefore, learning occurs when individuals are engaged and contribute knowledge and ideas to the community of practice.

In order to benefit from a community of practice, student teachers must shift from a passive or peripheral role to an active participant. Based on the work of Lave and Wenger (1991), Rovegno (2006) suggests “legitimate peripheral participation shifts from focusing on individual learning of in-the-head knowledge and cognition, to learning as increased participation in a social practice” (p. 264).As change occurs within an individual, engagement in the community of practice also changes negatively or positively based on their level of

commitment to the community of practice. This (change) leads to a transformation of knowledge within the individual and the group (Deglau& O'Sullivan, 2006).

A community of practice can allow for student teachers to implement effective teaching practices through conversations and knowledge exchanged with others. "The community of practice is, therefore, itself a mediating influence on multiple levels when considering teacher change" (Deglau& O'Sullivan, 2006, p. 380). Existing PETE programs could benefit from the use of a community of practice as a method of supervision to aid in the growth and development of future student teachers.

Web Logs

As electronic devices benefit our community, they have been considered as a tool for effective teaching in many subjects. Recent study in the integration of web logs (blogs) in educational contexts as a tool for reflective teaching practices has drawn considerable attention. Killeavy and Moloney (2010) explored the use of blogs as a vehicle to encourage peer group support during teaching practices. Findings from this study conducted in Ireland indicated that the use of blog entries within an established community of practice presented effective measures. However, blog entries for groups without initial face-to-face interaction resulted in a lack of teacher willingness to share with others in the group (Killeavy&Moloney, 2010). Reason for this occurrence was due to the lack of sociability to occur among members of the COP due to geographic and time constraints. The need to explore the use of blogsduringpreservice teacher training is important.

Methodology

A qualitative research study was used in order to explore the development of a community of practice with preservice teacher candidates during student teaching. A grounded theory approach was appropriate as the action, interactions, and social processes of individuals were examined and grounded in the data from the field (Creswell, 2007). The views and perceptions

of student teachers were gathered in order to determine their reflective nature and the effectiveness of the web log as tool while participating as a collective group.

Participants

Participants for this study consisted of thirteen (n= 13) physical education student teachers (7 males, 6 females) from a medium sized university in the western United States during a one-semester student teaching experience. These student teachers met on a rotating bi-weekly schedule throughout the 16-week semester during a seminar course which was designed and conducted as a community of practice adhering to constructivist learning tenets. The participants were purposefully selected based on enrollment in the student teaching seminar course and willingness and availability to participate in the research study.

Data Collection

Following approval of the university's Institutional Review Board (IRB), data were collected in order to provide a description of the student teachers' perceptions of the use of a web log (blog) as a means for developing and maintaining a community of practice during the student teaching experience. Data sources included focus group interviews, online blogs, and field notes of seminar meetings used to gather insight of the views and perceptions of preservice teachers. Participants were interviewed as focus group members at the conclusion of the semester by the researchers. Interviews lasted approximately 30 - 45 min. Semi structured interview questions acted as guidelines, although probing questions or clarification to answers were asked.All interviews were conducted in person by the researchers at a public location suitable for all members of the focus group. All interviews were audio-recorded and transcribed verbatim. Participants also submitted blog entries online on a weekly basis in response to prompts posted by the researchers. All participants were given opportunity to submit as many entries without limitation. Lastly, audio taped seminarmeetings were used to aid with accuracy of the observations while field notes served as artifacts.

Data Analysis

The participant's responses to interview questions and blog entries were analyzed using two distinct yet overlapping processes of analysis derived from a grounded theoretical perspective: open and axial coding (Corbin & Strauss, 2008). Open coding is the process of developing categories of concepts and themes derived from the data. In this study, open coding was used to analyze interview transcripts by reviewing each multiple times and making notes about their possible meaning. Additionally, open coding involved the process of conceptualizing, defining categories, and developing categories of results in terms of their properties and dimensions.Axial coding facilitates building connections within categories. In this phase, the goal was to systematically develop and relate categories. This step included the process of sorting out the relationships between concepts and sub-concepts with the ultimate goal to discover the ways that categories related to each other. Through the axial coding process, a researcher's goal is to answer questions of who, when, where, why, how, and with what consequences (Corbin & Strauss, 2008). Field notes were used to develop and prompt questions for the interview process.

Trustworthiness

Qualitative research is often gauged by terms such as trustworthiness, accuracy, consistency and plausibility (Blumenfeld-Jones, 1995). The concept of trustworthiness in this research study was validated by the following procedures: researcher journal, triangulation, member checks and external audit (Schwandt, 2007). Triangulation refers to the use of multiple data sources, responses to interviews, observation field notes and document analysis to check the integrity of all responses. Four techniques were used to establish trustworthiness. First, a researcher journal was kept to document personal reflections, methodological decisions, questions raised, theoretical propositions and evolving perceptions of the study. Second, triangulation uses multiple sources of data, and multiple methods (interviews, observation field

notes, artifacts) to confirm the findings (Merriam, 1998) were utilized. Member checks were used to establish credibility and confirm interpretation of the transcribed interview data by the researchers. An external auditor was used to review overall methodology and procedures used within the research study.

Findings

Findings of this study can provide insight into the use of technology as a means for supporting the development of a community of practice among preservice teachers. The impact and effectiveness of moving toward a community of practice through the use of a web log can be described through four themes: 1) student teachers' reflections indicated technical aspects of teaching, 2) the depth of response to the blog was directly related to the depth of the probe, 3) comments were only made in response to the probe not to each other, and 4) the blog was at the same time a meaningful learning tool and an annoyance.

Reflection indicated technical aspects of teaching

Student teachers reflected and commented on classroom management, disruptive behavior, student motivation and lack of respect. Overall the preservice teachers shared techniques and solutions for classroom management strategies with their peers throughout the semester. The student teaching seminar meetings and web logs generated discussion and interaction among the preservice teachers regarding students with special needs, those who do not speak English, students with attitude problems and disruptive behavior. In regards to classroom management, Rosa stated, 'I have found that management is such a huge aspect of teaching. Often times students don't want to be in required classes so misbehavior occurs often.'

Tyler also commented on his interest in learning various types of strategies to aid with his teaching, 'Through student teaching I hope to understand what strategies work best in management, lesson plans, planning, the daily routine, and what ways and activities can I best use to get students engaged.'

As the semester drew on, conversations and blog entries evolved and became more in depth. The content or topics that student teachers discussed went from small to large concepts causing them to think about their teaching on a larger scale.Julie wrote about the importance of reminding students of her expectations in the gym:

> I had to remind one of my classes that the grades they get are not what I'm giving them but what they have earned. Once that discussion was over the amount of effort from the class as a whole increased. Sometimes all they need is a quick reminder of the expectations and that goes for each individual.

As the student teaching experience progressed throughout the semester, the comments and insights provided by the students developed with more detail.Sandy elaborated to include aspects of student learning existing beyond the classroom:

> I strongly believe that it is the physical educator's personal responsibility to take a risk and try and change the way students, faculty, staff, family, community, etc. view physical education. PE needs to be promoted just like any other subject in school; it is an important part of any student's education and an even more integral part of a student's overall well-being well into their future.

Depth of response was directly related to the depth of the probe

One line questions or prompts were posted in five of the six weekly blogs by the researchers. Early prompts in the blog contained superficial information with only one line questions posed to student teachers. As weeks progressed, additional background information regarding pedagogical aspects of teaching were described with more detail in the blog prompt and were later followed by a question. As the depth of information presented to the student teachers was increased through the prompt, the blog responses contained well thought out comments indicating a higher level of thinking about teaching.

The progression from beginning of the project to the end, showed considerable changes in the amount of insight provided in response to the questions asked. Although each question for the blog was constructed thoughtfully, triggering student teachers to think critically or with more insight of their teaching, the more information provided in the prompt resulted in well

thought out responses.In response to the following prompt,What experiences have you had to challenge your beliefs about teaching this week? Chad commented:

> I was not a big fan of exploratory learning because I felt like it was allowing the students to learn how to do things the wrong way, after using it I actually liked it a lot and saw that the students were not forming bad habits through figuring it out on their own.

The final blog prompt contained additional background information supporting the notion of student-centered learning. The prompt as delivered to the student teachers was as follows:

> Student learning should be the goal of the teaching and learning process. Therefore as teachers we need to think about the way in which we teach in order to most effectively help students learn. Many people say that physical education should be child centered where students develop increasing responsibility for their own behavior, attitudes, and learning. Few teachers would argue with the notion of creating an environment that empowers students to be self-directed. The use of independent learning strategies has the potential to help students to become personally and socially responsible. The reality of the situation is not as simple as it might appear.
> While teachers have the ability to create an environment for learners that is experiential and interactive it also means giving up control to students. Typically the role of the teacher switches from teacher directed to a facilitator role. As a result students must learn to take ownership for their own learning. The shift of control and ownership is incremental. It is not simply blindly giving students total control but gradually and with practice having students gain control.
> What are your thoughts about this and the reality of doing this in your teaching?

In contrast, the following response was generated by Mary delivering more insight on her feelings toward student centered learning when asked:

> Giving up control of your classroom to your students can be very scary and I feel like if a teacher can do it, it can be very beneficial to their students. The teacher needs to know how and when it is appropriate though, because it could turn into a total disaster. The class needs to know what is expected of them and how they need to be acting to be able to have this in their class, for those classes that have a hard time with teacher direction, this might not be the best choice for them, but then again it could be the best. I feel it completely depends on the students and their ability to work well on their own.

Rosa also responded with more insight:

> During my experience student teaching I have found student lead classes to be very productive but only after they have learned what they need to know. However, students seem to be more successful and retain more when they are in charge of creating practice tasks or small-sided games. Their involvement in their education goes a long way, and says something about you as a teacher as well. As a teacher, student lead activities can be rough because you have to assume the facilitator role, but if you can get past the fact that you don't

have complete control of the class, then everyone benefits more and the students are ten times more engaged.

Comments were only made in response to the probe not to each other

Killeavy and Moloney (2010) also found the Newly Qualified Teachers (NQTs) to share similar concerns such as discipline and staff relationships as well as teaching special needsstudents.Participants of our study reported similar findings. Furthermore, Killeavy and Moloney reported "NQTs did not have the shared purpose orgoal of exploring these concerns within their blogs although thesematters were discussed in depth within the workshop seminarsessions" (p. 1075). The experiences related by NQTs indicated that theyencountered their predicaments on their own; the fact that othersmay have had the same experiences was not a consolation orstimulus to search for shared solutions.

Although student teachers were able to see each other's blog responses, they only responded once to a thread where they agreed or disagreed with each other. It should be noted that the response was only made after the researcher added a probing comment. Every other response in the blog resulted in a single answer without comment from a peer. Sandy states:

> I responded to the blog, but I never read any one else's post. Which I know that was the point, but I was just sorta like I'd write my thoughts based off of what the question was but I never actually took the time to go back and look at everything else...

Mary also commented:

> I felt like we were already doing what the blog was asking…but I felt like I was already doing it by talking to her through conversations so although I didn't go back to check Rosa's or Sandy's I already knew what they were going to be because I knew them so well.

The blog was at the same time a meaningful learning tool and an annoyance

Learning in a constructivist manner is an active process, allowing individuals to grow and learn from building personal knowledge with each new experience. Research in physical education has implied that a social constructivist approach can provide authentic learning experiences which in turn creates a meaningful connection to their (students') lives (Azzarito&

Ennis, 2003). Lave and Wenger (1991) suggest that such learning is situated in a specific context and rooted within a particular social and physical environment. The environment that the knowledge is gained in is crucial to the transferability of the experience to a real world setting. The use of authentic experiences can enhance understanding of knowledge or content knowledge to be applied in a real world setting.

In the case of Sandy, the blog was seen as a useful tool aiding with the ability to process thought and reflection, 'I used the blog as a way to process my thoughts from teaching over the course of student teaching. The blog was an outlet that allowed me to process my thoughts and reflections from a day-to-day basis.'

On the contrary student teachers responded they did not have time to use the blog or it was not a priority as evidenced in Kevin's response,'I used it [blog] once and blogged because we had to.'

Brad expressed his similar frustrations in the following statement,'You had to open this page to see what they were talking about, and then open this [another page] it seemed like too much, I went on there once and I was like this is too much.'

Student teachers expressed their likes and dislikes associated with the use of the blog. Overall, the student teachers' participation indicated that the blog was useful in some instances when reflecting on classroom management and other technical aspects of teaching. On the contrary, having to blog presented a burden to these preservice teachers, which detracted from student teaching. Lastly, the format in which the blog was presented to the student teachers could have been more user-friendly in order to seamlessly align with their already hectic lives.

Discussion and Conclusion

Situated learning theory as described by Lave and Wenger (1991) describes the importance of the social nature of learning as taking place within specific practices and settings. According to this theory, occupational groups such as preservice teachers represent a collection of

individuals who “together contribute to shared or public practices in particular spheres of life” (Kirk & Macdonald, 1998). The development of a community of practice among preservice teachers during a field experience seminar course represents one social environment in which active learning strategies enhance learning. This type of social interaction reinforces constructivist learning principles allowing preservice teachers to develop and reflect on their teaching in order to become more effective teachers.

In an effort to move toward the community of practice, student teachers were encouraged to gain more information, techniques, and suggestions for teaching through social interactions that occurred amongst the group. The conversations among student teachers during seminar meetings allowed for exchange of ideas and advice with others in a constructive environment. Students also expressed frustrations with peers in regards to problem students, cooperating teachers and administration.

In addition to the seminar meetings, the use of a blog was one way for preservice teachers to stay connected with one another when not meeting face to face. The blog was used to increase social interaction among the student teachers necessary for the success and maintenance of a community of practice. Blog entries collected throughout the semester indicated its use resulting in both positive and indifferent responses from the student teachers.

The use of a blog is a worthwhile tool if thoughtfully and diligently managed; however, for this group the inconvenience outweighed the benefits. The group made progress toward developing into a COP, but never fully achieved that goal of being independent of the instructor to fully learn from and with each other.These students reflected on technical aspects of teaching and showed development of thinking about their teaching with more depth reinforcing the ideas that use of the blog was meaningful and helpful for preservice teacher reflection.

Future research needs to investigate ways to develop the blog in a user-friendly way that allows for the development of professional and social interaction among student teachers. The use of a blog in a community of practice must be developed to act as a tool to keep student teachers connected socially. With the establishment of a community of practice already in place, the use of a blog can potentially be another means to improve a community of practice as well as encourage the development of teaching skills among preservice teachers.

References

Anderson, D. J., Major, R. L.,& Mitchell, R. R. (1992). *Teacher supervision that works: A guide for university supervisors.* New York, NY: Praeger.

Azzarito, L.,& Ennis, C. D. (2003). A sense of connection: Toward social constructivist physical education. *Sport, Education and Society, 8*(2), 179-198.

Blumenfeld-Jones, D.S. (1995).Dance and research representation.*Paper presented at the annual meeting of the American Educational Research Association,* San Francisco, CA, 391-402. doi:10.1177/107780049500100402

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8) 3-15.

Choi, M. (2006). Communities of practice: An alternative learning model for knowledge creation. *British Journal of Educational Technology, 37*(1), 143-146.

Corbin, J.,& Strauss, A. (2008). *Basics of qualitative research* (3rd ed.). Los Angeles, CA: Sage.

Creswell, J. (2007). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process.* Thousand Oaks, CA: Sage.

Deglau, D.,& O'Sullivan, M. (2006). Chapter 3: The effects of a long-term professional development program on the beliefs and practices of experienced teachers. *Journal of Teaching in Physical Education, 25,* 379-396.

Feiman-Nemser, S (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record, 103*(6), 1013-1055.

Hodgkinson-Williams, C., Slay, H.,&Sieborger, I. (2008). Developing communities of practice within higher education institutions. *British Journal of Educational Technology, 39*(3), 433-442.

Kaasila, R.,&Lauruala, A. (2010). Towards a collaborative, interactionist model of teacher change.*Teaching and Teacher Education, 26*,854-862.

Killeavy, M.,&Moloney, A. (2010). Reflection in a social space: Can blogging support reflective practice for beginning teachers? *Teaching and Teacher Education, 26*, *1070-1076*.

Kirk, D.,& Macdonald, D. (1998). Situated learning in physical education. *Journal of Teaching in Physical Education, 17*, 376-387.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.

Locke, L. (1979, April). Supervision, schools, and student teaching: Why things stay the same. Paper presented at the American Academy of Physical Education, New Orleans.

Metzler, M. W. (1990). *Instructional supervision for physical education.* Champaign, IL: Human Kinetics.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass Publishers.

Merriam, S. B. (2009). *Qualitative Research: A guide to design and implementation* (2nd ed.). San Francisco, CA: Jossey-Bass Publishers.

Parker, M., Patton, K., Madden, M., & Sinclair, C. (2010). From committee to community: The development and maintenance of a community of practice. *Journal of Teaching in Physical Education, 29*(4), 337-357.

Patton, K., Griffin, L., Sheehy, D., Arnold, R., Gallo, A. M., Pagnano, K., Dodds, P., Henninger, M., & James, A. (2005). Chapter 2: Navigating the mentoring process in a

research-based teacher development project: A situated learning perspective. *Journal of Teaching in Physical Education, 24*, 302-325.

Rovegno, I. (1998). The development of in-service teacher's knowledge of a constructivist approach to physical education: Teaching beyond activities. *Research Quarterly for Exercise and Sport Science, 69*(2),147-162.

Rovegno, I. (2006). Situated perspectives on learning. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *Physical Education Handbook* (pp. 262-274). Thousand Oaks: CA: Sage.

Rovegno, I.,& Dolly, J. (2006) Constructivist perspectives on learning. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *Physical Education Handbook* (pp. 242-261). Thousand Oaks: CA: Sage.

Schwandt, T. A. (2007). *The sage dictionary of qualitative inquiry* (3rd ed.). Los Angeles, CA: Sage

Shulman, L. (1992). Ways of seeing, ways of knowing, ways of teaching, ways of learning about teaching. *Journal of Curriculum Studies*, *28*, 393-396.

Sirna, K., Tinning, R.,& Rossi, T. (2008). The social tasks of learning to become a physical education teacher: considering the HPE subject department as a community of practice. *Sport, Education and Society, 13*(3), 285-300.

Smith, S. F.,& Rodgers, R. F. (2005). Student learning community of practice: Making meaning of the student learning imperativeand principles of good practice in student affairs. *Journal of College Student Development, 46*(5), 472-486.

Wenger, E., McDermott, R.,& Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge.* Cambridge, MA: Harvard Business School Press.

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HOMEMADE EQUIPMENT AS AN EDUCATIONAL TOOL IN A GROUP OF STUDENTS ENROLLED IN A PHYSICAL EDUCATION TEACHER EDUCATION PROGRAM

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ABSTRACT

The use of homemade materials as an educational tool in physical education has been slowly increasing over the last 15 years. This type of equipment seems to yield positive outcomes in the school community, but its impact on teachers' attitudes and beliefs has not been evaluated. The goal of this research project was to assess the effects of the usage of homemade materials in a group of students enrolled in a Physical Education Teacher Education program. 37 subjects (26 men and 11 women) participated in the study. They all completed a specifically designed questionnaire. Results showed that learning through homemade materials was a positive experience. It helped students master the subject's contents through a more functional and enjoyable method. They also learned to value more their own equipment, as well as others. It was seen as a valuable teaching tool. Subjects considered that this type of materials can help teachers attend classroom diversity more efficiently, because they can construct equipment adapted to the students' real necessities.

INTRODUCTION

In the last decade, there has been an increase in the number of publications related to the promotion of homemade materials as valuable tools for the development of physical education at the primary and secondary levels (Davison, 1998; Lichtman, 1999; Marston, 1994; Méndez-Gimenez, 2003, 2008; Moss, 2004; Orlick, 1990; Sher, 1996; Werner and Simmons, 1990). These works reflected the ideas of several authors that tried to open new venues in the exploitation of resources. They tried to illustrate how to take advantage of

useless objects, transforming them easily and effectively into proper equipment for physical education.

These homemade materials seem to hold many advantages, but they also have some drawbacks (Méndez-Giménez, 2003). Among the formers: the increase in active participation time, the adaptability of this materials to fit the students' needs, the costs savings, and the development of creativity and interdisciplinarity in the students. As for the obstacles identified, different authors (Corbin & Corbin, 1983; Grigg, 2009) have highlighted the need to search for safety during the construction process and usage of the materials, the additional time required for building them or the extra space needed to store the resources generated.

One of the reasons that drove many physical educators to construct their own equipment was the limited budget that they had to suffer in many schools (Mendez-Giménez, 2008). The provision of equipment, both quality and quantity, can adversely affect the excellence of the physical education programs. Unfortunately, this deficit is remarkable in many countries, even the most civilized countries. A global research carried out by Hardman (2008) showed that 36% of all the countries that participated in the survey reported that the quality of the materials supplied for their physical education classes was limited or insufficient. Only teachers from North America rated positively their equipment. In addition, 50% of the countries surveyed indicated that the amount of equipment was limited or insufficient, with the lowest figures reported in Africa, Asia, Central/Latin America and the Middle East regions or continents. Considering these data, it seems clear that the implementation of programs that could enhance the use of homemade materials will allow students, around the world, experience games and physical activities that they would not have access to due to the lack of economical resources.

However, our pedagogical perspective of homemade materials goes beyond the use of waste materials to solve the problem of limited budgets. It considers these resources as a mean to promote quality learning that relies on active methods of teaching. The constructivist paradigm

emphasizes the need to involve the students in their own learning process to generate more knowledge. In this sense, the need to assume the development of their own "toys" and the search for raw materials to carry out this task would activate the students mentally, predispose them to use them, and, therefore, learn from the whole experience.

Furthermore, the construction process may have positive psychological effects on students, such as increased self-esteem or motivation. Indeed, modify, change or build new elements, which subsequently will be used in physical education classes, can create a sense of usefulness and a feeling of creators (like carpenters or potters transforming raw materials into pieces of art). Camacho, Díaz and González (2006) pointed out that involving students in building materials and sharing them with other peers increases, on the one hand, the builders' self-esteem, and, on the other hand, the respect from those who use them. One of the keys in their innovative project developed between the physical education and technology classes was the relevance of working in cooperative groups, both students and teachers, and opening the project to the rest of the community within the framework of the extracurricular activities.

There are more pedagogical arguments supporting the use of waste materials, such as the development of awareness against the excessive consumption or the preservation of nature. This ecological perspective goes beyond the use of recycled materials in the classroom, and aims to awake in the students the notion that many objects can be rescued from their destination (the trash) and reused conveniently.

Despite the large amount of literature available on the use of homemade resources, research on the effects that these materials can provoke in the student population is virtually inexistent. Mendez-Giménez, Martínez-Maseda and Fernández-Rio (2010) found high levels of interest, enjoyment and motivation in a group of 6th grade students experiencing a unit of paladós (a net game) carried out with self-made materials.

On the other hand, Sola et al. (2009) showed that a high percentage of teachers (40% in the cities of Seville and Huelva) have not received any specific training on homemade materials, and only 53% have used them. However, these same authors described a positive attitude change in teachers towards these resources when they were used systematically in their classes. To our knowledge, no research has study the effects of this type of materials in Physical Education Teacher Education (PETE) students or in their perspectives as future teachers.

Given these considerations, the aim of this paper is twofold: a) assess the degree of satisfaction and the effects that these resources cause in a group of PETE students, and b) explore the impact that these resources might have in their training, their attitudes and their expectations as future teachers.

A PHYSICAL EDUCATION TEACHER EDUCATION SUBJECT: PHYSICAL EDUCATION FOR STUDENTS WITH SPECIAL NEEDS

Physical education for students with special needs is a subject in the Physical Education Teacher Education program at the Faculty of Teacher Training and Education of the University of Oviedo. During the course of it, students were asked to construct a series of materials with some guidance from the teacher. However, students also had the opportunity to investigate different ways to reach the same end, and create the same type of equipment asked for through different resources. The different topics and the materials related to them that the subjects had to built were: a) Visual impairments: rattle rolls, goalballs, sensitive twister, sound pins and blind sticks, b) Physical impairments: adapted sticks, arm-baskets, sticky gloves, propioception boards, boccia balls and ramps, and c) Intelectual disabilities: adapted raquets, rings, coins, plastic soft balls, and stilts.

During each practical session, students were asked to explain to their peers, and their teacher, how they had designed and built his/her piece of equipment, which raw materials were

used and how they had gathered them. They also had to emphasize the differences, if any, with the equivalent commercial equipment, and the benefits of using the constructed material for students with special needs (size, color, texture, etc.). The aim was to share all this information with fellow future teachers, while awakening their creativity. At the same time, the university teacher was able to monitor the safety and the viability of the materials before using them. In addition, students were also practicing their language skills (their proficiency) during the short speeches. Finally, the presentations were videotaped by the teacher to assess the whole process outside the practical session for time efficiency.

After the presentation, students used the materials constructed to experience, in vivo, the pros and cons, the strengths and weaknesses of the equipment built. They used their own as well as others materials. After several minutes of practice, students were asked to think of alternatives for improvement, and draw implications for practice in physical education and extracurricular settings. Finally, students were asked to complete an assessment sheet on the materials used reviewing their functionality, durability, adaptability or efficiency.

METHODS

Thirty-seven Physical Education Teacher Education students (26 males and 11 females) agreed to participate in the present study. The overall research project was conducted along the first semester of the academic year (4 months). The intervention took place on every practical session of the subject called: physical education for students with special needs (12 sessions of 2 hours each). The Self-Made Materials Questionnaire (SMMQ) was designed and used as the assessment instrument. It consisted of two subscales of 20 items each. Subscale 1 asked the subjects to reflect on their beliefs and feelings about self-made materials. Subscale 2 asked the students to assess the intervention program. All items had to be evaluated using a 5-point Likert scale that ranged from 1= “totally disagree” to 5= “totally agree”.

DATA ANALYSIS

Statistical analysis of the data obtained was performed using the software package IBM SPSS 18.0. The SMMQ's α Cronbach factor was found to be very high = 0,913, which indicates an elevated internal consistency of the questionnaire. Means and standard deviations of all the items of the two subscales were obtained. Furthermore, a comparative analysis of the results obtained from the subscale 2 between test 1 (before treatment) and test 2 (after treatment) was also performed. In this process, we used the Wilcoxon Test for related measures.

RESULTS

Figure 1 shows the means obtained on the subscale 1. The most relevant results appeared on item 5: 4.18, item 6: 2.23, item 9: 4.23, item 10: 4.32, item 18: 4.27, item 19: 4.23, and item 20: 4.36. All of them, except item 6 were above 4 points in a 0 to 5 Likert scale. Item 6's score was very positive despite its small value, because it means that it was positively valued by the subjects (as opposed to the rest of the items).

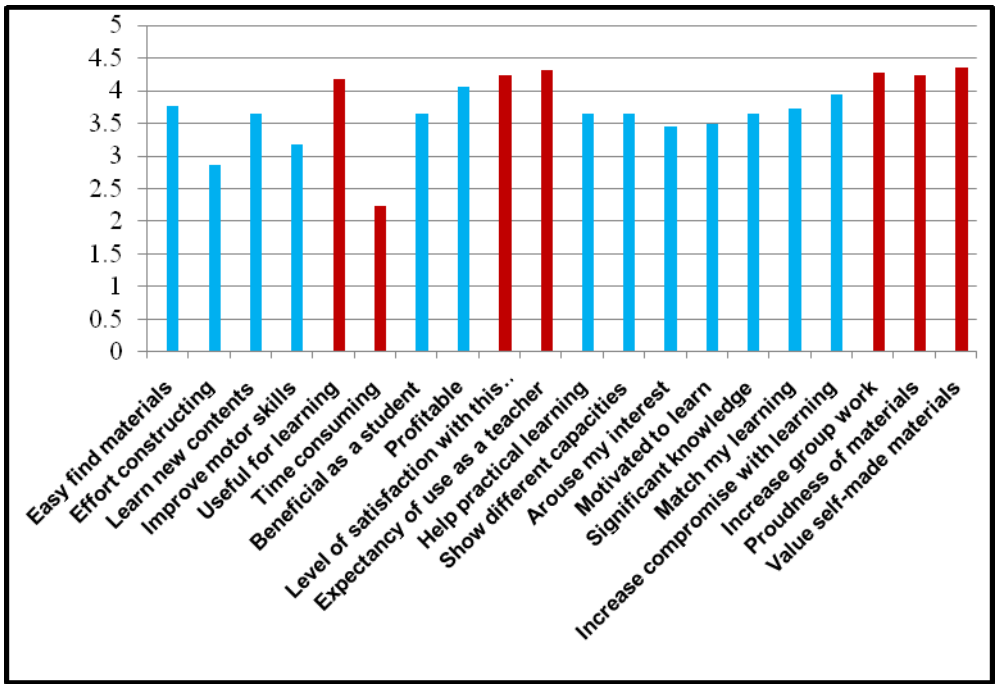

Figure 1. Students' response after the intervention program.

Regarding the subscale 2, significant differences ($p < 0.05$) between test 1 and 2 were obtained in 4 items (see figure 2):

· Item 2: "Demand greater student commitment": from 4.52 ± 0.61 to 4.00 ± 0.89.

· Item 4: "Include students with special needs": from 3.67 ± 1.11 to 4.48 ± 0.60.

· Item 8: "Help curricular individualization": from 3.76 ± 0.77 to 4.38 ± 0.74.

· Item 14: "Coeducational activity": from 3.52 ± 1.07 to 4.14 ± 0.65.

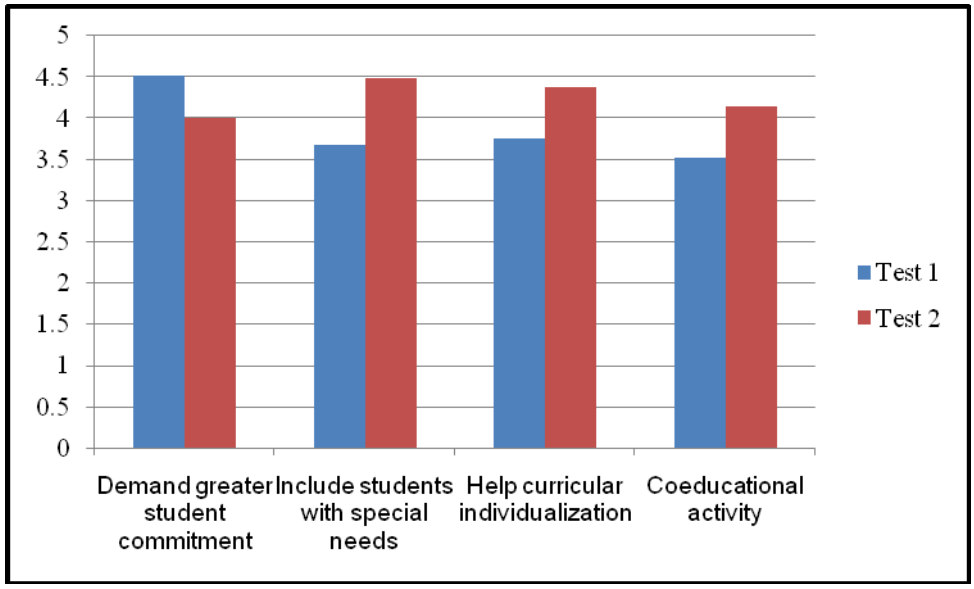

Figure 2. Students' beliefs and feelings on self-made materials on test 1 ant test 2.

DISCUSSION

Subjects reported that learning through self-made materials had been a very positive experience. They manifested that they were able to discover and master the subject's contents through a more functional and enjoyable method. Many times, university students feel that the contents they must learn are difficult to manage. Indeed, self-made materials have been proven as an aid in this process. Furthermore, the process of constructing the different materials was not perceived as a duty that took a big amount of time out of other university's duties. Finally, it also was perceived as a tool to promote group work.

Regarding their teaching career, this group of Physical Education Teacher Education students believed that self-made equipment was a valuable teaching tool, because it actively compromises students in their own learning process. Therefore, this group of future teachers manifested that they believe they will use self-made equipment when they become teachers. Students highlighted that the process of constructing your own physical education equipment makes you feel proud of the things that you and others have created. Furthermore, it made them value more their regular physical education equipment.

Subjects also believed that this type of materials allow teachers to cope more efficiently with school's diversity to include students with special needs. Standard commercialized equipment is not as adaptable as students need. It is always the same for anybody, no matter the ability level of the subject. On the other hand, self-made equipment can be constructed to fit each student's real necessities. Features such as weight, length or shape can be manipulated to build the piece of equipment that is really needed. Therefore, they promote the inclusion of students with special needs in physical education contexts. Similarly, these types of materials also support coeducation, since they can also be adapted to fit girls' needs. Finally, these two features endorse the idea that self-made equipment helps curricular individualization in physical education settings.

CONCLUSIONS

The construction of self-made equipment allowed the students to become active learners. They became social learners sharing that process with their classmates. Finally, they became creative learners designing and building the correct equipment. Future teachers see self-made equipment as a valuable educational tool.

References

Camacho, J. L., Díaz, S. y González, J.G. (2006). Diseño, fabricación y utilización de material deportivo de uso didáctico en IES Alonso de Ercilla. http://www.educa.jccm.es/educa-jccm/cm/revistaIdea/tkContent?idContent=12694&locale=es_ES&textOnly=false&pgseed=1220819277003&nshow.content=1&position.content=0.

Corbin, E.C., & Corbin, C.B. (1983). Homemade play equipment for use in physical education class. *Journal of Physical Education, Recreation & Dance*, *54*(6), 35-36-38.

Davison, B. (1998). *Creative physical activities and equipment. Building a quality program on a shoestring budget.* Champaign, IL: Human Kinetics.

Grigg, A. (2009). Trash balls, *Physical & Health Education Journal*, Autumn, 24-26.

Hardman, K. (2008). Physical Education in schools: a global perspective. *Kinesiology, 40*(1), 5-28.

Lichtman, B. (1999). *More innovative games.* Champaign, IL: Human Kinetics.

Marston, R., (1994). Constructing equipment from recycled materials. *Journal of Physical Education, Recreation & Dance*, *65*(8), 44-46.

Méndez-Giménez, A. (2003). *Nuevas propuestas lúdicas para el desarrollo curricular de Educación Física. Juegos con material alternativo, juegos predeportivos y juegos multiculturales.* Barcelona: Paidotribo.

Méndez-Giménez, A. (2008). "La enseñanza de actividades físico-deportivas con materiales innovadores: Posibilidades y Perspectivas de futuro", Actas del *Congreso Nacional y III Congreso Iberoamericano del Deporte en Edad Escolar: "Nuevas tendencias y perspectivas de futuro"*, *pp*. 83-108.

Méndez-Giménez, A., Martínez-Maseda, J., & Fernández-Río, J. (2010). Impacto de los materiales autoconstruidos sobre la diversión, aprendizaje, satisfacción, motivación y expectativas del alumnado de primaria en la enseñanza del paladós. *Proceedings International Congress AIESEP*, A Coruña, 26-29th, October.

Moss, D. (2004). *Sports and Physical Education equipment you can make yourself.* Ontario, Canada: Physical Education Digest.

Orlick, T. (1990). *Libres para cooperar, libres para crear (Nuevos juegos y deportes cooperativos).* Barcelona: Paidotribo.

Sola, J., Álvarez, J.D., Blanco, S., Silva, J., Pérez, D. y García, V. (2009). Material convencional frente a material autoconstruido en el área de Educación Física en los Centros Educativos de Enseñanza Secundaria. Un estudio piloto. *Revista Digital http://www.efdeportes.com/* , *135*.

Sher, B. (1996). *Juegos estupendos con juguetes improvisados.* Barcelona: Martínez Roca. S.A.

Werner, P., & Simmons, R. (1990). *Homemade play equipment.* Reston, VA: American Alliance for Health, Physical Education Recreation and Dance.

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Crossed analysis of teaching Phys. Ed. in a disadvantaged educational context

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I. Introduction

The aim of this research is to study what is taught in a disadvantaged educational context by crossing sociological and didactic approaches. The project is to process by a bi-disciplinary analysis the everyday and situated teaching activity. What organizes the teacher activity so as to make students effectively learn? How is emerging the interaction and what is produced in terms of transformations? This paper targets to describe the teacher practices in the very everyday classroom by the mean of different but complementary frameworks crossed for a better educational phenomena understanding

II. Research inquiry

From a sociological approach, the main question is to know how a school makes the selection among the available cultural field? More precisely, what are the school mechanisms that structure this pedagogical content knowledge selection in an unprivileged school?

The didactic approach puts the stress on the pedagogical content knowledge (PCK) to be taught according to the specific subject matter at disposals.

The purpose of this crossed scientific approach is to get a better understanding of the teaching/learning process. It helps showing what kind of legitimacy teachers build while selecting the content knowledge: reciprocally, how do the teacher didactic intentions appear within the "effectively-taught" content knowledge?

III. Method

This case-study was based on a discourse content analysis. A PE teacher was interviewed prior and after lessons (table-tennis learning cycle; 5th grade class; 10 hours effective practice time). The verbal data collection was initiated by the comment of the video record extracted of two significant learning settings (4' sequence duration) used for the post-cycle interview. The data processing issued into two directions: the didactic/sociologic approaches.

IV. Didactic approach. Results.

This didactic approach crosses :

- the analysis of teacher didactic intentions crossed the intended pedagogical content knowledge-to-be-taught and the planned intervention

- the content analysis of the effectively-taught PCK supposes to study what happens effectively within the classroom.

IV.1. Didactic intentions analysis

The contextual elements and their interpretation by the teacher him/herself were considered as being prevalent for understanding the teacher didactic intentions.

- The PCK targeted by the teacher gave weight to the "tactical and strategical" dimensions of student action. This choice was related with the interpretation made of the student characteristics; these students were defined as being "motivated and involved" but "instable, inconstant and susceptible of changing attitude".

- It was noticeable that the teacher did not make reference to the programs in order to choose the objectives; the single reference to the PCK consisted of explaining the difficulty for reaching them all when confronted with these specific students.

- The general acquisitions were linked with methodological aspects of learning and with student attitudes: the teacher was more concerned for the respect for game rules than for knowledge and refereeing. One again, the teacher explains the choices by the student characteristics defined as "physical activity and movement needs". In a general manner, not specific to this class, the teacher considers important "to manage conflicts and to establish rules".

- These general learning may be put into relationship with the teacher conceptions conception of PE in this school or even of what could be named "the proper teaching project". This project consists of representing the progression necessary for "managing the class, providing physical fitness,…" so as to make girls "practicing alone and giving them the whish for practicing some physical activity with others".

IV.2 Analysis of the taught PCK

Two sequences of PE were analyzed.

1. Analysis of sequence 1: the importance of the technical gesture in the meaning construction.

Learning task: it consisted of a cooperative setting with dyads. The instructional setting was "to make the exchange duration as long as possible".

A gap between the declared target (i.e. the bat holding that produces direct trajectories and exchange ruptures) and the proposed learning setting (i.e. making the exchange last). This gap

may be explained by the technical conditions (the bat holding) necessary for being efficient in table tennis.

In the same way, the teacher expressed in the post interview that students did not perceived the meaning of this technical constraint as they could not miss it for winning the matches.

So how to explain this focusing on the bat holding meanwhile this technique was not understood by students?

- During the post interview, the teacher expressed the will for answering at any cost to the preoccupation for student learning. This preoccupation conveyed traditionally to the acquisition of technical gestures assessed "efficient" by experts. This centering on gestural norms was few appropriate to the present context and particularly with the "student representations of physical practice".

- This gap may be considered as the expression of a habitual mode of functioning: this customary functioning has not jet integrated the specificities of intervention in a difficult educational context. The teacher has very few experience of this kind of particular school.

- Finally, it becomes possible to interpret this teaching strategy as a preoccupation for keeping order by an easy-to-control learning setting. The teacher activity results from a compromise between contradictory preoccupations, expressing the intention for reconcile the didactic/organizational preoccupations.

2. Analysis of sequence 2: the articulation of specific knowledge objects and of social behaviors

Learning task: cooperation setting by dyads; the "weak" student is expected to alternate left/right return while the "efficient" student provides always centered returns.

The a priori analyzis of the setting lets emerge the role differentiation between the weak and the successful student. It did not allowed the knowledge construction nor for the second one (that contented with sending back), nor for the weak one (that is not able to move forward the middle). This fact issued into the absence of realization by students of the prescribed task. The teacher remained focused on the bat holding taken as an essential objet of learning. Information on the available conditions allowing the alternation of trajectories were

not provided (i.e. standing on orientation, shoulders and forearm orientation; visual bearings and landmarks).

This relative blindness on the absence of student realization about the prescribed task may be explained by revising downwards the objectives. The teacher expressed during post interview in these terms: "*There, she [the student] masters remaining in activity, it is all right. She keeps moving, it is her nature and then one does with it, one tries to find some little ways, there while making Ibrahim a partner in. I knew that Ibrahim was keeping cool, he would manage his things and then, well, it is the same if she respects the instructions, it is good. If she does not, she stands back the table, she tries to play, she does what she ca, and then, well, it stops there, she is moving.*"

This reduction of the taught content knowledge as well as the focusing on social behaviors does not only deal with the specificity of the teaching in difficult context but maybe also with the difficulty encountered while elaborating the learning setting adapted to the PE strakes on knowledge acquisition.

V. Sociological approach. Results

A very precise reading of the corpus extracted from teacher verbal data productions showed the emergence of several analysis categories with relation to what was taught in « *priority educational zone* (PEZ).

The data are treated according to a triple analysis:

- 1) Identifying the « situated adaptation strategies » (Van Zanten) named by Becker « situational adjustments» and the operated cultural selections
- 2) Extracting legitimacy criteria of curricular choices, that is to say, the logic underlying these adjustments and selections
- 3) which leads to show contradiction axes, tensions between divergent necessities

V.1 Situated strategies of adaptation and cultural discrimination.

Everything happens as if there was a process of misalignment of the initial professional habitus that creates various strategies of "contextual adaptation"(Van Zanten, 2001b).

V.1.1 Survival strategies (and even renouncement strategies)

According to Woods, these « survival strategies » concerned « adaptation processes ». In this situation, teachers were trapped by a more and more unrewarding job and tried to save the face and to escape from their professional identity destruction. These strategies concerned at a time the prevention and the regulation of anomic behavior but also strategies of self-protection.

These strategies concerned a bending process less connected with the transmission/appropriation of a specific knowledge. They allowed immediate regulations during the setting with no conflicts.

Two main survival strategies were used:

- Playing, joking, making student laugh
- Cutting down on exigences

These survival strategies were used in order to defuse conflicts (i.e. “to slow down the pressure”, “to play down the importance of the situation”), to unblock tense situations, to create a social link within classroom or to generate a confidence climate.

They also participate in a reorganization of the "practical sense" (according to Bourdieu, 1972) authorizing a relative adjustment of professional dispositions in the current situation and future ones.

V.1.2 Didactic techniques

Routines, individualized procedures and small working groups, repetition, evolving situation, valorizing the valuable answers, making students work quickly, and so on... The teacher was well familiarized with all these teaching techniques and procedures: he/she targeted “*to make students want to practice*” and “*to be as quickly as possible in activity with minimal instructions”.* She seemed to have a wide range of intervention forms designed to put the student at the center of all attentions.

V.1.3. Granting students a particular attention, not considering them as “kids like others”

The teacher believed strongly not to be indifferent towards students, taking them as they usually behaved. Far from the idea of an egalitarian treatment, he/she promoted the necessity for recognizing differences and for discriminating the teaching procedures.

The teacher took on and even claimed for the special and singular character of the context among which he/she intervened. He/she taught with no regrets nor disillusionment what probably allowed *to last* while remaining mobilized.

V.1.4 Exigences and content knowledge ; selective curricula choices

The selection of content knowledge takes place in this unstable frame. The characteristics of the student involvement determine the learning requirements.

The teacher established a clear demarcation line between what is negotiable or evolutional and what he/she will not let go until the end of the year. While the rules in the classroom assert oneself without transaction or rarely with, the system of content knowledge delivered at classroom is subject to variations that could produce inequities of access to a common culture.

V.1.5. Rapport to time; unpredictability, negotiation, instability of content knowledge

Another parameter characterized the intervention in problematic educational context from the actor point of view; it was a certain rapport to time. The teacher showed at a time the feeling that everything was constructed within duration (it will need time at the beginning of the year to fix the rules, the routines...) but also the feeling that everything may crash and must be negotiated, readjusted, redefined from one moment to another

This alternation feeling between rupture/continuity seemed to be part of a wearing out process producing a kind of psychological fatigue. The teacher must be very active, available, repeating the instructions many times without having certainty about their level of reception by students. These instability and unpredictability made the teacher job more difficult than somewhere else but bought to the fore by a rewarding manner the moments of connivance and of collaboration between him/her and the students.

This risk is emphasized by an advance on the likely interest of students that causes a limitation of the targets of the teacher as well as an uneven distribution of content according to the alleged involvement of the student. This "*deprivation of knowledge*" (Tanguy et al., 1984) by advance creates unequal access of students to the school culture (at least the one that is legitimized by the official texts): it implicitly encourages students to comply with less stringent requirements in terms of knowledge acquisition (as confirmed by the study of "*expectancy effects*").

V.1.6. Conditions for a personal involvement : limits of the pleasure for teaching

Finally, the teacher insisted on the necessity for a strong personal involvement in the teacher job as a condition for getting pleasure. He/she assumed that these students deserve interested in them, that they deserve more attention than others, "*they affect us*". At the same time, he/she prohibited any uncontrolled encroachment on his/her private life. Doing this way, the teacher watched over a stress-proof form and cut between private and professional spheres.

To conclude this section, the model of practice built by the teacher is highly contextualized. The curricular choices oscillate between curricular adjustments, arrangements and sharing of what is non-negotiable.

V.2 Legitimacy principles and criteria mobilized by teacher for justifying these choices

The teacher mobilized different types of rationalities (Weber, 1956):

- An instrumental justification: the teacher felt legitimate for acting because he/she believed to be helpful for somebody while developing an increasing feeling of a social

utility. This feeling constituted a strong motive for intervention in this very specific school.

- An affective justification: these motivations were linked with emotional and personal characteristics of the teacher: the taste for humor (i.e. "*playing down, laughing*"), the increased sensitivity towards students who "*deeply touch him/her*" and the will "*never give up*" about the requirements for student behavior. This component of personal involvement weighted strongly on the teacher intervention. The teacher felt constantly involved physically and mentally.

- A contextualized justification. The teacher referred to the characteristics of students and to local context of education. He/she got the feeling for participating to an extraordinary experience, very particular and singular, that issued into very specific pedagogical choices. Students from this school were presenting a very particular profile demanding a full attention, a permanent adaptation and a tense implication.

Furthermore, the more the teacher was involved within a highly situated functioning register, the more he/she felt a true feeling of rupture between his/her prior professional socialization and the present one as experimented at school. The teacher settled in a process of reconfiguration of the prior professional "habitus" linked with the "*emergence of contextualized professional norms*" (Van Zanten, 2001). This adaptation processed by dis-adjustment/readjustment of the prior habitus.

Finally, the fourth justification is axiological or basic: it deals with the justifications linked to "*the exigence for internal validity of the taught things*" (Forquin, 1989). At the beginning of interviews, the teacher claimed for objectives not directly referred with the class profile (i.e. "*understanding the reason why all the table tennis area should be used*", "*trying to get a more varied game play possible*", "*the notion of opponent to fight according to his/her weaknesses*"). Meanwhile, the reference to these contents will not be very frequent during interviews, letting place to more contextual arguments.

V.3. Several contradictory dimensions of the teacher job

At the term of all these studies, a certain number of contradictory tensions appear between the different dimensions of this profession. Several observations may be noticed :

- The teacher assumption on the necessity for providing students a frame of reference, a strong scope and routines contrasted with the chronic unpredictability described and so-declared during lessons.

- The declared learning cycles were considered as being globally conform to the standards of the formal curriculum. This fact differed from claiming for the specific teaching context where teachers have teaching and make endeavor to adapt.
- A declared optimism on the student potentialities contrasted with a necessary restriction of pedagogical ambitions.
- A strong personal involvement in teaching versus the essential preservation of private life.
- The determination to "*never give up*" at some key points of a learning cycle versus a tolerance for "*letting do*" so as to avoid deadlock situations.
- The explicit commitment to an objective focused on the development of reflexivity (i.e. "*to understand why and how we act*") against the need for involving students permanently in business, with respects to their specific need to move.

These contrasting situations revealed that the teacher adopted a professional habitus necessarily multiple, discriminating and adjustable.

V.4 Conclusion on this section

Finally, the deep gap between primary professional socialization and secondary professional socialization in disadvantaged context (Van Zanten, 2001) does not necessarily issues into the legitimacy crisis of the content-knowledge-to-be-taught. It produces:

- A reconfiguration of the professional identity
- A conversion of the used pedagogical settings
- A defining of the legitimacy of the PCK-to-be-taught according to the social utility
- A practice of didactic styles, practical models, pedagogical uses highly situated and adjusted to local constraints.

This content discourse analysis on teacher practices explores the teacher principles and shows that teachers organize their teaching in an active manner so as to settle a *« local negotiated order »* (Van Zanten). This equilibrium is determined between the adaptation to student cultures and the constraints management linked with school constraints; it requires a variable deepness of reconfiguration of the primary professional habitus. Survival strategies and situated adaptation strategies combine so as to make compatible the teaching and the learning in the classrooms. Finally, constraints and obstacles, when clearly identified by teachers themselves, tend to move into resources for didactic action and professional decision-making.

VI. General conclusion. Which kind of professional dimensions can be reflected together?

1) Results showed that a crossed approach promotes a contextualized analysis by the linking of several levels of interpretation. On one hand, the didactician deciphers the strakes of the searched/effective knowledge and points out the contradictory preoccupations that orient his/her professional activity. On the other hand, the sociologist puts the stress on the contextual elements for adapting a deep reconfiguration of the professional identity. As a result, the didactic and the sociologist analysis are congruent so as to help a better understanding of the teacher/student interactions on what makes the teaching/learning setting meaningful.

2) Comprehensive/explaining issues. This research presents an empiricist approach that wishes to be at a time descriptive, comprehensive and explicative. The research project is to reshape the system of teacher mobiles and motives while crossing the internal actor point of view and the external researcher point of view. This crossing of comprehensive and explicative perspectives is common to these two approaches; it takes a specific orientation according to the scientific field taken into consideration. While the didactic researcher targets to understand the way a teacher builds the didactic game by the mean of several techniques (i.e. mesogenetic, chronogenetic and topogenetic techniques), the sociology researcher would be more oriented towards identifying the ways this game affects the educational phenomena, producing several necessary adaptations to contexts and in fine curricula discriminations. In a certain manner, it becomes possible to assume that the didactic techniques target the description of the “didactic game” while the sociological approach is more about the "determination of the game" informing about the “didactic elsewhere” (Sensevy, 2007, pp. 36-37). Meanwhile, all of these approaches conclude to the production of fragile equilibrium, of contradictions and of tensions or conflicts: the didactic game is elaborated between external/internal influences on the setting; the situated context becomes, as suggested by Giddens (1987), “constraining and habilitating”.

3) So beyond a simple juxtaposition of perspectives, this research project was to identify the meeting points and the conflict points that enrich reciprocally without being main obstacle for exchanges. These points contribute, by a plural and complementary approach, for a better understanding of the intervention practices on teaching.

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Collaboration, Confidence, and Personal Expectation: Effects of NBPTS certification on PE teachers' work

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Abstract

Background. *The National Board of Professional Teaching Standards* (*NBPTS*) was created to improve education in the United States through a system of advanced, voluntary certification for K-12 teachers involving the submission of portfolios, videotapes of classroom teaching, and hours of testing (Berliner, 2001; Hattie, 2003). The substantially low passing rate and the rigor associated with the completion process make it widely recognized as a valid and comprehensive assessment for identifying exceptional teachers (Berliner, 2001; Hattie, 2003). NBCPET's experience their daily work within a social structure that communicates messages of disrespect for PE as a subject (Stroot, Collier, O'Sullivan, & England, 1994) as physical education (PE) teachers are isolated from colleagues for a variety of reasons including, but not limited to, physical proximity, subject matter, and status (Solmon, Worthy, & Carter, 1993; Stroot, Collier, O'Sullivan, & England, 1994; Smyth, 1995; Woods & Lynn, 2001).

Purpose. The purpose of the study was to examine the relationship between achieving NBPTS certification and feelings of marginality of PE teachers. Specific research questions were: (a) how do NBCPETs describe the meaning assigned to NBC by individual in their work environments? (b) how do PE teachers describe the impact of possessing NBC on their work lives? (c) how do PE teachers describe the impact that achieving NBC had on their interactions with individuals in their working environment?

Participants and setting. 26 individuals who had participated in another study examining the beliefs and experiences of NBCPETs (Woods & Rhoades, in press) were randomly selected and interviewed to explore previous responses.

Data collection. Data sources included transcripts from face-to-face focus group interview with 6 NBCPETs and individual phone interviews with 20 NBCPETs using a semi-structured interview guide (Patton, 2007).

Data analysis. Huberman and Miles (1994) four stage process was utilized to analyze all data. In the first stage, data collection and initial analyses were conducted. In the second stage, data were coded and organized by theme. In the third stage, data were organized into categories to most effectively arrange the data. Finally, data were considered in reference to a Symbolic Interactionist perspective to consider how the teachers in this study made meaning of the impact NBC had on their position within the school environment.

Findings. Data indicated that physical educators, classroom teachers, and administrators considered NBC as a symbol of highly skilled teaching. Further, attaining this certification and possessing this symbol usually changed the way the NBCPETs approached their work and changed the way administrators and colleagues acted toward them. Specifically, the NBCPETs described the certification caused them to feel more confident which led to being more vocal and assertive with administrators and other teachers. This left them feeling less marginalized and promoted a sense of responsibility to uphold the high standard of teaching associated with the certification. These high personal expectations for their own teaching behaviors led to continued deliberate efforts to enhance their teaching and their PE programs. This reduced perceptions of marginality as the NBCPETs considered themselves leaders in their school environments.

Key words: National Board for Professional Teaching Standards, physical education teachers, work environment, marginality

The National Board of Professional Teaching Standards (*NBPTS*) was created to improve education in the United States by strengthening teaching as a profession through the

creation of national teaching standards and a national certification process. This Board, established in 1987, sought an objective criterion for designating exceptional teaching (Berliner, 2001; Bond, Smith, Baker, & Hattie, 2000). National Board Certification (NBC) is a system of advanced, voluntary certification for K-12 teachers involving the submission of portfolios, videotapes of classroom teaching, and hours of testing (Berliner, 2001). Approximately half of the teachers who attempt the process achieve NBPTS certification (NBPTS, 2008). NBCTs describe the process as demanding as and more helpful than traditional graduate work because of the continual analysis of teaching behavior and reflection (Linquanti, 2001). Anecdotal reports and surveys suggest that the completion NBPTS certification provides outstanding professional teacher development (Coskie & Place, 2008; Childers-Burpo, 2002). The substantially low passing rate and the rigor associated with the completion process make it widely recognized as a valid and comprehensive assessment for identifying exceptional teachers (Berliner, 2001). In 2001, more than a decade after its inception, the NBPTS published standards for physical education (NBPTS, 2009). To date approximately 1,700 physical educators have gained NBC. However, PETE literature includes few studies investigating NBCPETs (see Phillips, 2008; Woods & Rhoades, 2010; and Woods & Rhoades (in press). Findings from these studies have provided an initial insight into NBCPET's teaching performance, student competency, demographic characteristics, and perspectives on the advanced certification process.

Woods and Rhoades (2010) examined NBCPETs' demographic characteristics, subjective warrants for entrance into the profession, and reasons for seeking the advanced certification. Findings indicated that NBCPETs are predominantly female (79%), Caucasian (78.9%), and hold masters degrees (71.1%). Just over half (55.1%) work in the elementary setting, have a mean age of 45 years, and have approximately 20 years of teaching experience. Themes that emerged from the data included career pursuit because of a joy of working with

and helping children; continued association with sport and physical activity; motivation to coach; and enjoyment of physical activity. The most frequent reasons identified for pursuit of NBC were financial incentives, an attempt to meet the challenge, and desire to develop professionally.

Woods and Rhoades (in press) examined NBCPETs perceptions of change as a result of certification. Randomly selected NBCPETs (65, F=53, M=12) were interviewed. Analysis was through the lens of Lawson's (1989) Model of the Interactive Factors Influencing Workplace Conditions for the Physical Education Teacher. Several themes connected to teachers' views of themselves as NBCTs surfaced. In particular, more teaching reflection and a greater focus on student learning and assessment, including an increased emphasis on individualizing teaching were described. An elevation in their perceived status and credibility and expanded opportunities within the educational community also emerged. Alternatively, several NBCPETs explained that the certification process had little or no effect on their teaching.

NBCPET's experience their daily work within a social structure that communicates messages of disrespect for PE as a subject (Stroot, Collier, O'Sullivan, & England, 1994). Literature provides well-documented evidence that physical educators teach a subject perceived as low status and are marginalized pedagogues. Findings have demonstrated that physical education (PE) teachers are isolated and professionals who are stimulated and contented in some areas of their jobs, but dissatisfied and frustrated with others. They are isolated from colleagues for a variety of reasons, including physical proximity, subject matter, and status (Solmon, Worthy, & Carter, 1993; Stroot, Collier, O'Sullivan, & England, 1994; Smyth, 1995; Woods & Lynn, 2001). As a result, PE has remained a marginal subject in schools, which provides obstacles to teacher development. Scholars have found that PE teachers experience feelings of frustration, limited access to resources, and a continued

struggle to be perceived as legitimate professionals by other teachers, students, administrators, and parents (Macdonald, 1995). Teachers in a study by Solmon, Worthy, and Carter (1993) wanted their students to see PE as a class, not a play period and shared stories of incidents when colleagues implied they were not "real" teachers. Feelings like these influence how teachers feel about their jobs, their effectiveness, and their interaction with students and can lead to burnout and compromised program quality (Sparkes, 1990).

Contrasting this are findings of generalist NBCTs showing certification increased their perceived credibility in the profession, was associated with enhanced respect (Yankelovich Partners, 2001), and improved interactions with students, along with greater collaboration with other teachers (NBTPS, 2001a). Further, findings indicate that NBC teachers are more confident in their teaching (NBTPS, 2001a) and tend to remain in the profession longer than their peers.

Given this, the purpose of the study was to examine the relationship between achieving NBPTS certification and feelings of marginality of PE teachers. Specific research questions guiding the study were: (a) How do NBCPETs describe the meaning assigned to NBC by individuals in their work environments? (b) How do PE teachers describe the impact of possessing NBC on their work lives? (c) How do PE teachers describe the impact that achieving NBC had on their interactions with individuals in their working environment?

Theoretical Framework

Symbolic interactionism (Blumer, 1969) provided the theoretical underpinning for this study. Interpretive research of this type is fundamentally concerned with meaning making and seeks to grasp the actor's definition of a situation (Shwandt, 1994). Symbolic interactionism is based on the concept that individuals structure their external worlds by their perceptions and interpretations of what they conceive the world to be. This is based on three basic premises: (a) humans act toward things on the basis of the meanings they ascribe to those things, (b) the

meaning of such things is derived from the social interaction that one has with others and society, and (c) these meanings are created through an interpretive process used by the person in dealing with the things he/she encounters (Blumer, 1969).

More specifically, given that individuals construct their reality in social contexts through communication and role taking (Benzies & Allen, 2011), this perspective places distinct emphasis on the importance of symbols and the interpretive processes that inform interactions that are essential to understanding human behavior (Patton, 2007). Thus, symbolic interaction provides a theoretical perspective for studying how individuals interpret objects and other people in their lives and how this process of interpretation leads to behavior in specific situations. Using symbolic interactionism calls attention to the active input that NBCPETs have as they express their experiences and perceptions in becoming and functioning as NBCTs.

In this way, an assumption guiding this study was that teachers' actions pertaining to NBPTS certification (and those who have achieved it) was based on the meaning it has for them. This meaning has been constructed through social interaction with the certification process itself and through interactions with others pertaining to NBPTS. With this perspective, the researchers attempted to capture from the NBCPTEs' perspectives and present their description of how others assigned meaning to NBC and how and how this meaning impacted their interactions in the school structure.

Method

Participants and Procedures

This investigation included 26 individuals who had participated in another study examining the beliefs and experiences of NBCPETs (Woods & Rhoades, in press). Themes pertinent to the present study emerged from the Woods and Rhoades (in press) investigation,

consequently 26 of the 65 original participants were randomly selected and interviewed again to explore responses they provided in the initial interviews.

Data Collection

After obtaining Instructional Review Board approval teachers were assured of anonymity and upon agreement to participate, completed an assent form. Two types of qualitative methods for data collection were utilized Both focus group and individual interviews were used, because both types of interviews are independent data collection methods, yet their combination is useful to researchers, as "complementary views of the phenomenon may be generated" (Lambert & Loiselle, 2007). To gather rich and detailed information, six NBCPETs (N=6; F=5, M=1) participated in a face-to-face focus group interview, and subsequently 20 NBCPETs (F=15, M=5) participated in individual telephone interviews.

Focus group interviews

Focus group interviews are conducted to examine the interactions that result from discussion among participants where members' exchanges may accentuate similarities and differences and provide rich information (Duggleby, 2005). Stewart, Shamdasani, and Rook (2007) stress that focus group interviews are typically used in the early stage of a research project and followed by other research methods such as interviews, the case for the present study. Six NBCPETs participated in a focus group interviews with the two authors of this study. A semi-structured approach was employed, wherein two broadly constructed questions guided facilitated discussion. The interviews lasted approximately 90 minutes, were digitally recorded, and were later transcribed verbatim for analysis.

Individual interviews

Each teacher was individually interviewed using standardized open-ended questions based on an interview guide (Patton, 2007). The interview guide was grounded on findings

from the initial study (Woods & Rhoades, in press) as well as emerging concepts identified through the focus group interview. The same ten questions were asked of all teachers based on four topical areas related to the NBCPET's: (1) status, (2) confidence, (3) collaboration, and (4) personal expectation.

Following Patton's (2007) interview style and structure, questions were developed in each topical area to assess participants' perceptions and opinions about themselves and the ultimate effects of NBC. Additional queries were asked of each teacher based on her/his response to the previous questions. A pseudonym was assigned to each teacher. Interviews lasted approximately an hour and were digitally recorded and later transcribed verbatim for analysis.

Data analysis and trustworthiness

For the purposes of this study, the four stages proposed by Huberman and Miles (1994) guided data analysis. Data were analyzed in relation to Symbolic Interactionism in order to understand how the teachers and those in their school environments gave meaning to NBC as a symbol of advanced-level certification and how possessing NBC influenced the teachers' actions and the actions of their colleagues. In the first stage data collection and initial analyses were conducted. In the second stage, data reduction, data were coded and organized by theme or idea that best represented the nature of the observation or expression. In the third stage, described by Huberman and Miles (1994) as data display, the data were organized into categories. Focus group and individual interview data were compiled and coded relative to emerging themes and to connections and relevance between these items. After this, codes and quotes were organized and aggregated according to theme. At this point, coding was conducted within each theme looking for specific strategies to emerge from the data demonstrating the meaning assigned to NBC and its influence on individuals interactions. Finally, data were analyzed through the lens a Symbolic Interactionism perspective as a way to

consider how the teachers in this study made meaning of the impact NBC had on their positions within their school environments.

Employment of multiple strategies ensured the trustworthiness of the data. An audit trail detailed the methodological procedures followed. Member checks were conducted with approximately 20% of the identified participants directly quoted in the manuscript. In addition, identified negative cases were re-analyzed to any confounding data. Researchers also worked as a team meeting weekly to discuss the data. As in all qualitative research, results may be transferable to other settings with similar characteristics (Lincoln & Guba, 1985).

Findings

The purpose of this study was to examine the relationship between achieving NBPTS certification and feelings of marginality of PE teachers. The researchers also sought to investigate the held value and meaning assigned to NBC by NBCPETs and how that meaning influenced their actions and the way they perceived those in their working environments. Data indicated that physical educators, classroom teachers, and administrators consider NBC a symbol of highly skilled teaching. Further, attaining this certification and often changed the way the NBCPETs approached their work and the way they perceived their administrators and colleagues acted toward them. Specifically, the NBCPETs described the certification caused them to feel more confident, which led to their being more vocal and assertive with administrators and other teachers. This left them feeling less marginalized. Data also indicated that earning NBC gave a sense of responsibility to uphold the high standard of teaching associated with the certification. These high personal expectations for their own teaching behaviors instilled a sense of pride and led to continued deliberate efforts to enhance their teaching and their PE programs. Approaching their work in this way reduced perceptions of marginality, as the NBCPETs considered themselves leaders in their school environments.

NBC as a symbol of highly skilled teaching

The NBCPETs in this study repeatedly described NBC as a representation of advanced teaching. Because of rigor involved in the process, the NBCPETs considered achieving NBC a significant accomplishment and offered that significant personal reflection and peer review to be most beneficial in examining and elevating their own teaching. According to the NBCPETs in this study, other teachers and administrators in their schools shared this perspective on the NB certification. In an individual interview Jack said, "It is definitely looked at as teaching at a higher standard…and you have that label put on you whether you like it or not." Focus group transcripts included similar testimonies: "Among teachers without NBC, we are looked up to as more qualified and my status has improved, especially with administrators. They all want us to be NBC" (Sandy, individual interivew). The teachers described how they felt more respected because they now had the label of being an NB certified teacher. Interestingly, possessing this label seemed to minimize most perceived marginality associated with teaching PE.

After achieving NBC the PE teachers in this study were more likely to be involved in leadership positions, solicited for advice, and listed to by administrators and colleagues. Participants testified that possessing the certification caused others to act differently toward them as they were now considered highly effective educators. The following quotations demonstrate:

> I think that people give me an initial respect because of NBC and there is a greater degree of respect [after receiving NBC]. People seek out my advice and I am part of the leadership team. Having NBC is part of the reason they seek me out. I think that all at the county level have a higher view of me (Betty, focus group interivew).
>
> I think there is a level of mutual respect that just comes from getting that certificate. It must be hard to be in a place where you say things and they are never heard or no one cares. I think if I had said some things prior having my NB certificate people would

have listened less. There is just something about that piece of paper and what it represents. I do not know what it is about that piece of paper…it's not so much what we got out of that piece of paper. It is how that piece of paper affects those around you (Hannah, individual interview).

In my district, it is highly valued to have NBC. Administrators want you to give back and so we are leading curriculum committees, we are pegged. I felt at one time my name appeared on numerous committees and they would have never been interested in me before. The piece of paper means something to other people. It validates [you as a teacher] for different groups in different ways. My fellow NB teachers would say the same thing; that they notice a difference in things they are asked to do and ways they are involved (Susan, focus group interview).

These data indicate that NBCPETs, other teachers, and administrators all considered NBC to be a symbol of highly skilled teaching. As a result of this certification, participants perceived that individuals in the school environment treated NBCPETs differently by involving them in leadership positions, including them in committees, and seeking their advice regarding educational matters. Including NBCPETs in these activities central to school function promoted their feelings of respect and reduced feelings of marginality commonly associated with teaching PE.

Confidence

Nearly every teacher in this study described a profound increase in confidence as a result of achieving NBC. They believed that NBC validated them as educators and provided confirmation that what they were doing with students was, in fact, appropriate and effective. The NBCPETs believed other teachers and administrators in their schools shared this view of NBC.

Participants made statements such as: "It is outside validation. You've been validated by your peers and you verify what you're doing is correct" (Nick, focus group interview).

NBCPETs repeatedly expressed that feeling more confident led them to be more vocal with colleagues and administrators. They talked about speaking up when they had a concern or disagreement with an educational policy or procedure. Most noteworthy is the specific mention that they did not feel comfortable doing so *before* holding NBC. It seems that having the label of "highly qualified" contributed to this change in behavior. The following quotation from one focus group interview highlights this:

I feel more confident about speaking out about things that I think need to be changed or things that could be done differently. For example, we were doing a movement unit and our principal was going to allow students not to do it and he just had them write a paper. I was able to go to him and say 'No, PE is an established curriculum. We have goals and objectives that need to be met as a part of this curriculum. You wouldn't do that with a math or science class and go into their class and say, "They don't have to do this experiment. They can just write a paper." I probably would not have stood up to the administration like that before having National Board (Tamara, focus group interview).

In addition to being more vocal with administrators, the NBCPETs in this study described how enhanced confidence translated into a more assertive approach when collaborating with classroom colleagues. Hannah stated:

> I think it has helped with conversations with my colleagues because specialists are often asked and sometimes told how to integrate other content into their classroom. I have always worked really hard to make that a two-way street, but I can now say point-blank to a colleague 'here are my standards, how are we going to make this work for both of us.' It is because of the almost intimate relationship I have with those standards as a result of going through the NB process that I feel much more strongly about what they

represent. I feel a little calmer, but I also have more confidence (Hannah, focus group interview).

These data demonstrate that possessing NBC led to enhanced feelings of confidence that caused the NBCPETs to be more assertive and more vocal in their interactions with colleagues and administrators. These feelings and subsequent behaviors help move NBCPETs further away from the margin as they take a more active role in central school functions and become more visible leaders within the school structure.

Personal expectations

Because their school cultures regarded NB certification as a symbol of superior teaching, the NBCPETs in this study felt a duty to uphold that meaning by continually demonstrating high quality teaching. They discussed holding themselves to higher standards and having elevated expectations of themselves as a result of completing the NB certification process, Nate and Jeff demonstrate:

I do feel more pressure to make sure daily that I have quality instruction, because if somebody comes in and you are supposed to be a NBC teacher and you are rolling the ball out, what does that say about NBC? I feel a responsibility to make sure that I am doing top-level work; otherwise I think it gives the certification a bad name. I have heard other teachers say that. It makes them feel like they cannot ever really let their guard down, because you have this certification and the certification means something (Nate, individual interview).

It is definitely looked at as a higher standard and you do not want to let the standard down. If people look at you and you are doing something you know is not right, obviously you have that label put on you whether you like it or not, and you just want to try to live up to those expectations. Sometimes if I am tempted and I am tired and I just want to roll the ball out, I will say to myself "Oh, I cannot do that, I would be letting NB down" (Jeff, individual interview).

The NBCPETs in this study apparently owned the label of "accomplished teaching," associated with NB certification. Because they perceived themselves as representing this symbol of teacher quality, the NBCPETs held themselves accountable to maintaining that standard.

Little or no effect on participants

Although most of the teachers described feeling less marginalized as a result of attaining NB certification, a few expressed that it had little or no effect on their interaction with colleagues or their status in the school culture. Often they explained this was due to the low status of PE or the lack of knowledge about quality PE programming and instruction:

> I do not think my status is any different after getting NBC because most of the time, honestly, they do not care what you do in PE. When someone comes in to evaluate you, they know nothing about PE so if the kids are moving, there are not any problems, and nobody is being sent to the office, you are doing a good job (Mary, individual interview).
>
> It did not really change anything because PE is not a priority and it will never get more valuable, because its academics first. I do feel it was a boost I needed because I can talk until I am blue in the face and my administration would never be able to support full time PE (Grace, focus group interview).

On occasion the NBCPETs in this study described minimal social effects from NBC because some teachers did not know they were certified or had a complete lack of knowledge about the process itself. The teachers in this study discussed how they felt respected by those who knew about NBC, its rigor, and what it represented, or in essence, those who are knowledgeable about the shared meaning assigned to NB certification. One teacher explained:

> I would say I am respected at my school, but I do not think NBC had anything to do with that. Probably half of the staff does not even know that I am NBC. There is a

group that does respect me because they went through the process themselves (Casey, individual interview).

Finally, some of the NBCPETs' respect seemed to be different between the teacher as educator and the subject matter of physical education. Some teachers expressed perceptions that they were respected as teachers, but described a perceived lack of respect for the subject matter of PE. Catherine said, "I feel respected, more or less. I think they respect me. But, they do not see me as an equal as an academic subject."

These findings indicate that as a result of achieving NBC, the majority the physical educators in this study felt more confident, were more assertive and vocal, and were treated differently by individuals in their working environment. Given this, these NBCPETs felt reduced marginality, as they were involved in leadership positions, served on important school committees, and were consulted by fellow teachers. In general, other teachers, principals, and district administrators shared the belief that NBC symbolized highly skilled teaching. As a result, the NBCPETs in this study perceived that they experienced increased status and were perceived by their colleagues as legitimate professionals.

Discussion

Symbolic interactionism provided the theoretical framework underpinning this study. Using this lens, a basic assumption was that NBC served as a symbol of accomplished teaching, since Hankel, Koening and Elliott (2008) note that evidence suggests that NBPTS certification provides a mechanism for identifying highly skilled teachers. Further it was presumed that, in general, PE teachers, generalists, and administrators shared this perspective and recognized an impact on the practices of teachers who complete the process (Hankel, Koening, & Elliott, 2008). Findings indicated this was, in fact, the case. The NBCPET's regarded NBC as a valid symbol of professionalism and as representative of advanced

practice. In addition, they believed other teachers, principals, district administrators, and parents shared this belief.

As a result of possessing NBC certification, the NBCPETs commonly felt, taught, and interacted within their working environments differently after achieving certification. Consequently, they perceived that their colleagues and administrators began treating them differently, as interacting with the NBCPET took on a different meaning and dynamic following their acquisition of what NBC symbolized.

The NBCPETs interacted with the symbol of certification as it caused them to feel more confident, act more assertive, and elevate held expectations for themselves as teachers. NBC as a symbol represented external validation for the NBCPETs, who indicated the successful completion of the process added credibility to their lives as teachers. Although most NBCPETs said they were self-assured prior to NBC, they felt even more so afterward. Participants shared stories of being confident to address needed changes within the schools and perceived that their actions made a difference, which Jackson and McDeromott (2009, p. 34) identified as the "pedagogy of confidence." The awareness and mind-set of these NBCPETs confirms earlier research reporting that NBCTs demonstrated increased self assurance and a perceived mastery of teaching accomplishment after gaining NBC (Cavalluzzo, 2004; Lustick & Sykes, 2006; NBPTS, 2001b).

The NBCPETs were well aware of the of the school culture in which they functioned each day. They interacted with the symbol of certification in a way that caused them to be more assertive in their professional interactions. For example, they were more self-assured during exchanges with administration regarding policies and procedures. Likewise, they were more assertive with their colleagues when collaborative situations arose because through their interaction with the symbol of NBC, they felt, for example, more assured in the knowledge of their own content standards and were comfortable affirming the need to meet these standards

when collaborating with generalists. These findings are in line with the emphasis on the development of Professional Learning Communities in which collaboration is a key component, and the NBPTS (2001b) finding that more than 80% of NBCTs report that the certification process facilitated improved collaborations with other teachers.

The NBCPETs interacted with the symbol resulting in a feeling of responsibility to the shared meaning of NBC. After attaining certification, the NBCPETs overwhelmingly viewed held certification as representative and symbolic of validated advanced teaching. Because of this they felt a personal responsibility to maintain high expectations for themselves as a means to uphold the shared meaning of quality symbolized by NBC. This personal responsibility points to accomplishment of the NBPTS' propositions that NBC teachers should be committed to students and their learning. This commitment pressed the NBCPETs to uphold the tenets of the advanced teaching credential by persistently modeling appropriate teaching.

Further, findings indicated that others in the school environment were perceived to interact with the symbol of NBC as they solicited increased involvement, collaboration, and advice from the NBCPETs following their attained certification. This is not unexpected as NBPTS fifth core proposition affirms that accomplished teachers should collaborate with other teachers and work "with other professionals on instructional policy, curriculum development and staff development" (NBPTS, 2002, p. 4). The participants perceived that other teachers sought the NBCPETs' advice more frequently than before they had attained certification. Research shows that NBCTs assist other teachers an average of 0.58 more than non-NBCTs in their school. Clearly, the teachers in the school environment interacted with the NBC symbol by seeking guidance from those who possessed it (Frank, et al., 2008)

Because of their expertise, district administration interacted with the symbol by requesting the input of NBCPETs on district level committees regarding educational policies and procedures. School principals, as well, granted additional responsibility to the NBCPETs

after they were certified, which may have affected others in the school. Such behavior by administrators suggests that possessing this symbol validated the skill and value of the NBCPETs as educational professionals. This is related to findings that the principal's stance on teacher leadership is a critical factor in how NBCTs are viewed and used in their schools (Anagnostopoulos, Sykes, McCrory, Cannata, & Frank, 2010; Koppich, Humphrey, & Hough, 2007).

Also influencing these new school responsibilities is the notion that the NBCPETs believed the certification process prepared them to accept leadership positions and were interested in pursuing them. Such emergence among the NBCT who were studied by Yankelovich Partners (2001) indicated that 94% revealed that they wanted to be leaders in the profession. Approximately 100% of NBCTs were involved in at least one leadership activity, and on average, NBCTs were involved in almost ten leadership activities. Similarly, Sykes, et al. (2006) reported that NBCTs tended to increase leadership in their schools after this advanced certification. These researchers emphasize, however, that the leadership activities of NBCTs prior to certification is unknown. Hankel, Koening, & Elliott, (2008) speculate that perhaps teachers who seek NBC are already school leaders, and that board certification merely signals those leadership skills. This issue is outside the scope of the current data. .

These findings indicate that attaining advanced certifications (like NBPTS) may assist PE teachers in reducing the effects of teaching a low-status subject. Armed with NBC, the PE teacher studied by Lux & McCullick (in press) was successful in navigating the marginality in her school working environment. Findings presented here may offer insight into how possessing this symbol influences the feelings of PE teachers who have acquired it. Future research is needed to examine the degree to which changes in confidence and assertive behavior influence the structure, school hierarchy, and working environments of PE teachers.

References

Anagnostopoulos, D., Sykes, G., McCrory, R., Cannata, M., & Frank, K. A. (2010).Dollars, distinction, or duty? The meaning of the National Board for Professional Teaching Standards for teachers' work and collegial relations. *American Journal of Education, 116*, 337–369.

Benzies, K. M., & Allen, M. N. (2001). Symbolic interactionism as a theoretical perspective for a multiple method research article, *Journal of Advanced Nursing, 33,* 541-547.

Berliner, D. (2001). Learning about and learning from expert teachers. *International Journal of Educational Research*, *35*, 463-482.

Blumer, H. (1969). Symbolic interactionism: Perspective and method. Englewood Cliffs, NJ: Prentice-Hall.

Bond, L., Smith, T., Baker, W. K., & Hattie, J. (2000). The certification system of the National Board for Professional Teaching Standards: A construct and consequential validity study, Center for Educational Research and Evaluation, University of North Carolina, Greensboro.

Cantrell, S., Fullerton, J., Kane, T. J., & Staiger, D. O. (2007). *National board certification and teacher effectiveness: Evidence from a random assignment experiment.* A paper developed under a grant from the Spencer Foundation and the U.S. Department of Education. Retrieved from http://harrisschool.uchicago.edu/Programs /beyond/workshops/prepapers/fall07-kane.pdf

Cavalluzzo, L. C. (2004). *Is national board certification an effective signal of teacher quality?* Alexandria, VA: The CAN Corporation.

Childers-Burpo, D. (2002). Mirrors and microscopes: The promise of National Board certification in an era of accountability, *Contemporary Education, 72*, 14–17.

Coskie, T. L., & Place, N. A. (2008). The national board certification process as professional development: The potential for changed literacy practice. *Teaching and Teacher Education, 24*, 1893-1906.

Duggleby, W. (2005) What about focus group interaction data? *Qualitative Health Research, 15*, 832–840.

Frank, K. A., Sykes, G., Anagnostopoulos, D., Cannata, M., Chard, L., Krause, A.,& McCrory, R. (2008). Does NBPTS Certification affect the number of colleagues a teacher helps with instructional matters? *Educational Evaluation and Policy Analysis, 30*, 3-30.

Hakel, M., Koenig, J., & Elliott, S. (2008). *Assessing accomplished teaching: Advanced-level certification programs.* Washington, DC: National Research Council.

Jackson, Y., & McDeromott, V. (2009). Fearless leading. *Developing School Leaders*, 47, 34-39.

Koppich, J. E., Humphrey, D. C., & Hough, H. J. (2007). Making use of what teachers know and can do: Policy, practice, and National Board certification. *Education Policy Analysis Archives*, *15*(7). Retrieved from http://epaa.asu.edu/epaa/v15n7/

Lambert, S. D., & Loiselle, C. G. (2008). Combining individual interviews and focus groups to enhance data richness. *Journal of Advanced Nursing, 2*, 228-237.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA.: Sage.

Lux, K., & McCullick, B. (in press). How one exceptional teacher navigated her working environment as the teacher of a marginal subject. *Journal of Teaching in Physical Education.*

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis (*2nd ed.). Thousand Oaks, CA: Sage Publishers.

Macdonald, D. (1995). The role of proletarianization in physical education teacher attrition. *Research Quarterly for Exercise and Sport*, 66, 129-141.

McColskey, W., Stronge, J. H., Ward, T. J., Tucker, P. D., Howard, B., Lewis, K., & Hindman, J. L. (2005, June). *Teacher effectiveness, student achievement, and national board certified teachers*. Arlington, VA: National Board for Professional Teaching Standards. Retrieved from http://www.nbpts.org/UserFiles/File/Teacher_Effectiveness_Student_Achievement_and_National_Board_Certified_Teachers_D_-_McColskey.pdf

Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A source book of new methods.* Beverly Hills, CA: Sage Publishers.

National Board for Professional Teaching Standards (NBPTS). (2001a). *The Impact of National Board Certification on Teachers* (Survey results). Arlington, VA: National Board for Professional Teaching Standards.

National Board for Professional Teaching Standards (NBPTS). (2001b). *I Am a Better Teacher* (Survey results). Arlington, VA: National Board for Professional Teaching Standards.

National Board for Professional Teaching Standards (NBPTS). (2002). *Why America needs NBCTs?* Retrieved from http://www.nbpts.org/index.cfm?t=downloader.cfm&id=545

National Board for Professional Teaching Standards (NBPTS). (2008). *National Board certification process*. Retrieved from http://www.nbpts.org/ for_candidates

National Board for Professional Teaching Standards (NBPTS). (2008a). *Early and middle childhood physical education: Scoring guide*. Retrieved from http://www.nbpts.org/pdf/sg/18_emc_pe.pdf

National Board for Professional Teaching Standards (NBPTS). (2009). NBPTS physical education standards. Arlington, VA: Author. Retrieved from http://www.nbpts.org/userfiles/File/emc_pe_standards.pdf

Patton, M. Q. (2007). *Qualitative research & evaluation methods.* Thousand Oaks, CA: Sage Publishers.

Phillips, A. (2008). A Comparison of National Board certified teachers with non-National Board certified teachers on student competency in high school physical education. *Physical Educator, 65*, 114-121.

Rotberg, I. C., Futrell, M. H., & Liberman, J. M. (1998). National Board Certification. *Phi Delta Kappan*, *79*, 462-466.

Rovegno, I., & Bandhauer, D. (1997). Norms of the school culture that facilitated teacher adoption and learning of a constructivist approach to PE. *Journal of Teaching in Physical Education*, *16*, 401-425.

Sanders, W., Ashton, J., & Wright, S. P. (2005). *Comparison of the effects of NBPTS certified teachers with other teachers on the rate of student academic progress. Report prepared for the National Board for Professional Teaching Standards.* Cary, NC: SAS Institute, Inc.

Schwandt, T. A. (1994). Constructivist, Interpretivist Approaches to Human Inquiry. In: N. K. Denzin and Y. S. Lincoln (eds) *Handbook of Qualitative Research*, pp. 118-137. London: Sage.

Smyth, D. (1995). First-year physical education teachers' perceptions of their workplace. *Journal of Teaching in Physical Education, 14,* 198-214.

Solomon, M., Worthy, T., & Carter, J. (1993). The interaction of school context and role identity of first-year teachers. *Journal of Teaching in Physical Education*, *12*, 313-328

Sparkes, A. (1990a). The changing nature of teachers' work reflecting on governor power in different historical periods. *Physical Education Review, 13*, 39-47.

Sparkes, A., Templin, T., & Schempp, P. (1993). Exploring dimensions of marginality: Reflecting on the life histories of physical education teachers. *Journal of Teaching in Physical Education*, *12*, 386-398.

Stewart, D. W., Shamdasani, P. N., & Rook, D. W. (2007). *Focus groups: Theory and practice*.Thousand Oaks, CA: Sage Publishers.

Stroot, S., Collier, C., O'Sullivan, M., & England K. (1994). Contextual hoops and hurdles: Workplace conditions in secondary physical education. *Journal of Teaching in Physical Education*, *13*, 342-360.

Sykes, G., Anagnostopoulos, D., Cannata, M., Chard, L., Frank, K., McCrory, R., &
Wolfe, E. (2006). *National board-certified teachers as organizational resource*. Arlington, VA: National Board for Professional Teaching Standards. Retrieved from http://www.nbpts.org/resources/research/browse_studies?ID=174

Templin, T. (1988). Teacher isolation: A concern for the collegial development of physical educators. *Journal of Teaching in Physical Education*, *7*, 197-205

Woods, A. M., & Lynn, S. K. (2001). Through the years: A longitudinal study of physical education teachers from a research-based preparation program. *Research Quarterly for Exercise and Sport, 72*, 219-231.

Woods, A. M., & Rhoades, J. (2010). National Board Certified Teachers: Background characteristics, subjective warrants, and motivations. *Journal of Teaching in Physical Education. 29,* 312-331.

Woods, A. M. & Rhoades, J. L. (in press). National Board Certified Physical Educators: Perceived changes related to the certification process. *Research Quarterly for Exercise and Sport.*

Yankelovich Partners. (2001, April). *Accomplished teachers taking on new leadership roles in schools: Survey reveals growing participation in efforts to improve teaching and learning.* Arlington, VA: National Board for Professional Teaching Standards. Retrieved from http://www.nbpts.org/resources/research/browse_studiesID=22

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Learning orienteering in France: a socio-discursive approach of student profiles with regards to practice

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Background: This study's aim is on the way a student interprets a problem solving setting related to orienteering. In France, the pedagogical content knowledge supposes that a student be able to make decision among strategies for reaching out marks under time constraints. Several levels of difficulty are possible, allowing the corresponding strategies for the optimal management between score difficulty and personal efficiency.

Purpose: The theoretical framework lays on the socio-discursive interactionism provided by Bronckart (2007). If the language activity is a constitutive part of human decision-making, then its socio-historical dimensions determine the semiotic activity of environment interpretation and the language profile.

Method: The method consisted of 1) determining the evolution of the student language profile during an orienteering learning cycle (n = 19 students; 18 years old; 8 X 1h30 effective practice) ; 2) collecting written data on the projected/effective orienteering run during lessons 1, 5 and 8; 3) describing social behaviors in action.

Results: Four profiles were extracted according to different lexical fields and social strategies. A discourse analysis helped modeling the dynamic of the student profiles with regards to their personal efficiency. These observations allowed the link of the action strategies with the individual performance.

Finally, the main variables for succeeding were concerning the competency for self-organizing, practicing safely, formulating the intended action, expressing feelings, and reflecting-in-action. These criteria changed during the cycle by the deepening of student understanding while shifting from one profile to another.

Keywords: orienteering, socio-discursive interactionism, Baccalauréat, Phys. Ed., student strategies

Introduction

Shaping bridges between action, language and reflection is possible when people consider that any action is a relevant language production from the actor point of view. Acting is not distinct from reflecting like the Cartesian assumption states, but on the contrary the mind is embodied by action and the reflection is elaborated by and on action. So the way a subject behaves reflects his/her potentiality for elaborating action strategies and for problem-solving. By return, any reflection is linked with a true and situated experience that serves as a basis for re-elaborating further strategies: language as a product contributes to modify its pragmatic process of effect reaching and vice versa. The intention determining the meaningful action supposes to access to the inner world represented by the actor considered as being responsible and autonomous.

In physical education, the teacher question is "how to reach the student point of view while solving a complex problem"? The target is to infiltrate the student personal cognition in order to understand the elaboration of strategies, the possible errors and the efficient or promising profiles. The teacher question shifts so from the available knowledge-to-be-taught to the relevant strategies of knowledge reconstruction. This process supposes a reasoning that is nor always coherent nor ever intuitive. The student determines the action strategies from the interpretation of the problem-solving area, linking the felt experience with the planned project and the constraint parameters. The teacher difficulty lays on the way to reach the student representations of the personal world. The language production, that is expected to represent a part of the inner world, may be an interesting manner to investigate the action strategies from an internal point of view. The language sciences provide nowadays a wide theoretical

framework that allows processing a discourse and/or a content analysis in a qualitative approach of learning.

As an example, the socio-discursive approach provided by the Genève School of educational psychology of language and represented by Bronckart (1996) supposes that all human discourses are social productions that can be studies as a text no matter its materiality (Hjelmslev, 1943). By essence plurimodal, a language production reflects an aspect of the individual's activity and can be processed by a content analysis that assumes that the meaning is included within the signs and/or by a discourse analysis that postulates that the relevant sense is situated and must be reinterpreted.

The question is to reach the subject's activity while interpreting a learning task. If one considers that "interpreting" means shaping links between semic indices that have to be worked on, then the learner activity is oriented towards the construction/deconstruction/reconstruction of meaningful frameworks helpful for decision-making. Then the constant re-elaboration of the interpretation network will provide an adapted and evolving background helpful for constructing strategies in a complex setting.

In France, the Physical Education curricula is expecting from student to choose the more elaborated-for-him/her strategy so as to solve complex problems. As an example, orienteering is considered for student aged 18 as a sport practice available for developing action strategies and reflective practice. The research question is "how do students elaborate in an assessment context the efficient differential strategies that help succeeding? What links exist between interpreting, understanding and decision-making? Orienteering being practiced in a natural but unknown environment, how do students elaborate individual and collective strategies and are there similarities/specificities among these ways for reflecting in/on action?

This study's aim is on the way a student interprets a problem solving setting related to orienteering. In France, the pedagogical content knowledge supposes that a student be able to

make decision among strategies for reaching out marks under time constraints. Several levels of difficulty are possible, allowing the corresponding strategies for the optimal management between score difficulty and personal efficiency.

Method

Participants and participant selection

The students of this study concerned a French Baccalauréat class voluntary for a sport option class. Their motivation for sport practice was not specifically centred on orienteering but they considered this social practice as interesting at a time because useful in everyday life and enjoyable as outdoor sport that may be practiced with others. The local tradition for sports in this area explains this interest for outdoor sports because the natural environment is propitious and exempted of objective dangers excepted rainy conditions.

The participants of this study included an expert PE teacher. Didier[3] was a twenty-years-experienced PhD in Sport Pedagogy. His expertise in orienteering was effective as he tough this sport practice every year. His interest for providing reflective postures from students was congruent with the Baccalauréat examination that stipulated the student strategies for problem-solving in a very constrained task. The tough pedagogical content knowledge was so congruent with the research design in terms of student posture and of learning objectives and success. So we expected nor individual student failure nor any disinvestment in terms of student motivation.

Research setting

The Gray High School was a public school located in a middle town north part of the main franche-county agglomeration. This high school (n=1500 students) enrolled varied populations of students, advantaged-or-not in terms of culture and of study success. The chosen class selected for the study was a 5th Grade student class that was preparing the first

[3] All names are pseudonyms.

university diploma; the Baccalauréat. This class was composed of 19 students (13 females; 6 males) that had chosen PE as for an optional sport practice that was valued for assessment as 5% of the final notation for examination. The previous learning cycles helped them familiarize to a constructivist and reflective approach of practice with regards to problem-solving settings. The class was so used to manipulate tools for providing a reflection-on-action as well as being autonomous when practicing in a wide free –but safe- area.

The orienteering field was the Gray forest east part (one square kilometre around) delimited by very characteristic stop lines. None of students knew this part before the examination because the training field was not the same.

The pedagogical content knowledge of orienteering in France

The learning cycle (8 X 1h30 hours effective practice) consisted of: 1) linking the map reading (i.e. orienting the map so as to situate oneself, identifying the significant items and legends by triads and then dyads, using a compass for finding an azimuth…); 2) action planning while choosing the optimal itinerary (i. e. taking into account the markers level of difficulty and/or the stop lines, the configuration of the location…); 3) linking the personal resources with race strategies (i.e. emotional, energetic, informational and/or semiotic resources with regards to intended actions and feelings while acting); 4) memorizing the relationships for re/deconstruction by observation and crossed discussion during action and 5) optimizing the strategies with regards to the formal constraints of the task (i.e. managing the balance between timing limits, the resources at disposal and the expected score). The observed lesson was the national final assessment examination where the student had to decide the available race in the time allocated for a maximal score possible; twelve marks ranked into five different levels were at disposal.

Data collection

This research design employed a crossed methodology to develop an in-depth understanding of the student's dispositions and strategies-in-action. The method consisted of 1) determining the evolution of the student profiles during an orienteering learning cycle (n = 19 students; 18 years old; 8 X 1h30 effective practice) by a continuous written report collection (T = 15' duration; before/after race on the projected/effective orienteering strategies; lessons 1, 5 and 8); 2) describing student social behaviors in action.

Three main studies were managed during three different temporalities. The first one was to describe the student prior profiles with regards to the lexical field used while expressing the action strategies. The second study brought to the fore a longitudinal study made during the 1st, 5th, 8th lessons: the target was to describe the student evolution of profiles. The third study took place during the cycle and consisted of a comparing the evolution of the student social interactions during action.

The three studies were based on different but precise logics of pedagogical content knowledge. These PCK corresponded to three problem-solving setting presented each during lessons 1, 5 and 8. First, the written reports collected during lesson 1 dealt with the description of the targeted markers location in order to link the map with the field when considering the efficiency standards. Second, the written work collected during lesson 5 was on memorizing two markers for a better understanding of the link map/ markers, sparing time and score improving. Finally during lesson 8, the student writing expressed the planned itinerary including 12 markers while managing the balance race/orientation.

The student strategy interpretation tool

Our primary focus was describing how the students interpreted the problem-solving task and the constraint system. The difficulty was to reach their own individual reading of the task in order to model the personal profiles for decision-making. The choice for investigating the strategies by a subjective but internal point of view was argued because the comparison

from an expert one had no interest in understanding the inner and situated strategy elaboration. So the internal point of view, grounded by the previous phenomenological assumption, was supposed to help infiltrating the action as defined, experience, planned and expected by students –and not as valued by the teacher-. So several options being possible, the elaborated tool allowed by an inductive process to describe then to model the observations.

A specific tool has been elaborated especially for this study. It consisted of collecting student written reports before, after and during action all along the three considered lessons. This tool consisted of asking to each student separately: 1° *to reformulate what was understood from the instructional setting and problem-solving task*, 2° *to explain what was effectively done during the race* and 3° *what was effectively learnt during action*. This tool had been pre-tested so as to validate its pertinence, sensibility and fidelity. The inter-coder reliability was tested with a 95% agreement score.

The data collection

The data collection was made in standardized conditions; each student was given a written paper with an allocated time of 10 minutes each for expressing the reflection on action. This collection took place before and after the orienteering race and was strictly individual; a collective debriefing took place after these productions in order to compare the interpretations and to provide feedbacks to students. They were advised that no "correct" answer was expected because of the highly situated nature of their own reasoning.

Data analysis

The student written reports were collected during the first, fifth and eighth lessons so as to restitute the historical dynamics of change: these student reports were individual and connected with their proper experience. Two axis for the data treatment were used: 1) the evolution of the content with regards to learning and 2) the linking between the instructional settings, the effective practice and the declared-by-student learning. These discourses were

produced during reflective moments while students fulfilled the individual grids as well as the researcher observation allowed to notice social interactions between students.

The data analysis was processed in three moments. First the discourse transcription allowed the elaboration of lexical fields defining the profile area. Second, these lexical fields linked with four themes were determining the action pertinence from the situated practitioner practice. Third, the link between the practice and the language profiles was determining the social interactions.

The used grid for data treatment was elaborated according to a content analysis of the student written productions (Denzin & Lincoln, 2002). Four themes were extracted with regards to the produced semantic field. We name "profile" the interpretation register defined by the student written reports. First, the "logistic profile" item concerned the used materials for orienteering, the time management, the external significant landmarks and the consideration for instructional setting. The "sensitive profile" item consisted of the student reference to internal and external experiences. The "assessment profile" recovers the declared success-or-not assumption, the failure identification and the feeling to get the project fulfilled. The "profiles" corresponds to posture distanced from effective realized action while using the pertinent semic indices for decision-making.

Analysis of the student written reports

Student sheets; lessons 1, 5, 8.

The main part of the students collaborated positively to the proper analysis process. The weather forecast did not make easy the training cycle so students fulfilled sometimes their notes in difficult conditions and under time constraints at the end of the learning setting. The richness of the interactions between students passed over the individual decontextualized reflection. The written data from the first lesson helped obtaining the foreseen declared

actions, the effective actions and the declared student learning. It identifies the incoming state of student learning levels. The second written data helped describing the evolution of the action planning with regards to the expected effects. The video-recoding of the language interactions allowed situating the context of language productions and of student reflections. The last written report made the link between the action strategies and the effective practice. The lexical fields and the semantic approach helped describing the evolution of the relationships between comprehension, language production and effective practice.

The data treatment of the written reports

The data treatment of the written reports was processed according to Amossy (2006, p. 158): « *The argumentation analysis does not focus on the lexis itself and by oneself: it lays on the ways the vocabulary choice orients the argumentation. It studies the lexical elements used by the student in the considered interaction* ». This assumption explains that lexeme is not a full entity to be replaced into the interdiscourse where it "was born" and "has lived".

Four themes extracted from the discourse analysis

The written data let emerge a specific lexical field the allowed extracting four student profiles corresponding to four themes. The first theme was named « **assessing profile**» because it was identified by items related to the notions of success /failure of the race strategy. The « **logistic profile**» concerns words related with the student self-management, the use of materials (compass, maps, field written reports), the time management between departure and arrival and the concern for fulfilling the instructional constraints of the task. The « **reflective profile**» concerns the orienteering vocabulary related to semic indices (i.e. marks taken as reference, map legend interpretation, space conceptualization, identified learned competencies and declared action strategies). Finally, the « **sensitive profile** » was defined by the student reports concerning the physical effort and resource management (i.e. security concern, global feelings while racing). These four themes will be successively studied.

Observation field notes on student social interactions

Students decided differently to work by and with peers; alone, by two and/or three from the first lesson. Their behavior was collected during lessons by field notes that helped describing their action strategies in terms of social relationships.

Figure 1 : Student social interactions during the orienteering learning cycle

Student names	*Lesson 1*		*Lesson 5*		*Lesson 8*	
	Peers	*Profiles*	*Peers*	*Profiles*	*Peers*	*profiles*
L	PG	RELS	Alone	R	(RO CB)	RES
RO	B/GA	RES	Alone	RS	(CB L)	RS
CB	Alone	RELS	P	RES	(L RO)	RELS
B	RO/GA	RES	Alone	RL	Alone	R/
P	Alone	RL	CB	RES	Alone	RS
GA	RO/B	RES	Alone	RLS	Alone	RLS
S	(RH)	REL	RH	RL	Alone	RLS
RH	(S)	R	S	RL	Alone	R/
GC	seul	REL	Alone	REL	Alone	LS
G	(N)	RL	N	RL	Alone	RELS
N	(G)	RL	G	RL	Alone	RELS
C	Absent	L	F	REL	(D)	REL
F	Absent	L	C	REL	(R)	RLS
D	Absent	/	T	RE	(C)	RLS
T	R/BA	RL	D	RE	Alone	R
R	T/BA	RL	BA	RL	(F)	RES
BA	R/T	RL	R	RL	Alone	RELS
PG	L	REL	CV	R	Alone	RELS
CV	Alone	R	PG	R	Alone	RLS

Data trustworthiness

The first difficulty was to train students to answer and to fulfil the written sheets while making explicit the proper strategies. These students had already been trained to reflect on action from previous learning cycles. This process had been pre-tested and validated by similar students familiarized with this procedure.

After reading the collected written data, two researchers specialist on language sciences discussed about the data treatment in terms of content and of discourse analysis. The target was to elaborate a tool presenting the expected five properties of the data treatment grid: relevance, sensitivity, fidelity, mutual exclusion and exhaustiveness of the items. These exigencies let them extracting four categories for the data treatment so as to fulfil the trustworthiness of the process. After stabilizing these categories used for profiling the student

written discourse, the researchers resolved discrepancies and negotiated the common way for interpreting the data. After a while, they presented acceptable inter-coder reliability (5% discrepancy). Finally, the common themes were based on a negociated occurrence attribution and the data had been exhaustively treated. As this method was based on a case-study, the target was not to generalize the issue of this research but to describe a specific situated process that provides heuristic understanding about student orienteering strategies at this level of sport practice.

Results

Two salient results emerged within this examination of the student written reports. The first result focused on the lexical field's definition that formed four thematic fields. These fields formalized intentions-in-action of the students. The second theme demonstrated that the vocabulary of the students evolved during the cycle and allowed to observe three profiles which represented three strategies to manage intentions-in-action. Finally, the third theme explained that social interactions involved the action issues according to student profiles.

Four themes extracted from the lexical field analysis

Filliettaz (2008, 14) assumes that: « *The relevance of a situated discourse analysis ensues essentially from its linking with the semiotic forms that impact the discursive productions* ». From the beginning of the learning cycle, students were oriented towards the *reflective field*: they referred mainly to orienteering semic indices (i.e. marks taken as reference, the interpretation of the map legend, the space conceptualization, the identified learned competencies and the declared action strategies). During this first lesson, 13 students on 19 were presenting a *logistic field* as well so as to give importance to security first. The *assessment field* (n = 8) and the *sensitive field* (n = 5) were temporarily under-valued.

During the 8th lesson, the same field repartition appeared but more students were self referred and connected with the sensitive field (n = 14). So the linking of their reflective experience on the race field and their feelings while running was being constructed and stabilizing. 18 students were expressing within the reflective field while referring to the different semic indices useful for running. As the learning cycle is ending, students summarize their feelings and their experiences while shaping a network of indices available for decision-making. These observations do not allow studying if they prioritize the indices, but what is observed is that they relate them in a complex process. As this 8th lesson is a national assessment setting, the student feelings must be oriented by the strakes of the notation. But the observations showed that only eight of them where yet referring to the assessment field even if all of them were under psychological constraint. Everything happens as if they were more reflective-oriented that assessment-oriented at the end of the learning cycle: this fact is paradoxical at the term of the learning process under strong assessment constraints. According to the logistic field referred by 12 students, the security reference let place to the material management at disposal for decision-making (i.e. the map reading, the compass use, the time management, the difficulty level of the marks).

Finally, the different field definition and the student repartition among these fields evolved during the learning cycle. If the logistic field was more concerned by security at the beginning of the cycle, then it was more focused on the material management at the end. If the assessment field referred to the failure made at the beginning of the cycle, it concerns the relationships between errors, difficulty levels and strategies of remediation. The reflective field expands while defining the reflective and practical solutions when confronted to obstacles. The sensitive field, very few used at the beginning of the learning, was developed in a qualitative as well as a quantitative way: more students referred to personal interpretations of feelings and their remarks were more self-referred.

Student elaboration of strategies: a historical process

Lesson 1. Students used at a time several fields for decision-making but in several proportions. The sensitive field used by students let them go to a higher expertise level while the assessment field put limits to expertise. The association of logistic and reflective field was promising but the single reflective field helped succeeding even if the action analysis was poorer and more simple.

Lesson 5. No more students used a specific field for decision-making: a kind of specialization emerged due to the selection of the fields. Certain students met difficulties when confronted with this complex problem-solving setting so they tried to simplify the process for decision-making. So they focused on the reflective and logistic fields.

Lesson 8. Once again, the four fields were mobilized by students, but in another way. Some of them managed in an optimal way these parameters that allowed them succeeding: their scores varied from 19.25 to 18.25 on 20. The second type of students did not manage all parameters, the complexity being a true obstacle; their scores varied from 11 to 11.50. Between these profiles, students with an assessment/logistic field could not adapt to the complexity of the situation. The reflective/sensitive field helped interpreting the action in an appropriate manner: so the self reference connected with space conceptualization and so was the condition for understanding the complexity of the setting from the inner and embodied point of view.

Social interactions and roles for language productions

Students worked differently all along the cycle: alone, by dyads and/or by triads from the beginning and formally alone during the last lesson. Some of the working groups were stable while some others were fluctuating. During lesson 1, the composition of the groups was made by affinity even if students presented very varied profiles. Then weak students did not meet a specific group where to be integrated: some of them seemed to be somewhat lost.

Groups moved from affinity dynamics to level composition or learning groups. During lesson 5, student become selective for their interactions and affinities; some of them were very invested in an energetic manner and so met others from the same profile. Others were more strategy-centered and make or an alliance between similar profile of peers or between complementary profiles. At the end of the cycle, the main part of the students (n = 12) decided to work alone due to the final examination conditions, taking obviously the risk or to progress or to fail alone. Only one student (GC) was failing in developing a reflective profile; his final assessment notation came at a low level.

Discussion

The learning cycle was based on a constructivist approach of learning orienteering. The student strategies were first organized by the different tools at disposal: the elaboration of knowledge was oriented by the action strategies and experience in the race field. In order to build his/her project, the student used prior knowledge and self-references based on personal feelings linked with practice: the knowledge was inseparable from the inner expertise and from the experienced action issues. But the modification/reconstruction of this frame of reference by action helped interacting meaningfully with the specific and complex context of the orienteering field. The student moved from one specific profile to another, complementing the different competencies and trying to develop a personal style available in the specific context. There was a inter-dependency between pre-shaped knowledge and future knowledge-in-action, allowing a true recursive process between the race strategy elaboration and the final performance.

As stated by Bronckart (1996), the student activity is not limited to the decoding of the environmental semic indices, but expands to the basic dialogue with the complex environment included within a socio-historical dynamics. These social interactions impact all levels of strategy elaboration. In fact, the race construction of itinerary supposes the active interaction

of the subject with the complex learning task, in a very situated and complex context. This context is saturated of semic indices that must be interpreted with regards to the very numerous variables for decision making; according to the student profiles, their competency for moving from one to another profile may be provided in context. Furthermore, the competency for managing several profiles at a time helps adapting in a wide range of strategies and of constraints: it helps shifting and adapting the strategies during the race itself. The social dimension helps the student to elaborate a solidarity system that helps sharing the other's expertise: the community of practice becomes so helpful for activating the learning process by the sharing of profiles. At a time, the historical dimension invites him/her memorizing the impact and the effects of a pre-planned strategy with regards to the encountered constraints and to the evolution of the action strategies.

If words used for characterizing the intended/effective actions are relevant of a student profile, then the context and the true experience are necessarily determining the practice strategies. In fact, the dialogue with environment supposes relating the internal feelings with the external semic indices in order to manage the complex constraints and to interpret the situation. Doing this way, the student profiles at a time move and deepen so as to help adapting in the situated context. The complementary profiles serve as a basis for enlightening and making wider the specific profile at a certain moment of the learning process. At the end, the best students are able to change their way of interpreting the problem-solving setting according to the type of encountered problem and to their present resources.

The French Baccalauréat in PE represents also a full examination where students have to elaborate optimal strategies when confronted with a problem-solving setting. This examination supposes to be able at a time to deepen the personal profiles and to expand the proper profile to other ones in order to make the competencies of the racer wider. It represents an interesting way for differentiating the student strategies at a time by a management of

similar reasoning and by the rupture from the personal profile when confronted with rupture and difficulties. This study provides so the necessity to take into account at a time the student profile at a moment of learning and in process, the social dynamics and the historical inscription of the learning in a former/future action strategy.

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References

Bouthier, D., (1993). *L'approche technologique en STAPS, représentations et actions en didactique des APS.* Habilitation à diriger les recherches. Orsay : Université Paris Sud.

Bronckart, J.-P. (1996). *Activité langagière, textes et discours. Pour un interactionisme socio-discursif*. Lausanne : Delachaux et Niestlé.

Denzin, N.K., & Lincoln, Y.S. (Eds.) (2003). *Collecting and interpreting qualitative materials.* London: Sage.

Filliettaz, L., & Schubauer-Leoni, ML. (2008). *Processus interactionnels et situations éducatives.* Bruxelles: De Boeck.

Gardner, H. (1983). *Frames of mind. The theory of multiple intelligence.* New York: Basic books.

Hjelmslev, L. (1971) [1943], *Prolégomènes à une théorie du langage*. Paris : Minuit

Kirshner, A. C., & Whitson, D. H. (1997). *Situated cognition. Social, semiotic, and psychological perspectives*. Mahwah: Erlbaum Associates.

Lave, J. & Wenger, E. (1991). *Situated learning: legitimate peripheral participation.* New York : Cambridge University Press.

Magill, R.A. (1998). Knowledge is more than we can talk about: implicit learning in motor skill acquisition. *Research Quaterly for exercise and sport, 69*, 104-110.

Martinand, J.L. (1994). La didactique des sciences et de la technologie et la formation des enseignants. Revue *Aster, 19,* 61-75.

McBride, R. E. (1991). Critical thinking. An overview with implications for physical education. *Journal of Teaching in Physical Education, 11*, 112-125.

McPherson, S. (1993). Knowledge representation and decision making in sport. In J. L. Starkes & F. Allard (Eds.). *Cognitive issues in motor expertise*. Amsterdam: North-Holland Ed.

McPherson, S. L. & French, K. E. (1991). Changes in cognitive strategy and motor skill in tennis. *Journal of Sport and Exercise Psychology, 13*, 26-41.

Mouchet, A. (2011). Les registres de technicité : un concept utile pour analyser l'activité des sujets dans les APSA? é*lectronique Journal pour la Recherche sur l'Intervention en Education Physique et Sportive, 23,* 76-92.

Nachon, M., Mahut, N., Mahut, B., & Gréhaigne, J. F. (2001). Student's construction of strategies in table tennis: Design of the expectation horizon within debate of ideas. AIESEP Proceedings. Taipei (TW), June.

Rink, J. E., French, K. E., & Tjeerdsma, B. L. (1996). Foundations for the learning and instruction of sport and games. *Journal of Teaching in Physical Education, 15*, 399-417.

Rovegno, J., Nevett, M., Brock, S., & Barbiarz, M. (2001). Teaching and learning basic invasion-game tactics in 4th Grade : a descriptive study from situated and constraints theoretical perspectives. *Journal of Teaching in Physical Education, 20*, 370-388.

Schiffrin, D., Tannen, D., & Hamilton, H.E. (2001). *The Handbook of discourse analysis*. Oxford (UK) : Blackwell Publishing.

Schön, D.A. (1983). *The reflective practitioner*. US: Basic books.

Schunk, D. H. (1986). Verbalization and children's self-regulated learning. *Contemporary Educational Psychologie, 11,* 347.

Searle, J. R. (1983) *Intentionality. An essay in the philosophy of mind*, Cambridge; University Press.

Searle, J.R. (1969). *Speech acts*. Cambridge : University Press.
Searle, J.R. (2001). *Rationality in Action.* Boston : MIT Press.
Searle, J.R. (2002). *Consciousness and Language*. Cambridge : University Press.
Shannon, C.E. et Weaver, W. (1949). *Mathematical theory of communication*. Urbana : Illinois University Press.
Shulman, L. (1987). Knowledge and teaching : foundations of new reform. *Harvard Educational Review*, 57 (1).
Siedentop, D. (1986). Modification of teacher behavior, Sport pedagogy : *proceedings of the 1984 Olympic Congress*. Champaign : IL : Human Kinetics.
Silverman, S. (1991). Research on teaching in physical education. *Research Quaterly for exercise and sport*, 62 (4).
Simon, H.A. (1990). Epistemology: formal and empirical. In W. Sieg (ed.). *Acting and reflecting, the interdisciplinary turn in philosophy.* Kluwer Academic Publishers.
Sperber,D., & Wilson, D. (1989). *La pertinence. Communication et cognition*. Paris: Minuit.
Streeck, J. (1996). How to do things with things. *Human studies, 19*, 365-384.
Suchman, L. (1987). *Plans and situated actions: The problem of human-machine communication*. Cambridge UK: University Press.
Uhlrich, G. & Bouthier, D. (2008). Efficacité d'une situation de formation, par la simulation, à l'observation du mouvement général en rugby. é*lectronique Journal pour la Recherche sur l'Intervention en Education Physique et Sportive, 15,* 198-215.
Van Glasersfeld., E. (1995). *Radical constructivism. A way of knowing and learning*. London: The Falmer Press.
Von Wright, G.H. (1976). Determinism on the study of Man. In J. Manninen & R. Tuomela (Eds.), *Essays on explanation and understanding*. Dordrecht: Reidel.
Watzlawick, P. (1976). *How real is real? Communication, disinformation, confusion*. Random House.
Wittgenstein, L. (1973). *La rime et la raison*. Paris : Minuit.

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Students' Perceptions of the Command, Practice, and Inclusion Styles of Teaching

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Abstract

Background: For many physical educators, the Spectrum of Teaching Styles (Mosston and Ashworth, 2002) serves as a "tool box" for meeting the different needs of students and goals in physical education. Despite the proliferation in Spectrum research in which researchers have examined teacher experience and student skill, knowledge, and social learning within the styles, little is known of the extent to which students perceive the Spectrum teaching styles. Exploring students' perceptions about the teaching styles will broaden our understanding of the ways students learn, what students identify as benefits and drawbacks of the teaching styles, the relationships that students perceive between the styles and learning domains, and student style preferences.

Purpose: The purpose of this study was two-fold: (a) to examine students' perceptions of physical, cognitive, and social involvement in physical activity lessons conducted in the command, practice, and inclusion styles of teaching; and (b) to examine student preference for different teaching styles.

Setting and Participants: A total of 77 college-aged students enrolled in four different physical activity classes at a university in the U.S.A. participated in this study.

Data Collection: All students participated in three, 50-minute lessons. One lesson was delivered in the command style, one in the practice, and one in the inclusion. All 12 lessons were taught by one Spectrum trained teacher. Students performed the same series of pilates exercises in all three lessons. After each lesson the students completed two questionnaires that included statements addressing physical, cognitive, and social involvement (7-point

semantic differential scales), style preference, and rating of perceived exertion. Additionally, individual interviews were conducted with four students from each class after each lesson.

Findings: The students reported feeling more physically and cognitively involved in the inclusion style lessons than in the command and practice style lessons. No differences were found for social involvement. In terms of style preference, the inclusion and command styles were selected most frequently.

Conclusions: These findings suggest that the command, practice, and inclusion styles can influence level of student involvement in physical activity lessons.

Keywords: Spectrum of Teaching Styles, Student Perceptions, Pilates, College Students, Physical Activity

Students' Perceptions of the Command, Practice, and Inclusion Styles of Teaching

Knowing the benefits and drawbacks of instructional styles is important to physical educators. Based on the results of this study, if the primary goal is to maximize physical activity involvement, the command and inclusion styles are most effective when teaching pilates. If the goal is to get students physically and cognitively involved, the most efficient way to do so would be to integrate the inclusion and command styles. Specifically, the teacher should provide the students alternative levels of task difficulty (inclusion) and have them perform the tasks to a continuous model in unison (command).

Delivering a quality physical education program, one in which student learning can be demonstrated, is not an easy task. In fact it is a very complex task because students enter the learning environment with varying levels of skill ability and diverse movement backgrounds. Curricula must be taught to accommodate a wide array of goals and objectives encompassed within the psychomotor, cognitive, and affective educational domains which are reflected in national standards (e.g., NASPE, 2004). To meet the diverse needs of students and the outcomes associated with national standards, physical educators must develop a "tool box" of

instructional strategies. For many, the Spectrum of Teaching Styles (Mosston and Ashworth, 2002) serves as this "tool box" for designing quality physical education programs.

The Spectrum is recognized worldwide (Cothran et al., 2005; Kulinna and Cothran, 2003). It has been embraced in physical education as a structure for teaching in schools (Hall and McCullick, 2002; Jackson and Dorgo, 2002), designing undergraduate teacher preparation programs (Ashworth, 1992; Byra, 2000), and conducting research (Hennings, Wallhead, and Byra, 2010; Iserbyt, Elen, and Behets, 2010). It is a framework "that delineates alternative teaching-learning styles" (Mosston and Ashworth, 2002, p. 1) based on the deliberate decisions teachers and students make within the instructional setting.

Validating theoretical assumptions associated with the Spectrum continues to be critical to the pursuit of knowledge about the landmark teaching styles. Many Spectrum studies have been conducted to examine student skill learning (Hennings et al., 2010; Iserbyt et al., 2010), student knowledge gains (Beckett, 1991; Jenkins and Byra, 1996), and student social behaviors (Byra and Jenkins, 1998; Chatoupis, 2005). In addition, teacher experience with and use of Spectrum teaching styles in the K-12 physical education setting has been studied (Cothran et al., 2005; Kulinna and Cothran, 2003).

Little, however, is known about the extent to which students perceive the Spectrum teaching styles. To better understand student perspective of Spectrum teaching styles, additional research needs to be conducted. According to Cullingford (1991), the views of learners "need to be taken into account because they know better than anyone which teaching styles are successful, which techniques of learning bring out the best of them, and what the ethos of the school consists of" (p. 2). "What children say should help us understand better what the experience is . . ." (p. 13). Lee (1997) reiterated this premise by suggesting that there is ample research available "to indicate that students are aware of their thoughts and are

able to report them with sufficient accuracy to yield information that researchers can use to explain how they learn from teaching" (p. 267).

In one study, college-aged students reflected on their K-12 physical education experiences in terms of teacher use of Spectrum styles (Cothran, Kulinna, and Ward, 2000). These students recollected that their teachers employed about half of the 11 Spectrum styles in their teaching and that the styles employed were almost exclusively from the reproduction cluster (i.e., teacher-centered styles of teaching). The command and practice styles were most frequently identified. In the command style of teaching students learn to perform a task accurately and quickly as presented by the teacher (Mosston and Ashworth, 2002). In the practice style of teaching students learn to perform a task through individual or paired practice as presented by the teacher (Mosston and Ashworth). Cothran et al. also reported that the students perceived the practice style as most fun, most effective for learning, and most motivating. In two other studies students reported their experiences in lessons conducted under the conditions of two other Spectrum styles, the reciprocal and inclusion. In the reciprocal style learners are paired; while one learner completes the task, the other observes and provides feedback based on criteria presented on a task sheet (Mosston and Ashworth, 2002). In the inclusion style the students are provided alternative levels of difficulty from which to choose when performing a task (Mosston and Ashworth). Cai (1997) studied the attitudes of college-aged students towards participation in the command, reciprocal, and inclusion styles while engaging in racquetball and karate. Command was identified as the preferred style for the students in both content areas. When comparing styles across the two content areas, the students reported that the inclusion style should be used with sport-specific skills. In a rifle shooting task taught under the conditions of the command, practice, and reciprocal styles, Boyce (1992) found that approximately half of the students who received the reciprocal style treatment reported that they felt their partners knew no more about the

shooting task than they did. About half of the students who received the command style treatment reported disliking the way feedback was publicly available to all students.

The purpose of this study was two-fold: (a) to examine students' perceptions of physical, cognitive, and social involvement in activity lessons conducted in the command, practice, and inclusion teaching styles; and (b) to examine student preference for different teaching styles. Exploring students' perceptions about the styles will broaden our understanding of the ways students learn, what students identify as benefits and drawbacks of the styles, the relationships that students perceive between the styles and learning domains, and student style preferences. Knowing how students perceive the different teaching styles should promote more effective teacher use of styles.

Methods

Participants

A total of 77 college-aged students, 59 females and 18 males, from one university in the Rocky Mountain region of the U.S.A. participated in this study. The students were between 18 and 24 years of age. They were enrolled in four different physical activity classes, classes which were a part of their university-wide general education program. Student enrollment in the four classes was 13, 18, 23, and 23. In terms of class status, 51 percent of the students were freshmen, 21 percent sophomores, 5 percent juniors, and 23 percent seniors. Approximately 80 percent of the students were Caucasian. The remaining students were of African American, Asian, Hispanic, and American Indian descent.

All of the students were taught by one female teacher who had two years of teaching experience. This teacher was trained and assessed in the use of Mosston and Ashworth's (2002) teaching styles through a university graduate level course. Having one teacher provide all instruction helped control for variability in delivery of the styles.

Setting and Content

This study took place during the students' regularly scheduled activity classes. The students met once per week, 50-minutes per session, for the semester. The actual study was conducted during the first four classes of the semester. All class sessions were conducted in a gymnasium measuring 120 by 60 feet. Students had access to individual mats on which to lie while performing the movement tasks.

The content delivered during the study lessons was pilates. The students performed 3-sets of five pilates abdominal exercises each lesson, the 100 (100 reps), bicycle (20 reps), alternating leg lift (20 reps), double straight leg (6 reps), and roll up (6 reps). Engaging students in meaningful lifetime physical activities while teaching fitness and wellness concepts is the emphasis in today's "new" physical education programs (Viadero, 2008; Wikgren, 2011). Pilates is one of those activities that can be performed for a lifetime and is commonly included in "new" physical education programs where the goal is to develop lifelong movers.

Styles Intervention

This study spanned a four week period of time. During the first week the students were introduced to the study. The participants were informed that for three weeks they would be performing a series of pilates abdominal exercises while being taught within the command, practice, and inclusion teaching styles during their weekly 50-minute physical activity classes. The information provided to the students during the introductory session enabled them to voluntarily decide whether to serve as a participant in the study. Written informed consent was obtained from all students at the end of the introductory session. Approval of this research study was granted by the university's Institutional Review Board.

An alternating treatment design protocol was utilized. During the first pilates lesson (second week) two of the four classes were randomly assigned to the command teaching style and two to the practice. During the second lesson (third week) the two teaching style

treatments were reversed for the four classes. Finally, during the third lesson all students received instruction under the conditions of the inclusion teaching style. It is important to note that within the inclusion style the students were not required to self-check task performance. Rather, task performance was assessed by the teacher as is the case in the command and practice styles. This modification was made to maintain consistency across the feedback factor in the three teaching styles studied. Given that the focus of this study was to examine student perceptions of each style, a design that included only a singular well designed lesson within the conditions of each teaching style was deemed sufficient for the students to be able to accurately report their perceptions of each teaching style experienced.

Description of Lessons

Each lesson consisted of an introduction, demonstration and explanation of the exercises, practice time to engage in the exercises, and a short closure. Each lesson lasted approximately 40 minutes.

Introduction

During the introductory phase of each lesson the teacher explained to the students what they would do, what their role was, and what the teacher's role was specific to the teaching style used. In the command style, the teacher stated the following:

> Today we will be using the command teaching style. You will do five pilates exercises. I will demonstrate each exercise and then you will perform them at the pace I establish. While exercising, I will give you feedback about your performance.

In the practice style, the teacher stated the following:

> Today we will be using the practice teaching style. You will do five pilates exercises. I will demonstrate each exercise and then you will practice them on your own as listed on the task sheet. While exercising, I will circulate and give you individual feedback about your performance.

In the inclusion style, the teacher stated the following:

> Today we will be using the inclusion teaching style. You will do five pilates exercises. I will demonstrate the levels of task difficulty for each exercise and then you will choose a level of difficulty for each exercise and perform them on your own at your own pace as listed on the task sheet. While you are exercising, I will circulate and give you feedback about your performance.

Demonstration and Explanation

Following the introductory phase of the lesson the teacher demonstrated/explained each exercise to the students. Task directions and critical cues were provided. Following the demonstration, the students performed a partial set of each exercise as per the conditions of each teaching style.

Practice Time

After the demonstration/explanation, the students engaged in the demonstrated exercises as per the conditions of each teaching style. In the command style the students followed every decision the teacher made regarding quantity, quality, and order of exercises to be performed, where to locate, when to begin, the pace at which to exercise, duration time for exercising, stopping time, interval time between exercises, and posture for performing each exercise. These nine decisions that the teacher made in the command style were shifted to the students in the practice style. In the inclusion style, the students made these same nine decisions as well as decisions about level of exercise difficulty. In all three teaching styles, the teacher was the provider of feedback. In the practice and inclusion styles, the students received a task sheet that included performance directions and skill cues for the five exercises.

Closure

At the end of the lesson, the teacher gathered the students for closure. During closure the main points of the episode were summarized and role- and task-related feedback provided.

Data Collection Instruments

At the end of each of the three lessons the participants completed the Developmental Channels Questionnaire (DCQ) (Mosston and Ashworth, 2002) and Rating of Perceived Exertion (RPE) form (Borg, 1998). In addition, four participants from each class were interviewed. The purpose of the individual interviews was to solicit more in-depth information related to the themes that emerged from the questionnaire analysis. A mixed method design was utilized to strengthen data structure and increase the depth of analysis of the specific research questions addressed (Johnson and Onwuegbuzie, 2004).

DCQ

Mosston and Ashworth (2002) suggest that the structure of decisions made by the teacher and learner in each teaching style impacts the "developing learner in unique ways by creating conditions for diverse experiences" (p. 11). Each teaching style underscores distinct objectives that lie along the physical, cognitive, and social developmental channels. In the general field of education, developmental channels are referred to as educational learning domains, psychomotor (manual/physical skills), cognitive (mental skills/knowledge), and affective/social (growth in feelings or emotional areas/attitudes) (Krathwohl, 2002). Each teaching style reflects some combination of human attributes specific to these developmental channels.

Following each lesson the students reported perceived level of physical, cognitive, and social involvement for the teaching styles employed. The same six 7-point semantic-differential scales were employed to examine student involvement in each of the three developmental channels. The 7-point scoring system associated with scale items consisted of three positive points, three negative points, and one neutral point. A semantic-differential scale involves the rating of concepts using bipolar adjectives. These adjectives represent opposite meanings with scales anchored at the extremes (e.g., minimal-maximal, difficult-

easy, powerful-powerless, bad-good, useful-useless, enjoyable-not enjoyable). Nunnally (1978) stated that the evaluation factor of the semantic-differential scale serves as a definition of attitude and/or perception, and responses to this factor's adjectives pairs are excellent measures of an individual's thoughts. The scales used in this study were similar to those employed by Papaioannou and Theodorakis (1996) and Digelidis, Papaioannou, Laparidis, and Christodoulidis (2003) to assess student attitudes towards exercise and sports participation in physical education classes. Reliability scores (Cronbach's α) of .82 and .87 were reported in these studies. After the second and third lessons, two additional questions about teaching style preference were included on the DCQ form. The participants were asked in which teaching style they preferred exercising and why.

RPE Scale

The RPE scale (Borg, 1998) was administered at the end of each lesson to examine perceived level of student exertion in physical activity. The students rated their perceived exertion on a scale of 0 (no exertion) to 10 (extreme exertion). RPE has been shown to correlate with other exercise variables like heart rate, ventilation, percent VO_2 max, and workload (ACSM, 2000).

Interviews

Once the students had completed the DCQ and RPE scale, four participants from each class were randomly selected to be interviewed immediately following each lesson. This resulted in a total of 48 interviews (4 students x 4 classes x 3 lessons). The interviewees were asked to respond to three statements: (a) Tell me about your physical involvement in this lesson; (b) Tell me about your cognitive involvement in this lesson; and (c) Tell me about your social involvement in this lesson. In addition, the interviewees were asked about style preference after their second and third lessons. Two trained investigators conducted the

interviews. Each interview lasted between 5 and 10 minutes. The interviews were audio-taped and subsequently transcribed for analysis.

Teaching Style Fidelity

Style implementation was verified through systematic observation of the lessons. Checklists (Sherman, 1982) for the command, practice, and inclusion teaching styles were employed to ascertain level of fidelity between the teacher's instructional behaviors and the style specific behaviors. Two trained coders coded 6 of the 12 lessons, two from each style, to assess coding biases and reliability. Inter-observer agreement percentage scores for the command, practice, and inclusion styles were 100, 98.39, and 98.44, respectively. Intra-observer agreement percentage scores were 95.45, 98.39, and 98.44, respectively.

Data Analysis

Mean and standard deviations were computed for the DCQ items and the RPE scores for the command, practice, and inclusion teaching styles. One-way ANOVAs were performed to examine differences in developmental channel involvement and perceived exertion across teaching styles. A Bonferroni adjustment was made to the level of significance to accommodate the multiple ANOVAs being performed ($p<.02$). When significant differences were found, Tukey post-hoc tests were used to determine the origin of the differences. Frequency scores were calculated for the style preference questions that were answered after lessons 2 and 3. Qualitative data reduction techniques (Bogdan and Biklen, 1998) were used to determine the common themes that evolved from the open-ended question DCQ instrument regarding style preferences.

The transcribed post-lesson interviews were analyzed using qualitative data reduction techniques (Bogdan and Biklen, 1998). Two coders initially analyzed the data for regularities and patterns (common elements). The two coders then grouped the interview statements to determine category descriptors. Once categories were developed, the two coders sorted the

statements into the identified categories. This step was repeated until the two coders had come to common agreement on the categories and placement of statements.

Results

RQ 1: Students' Perceptions of Physical, Cognitive, and Social Involvement

DCQ Descriptive statistics for the participants' perceptions of physical, cognitive, and social involvement in the command, practice, and inclusion style lessons are presented in Table 1. One-way ANOVAs revealed significant main effects for the cognitive (F[2, 205] = 36.72, $p < .001$) and physical channels (F[2, 202] = 3.64, $p < .028$) across teaching styles. Tukey post-hoc tests showed cognitive involvement in the inclusion style lessons to be significantly higher (i.e., more involved) than in the practice and command style lessons, and significantly higher in the practice style lessons than the command style lessons. For physical involvement the students reported significantly higher scores in the inclusion style lessons than in the practice style lessons. No significant main effect was found for social involvement across styles.

TABLE 1 HERE

RPE Scale

Means for the participants' RPE scores in the command, practice, and inclusion style lessons were 6.35, 6.65, and 7.14, respectively. A one-way ANOVA was performed and a significant main effect found (F[2, 205] = 6.35, $p < .002$). A Tukey post-hoc test showed RPE to be greater in the inclusion style than in the command and practice styles.

Interviews

Physical involvement. Two themes emerged for physical involvement across all three styles. Most students reported that they felt *Physically Involved* and that they felt as though they exhibited *Great Effort* in the lessons. Two style-specific themes emerged as well. In the practice style lessons the students reported *I Can Determine My Own Level of Effort*. This

theme relates to making the decision about the pace and rhythm at which to exercise. A theme that evolved in the inclusion style lessons was *I Can Make the Exercise Difficult and Challenging*. These two style-specific themes directly reflect elements of instructional delivery unique to the practice and inclusion teaching styles. Following are three student quotes that supported the idea that physical involvement was similar across styles:

- I was pretty physically involved, it was challenging for me because I am really sore today so it was a decent workout. (Sean, command style lesson)
- It was a good deal . . . it definitely worked my abs . . . you had to think about it more when you were the one doing the counting. (Harold, practice style lesson)
- I think I was pretty physically involved. I pushed myself to see how far I could go. (Katie, inclusion style lesson)

Cognitive involvement. Style-specific themes emerged for cognitive involvement, *No Thinking* for the command style, *Some Thinking* for the practice style, and *A Lot of Thinking* for the inclusion style. In the command style the participants reported that they were told what to do and when to do it. This led the students to believe that no thinking was involved. In the practice style the participants reported that they had to track their own performance including counting repetitions, pacing themselves, and remembering the skill elements for each exercise. This led the students to believe that some thinking was involved. In the inclusion style the students not only had to keep track of counting repetitions, pacing themselves, and remembering the skill elements, they had to make decisions about level of difficulty for each exercise. This led them to realize that a lot of thinking was involved in the inclusion style. The following quotes highlight the style-specific themes:

- Probably not a lot (of thinking) because I just followed the cues and did whatever she (the teacher) said, and I didn't think about it much. (John, command style lesson)

- I kind of had to think about all of the cues and points when I was doing it because I couldn't really see it so you had to think more about them. (Shauna, practice style lesson)
- Compared to all of the others (teaching styles) this one was probably the most thinking you had to decide which level to do and make sure that you were following all of the skill cues. (Harry, inclusion style lesson)

Social involvement. Overall, the students perceived social involvement in much the same way across all three styles. In the command style about two-thirds of those interviewed perceived social involvement to be minimal. These students felt like they were on their own, *Alone in a Mass* (Graham, Holt-Hale, and Parker, 2010). If a social interaction did occur, it was likely accidental such as mistakenly touching a peer while exercising. Although most of those interviewed felt socially isolated, a few did perceive themselves as *A Part of a Whole* in the command style. Because they were performing the same exercises at exactly the same time as their peers, these students felt like they were working together.

In the practice style more than half of the participants felt *Isolated*. They perceived the environment to be isolating because of having to do the exercises on their own. A few of the participants identified that they perceived the environment to be *Interactive* as a result of the teacher circulating and providing individual feedback.

In the inclusion style the majority of the participants described their level of social involvement as *Minimal*. They simply stated that they were "exercising on their own." Following are student quotes from each teaching style that reflect the perception of minimal social involvement:

- There was almost no social interaction really . . . we sat (exercising in a seated or prone position) and had to look at the ceiling so there wasn't a whole lot of socialization that went on. (Mary, command style lesson)
- There wasn't much. It was mostly just a physical thing. (Barry, practice style lesson)

- Not too much social involvement. It was mostly just keep to yourself activity. (Shane, inclusion style lesson)

RQ2: Students' Preferences for Different Teaching Styles

DCQ Frequency scores were calculated for style preferences reported after the second and third lessons, while qualitative techniques were used to identify the common themes that evolved from the participants' "why" answers. The teaching style selected most frequently following the completion of the second lesson was the command (62%), and following the third lesson the inclusion (56%). All three teaching styles were selected as a favorite by some participants after the third lesson (command 37%; practice 7%).

Several themes emerged from the answers the participants provided about why they preferred one teaching style over another. *Keeping to the Pace and Form* and *Motivation* were two themes that emanated from those selecting the command over the practice after the second lesson. Students indicated that they preferred the command over the practice style because the teacher helped them maintain an appropriate pace while performing the exercises correctly, and that following the leader was highly motivating. Those selecting the practice over the command style lesson identified *Individual Pace* as the reason for preferring the practice style. These students liked the ability to work at their own pace.

After the third lesson, once participants had experienced all three styles, those selecting the command style as the preferred style reported doing so for the same reasons as selecting the command over the practice style after the second lesson, *Keeping to the Pace* and *Motivation*. *Level of Difficulty* emerged as the theme for those selecting the inclusion over the command and practice styles. Those selecting the inclusion style reported doing so primarily because they could match the level of difficulty of each exercise to their own needs.

Interviews

After having participated in the first two lessons, and subsequently, the third lesson, the students interviewed were asked to identify style(s) preferred and why. Overwhelmingly, the interviewees selected the command over the practice style after the second lesson. The students reported feeling more motivated to give greater effort in the command style because they were exercising in unison and better able to execute the exercises correctly given a constant model. The few who did select the practice style over the command said they liked to be able to perform the exercises on their own and at their own pace.

After having participated in the inclusion style lesson, the interviewees identified the command and the inclusion as the preferred teaching styles. In fact no interviewee selected the practice style as his/her preferred instructional style. Nine chose command as the favorite teaching style while seven chose inclusion. The two main reasons for selecting the command style were being able to perform the exercises correctly as a result of having them constantly modeled, and feeling highly motivated as a result of working at the pace set by the leader. Being able to make their own decisions about level of difficulty was the reason why most of the interviewees selected the inclusion as the preferred teaching style. These students felt empowered and more independent as a result of selecting their own level of difficulty.

Discussion

The purpose of this study was two-fold: (a) to examine students' perceptions of physical, cognitive, and social involvement in activity lessons conducted in the command, practice, and inclusion teaching styles; and (b) to examine student preference for different teaching styles. The students' perceptions of physical involvement were similar and different across the three teaching styles. In terms of likeness, the students perceived physical involvement to be positive and strong. The DCQ and RPE scores and the interview responses overwhelmingly demonstrated that the students felt physically involved and perceived giving great effort during all lessons. According to Mosston and Ashworth (2002), objectives specific to motor

performance are emphasized in the reproduction cluster of teaching styles. The students' perceptions of feeling physically engaged clearly reflect this emphasis. Mosston and Ashworth's theoretical assumptions about the kinds of objectives emphasized within reproduction teaching styles were supported by the findings in this study. In terms of differences, students reported feeling more physically involved in the inclusion style lessons than in the practice and command style lessons. Again, this was reflected in the DCQ and RPE scores. Why this difference? One might postulate that the students felt empowered as a result of having to make decisions about level of task difficulty. Feeling "in charge" may have inspired them to work harder and expend more energy. Mosston and Ashworth (2002) suggest that the single most important element of the inclusion style of teaching is its power of inclusion. "It is as if the learner says, I have a place too . . . I belong" (p. 180). Other research supports this contention as well. Goudas, Biddle, Fox, and Underwood (1995) found middle school students' level of motivation to be higher when participating in a differentiated teaching style (inclusion) compared to a direct teaching style (practice).

The students reported social involvement in the lessons in a similar manner across the three teaching styles. Their DCQ scores and responses to the interview questions seemed to reflect a perception of indifference or neutrality. Generally, the students' questionnaire responses reflected feelings that were neither positive nor negative. Social involvement was not necessarily enjoyable or not enjoyable, easy or difficult, or good or bad for the students. It seems likely that the feeling of indifference or neutrality specific to social involvement resulted from the students having to exercise on their own. Student organization in all three teaching styles reinforced an individual experience for the students. If the lessons were designed to include exercises that involved some level of student interaction, it is likely that the students would have felt more socially involved. Research, however, must be conducted to verify this speculation.

The most profound differences were revealed for cognitive involvement. The students perceived cognitive involvement to be much greater in the inclusion lessons compared to the command and practice lessons. This finding was clearly supported by data derived from the DCQ, RPE scale, and interviews. In the inclusion style, learners must survey the levels of task difficulty, select an initial level at which to enter performance, practice the task, and then reselect a level of difficulty before performing the next set (Mosston and Ashworth, 2002). Cognitive processes used to satisfy the decisions to be made in the inclusion include remembering (recognizing and recalling) and understanding (interpreting, classifying, and comparing) (Krathwohl, 2002). Comparatively, decision making in the command and practice styles is limited to cognitive process associated with remembering. Beckett (1991) and Jenkins and Byra (1996) found that learners performing under the conditions of the inclusion style scored higher on written knowledge tests than students engaged in instruction under the conditions of the practice style. The findings from this study support the contention that students engage in more cognitively complex processes when participating in the inclusion style compared to the command and practice styles.

After having performed pilates exercises under the conditions of the command and practice styles, the majority of the participants chose the command style as the preferred teaching style. Those selecting the command over the practice style did so because they liked having the instructor maintain the pace and form for moving. One may postulate that the students associated the content, pilates, as being similar to content delivered in a step/dance aerobics class (which is almost always taught in command style), and thus their beliefs that a pilates lesson would be best delivered under the conditions of the command style of teaching. It is important to note, however, that about a third of the participants did choose the practice style over the command style lesson because they liked working at their own pace. It seems that different learners have different preferences.

After having experienced the pilates exercises under the conditions of the command, practice, and inclusion styles, the students identified the inclusion and command style lessons as their favorites. They selected the inclusion and the command styles because of their unique instructional delivery systems. Those who selected the inclusion style liked being able to make their own decisions about level of task difficulty. Those who selected the command style liked exercising in unison while following a leader. Only a few students selected the practice style of teaching as their favorite. This finding suggests that learners are diverse. They learn in different ways, come from different cultural backgrounds, and enter physical education with different levels of movement experiences, which precipitates different learner needs and aspirations (Graham, 1995; Mosston and Ashworth, 2002). To reach the physical, cognitive, and social needs of the different learners, it makes good sense for teachers to employ different teaching styles in their instructional routines.

Summary and Educational Significance

The findings from this study provide some answers to the two questions posed. First, teaching style does impact students' perceptions about physical and cognitive involvement in pilates lessons. Students feel physically involved participating in pilates exercises delivered in the command, practice, and inclusion styles of teaching. This finding makes perfect sense in that objectives specific to motor/fitness performance are emphasized in the reproduction cluster of teaching styles (Mosston and Ashworth, 2002). In addition, students perceived physical involvement to be greater in the inclusion style compared to the command and practice styles. Similarly, students perceived cognitive involvement to be greater in the inclusion style than the command and practice styles. In reflecting on Lee's (1997) mediation model of student thinking and behavior, the inclusion style of teaching seems to have much to offer learners in physical education. The inclusion style of teaching allows for choice in level of task difficulty, the development of task-oriented goals, and the employment of self-

referenced assessment strategies. Lee suggests that a learning environment of this type, one that influences student interest, enjoyment, and personal meaning, likely has a positive impact on learner task engagement that, in turn, mediates achievement.

Second, students participating in the pilates' exercises did identify teaching style preferences. The command style was favored over the practice style when comparing the two styles and the inclusion and command styles favored over the practice style when comparing the three styles. This is important for physical education teachers to know because most physical education teachers use instructional strategies that fall under the canopy of Mosston and Ashworth's (2002) practice style of teaching (Cothran et al., 2005; Kulinna and Cothran, 2003). Knowing that students prefer other teaching styles like the command and inclusion to the practice style will help physical educators better meet the instructional needs of their students.

So what implications do these findings have for practitioners? If the primary goal is to maximize physical activity involvement, it seems that any one of these three teaching styles can be effectively used when teaching pilates or perhaps other similar activities like step/dance aerobics. Keep in mind, however, that the students in this study preferred the command and inclusion styles over the practice teaching style. On the other hand, if the goal is to get students physically and cognitively engaged, the most efficient way to do so may be to integrate the inclusion style with the command style. Provide the students alternative levels of task difficulty (inclusion) but have them perform it to the model in unison (command).

Much still remains to be learned about the perceptions of students in Spectrum teaching styles. To learn more, researchers need to conduct similar studies with school-aged learners (e.g., elementary, middle school, and/or high school aged learners), different content areas

(e.g., motor skills), and different drill organizations (e.g., students paired, students working at stations, etc.). These represent but a few of the directions for future research.

References

American College of Sports Medicine (ACSM). 2000. *ACSM's guidelines for exercise testing and prescription*. Philadelphia: Lea and Febiger.

Ashworth, S. 1992. The Spectrum and teacher education. *Journal of Physical Education, Recreation, and Dance* 63(1): 32-5, 53.

Beckett, K. 1991. The effects of two teaching styles on college students' achievement of selected physical education outcomes. *Journal of Teaching in Physical Education* 10: 153-69.

Bogdan, R.C., and S.K. Biklen. 1998. *Qualitative research for education: An introduction to theory and methods*. Boston: Allyn and Bacon.

Borg, G. 1998. *Borg's perceived exertion and pain scales*. Champaign, IL: Human Kinetics.

Boyce, B.A. 1992. The effects of three styles of teaching on university student's motor performance. *Journal of Teaching in Physical Education* 11: 389-401.

Byra, M. 2000. A coherent PETE program: Spectrum style. *Journal of Physical Education, Recreation, and Dance* 71(9): 40-3, 56.

Byra, M., and J. Jenkins. 1998. The thoughts and behaviors of learners in the inclusion style of teaching. *Journal of Teaching in Physical Education* 18: 26-42.

Cai, S.X. 1997. College student attitude towards three teaching styles in physical education classes. *College Student Journal* 31: 251-60.

Chatoupis, C. 2005. Effects of practice and inclusion styles on perceived athletic competence of Greek primary school children. *Studies in Physical Culture and Tourism* 12(1): 2-13.

Cothran, D.J., P.H. Kulinna, D. Banville, E. Choi, C. Amade-Escot, A. MacPhail, D. Macdonald, J.F. Richard, P. Sarmento, and D. Kirk. 2005. A cross-cultural investigation of the use of teaching styles. *Research Quarterly for Exercise and Sport* 76: 193-201.

Cothran, D., P.H. Kulinna, and E. Ward. 2000. Students' experiences with and perceptions of teaching styles. *The Journal of Research and Development in Education* 33: 93-102.

Cullingford, C. 1991. *The inner world of school: Children's ideas about schools*. London: Cassell Educational Limited.

Digelidis, N., A. Papaioannou, K. Laparidis, and T. Christodoulidis. 2003. A one-year intervention in 7th grade physical education classes aiming to change motivational climate and attitudes towards exercise. *Psychology of Sport and Exercise* 4: 195-210.

Goudas, M., S. Biddle, K. Fox, and M. Underwood. 1995. It ain't what you do, it's the way that you do it! Teaching style affects children's motivation in track and field. *The Sport Psychologist* 9: 254-64.

Graham, G. (1995). Physical education through students' eyes and in students' voices: Implications for teachers and researchers. *Journal of Teaching in Physical Education, 14*, 478-482.

Graham, G., S.A. Holt/Hale, and M. Parker. 2010. *Children moving: A reflective approach to teaching physical education* (8th ed.). New York: McGraw Hill Higher Education.

Hall, T.J., and B. McCullick, 2002. Discover, design, and invent: Divergent production. *Teaching Elementary Physical Education* 13(2): 22-4.

Hennings, J., T. Wallhead, and M. Byra. 2010. A didactic analysis of student content learning during the reciprocal style of teaching. *Journal of Teaching in Physical Education* 29: 15-32.

Iserbyt, P., J. Elen, and D. Behets. 2010. Instructional guidance in reciprocal peer tutoring with task cards. *Journal of Teaching in Physical Education* 29: 38-53.

Jackson, J.A., and S. Dorgo. 2002. Maximizing learning through the reciprocal style of teaching. *Teaching Elementary Physical Education* 13(2): 14-8.

Jenkins, J., and M. Byra. 1997. An exploration of theoretical constructs associated with the Spectrum of Teaching Styles. In *Research on teaching and research on teacher education: What do we know about the past and what kind of future do we expect*, ed. F. Carreiro da Costa, 103-108. Lisbon, Portugal: AIESEP.

Johnson, B., and A.J. Onwuegbuzie. 2004. Mixed methods research: A research paradigm whose time has come. *Educational Researcher* 33: 14-26.

Krathwohl, D. R. 2002. A revision of Bloom's taxonomy: An overview. *Theory into Practice* 41: 212-18.

Kulinna, P.H., and D. Cothran. 2003. Physical education teachers' self-reported use and perceptions of various teaching styles. *Learning and Instruction* 13: 597-609.

Lee, A.M. 1997. Contributions of research on student thinking in physical education. *Journal of Teaching in Physical Education* 16: 262-77.

Mosston, M., and S. Ashworth. 2002. *Teaching physical education*. San Francisco: Benjamin Cummings.

National Association for Sport and Physical Education (NASPE). 2004. *Moving into the future: National standards for physical education*. Reston, VA: Author.

Nunally, J.C. 1978. *Psychometric theory*. New York: McGraw-Hill.

Papaioannou, A., and Y. Theodorakis. 1996. A test of three models for the prediction of intention for participation in physical education lessons. *International Journal of Sport Psychology* 27(4): 383-99.

Sherman, M. 1982. *Style analysis checklists for Mosston and Ashworth's spectrum of teaching styles*. Unpublished manuscript, University of Pittsburgh, Pittsburgh, PA.

Viadero, D. 2008. Exercise seen as priming pump for students' academic strides. *Education Week 27*(23): 14-5.

Wikgren, S. 2011. Making the case for individualized health-related fitness education. *Strategies* (Special Theme Supplement – Fitness Education and Assessment in Physical Education) 24(3): 11-4.

Table 1.

Mean and Standard Deviation Scores for the Four Developmental Channels

Channels	Teaching Styles					
	Command		Practice		Inclusion	
	M	SD	M	SD	M	SD
Physical	5.45	0.86	5.34*	0.93	5.61*	0.84
Cognitive	3.96*	1.16	4.75*	0.98	5.38*	0.76
Social	4.51	0.89	4.24	1.00	4.45	0.99

*$p < .05$

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Preparing Faculty in Adapted Physical Education: The Need Persists

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Introduction

It is assumed that faculty in institutions of higher education (IHEs), who are responsible for preparing teachers, are also sufficiently prepared and knowledgeable to work with all students within the general curriculum. Many universities in the USA are unable to locate and hire well prepared professionals with experience and training in adapted physical education. This is due in part as there has been a gradual reduction in the quantity of doctoral training programs and an inability for the remaining programs to produce enough graduates to fill vacant positions. Thus, a critical need remains for qualified faculty in adapted physical education.

Currently there is also a huge gap in the capacity of IHEs to prepare qualified personnel for leadership positions in all areas of special education (Wasburn-Moses & Therrien, 2008). Unfortunately this gap is growing. Previous research reported that the need for qualified professors of adapted physical education exceeded the available pool of candidates, with faculty appointments either going unfilled or unqualified professionals hired (Dunn & McCubbin, 1991; McCubbin & Dunn, 2000). Our data indicate the need remains as many programs have reduced their prioritization of doctoral preparation in this area. Furthermore, Zhang and colleagues (2000) have suggested a national shortage of fully qualified adapted physical education teachers. Untrained teachers in the motor domain (classroom teachers or aids) or untrained teachers of children with disabilities (regular physical educators) are providing services to students with disabilities. In other states, related service personnel (OT's and PT's) are being used erroneously as substitutes for adapted physical education.

To further support the importance of quality physical education for children with disabilities, research data clearly show that students with disabilities are at a higher risk for a lifetime of poorer health and disease than the general student population (Healthy People 2010). Physical inactivity, coupled with poor nutrition, has created significant concerns for a large proportion of our children in the U.S. Yet, as noted in the Healthy People 2010 and in the summaries of Healthy People 2020, the incidence and impact of inactivity and obesity for children with disabilities is higher than with the general population. This leads to compounded problems and reduced quality and years of healthy life for persons with disabilities into adulthood (Hogan, Rogers & Msall, 2000; Surgeon General's Report, 2005; HP 2020), emphasizing the need for intervention and individuals trained specifically in this area (Tappe & Burgeson, 2004).

This paper examines the current need for higher education personnel in adapted physical education in the USA and briefly discusses the future direction of training future leaders in adapted physical education.

Positions Available

An electronic analysis was made of the Chronicle of Higher Education, Higheredjobs.com and OPERA for the purpose of determining the number of advertised positions in adapted physical education beginning since September, 2000 through May, 2010. The following data were recorded: Name of institution, state, closing date, degree requirement, tenure or fixed-term appointment, teaching responsibilities other than adapted physical education, and other job expectations (e.g. scholarship and research). Over this 10 year period, there were a total of 440 IHE positions seeking faculty with expertise in adapted physical education. Of these positions, an average 28% were re-advertised from year to year. See Table 1.

Table 1: Re-advertised adapted physical education positions between academic year

	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	Total
Position	11	16	15	12	20	18	15	10	5	122
(%)	22%	33%	32%	27%	41%	40%	33%	30%	15%	28%

This clearly identifies the difficulty in locating trained faculty to fill the existing positions. Of those 440, there were 172 positions in which adapted physical education was identified as the primary responsibility between the years 2001-2010. Of the 172 positions, 84% were tenure track positions that required and/or preferred candidates that possessed a doctorate, 22% of the positions would consider candidates who were ABD, and 10% of the positions would consider an applicant with a master's degree. This is a disturbing fact, again due to insufficient numbers of qualified applicants. As expected, some of the positions were seeking candidates who might be qualified to teach in more than one area such as adapted physical education and motor behavior/sport pedagogy.

Personnel Trained

An analysis was made of the number of doctoral level personnel in adapted physical education prepared annually. This was accomplished by conducting an on-line search of the Dissertation Abstracts for academic years 2000-2009. Specifically, the procedure used was to do a computer search of the publication Dissertation Abstracts using key search terms. The terms used included: disability, inclusion, physical education, adapted physical activity, adapted physical education, motor development, motor learning, physical fitness, exercise, motor skill, and/or specific disability categories. An abstract of each dissertation was reviewed and verified that the study addressed an issue or topic pertinent to the field.

Table 2: Dissertations with content related to APE (from 2000 – 2009)

USA Universities	00	01	02	03	04	05	06	07	08	09	Total
Texas Women's University	2	2		2	1		3	4	2		16
Oregon State University	2	1	1	1	1	1	2	1	2	1	13
University of Virginia	1	2		1		2	1	3	1		11
Ohio State University	2	1	1			1	1	3			9
Michigan State University		2		1	2	1			1	1	8
Indiana University			1	2	1	2	1	1			8
University of Michigan			1					1	2		4
Other Universities*		2	1	2	3	2		2	2	1	15
Total	9	9	9	10	9	10	10	15	10	3	94

*Other universities represent doctoral dissertations with content related to APE from institutions with ≤ 4 total

Our analysis shows, the need for personnel identified for adapted physical education faculty is increasing, as the number of positions has remained significantly greater than the number of people completing the doctoral degree.

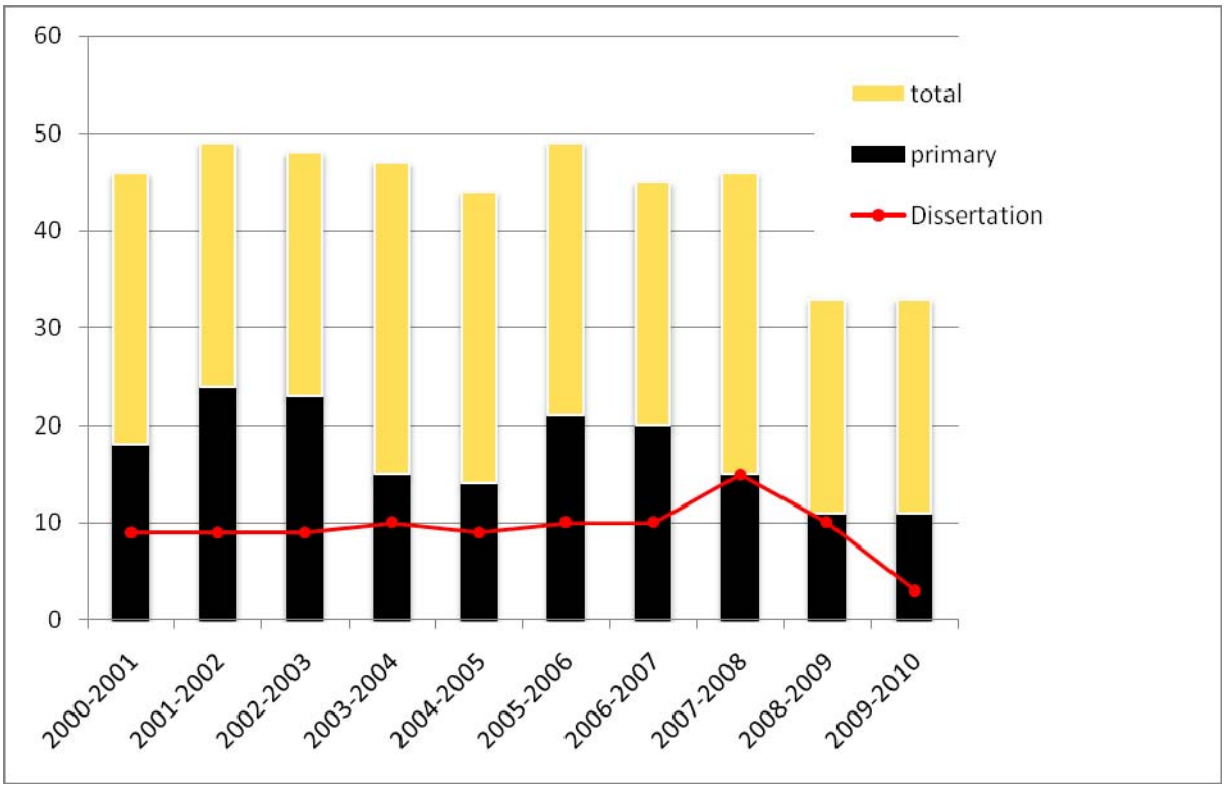


Figure 1: Historical Summary of Number Trained vs. Dissertations Completed 2000-2010

The analysis of the needs data, when comparing advertised positions v. graduates exiting doctoral programs must be interpreted with caution, because there may be additional factors that can influence the magnitude of the need. For example, not all advertised openings for academic positions are included in the Chronicle of Higher Education and higher educationjob.com, which are arguably the best sources for position listing. There are also limitations in using Dissertation Abstracts as the sole means of determining the number of doctoral graduates in adapted physical education. This method was selected as the most objective way to access information with the expectation that all graduates would submit information to Dissertation Abstracts as part of the degree program requirements.

It is evident there are significantly more positions advertised for faculty with expertise in adapted physical education than there are qualified graduates completing doctoral degrees. There is stability in the number of people completing their degrees as well the number of available positions (except two years during the last decade). The smaller number of available positions during the last two years may be due to economic reasons, but it is important to note that despite economic difficulty, the number of available positions exceeds the number of people completing doctoral dissertations in adapted physical education. The above analysis, too, is conservative because it omits a review of the number of leadership opportunities for doctoral level personnel in settings outside of higher education. Furthermore, the analysis does not reflect the number of personnel prepared who chose to accept a faculty position outside of the U.S. Finally, some institutions may be choosing to not prepare personnel because they recognize that good doctoral level training in adapted physical education is expensive.

Professional Development from Research to Effective Practice

We believe doctoral programs must been designed to provide students with the latest information and skills to serve as effective teachers, scholars, and leaders through interdisciplinary opportunities. As evidenced by the job descriptions, the positions for

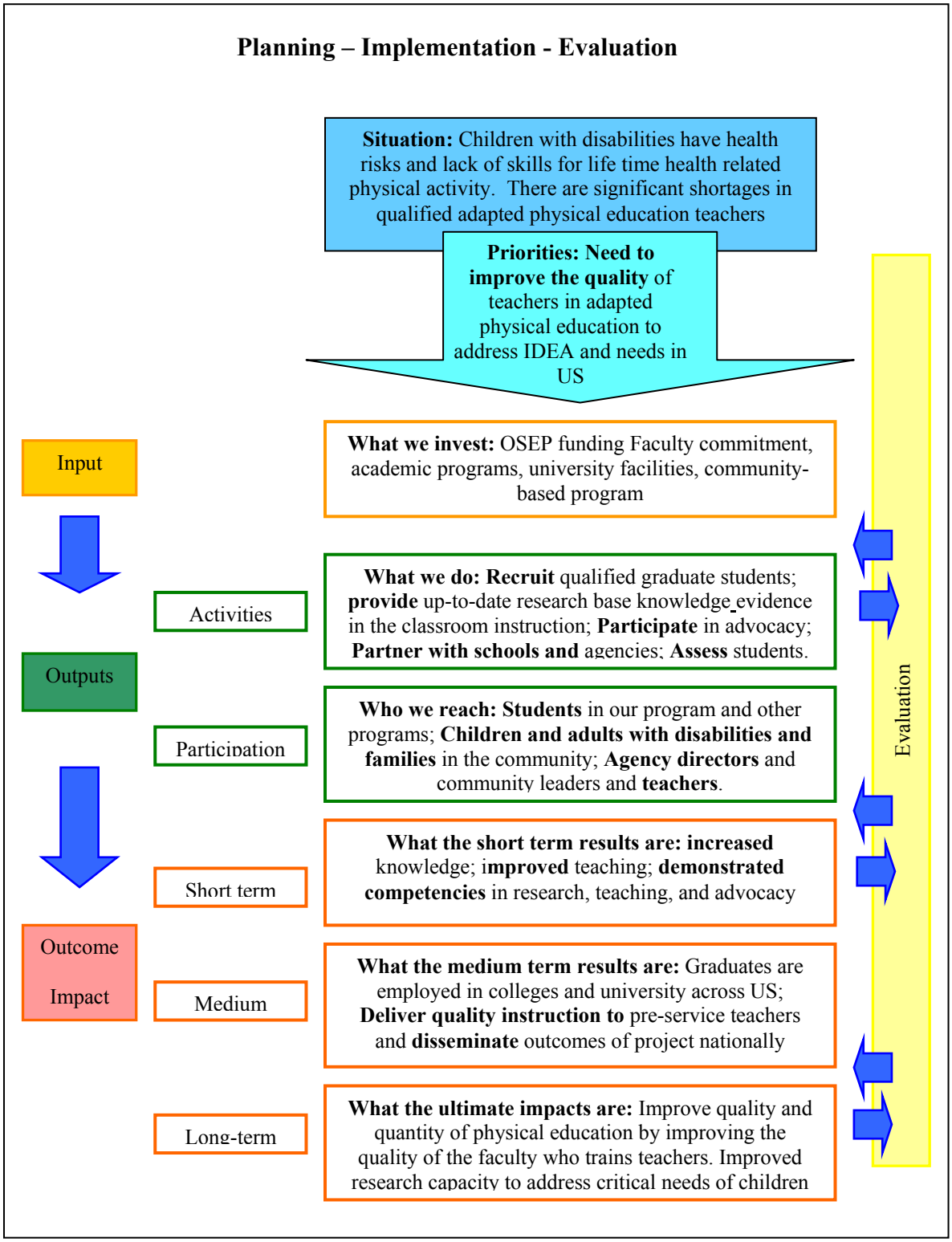
graduates require each to teach in more than one area, as addressed in the previous needs data (McCubbin & Dunn, 2000; Thomas, 2003; Woods, Karp, & Feltz, 2003). Options available to the students include Exercise Science; Sport Pedagogy; Public Health; Sport and Exercise Psychology; and Education. What should be noted is the overwhelming majority of the positions are linked with sport pedagogy or physical education/teacher education and therefore efforts to build linkages for new doctoral training to bridge the obvious needs for more typical physical education teacher education positions may be a valuable direction for areas of disciplinary focus. We also believe that previous competencies (Jansma & Surburg, 1995) still hold value in defining essential skills of doctoral students. Therefore we recommend:

1. Doctoral level personnel must have sufficient knowledge and understanding of a functional and ability-based approach to be effective as faculty preparing the professoriate in adapted physical education.
2. Coursework, including school and community-based research experiences. Students shall be actively engaged in the content they teach, within the community where they live, supervised by effective teachers/mentors.
3. Doctoral students must be conversant with the literature with specific foci on active participation, response to intervention, and student achievement within the general curriculum.
4. Graduates shall understand and implement various research procedures and designs. Graduates of this program will have demonstrated competencies in statistics, measurement, and research design. Students will be expected to submit, present, and publish scholarly papers prior to completing their degree program.
5. Future professors need to design and teach college level courses. These experiences should be developmental in nature with mentoring from experienced and successful faculty.
6. Leaders in adapted physical education must appreciate and recognize the importance of the roles of professionals in designing and delivering services to all students including those with special needs.
7. One of the guiding principles underlying this project is that diversity is a key to

success. Universities have a moral obligation to open its doors wider for any groups that are underrepresented or experience discrimination.

We have suggested a model to organize and meet important objectives leading to desired outcomes. The objectives align with professional competencies and reflect short-term learning outcomes as illustrated in the logic model. Increased knowledge, effective teaching and demonstrated competencies in research, scholarship and leadership/advocacy prepare our Ph.D. students to seek positions in higher education. These short-term outcomes lead to our medium-term outcomes which are action directed (placement of well prepared graduates in universities to teach preparing teachers and dissemination of project training and outcome). Our short-term and medium term outcomes lead to long-term impacts and improve the quantity and quality of physical education services available to the nation's students with disabilities by improving the quality of the educational experiences for the students preparing to be teachers. This type of model evaluation plan will insure that our students receive a quality education that will support their professional development and set them on a trajectory for success in a university career as a professor in adapted physical education. Having more qualified faculty who are prepared to prepare teachers will lead to better educational opportunities for children with disabilities. Well prepared doctoral graduates who enter the profession contribute in many ways to improve the quality of adapted physical education teachers and to this important area of knowledge in our field.

Figure 3. Preparing Quality Personnel in Adapted Physical Education Logic Model



Summary

There remains a persistent need to increase the number of faculty for positions in higher education to prepare new physical education professionals to teach children with disabilities in the public schools. Multiple factors have lead to this conclusion including recent data of graduation rates vs. positions available in US institutions of higher education. With fewer universities investing in physical education teacher education, coupled with fewer universities focusing on adapted physical education, there is a potential crisis ahead in not having experienced and adequately trained faculty to prepare the next generation of teachers. Additionally, without preparing sufficient professors for important roles, our research capacity to influence and improve educational outcomes may also be compromised.

References

Dunn, J.M. & McCubbin, J.A. (1991). Preparation of leadership personnel in adapted physical education. *Adapted Physical Activity Quarterly, 8,* 128-135.

Hogan, D.P., Rogers, M.L., & Msall, M.E. (2000). Functional limitations and key indicators of well-being in children with disability. *Archives of Pediatrics & Adolescent Medicine, 10,* 1042 – 1048.

Jansma, P. & Surburg, P. (1995). Ph.D. competency guidelines and adapted physical education preparation in the United States. *Adapted Physical Activity Quarterly, 12,* 307-322.

Individuals with Disabilities Education Improvement Act. Public Law 108-446. 118 Stat. 2647 *et seq*. (2004).

McCubbin, J.A. & Dunn, J.M. (2000). Preparation of leadership personnel in adapted physical education: A follow-up study. *Adapted Physical Activity Quarterly, 17,* 371-380.

Tappe, M.K. & Burgeson, C.R. (2004). Physical education: a cornerstone for physically active lifestyles. *Journal of Teaching in Physical Education, 23,* 281-299.

Thomas, J.R. (2003). Preparing for faculty roles in discovery, learning, and engagement. *Quest,* 55 (1), 4-17.

U.S. Department of Health and Human Services (2000). *Healthy People 2010. Understanding and improving health.* (2nd ed.) Washington, DC: U.S.

U.S. Department of Health and Human Services (2005). The Surgeon General's Call to Action to Improve Health and Wellness of Persons with Disabilities. Washington DC: U.S

U.S. Department of Health and Human Services (2009). *Healthy People 2020 Public Meeting: 2009 draft Objectives.* Retrieved June 22nd, 2010, from http://www.healthypeople.gov/hp2020/objectives/files/Draft2009Objectives.pdf.

Wasburn-Moses, L. & Therrien, W.J. (2008). The impact of leadership personnel preparation grants on the doctoral student population in special education. *Teacher Education and Special Education, 31,* 65-76.

Woods, M.L., Karp, G.G., & Feltz, D, L. (2003). Positions in kinesiology and physical education at the college or university level. *Quest, 55,* 30-50.

Zhang, J., Kelly, L., Berkey, D., Joseph, D., & Chen, S. (2000). The prevalence-based need for adapted physical education teachers in the United States. *Adapted Physical Activity Quarterly, 17*, 297-309.

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W.B.Yeats and the Human Lifespan in Physical Activity

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This article will focus on the pathway of youth to adulthood and beyond with special reference life's experiences and selected poems of William Butler Yeats.

Introduction

In recent years, Ken and I have been interested in testing the covariance of physical activity and sports with other disciplines. Obvious linkages can be found with physics, chemistry, mathematics, leisure and the handicapped, but not much has been done with great literature.

The 20th century has been absorbed with compartmentalizing knowledge – and this has been and continues to be successful in exploring the depths of each area. Perhaps it is time we started to put the pieces back together, to lift our heads and look at a world of **entirety**. Hence our efforts in exploring linkage of physical activity and the world of literature – in this case with poems of a Nobel prize winner.

Let us look at four phases in the life cycle of human beings.

a. Youth and fantasy
b. Reality and achievement
c. Practice and maturity
d. Reflection and eternity

Youth and Fantasy

The fantasies of young children are analogous with Yeats's mythological period. Play, dreams, fantasies and ideals are featured. Children model their heroes and nothing can stop them being champions and acting out fantasies.

I will arise and go now, and go to Innisfree
And a small cabin build there, of clay and wattles made;… a hive for the honey bee
… for always night and day
I hear lake water lapping with low sounds by the shore;
While I stand on the roadway,…

I hear it in the deep heart's core.
(The lake Isle of Innisfree)

- Youth and Fantasy

And children dream dreams of the simplest but most beautiful things.
I went out to hazel wood,
because a fire was in my head,
and cut and peeled a hazel wand,
And hooked a berry to a thread;
…I dropped the berry in a stream
And caught a little silver trout…
When I laid it on the floor,
And someone called me by name:
It had become a glimmering girl
With apple blossom in her hair
Who called me by my name and ran
…I will find out where she has gone,
And kiss her lips and take her hands.
(The Song of Wandering Aengus)

When we force children to move beyond their limitations and interests, we do great damage. When we build play into learning experiences, we build confidence and self-concept. Some children are different and take longer to learn and some lose confidence when they are censured or ridiculed.

We cannot be sure of the effect on children's natural growth patterns when we intervene with harsh criticism. Sometimes they deal with it and take it in their stride and sometimes they cling to dreams beyond the healthy period. Children's games must recognize time periods and rest periods, with censure, timely but just.

I made my song a coat
Covered with embroideries
Out of old mythologies
From heel to throat;
But the fools caught it,
Wore it in the world's eye
As though they'd wrought it.
Song, let them take it
For there's more enterprise
In walking naked.
(A Coat)

Of course, growth matures us and works against adversity. But then we must not linger too long in fantasies.

Sweetheart, do not love too long:
I loved long and long,
And grew to be out of fashion
Like an old song.
(O Do Not Love Too Long)
Yeats enshrines the universal appeal of **hope** which embodies all children's fantasies.

Reality and Physical Achievement

As children passes through puberty, particularly girls, they begin to recognise their limitations and adjust expectations of achievement. They are not fast enough to win the race; they drop balls many times in the pace of a game; they are last chosen when team sides are selected; they search around for activities in which they can succeed.

Yeats toyed with appropriate adjectives for this age – sanguine – vigorous – healthy, but considered them hackneyed so he settled for – **upstanding**. And he saluted people to be, "not sedentary as I".

…Our stitching and unstitching has been nought.
Better go down upon your narrow bones
And scrub a kitchen pavement or break stones
Like an old pauper in all kinds of weather;
For to articulate sweet sounds together
Is to work harder than all these, and yet
Be thought an idler by the noise, he said,
Of bankers, schoolmasters, and clergymen
The martyrs call the world.
And gender equity so entwined with cultural practices injects its influence.
There is one thing that all we women know,
Although we never heard of it at school-
That we must labour to be beautiful,
(Adam's Curse)

Practice and Maturity

We have determined our goals and abilities and we function within the limits of our capabilities. This may be Olympic participation or simply weekend leisure. But whatever, we must push hard for achievement.

Get all the gold and silver that you can,
Satisfy ambition, or animate
The trivial days and ram them with the sun.
…And from the 40th Winter by that thought

Test every work of intellect or faith
And everything that your own hands have wrought
(To Go) *...Proud, open-eyed and laughing to the tomb.*
(Vacillation)

This is now our productive period of raising families, recognising talents, succeeding in vocation, enjoying maturity and invoking health and wellbeing.

Wine comes in at the mouth
And love comes in at the eye;
That's all we shall know for the truth
Before we grow old and die.
I lift the glass to my mouth,
I look at you, and I sigh.
(A Drinking Song)

Our labours are full and we must continue to be active for health is especially valuable at this time.

Reflection and Eternity

My fiftieth year had come and gone,
I sat a solitary man,
In a crowded London shop.
An open book and empty cup
On the marble table-top
...And twenty minutes more or less
It seemed, so great my happiness,
That I was blessed and could bless.
(And yet) *..Responsibility so weighs me down.*
Things said and done long years ago,
Weigh me down, and not a day
But something is recalled,
My conscience or my vanity appalled.
(Vacillation)

Veteran musings place things into perspective. A long life has had many successes. The creation of friendships: for a teacher, the many grateful students; for a parent, productive children and for the community, a sound framework from which others can spring.

Indeed, most citizens have enjoyed more joy than pain but the pathway through life's span is fraught with difficulties as well as successes. So, even in the full maturity of achieved goals,

we need to heed Yeat's magnificent poem of four stanzas which pose a vital question: "What then?"

His chosen comrades thought at school
He must grow a famous man;
He thought the same and lived by rule,
All his twenties crammed with toil;
"What then" sang Plato's ghost, "What then?"
Everything he wrote was read,
After certain years he won
Sufficient money for his need,
Friends that have been friends indeed;
"What then?" sang Plato's ghost, "What then?"
All his happier dreams came true-
A small old house, wife, daughter, son,
Grounds where plum and cabbage grew,
Poets and wits about him drew;
"What then?" sang Plato's ghost, "What then?"
"The work is done," grown old he thought,
"According to my boyish plan;
Let the fools rage, I swerved in nought,
Something to perfection brought,"
"But louder sang that ghost "What then?"

Conclusion

One of the conference's objectives is the impact of investigation into mysteries of various phenomena which affect human beings' physical activities and their development in social, cultural and economic matters.

Great literature is a secluded source for discovering this impact. Poetry, many times avoided by growing students, is one such source. When reading William Butler Yeats analogy after analogy leaps out from his fertile stanza.

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Camping on concrete: Professional development for Adventurous Activities in Wales

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Abstract.

Background: The growing discourse around 'cotton wool kids', risk aversion, childhood health, activity levels and nature deficit (Gill, 2009; Munoz, 2009; Louv, 2006) has led to concerns about the experiences of children and young people in the education system. By contrast recent changes in the National Curriculum for Physical Education in Wales (2008) have increased the emphasis on learning in the outdoors. At Key Stage 2 (ages 8-11) the programme of study for Physical Education now includes Adventurous Activities[i] as a statutory entitlement. A new Outdoor Learning Cards resource and training programme has been developed to assist teachers in the delivery of 'high quality outdoor learning activities and to help young people develop a range of skills related to these activities' (Outdoor Learning Handbook, 2008, 4). Four designated outdoor learning activities have been identified as journeying, team building, bouldering and orienteering.

***Purpose*:** This on-going research provides insight into the impact of the Outdoor Learning Cards resource on Adventurous Activities pedagogy.

Participants and setting: A total of 90 teachers from local schools who had attended the training course were targeted.

Data collection: Data for the study was generated via open-ended questionnaire (23% response rate) and semi structured interviews with selected participants.

Findings*:* Initial findings suggest the introduction of the Outdoor Learning Cards training and resource has been inconsistent across primary schools in South Wales. Whilst many teachers report the training and resource to be valuable in developing their confidence and expertise, there is also evidence of a broader impact upon complementary forms of Adventurous

Activities pedagogy in schools. More positively, children are reported to be highly enthusiastic and engaged in Physical Education lessons when using the resources. Teachers also highlighted the positive impact of Adventurous Activities upon the development The Key Skills.

***Conclusion**:* The research raises issues relating to the limitations and potential of the Outdoor Learning Cards resource to deliver high quality Adventurous Activities in the curriculum as well as implications for future training course delivery and teacher practice.

Introduction.

The Media highlight concerns about the lack of opportunities for children to roam and play in green spaces (The Times 2007, The Mail 2008, The Telegraph 2010). Developments in technology and the loss of green spaces mean that children increasingly spend their time on computer games, in front of television and computer screens (Palmer 2006). Louv (2005: 36) describes "Nature-deficit Disorder (as) the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses." Combined with Gill's (2007) discourse relating to a risk adverse society, and Mortlock's (2009) anger at how adventure in the natural environment has been replaced by adventure in the form of computer games, it seems the need to ensure children are able to access natural environments is increasingly a priority for both education and society in general.

The growing interest in the outdoor environment as an integral and valued resource for children's learning and development (Maynard and Walters, 2007; Louv; 2005; Garrick, 2004; Waite, 2010), in particular the natural environment, also highlights that this learning incorporates increased levels of physical activity (Mygind, 2007) and improved motor development (Fjortoft, 2004). Maude suggests there is overwhelming evidence for the

benefits of outdoor play for young children where meaningful exploratory experiences create 'opportunities to become risk literate and physically literate' (Maude, 2010, 113).

Wider benefits are highlighted by Waite (2010) who suggests learning outside the classroom enables observation of children's natural behaviour, not tied to a particular learning outcome, but a view of the holistic social and emotional aspects of learning. In his report "Natural Thinking', Bird (2007) also makes a strong case for the importance of engagement with nature linked to a variety of issues. He identifies evidence that suggests nature impacts positively on children's concentration, levels of stress and can reduce aggression. It can be used to treat children with poor self-discipline and ADHD (Attention Deficit Hyeractivity Disorder), as well as improve wellbeing and mental health. Louv (2005) supports this, describing the restorative qualities of the environment as "Nature's Ritalin" (p 105).

Alongside the growing awareness of the importance of the outdoors for children's development, has been a growing discourse focusing on the design of children's play spaces and the need to facilitate access to outdoor spaces not just for play, but where children can engage in outdoor activities (Munoz, 2009). Not only is the design important, but the way in which schools use their grounds and access the local environment will impact on the quality and amount of outdoor education available to the children. Many urban schools may not have access to the types of landscapes and wild places that Mortlock (2001) used for adventurous activities when working with children. However much of the research evidenced by Bird (2007) demonstrates the impact of nature to be so profound that even minimal exposure to nature can be beneficial (Taylor et al, 2001-Cited in Bird, 2007). Much can be done with limited space and Moore and Wong (1997, cited in Munoz, 2009) highlighted a wide range of benefits to pupils and staff resulting from the transformation of a tarmac yard into an 'environmental yard' (p15) with the addition of natural elements.

Outdoor Education in the Curriculum

The 1944 Education Act in the UK made it a statutory requirement of every local authority 'to secure provision for their area of adequate facilities for leisure-time occupations in such organised cultural training and recreative activities as are suited to their requirement ' (cited in Hunt, 1989, 268). Whilst the Act made no specific reference to outdoor education other sections of it drew upon the New School Movement of the early twentieth century, the development of organised youth groups such as the Scouts, Guides and Youth Hostel Association and the establishment of Outward Bound and the Duke of Edinburgh Award, in recognising the need to provide challenging, adventurous, outdoor activities as part of the educational experience of all children. Hunt (1989, 24) comments on the universality of such themes that 'lie at the heart of outdoor, and indeed all, education' that are equally important to the process of education today as they were then. Other sections of the Act provided a way forward for local authorities to begin to introduce children to the benefits and learning potential of education outdoors. In particular it suggested, 'a period of residence in a school camp….would contribute substantially to the health and width of outlook of any child from a town school, especially if….the study of the countryside and the pursuit of outdoor activities formed the bulk of the educational provision and were handled by specially qualified staff' (Hunt, 1989, 25).

The White Hall Centre in Derbyshire became the first year-round residential centre established in 1950 for open country pursuits. In the years that followed residential experiences became a cornerstone of state sector outdoor education provision, focusing upon personal and social learning through outdoor pursuits and field studies (Ofsted, 2008)[ii]. However, despite widespread recognition of the value of outdoor education such provision has remained beyond the statutory obligation of local education authorities, leaving it open to cost-cutting and the threat of closure in more difficult economic times (Humberstone, 1992).

Noble (1995, cited in Nicol, 2002) identified a decrease in the length of residential experiences from 28 days to 8 days, whilst today it is far more common for residential experiences to last between 3-5 days. Other criticism focusing specifically on the educational process has come from a number of quarters. Ofsted (2008, 17) have raised concerns about the rise in the use of commercial rather than local authority centres. Dillon et al (2005) and Williams (1995) have called for teachers to liaise with residential centres pre and post visit so that experiences meet the particular needs of pupils whilst Ofsted (2008, 17) highlight the importance of the visit as an integrated part of pupils' holistic as well as curriculum learning rather than 'an isolated special event'. More positively they identify a range of good practice to reduce staff workload linked to outdoor residential experiences to include the use of well trained administrative support staff, the provision of generic risk assessments and teaching material by local authorities or centres, and the support of an educational visits coordinator (EVC). At the same time Gill (2010) has attempted to debunk many of the urban myths perpetrated by the media that continue to undermine the provision of outdoor education learning opportunities. In particular, he has drawn attention to the overall increase in the number of outdoor visits undertaken by schools as well as bringing a more rational voice to the threat of prosecution if something goes wrong.

Beyond the provision for residential outdoor education it was not until the Education Reform Act of 1988, and the introduction of the National Curriculum in 1989, that provision for outdoor education in the curriculum was increased. However, rather than being established as a subject in its own right, and there are many who would suggest it does not have the requisite body of knowledge to be identified as a curriculum subject (Barnes and Sharp, 2004; Nicol, 2002), it was introduced as Outdoor and Adventurous Activities (one of six areas of learning) in the Physical Education Programme of Study and made available as an option choice alongside athletic activities. In the Wales Curriculum 2000 document Outdoor and

Adventurous Activities consisted mainly of orienteering and problem solving until KS4 when journeying, camp craft and adventurous challenges were added (ACCAC[iii] 1999). Although at KS4 self-evaluation and the development of personal and social skills were highlighted, the potential of outdoor and adventurous activities remained stubbornly unfulfilled as it remained an optional choice for pupils and schools at all key stages. Humberstone (2002) eloquently sums up the situation, 'I would suggest that outdoor education in its present form did not feature substantially in the National Curriculum because it is ideologically incompatible with, and in practice, incongruent within, a National Curriculum framework, where knowledge is more rigidly compartmentalised and teaching is likely to be led by test rather than by the needs of the pupils' (p.163).

The politicisation of education over the last twenty years would suggest Humberstone's analysis to be accurate however physical education has proven to be a valuable ally in enabling outdoor education to be made more readily available to all pupils. Recent research drawing attention to the physical (Veitch et al, 2005) and health benefits (Munoz, 2009) of outdoor experience in particular have helped to strengthen the physical education-outdoor education relationship. More broadly the upsurge in provision of Forest Schools has identified increased levels of physical activity through learning outdoors (Mygind, 2007) with a commensurate decrease in sedentary time from three quarters to a third of the school day. As positive and welcome as this research is in providing an empirical basis for outdoor education within the curriculum no similar studies have been undertaken with pupils aged between 8-16 and Munoz (2009) highlights the need for more systematic investigation of outdoor experiences for children of different ages and gender.

Outdoor Education in Wales

In Wales this relationship between Physical and Outdoor Education has been further strengthened with the creation of the National Assembly for Wales (1999) and the emergence

of home-grown education policies, different and distinct to those in England, to meet the specific educational, social and cultural needs of the people of Wales. Informed by a series of policy documents (Climbing Higher, 2005; Climbing Higher Next Steps, 2006) a twenty year strategy has been developed aimed at increasing the population's use of the natural resources of Wales. Most recently 'Creating an Active Wales' (2009) have further identified the need to equip young people with the skills and motivation to use the outdoors in a bid to stem rising health problems associated with a lack of physical activity.

Most recently the introduction of a new learner-centered, skills focused curriculum (DCELLS, 2008a) has further demonstrated government's commitment to the learning potential of the outdoors. Three developments have particular importance for Outdoor Education in Wales. Firstly, the introduction of the underpinning Skills Framework for 3 to 19 year olds. This new curriculum approach advocates the development of the key skills of Thinking, Communication, ICT and Number across all subjects and areas of learning, including adventurous activities, from 3 to 19 years of age. Secondly, Early Years and Key Stage 1 have been replaced by a holistic play-based learning continuum for children aged 3-7 called the Foundation Phase, that advocates children learning through first-hand experiential activities using both indoor and outdoor classrooms (DCELLS[iv] 2008b). Thirdly, The Physical Education programme of study at Key Stages 2 and 3 continues the emphasis on the use of the outdoors, with the introduction of Adventurous Activities as a statutory area of activity for all pupils up to the age of fifteen (DCELLS, 2008a).

Whilst the Foundation Phase is still being rolled out in Wales anecdotal evidence from England's Foundation Stage approach suggests schools and teachers are beginning to adapt to the new expectations of children being able to move freely between indoor and outdoor environments. In the best instances the whole school environment as well as local facilities such as woods or shops was available to the children. In other cases, full use of the school

grounds was unnecessarily limited by the lack of a suitable wet weather canopy or suitable wet weather clothing (Ofsted, 2008). More worryingly in England Waite (2011) has identified a trend for declining provision of outdoor learning experiences between early years and later stages of primary education despite the generally strong support of teachers and pre-school practitioners. She postulates on the possibility of holistic discovery pedagogies such as the Foundation Stage being seen as superficial and inappropriate to the narrow, assessment-led curriculum operating in England. In Wales the move away from assessment and testing in the primary years in favour of a more focussed, skill based curriculum strengthens the case for Adventurous Activities, which have traditionally been recognised for developing young peoples' personal, social education, thinking and communication skills. The skills framework identifies the need to combine thinking with assessment for learning through 'active engagement, teacher and learner exploration, learners encouraged to think, question and talk' (DCELLS, 2008c, 11), which are arguably all fundamental aspects of Adventurous Activities.

Curriculum change

Even with a more conducive climate for outdoor pedagogy in Wales, the statutory inclusion of Adventurous Activities in the Physical Education curriculum is not without its problems, in particular, in relation to resources, equipment, timetabling and perhaps most importantly teacher skills and confidence. The new learner-centered and skills focused curriculum allows teachers and schools to be more creative in their approaches to the teaching of physical education (Lavin et al, 2010). Guidance on the implementation of the curriculum, emphasises flexibility with an aim to 'reduce prescription and to give control and responsibility back to schools and to learners themselves' (DCELLS, 2008a, 7), and although Kirk and Macdonald (2001) warn that reforms that are overly prescriptive will not succeed, a lack of prescription can equally result in inconsistencies. The role of the teacher as the change agent is critical (MacDonald, 2003). Teachers implement their own versions of an initiative

which may not reflect the intentions of the document (Kirk and Macdonald, 2001). Teachers may also lack the training and confidence to deliver new curriculum initiatives. Waite (2011) found that teachers had little or no input in their training on the use of the outdoors whilst Dillon et al (2005) recommend government, local authorities and other agencies should 'further develop school teachers' confidence and capacities to work with students in outdoor contexts' (p.75). Supporting this were concerns raised by ESTYN[v] (2001) who reported that 'the time allocated to university or college-based training is often not enough to allow trainees to develop the necessary knowledge, skills and understanding to teach the subject competently and confidently' (p.14).

This reduction in of hours in initial teacher education increases the need for continuing professional development (CPD) to compensate for the lack of subject expertise. DfEE[vi] (2001, 3) defines CPD as 'any activity that increases the skills, knowledge or understanding of teachers, and their effectiveness in schools'. This is supported by Armour and Yelling (2003) who suggest the purpose of continuing professional development is to raise standards of teaching and therefore pupil learning. Unfortunately Physical Education continuing professional development has been found to be limited and comprising mainly of sport–specific up date courses (Armour and Yelling, 2002). These one off training events may result in a quick fix but they do not result in lasting change and may, in fact, be counterproductive (Carnell and Lodge, 2002). Armour and Yelling (2002) also suggests that patterns of continuing professional development are haphazard and lack coherence and progression, with much official continuing professional development losing its impact because it was not based on real issues of the teachers' schools or children and therefore lacked relevance for the those attending the training (Armour and Yelling, 2003). In spite of the growing body of research supporting the need for learning in the outdoors and welcome initiatives like the introduction of the Skills Framework it is perhaps this lack of teacher expertise and confidence more than

anything else that could limit the potential for 'an enriched curriculum that will motivate and meet the needs of the individual learners and prepare them for life in the twenty first century' (DCELLS, 2008c, 12).

Outdoor Learning Cards

In a direct response to the need to develop teachers' skills and understanding in Adventurous Activities, The Outdoor Education Advisors Panel (OEAP) developed a new Outdoor Learning Cards resource and training programme in 2008. This was specifically designed assist teachers in the delivery of 'high quality outdoor learning activities and to help young people develop a range of skills related to these activities' (Outdoor Learning Handbook, 2008, 4). Four designated outdoor learning activities were identified as journeying, team building, bouldering and orienteering. Principles underpinning the new resource recognized that the activities could be delivered by teachers without the need for specialist training and expertise, they could be delivered within and around the school grounds and local area, they require minimal specialist equipment, and they could be used to contribute towards a scheme of work for Adventurous Activities within the PE Curriculum.

A common skills framework for the Outdoor Learning Cards has been created drawn from the government documentation for the Skills Framework for 3 to 19 year olds and includes communication, team working, reflective learning, leadership, independent thinking, creative skills and personal attributes (Outdoor Learning Handbook, 2008, 8). Generic learning outcomes for the Outdoor Learning Cards highlight their contribution 'to promote physically active and healthy lifestyles and will develop in young people positive attitudes towards self, others and the environment' (p.4). In addition, the Learning Cards are also intended to 'engage young people in safety education by encouraging them to manage risk sensibly' (p. 4).

The Outdoor Learning Cards training programme requires teachers to attend a one day training course during which they are introduced to the Resource Cards and their underpinning rationale. In addition, teachers get the chance to gain confidence in using the Resource Cards and to experience the activities first hand. The Resource Cards are not designed to be a scheme of work but are designed to support teachers to create their own scheme of work for Adventurous Activities within Physical Education. As such a major focus of the training programme considers how teachers will integrate the training and resources into their own school and local setting, reflecting Duckworth's (1997: 3) argument that the starting point for effective professional development should be to challenge the teacher to 'look with fresh eyes' at their professional practice.

Effective forms of professional development are highly complex, taking into account teachers experiences, emotions, social context, making connections that develop understanding and facilitate learning and change. They require reflection, analysis, judgment, dialogue and collaborative responsibility for learning (Carnell and Lodge ,2002). The Outdoor Learning Cards training has been carried out across school clusters, and as such gives some scope for groups of teachers to work together, allowing the collective participation required for long term change (Makopoulou and Armour, 2006). However, concerns about the structure of the training as a 'one shot' CPD module and the lack of long term support for teachers raise questions about the impact of the training upon school based outdoor pedagogy as well as upon teachers' ability to establish true collaborative learning that will improve practice. In light of research that suggests one day training may reduce long term change, this research seeks to investigate the impact of the Outdoor Learning Cards training and resources, in schools in West Wales.

Methodology

When planning the research a variety of data generation methods were considered. Combining of methods was chosen in order to attempt to see the whole picture (Silverman, 2001), making use of open questionnaires as phase 1 data generation and semi-structured interviews as phase 2. Questionnaires were deemed to be the most effective way to generate initial data from the ninety schools that had attended the training programme. Being mindful of the workload of teachers, and with the understanding that 'the questionnaire will always be an intrusion into the life of the respondent' (Cohen, Manion and Morrison, 2011) an attempt was made to ensure responses could be completed in under ten minutes.

The questionnaire was piloted with staff who had attended Outdoor Learning Cards training with a different provider in order to ensure completion in the given time was feasible and that all the questions were self-explanatory. Following feedback from the pilot, the format of several questions was altered to allow a tick box answer system for speed. The questionnaire consisted of a mixture of structured and semi structured questions grouped under five different headings to aid data analysis: *Perceptions of the Outdoor Learning Cards (OLC) course, Links to the Curriculum, Impact on Children's Learning, School Issues* and *The Future.*

The questionnaire was distributed via e -mail with a covering letter. As with postal questionnaires, the validity can be seen from two viewpoints (Belson, 1986, cited in Cohen, Manion and Morrison, 2011), whether those completing the questionnaire do so accurately and if those who do not complete the questionnaire would have filled in similar responses. In order to address the issue of non-response, the questionnaires were sent out repeatedly over a four-week period. A response rate of 23% was achieved.

Semi-structured interviews were carried out with three teachers as a second phase of data generation. Interviews took place within the school workplace with selected teachers

who had offered to take part in the research. The interviews were used to follow up emergent findings and 'to go deeper into the motivations of the respondents and their reasons for responding as they do' (Cohen, Manion and Morrison 2011, 411). An interview guide approach was used with topics and outline questions prepared in advance, but the interviewer, in response to previous answers and discussion determined the sequence and working of questions (Patton 1980, 206). The research is on-going and data generation will continue over the next six months.

Results and analysis

Initial findings (work is still in progress) fall into three categories:

1. Increase in teacher confidence to deliver adventurous activities in school.

All respondents reported they were more confident, or much more confident, to deliver Adventurous Activities in school. Even those teachers (the majority) who had very little previous outdoor teaching experience commented positively on their new found confidence. This they attribute to attending the training day and having the opportunity to work with the Resource Cards commenting that "Practical experiences made it easier to achieve within a school environment" and "The practical nature of the course really helped". In particular teachers identified how the resources, "Provided a plethora of ideas" explaining that the training "Gave me numerous ideas to develop in school and gave me the confidence and security".

Teachers highlight the potential of the Resource Cards within their schools commenting particularly on their ease of use. "All teachers were able to use them and they show good progression" and "I never taught it before and now it features regularly in the teaching of PE." In particular, their ease of use in providing guidance to colleagues was noted as being especially important for non specialist Physical Education teachers. "They were easy to explain to other staff, which is vital as I am the co-ordinator but do not teach KS2" and "I

would encourage any teacher who has the opportunity to make the most of this course, especially the non-specialist PE teachers."

Although it is encouraging that teachers feel they have gained confidence in the teaching of Adventurous Activities, the purpose of continuing professional development as highlighted by DfEE (2001) and Armour and Yelling (2003), is to increase skills, knowledge and understanding, and perhaps most importantly to increase teacher effectiveness and raise standards. It could be quite possible that what teachers are reporting is not that their teaching is any more effective than it was prior to the training but they feel more confident doing it. Comments by teachers later in the questionnaire do, however, support the notion of a positive impact on children's learning suggesting that increased teacher confidence has in fact translated into increased pupil learning and these are highlighted in the next section.

When considering the lack of hours spent on this area of activity during Initial Teacher Education (Waite, 2011) it would be reasonable to assume that teachers' skills and understanding in the area of Adventurous Activities will have been improved as a result of their Outdoor Learning Cards training. Follow up interviews suggest this to be the case with Teacher B commenting, "When we did orienteering we realised we were doing it in a very simple manner compared to what we should have been challenging these children with, as shown on the cards." Likewise, Teacher A states, "Those cards have had a huge impact because they've made us rethink about resources and what we're offering these children, and they've shown us more than anything how we are meant to be covering Adventurous Activities." Attention is again drawn to the needs of the non-specialist teacher by Teacher C. "In primary we're not specialists, we're sort of, you know, I'm PE co-ordinator, but my subject was always literacy in college and I'm now PE co-ordinator, and I'm not a specialist in any way, so I'm completely reliant, or have been, on PESS[vii] and Trinity[viii] for these courses really, so its had a huge impact on us because its shown us the sort of things that we

need to be doing to develop these children in these outdoor and adventurous activities." This aspect of the curriculum only became a statutory requirement in Wales in 2008. It is, therefore, quite feasible that prior to this many programmes of study at higher education may not even have covered this aspect of the curriculum and that many teachers would have had little or no experience teaching Adventurous Activities (Humberstone, 2002; Williams, 1995). Newly qualified teachers may in fact be the only staff to have had any preparation for this aspect of Physical Education in their initial training and even then it may only have been a few hours spread over an entire three year course.

Existing research suggests that one day training courses are unlikely to result in lasting change (Carnell and Lodge 2002), however, the changing nature of the curriculum over recent years and teachers' lack of previous experience may mean that in this case the impacts are longer lasting. Without exception teachers reported that the cards fulfilled the curriculum requirements. Likewise, as a statutory requirement, teachers had incorporated them into their schemes of work thus ensuring they will remain a compulsory aspect of the children's Physical Education provision for many years to come. However, given the relatively short time period between the introduction of the Outdoor Learning Cards training and the research (two years) it remains uncertain how much impact the continuing professional development will have on standards, at least until schools have undergone inspection and ESTYN report on their findings.

2. Positive impact on children's learning

Teachers were unanimous in commenting on the positive impact they felt the new Adventurous Activities Resource Cards had on children's learning. Three inter-linked aspects of pupil's learning were deemed to have benefited: personal and social learning; cross-curricular learning and Key Skills learning.

Personal and social learning is an area that has traditionally been linked with Outdoor Education and in particular with outdoor residential experiences (Nicol, 2002). However, whilst many schools would identify personal and social learning as part of the 'hidden curriculum' that infuses the values and ethos of the school per se they have only sought to formally engage with it in the form of the outdoor residential. However, Ofsted (2008) have reported on the failure of many schools to fully integrate the outdoor residential experience into children's holistic learning. Bringing Adventurous Activities into the school curriculum and grounds, and placing it the hands of the teachers who best know and understand the particular needs of their children, would seem to be a very positive step forward in making overt the importance of children's personal and social learning within their curriculum experience. Teachers reported on children "Taking turns, sharing, working as a team", and having "Improved self esteem and self confidence through tackling challenges." The activities had "proved valuable socially for children to work together", though for some children this had been a challenge, "as our children are a very competitive group, it was a learning curve to have to support each other and work as a team in order to succeed".

At a time when children are increasingly spending time in front of televisions and on computers (Palmer, 2006), the importance of opportunities for developing personal and social skills in school cannot be understated. In particular, and most recently, a growing body evidence has begun to highlight how the natural environment in particular impacts on children social and emotional well-being (Louv, 2005; Palmer, 2006). Although teachers did not highlight children's emotional development per se, learning outdoors was identified as a positive aspect of children's experiences. "They (the children) enjoy the outdoor aspect of the work" and "They gain a lot from the outdoor nature that is encouraged". Follow up interviews were similarly positive with Teacher A stating, "You're outdoors you're in the fresh - air children love learning outside, they have more fun from going outside." Another teacher

expanded on the lasting impact of the activities on pupils, “On return to school we had a team building event, where the children had to construct small tents. We had borrowed 5 camping stoves…. and prepared hot dogs and baked beans. These children have since left school but still mention it when we meet (Teacher B).”

Adventurous Activity experiences were also identified by teachers as having a positive impact upon children’s cross-curricular learning. Prior to the introduction of the National Curriculum in Wales and England in 1989 outdoor education had been a recognised approach to bringing an experiential and thematic dimension to pupils learning. In particular, learning outdoors in the school grounds and local area acted as a major focus for developing a more integrated and cross curricular approach to children’s learning. More recently the advent of Key Stage assessments and the introduction of league tables have reduced the opportunities for cross-curricular approaches that take children out of the classroom to learn in a more natural setting and in a more experiential way. Comments from teachers would suggest that the Outdoor Learning Cards were being used to develop broader cross- curricular links that extended beyond Physical Education to other areas of the curriculum. “Maths Geography, Communication, thinking – huge links” were identified as well as “Communication skills, ICT-Use of Logo and BeeBot”. Further opportunities were found by another teacher in “Journeying – PHSE, Geography, Science (effective material to build shelters)”.

Whilst it would be wrong to interpret these responses as a return to a thematic outdoor education approach, the identification of cross-curricular links is particularly encouraging in terms of developing the potential to expand the use of the outdoors beyond Physical Education at KS2. Teacher A commented, “That, (the outdoor) element of the Foundation Phase, we’d love guidance in KS2, and how we bring that into our curriculum and cross curricular elements.” Similarly Teacher B states, “We adapted and have areas in the classroom, and have a bank of resources and they have to decide on their own game and put

rules in place, so we do try, but guidance for us in KS2 on how we can develop what they've learnt in Foundation Phase and bring the best out of these children cross curricularly." At present teachers have identified the activities as being part of their schemes of work for PE but it is clear from their comments they are aware of the need for, and potential of, the Resource Cards to develop the use of the outdoors to other aspects of the curriculum.

The third and perhaps the most significant impact of the Outdoor Learning Cards upon children's learning has been in relation to the focus on Key Skills Learning. Recently introduced in Wales (DCELLS, 2008c) the Key Skills Framework for 3 to 19 year olds focuses specifically on the development of the key skills of Thinking, Communication, ICT and number that are felt to underpin lifelong learning. Teachers have commented favourably on the positive contribution of Adventurous Activities to this crucially important initiative. Questionnaire responses noted how, "The Outdoor Learning Cards have a large impact on children's thinking skills and problem solving" and how they help children to "Solve problems more efficiently and communicate better with each other." Follow up interviews expanded further, "For us its all about the skills, its teaching all those different Key Skills and they really come through in this because you've got your communication skills, you've got your creative thinking, you've got every skill, you've got the problem solving element of it" (Teacher C). At a time when teachers in Wales have to identify how their teaching delivers the Skills Framework it appears that they welcome a resource that so readily enables children to develop these Key Skills.

More importantly one teacher commented on how some pupils themselves were aware of the underpinning potential of the activities they were doing. "I asked them about the skills they had learnt and they could name all the skills they had learnt 'we were listening, we were communicating, they could name all the skills, they just filter through in such a fun and positive way'" (Teacher A). Teachers have clearly identified the positive impact of the

Resource Cards as a tool for delivering the Skills Framework and further analysis of the comments begins to reveal why this may be. The Resource Cards are felt to be "self-explanatory and can be used independently by the children". They are "visual and realistic". "Children are given the skills to learn independently", and "They (the children) enjoy the activities, take more interest and consequently their understanding improves." In other words the Outdoor Learning Cards and the activities they introduce are felt to be learner centred, practical and user friendly.

One aspect of children's learning that was not mentioned rather surprisingly was related to children's health. Whilst it might not be unusual for children themselves not to mention this, it is a little more unexpected that teachers did not comment on this issue. Given the intense media and research spotlight on children's health in recent years (Mygind, 2007) it could be reasonably expected that teachers would draw attention to this new opportunity to promote longer and more diverse periods of physical activity. That this was not commented on in any of the questionnaire returns or discussed in the interviews may be explained in one of two ways. Firstly the overwhelming emphasis on the development of Key Skills in the new curriculum focussed teachers' attention on these areas, to the exclusion of other aspects, such as health and activity. Secondly, that children's' physical activity and improved health are assumed outcomes of Physical Education and therefore not worthy of specific comment. Future research will seek to further explore the impact of Adventurous Activities upon children's physical activity levels and health.

3. Increased provision for Adventurous Activities.

Whilst Gill (2010) suggests there has been an increase in the number of outdoor visits undertaken by schools it is commonly recognised that the non statutory status of residential outdoor learning has meant that, like school playing fields, they have been sold off by many local authorities in recent years. It was a particular interest of the research to explore the

impact of the Outdoor Learning Cards upon Adventurous Activities provision. To this end a small number of schools did identify a move away from residential experiences in favour of school based and in-house delivery such that the Outdoor Learning Cards were now their only means of delivering Adventurous Activities. In contrast, the majority of schools felt the cards had actually expanded their provision. Many maintained their existing use of residential centres, " we also use Pendine Outdoor Education centre," and "Year 6 also do a PGL weekend", as well as another school continuing with "residential visits by year 5 and 6". Added to this continuing provision at the upper end of primary schooling, other teachers commented on the extended provision that was now evident across the full four year range of Key Stage 2 with particular emphasis on years 3 and 4 and the transition from the Foundation Phase**.**

The incorporation of the Resource Cards into a scheme of work by most schools has also resulted in greater financial investment in resources and facilities to support pupils learning. One teacher commented, "We have purchased two climbing walls for KS2 and Foundation Phase, up dated orienteering equipment and purchased more resources for team building". Other schools had been more circumspect and for some a lack of resources was still a barrier to fully implementing Adventurous Activities especially "lack of funds and space for a climbing wall". When comparing the provision now to that which existed prior to the changes in the curriculum, clearly there has been a considerable increase in opportunities for Adventurous Activities. However the issue needs to be considered as to whether the sole use of the Resource Cards as a scheme of work delivers the breadth and progression required for an area of activity across four year groups. Although at the present time the Outdoor Learning Cards appear to have expanded the provision and learning opportunities around Adventurous Activities this may be a double-edged sword. If schools fail to develop their delivery of Adventurous Activities beyond the limits of the Resources Cards, and it must be remembered

that they were written to contribute towards and *not* to act as a scheme of work (Outdoor Learning Handbook, 2008), this aspect of the curriculum will fail to realise its full potential. Ultimately teachers, and most importantly pupils, will work within and be constrained by the ideas on the Resource Cards as a scheme of work for Adventurous Activities that is limited to Physical Education. In the longer term this can only work contrary to the cross-curricular potential that has been identified earlier. On the other hand, if teachers are regularly delivering Adventurous Activities, initially within the scope of the Resource Cards, their increasing confidence and experience may result in the natural, longer term development of this area of activity in schools.

A final and interesting aspect that some teachers highlighted was the particular value of these activities to expand provision and for pupils who have not favoured traditional games and sport activities in the past. This greater inclusivity of all children within Physical Education has been a major strength of outdoor pedagogy for many years and helps to provide children with a broad and balanced programme of study that should be the hallmark of Physical Education. "OAA (Outdoor and Adventurous Activities) is a great way of keeping everyone active at a non-competitive level. It has proved a great success with children that are not keen on sport". It may well be that the greater diversity of learning offered by the statutory inclusion of Adventurous Activities (at least at Key Stage 2) is evident in the high levels of enjoyment and increased pupil motivation reported by teachers in interviews. "The children are very motivated; they cannot wait for the summer term when they know the adventure cards are coming out" (Teacher C). A last word however should rightly be reserved for one teacher whose enthusiasm for Adventurous Activities was similarly reflected in her pupils response and engagement, "I did one last week, I did the blindfold one and set up a course. They were being blindfolded and working their way through the course and 2 children

came up to me at the end and they said ‘Miss, that’s the best PE lesson we’ve ever had and we couldn’t see for most of it’. They loved it because they are so fun.”

Conclusion.

At this point the conclusions drawn form the study must be treated cautiously due to the limited sample size at this initial stage. As data continues to be generated by on going interviews and questionnaire returns further analysis will allow more detailed insight into the impact of the Outdoor Learning Cards training and resource upon both teachers and children.

Previous research (Armour and Yelling 2003, Carnell and Lodge 2002, and Armour2001) highlights limitations of one-day training days as a form of continuous professional development suggesting that lasting change is seldom achieved. However the findings of this study have identified that teachers have incorporated the training and resources into the schemes of work for Physical Education. This fact alone will ensure children continue to access Adventurous Activities at KS 2. Although this could be considered highly positive in the short term further analysis questions the longer term implementation and development of this area of activity. Concerns are raised about whether teachers’ knowledge and understanding has been sufficiently developed to expand pupils’ learning opportunities without the use of the Resource Cards, limiting the long term potential of this aspect of Physical Education. This is an area for future research.

The data also suggests that teachers have concerns relating to transition, particularly from foundation phase to Key Stage 2. This highlighted, in particular, a need for future training relating to the use of the outdoors as a holistic learning environment similar to the Foundation Phase philosophy. Questions are also raised about transition from Key Stage 2 to Key stage 3 and although secondary school staff have attended the training, to date none have responded. Similarly the research failed to generate data relating to levels of physical activity and children’s health. In a time of increased emphasis on health it is surprising that teachers

did not identify aspects of physical activity and health in relation to children's experience of Adventurous Activities. Teachers may not have commented on these aspects as they feel physical activity and improved health are synonymous with Physical Education. However, it may also be the case that the increased emphasis on Key Skills in all aspects of the curriculum dominates teachers' thoughts to the exclusion of anything else.

Finally, data from the research suggests the major impact of the Outdoor Learning Resource Cards has been identified as vehicle for the delivery of Key Skills which underpin the curriculum. Their contribution to developing pupils thinking, communicating, ICT and number skills were repeatedly highlighted by teachers.

At a time when children's aptitude for learning is considered a main role of the education system, a resource that can develop life long learning skills for all pupils appears to have been welcomed and highly valued by teachers.

Bibliography

Armour, K. and Yelling, M. 'Physical Education departments as learning organisations: the foundation for effective professional development. Paper presented to *British Educational Research Association*, Edinburgh, 2003.

Armour, K. and Yelling, M. 'Chalk and Talk' or learning from doing. Continuing professional development for Physical Education teachers. *British Journal of Teaching Physical Education,* 2002.

Barnes, P. and Sharp, B. Some thoughts on the nature of outdoor education. In P.Barnes and B. Sharp (Eds.), *Outdoor Education.* Lyme Regis: Russell House Pub., 2004.

Belson, W. A. *Validity in Survey Research.* Aldershot: Gower, 1986.

Bird, W. *Natural Thinking.* A report by Dr William Bird for the Royal Society for the Protection of Birds, Investigating the links between the Natural Environment, Biodiversity and Mental Health. RSPB, 2007.

Carnell, E. and Lodge, C. *Supporting Effective Learning.* London: Sage, 2002.

Cohen, L. Manion, L. and Morrison, K. *Research Methods in Education. (7th edition)* London: Routledge, 2011.

Climbing Higher & Climbing Higher Next Steps available at:
http://wales.gov.uk/topics/cultureandsport/sportandactiverecreation/climbing/;jsessionid=dCKNNy2Sh7GHKSLD6h2WrZJGxcJnLKyZjqNbRQq3JhMkMSnsXKtV!688189528?lang=enCreating an active Wales available at:
http://www.wcva.org.uk/images_client/policy_consultant/Climbing%20Higher%20E.pdf

DCELLS (Department for Children, Education, Lifelong Learning and Skills) *Making the most of learning. Implementing the revised curriculum.* Cardiff: DCELLS, 2008a.

DCELLS (Department for Children, Education, Lifelong Learning and Skills) *Foundation Phase Framework for Children's Learning for 3 to 7-year-olds in Wales.* Cardiff: DCELLS, 2008b

DCELLS (Department for Children, Education, Lifelong Learning and Skills) *Skills Framework for 3 -19 year olds in Wales*. Cardiff: DCELLS, 2008c.

DfEE, *Learning and teaching: A strategy for professional development*, DfEE 71/2001.

Dillon, J., Morris, M,. O'Donnell, L., Reid, A. Rickinson, M. and Scott, W. *Engaging and learning with the outdoors – the final report of the outdoor classroom in a rural context research project.* National Foundation for Education Research, 2005.

ESTYN. *Physical Education and School Sport Action Plan-an in depth look at progress made in the implementation of the PESS action Plan.* Cardiff: ESTYN publication, 2006.

Fjorttoft, I. 'Landscape as Playscape: the effects of natural environments on children's play and motor development', *Children, Youth and Environments Vol. 14, No. 2,* 2004.

Fullan, M. *Change Forces - Probing the depths of Educational Reform*. London: The Falmer Press, 1993.

Garrick, R. *Playing Outdoors in the Early Years.* London: Continuum, 2004.

Gill, T. *No Fear. Growing Up in a Risk Averse Society.* London: Calouste Gulbenkian Foundation, 2007.

Gill, T. *Nothing Ventured: Balancing risks and benefits in the outdoors.* English Outdoor Learning Council, 2010.

Humberstone, B. Outdoor Education in the National Curriculum. In Armstrong, N. (Ed), *New Directions in Physical Education Vol. 2*. Leeds: Human Kinetics, 1992.

Hunt, J. *In Search of Adventure - A Study of Opportunities for Adventure and Challenge for Young People,* Surrey: Talbot Adair Press, 1989.

Kirk, D. and MacDonald, D. Teacher Voice and ownership of curriculum change. *Journal of Curriculum Studies, vol. 33 No. 5.* 2001.

Lavin, J. Wainwright, N. Hargreaves, S. Delany, B. and McKee, D. Children's Primary Physical Education in the United Kingdom- A post code lottery? *Primary Physical Education Matters,* Vol.6 No.1, Spring 2011.

Louv, R. *Last Child in the Woods. Saving Our Children from Nature Deficit Disorder.* London: Atlantic Books, 2005.

Macdonald, D. *Curriculum change and the postmodern world: is the school curriculum-reform movement an anachronism?* 2003 http://faculty.ed.uiuc.edu/westbury/jcs/Vol35/MACDONAL.HTM accessed 21/1/11

Makopoulou, K. and Armour, K. Evaluating the National PE-CPD programme in England: Evidence from schools and teachers. Paper Presented at the *British Educational Research Association Annual Conference,* Warwick, 2006.

Maude, P. Physical literacy and the young child. In M. Whithead(Ed). *Physical Literacy Throughout the lifecourse.* Oxon: Routledge, 2010.

Maynard, T. and Waters, J. 'Learning in the outdoor environment: a missed opportunity?' *Early Years, vol. 27, No. 3,* 2007.

Moore, R. C. and Wong, H. H. *Natural Learning: creating environments for rediscovering nature's way of teaching,* (Berkeley: MIG Communications), 1997.

Mortlock, C. *The Spirit of Adventure, towards a better world.* Kendal: Outdoor Integrity Publishing, 2009

Mortlock, C. *Beyond Adventure.* London: Cicerone Press. 2001.

Munoz, SA. *Children in the outdoors: a literature review*. Forres, Scot: Sustainable Development Research Centre, 2009

Mygind, E. 'A comparison between children's physical activity levels at school and learning in an outdoor environment', *Journal of Adventure Education and Outdoor Learning,* Vol. 7, *No. 2,* 2007.

Nicol, R. Outdoor education: research topic or universal value? Part two. *Journal of Adventure Education and Outdoor Learning*, Vol. 2 (2), 85-100, 2002.

Ofsted. *Learning outside the classroom: How far should you go?* London: Ofsted Pubs. 2008.

OEAP. *The Outdoor Learning Handbook*. Perthshire: Harvey Pub. 2008.

Palmer, S. *Toxic Childhood, How the modern world is damaging our children and what we can do about it.* London: Orion, 2006.

Silverman, D. *Interpreting Qualitative Data: Methods for analysing talk, text and interaction* (second edition). London: Sage, 2001.

Taylor, A. Kuo, F. and Sullivan, W. *Views of nature and self-discipline: evidence from inner city children* Journal of Environmental Psychology 21 sup. 2001.

The Mail. *Parents risk creating 'battery farm children' by not letting them play outside.* Published 5/2/2008.

The Telegraph. *Don't cosset children in 'cotton wool' says commissioner* Published 8/6/2010.

The Times. *How many adults does it take to let children play outside?* Published 4/8/2007.

Veitch, J., Bagley, S., Ball, K., and Salmon, J. Where do children usually play? A qualitative study of parent's perceptions of influences on children's active free-play. *Health and Place,* 12 (4), 383-393, 2005.

Waite, S. (Ed) *Children learning outside the classroom: from birth to eleven*. London: Sage pub., 2011.

Whitehead, M. *Physical Literacy Throughout the lifecourse.* Oxon: Routledge 2010

Williams, A. Outdoor and adventurous activities, holistic learning and the primary residential experience. *The Bulletin of Physical Education*, Vol. 31 (2) 51-56, 1995.

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Gender differences in Spanish Physical Education teachers towards School Doing Gender

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Abstract

Background: Legislative policies adopted in Spain with regard to gender and education, have rapidly spread. Among the measures which have been adopted are training and raising teachers' awareness on equality. However, it is not clear that women and men show the same attitudes towards gender equality so adopted measures will not always be effective.

Purpose: In this paper we analyse the Physical Education (PE) teachers' attitudes towards gender equality and compare their attitudes by sex

Participants: This study follows a survey-type quantitative descriptive methodology in which 526 Spanish PE teachers have taken part.

Data collections: Data were collected using the Likert-type Scale SDG/t (School Doing Gender /teachers), made up of 30 items separated in three subscales: sociocultural (10), relational (10) and personal (10). The scale's reliability analysis shows that this reaches a high measurement reliability (ALPHA=.920).

Data analysis: The analysis consists of descriptive and frequency studies and contrast tests of the data obtained

Findings: Results reveal that PE teachers mainly show an adaptive attitude towards gender changes, and that there are differences in this group attitudes depending on their sex, in which female teachers achieve higher scores than males.

Conclusions: We can state that it is necessary a better training in gender issues in order to raise awareness and update PE teachers' knowledge, especially in the case of male teachers.

Key words: gender; Physical Education; teaching; attitudes

Introduction

In the last decade, the Spanish estate has approved several legislative measures within the framework equality of opportunities. The most important of these is Law on Effective Equality between Men and Women, 2007. One of the frameworks of action of this law is schools. Education centres will integrate the equality principle, will eliminate stereotypes, will enhance women's participation and will lead projects on the promotion and dissemination of the equality principle.

Likewise, at a national scale, the Education Act of 2006 includes the equality principle as one of its action pillars, fostering coeducation in classrooms and even modifying the syllabus of the compulsory education in order to include a subject in which the equality topics are dealt with directly.

Within this legal framework, teachers play an important role in the cultural change at school regarding gender equality. Many of the proposed measures are aimed at current and future teachers' training and awareness regarding gender equality, by means of a continuous training or specific training for Physical Education teachers. However, from training centres in Spain, there are awareness initiatives promoted and these do not take into consideration teachers' features that can influence their own beliefs and attitudes; such as gender, culture, school, religion … As Brown and Rich (2002) and Vázquez, Fernández-Garcia and Ferro (2000) claim that men and women position their practices in a different way, women's is more critical and linked to feminist proposals. Therefore, gender establishes as a key variant for teachers' attitudes towards gender equality.

Hence, the purpose of this paper is to find out if there is a gender gap (Rossi, 1982) in Spanish Physical Education teachers' positions regarding gender equality. Knowing their positions will allow us to assess current proposals (Scraton, 1992) and establish new training

proposals that are suited to teachers' features and so, they are more effective in progress towards a new gender culture.

Physical Education and Gender: current state of affairs

One of the aims of Physical Education at school must be helping to integrate people in society, promoting, through school and proper measures, a body culture with benefits such as psychophysical balance, personal development, free time enjoyment or better health, as well as development of personal autonomy against manipulations and pressures that the new social myths impose through the media and the Internet.

All of this leads to a new concept of Physical Education, both from the point of view of its aims and from its contents and methods, which brings in new approaches to the traditional development of skills (Vázquez, 2001). Body and movement experiences make up the main working tool in Physical Education. Therefore, this is a privileged school subject to assess gender stereotypes, roles and beliefs which are shown in daily life at school and in teaching practices.

PE teachers, as an agent involved in students' education, have the responsibility of acting in education for gender equality. Accepting their responsibility as educational agents, teachers must work to reach equality of opportunities, even unlearning what they learnt in order to confront their own beliefs and prejudices against their performance as teachers (Talbot, 1993).

Gender research in the educational field is currently a fruitful source of publications and international research (Gender and Education, Journal of Gender Studies, Journal of Teaching in Physical Education, Sport, Education and Society, etc.). Physical Education is one of educational areas pioneer in the inclusion of gender perspective in its studies and researches. As a result, today we count on innumerable contributions, especially from the 80s.

The progresses that have taken place in the last decades regarding acknowledgement of gender as a social construction have allowed to ensure the importance of society, not of biological differences, developing a more critical and proper view of inequalities between genders in Physical Education (Scraton, 1992). Ultimately, it is important to include gender perspective in the study of Physical Education as a reinforcing field of the stereotypes of the own body and physical activity (Vázquez, Fernández-García y Ferro, 2000).

The viewing of the latest studies about gender and Physical Education (Cheypator-Thomson, You and Hardin, 2000; Davis, 2003) shows a wide range of research topics that we can classify in three big groups following the classification made by Flintoff and Scraton (2006): Syllabus, Students and Teachers. However, several sources (Clarke, 1998; 2006a; 2006b; Gorely, Holroyd and Kirk, 2003) make us establish a fourth group, specific but transversal to the previous ones, about different identities in Physical Education.

a) *Curriculum of Physical Education and gender*. It has been the subject matter of numerous studies, especially those where segregated school is compared to co-educative school (Gabbei, 2004; Hannon and Ratliffe, 2005; Wright, 1997). Even more prolific are the Physical Education studies about hidden curriculum, carrying out studies about language (Scharagrodshy, 2004; Stidder, 2005; Vázquez, Fernández and Ferro, 2000; Wright, 2000), use of images at the Physical Education class (Taboas and Rey, 2007: González-Pascual, 2005) or the use of spaces (Clark and Paechter, 2007; Subirats and Tomé, 2007).

b) *PE students and gender*. In the last years, a large number of researches have been made in which the stereotypes that students show regarding physical activity (Klomsten, Marsh and Skaalvik, 2005; Williams and Bedward, 2002), their attitudes towards equality (Robinson and Melnychuk, 2009), barriers towards participation in Physical Education (Enright and O'Sullivan, 2010), girls' and boys'

embodiment (Azzarito, 2009; Fisette, 2011; Paechter, 2011) and their satisfaction with Physical Education (Barr-Anderson, et al., 2008) are analysed.

c) *Different identities in Physical Education*. This group of more recent researches has been focused on the issue of new masculinities that do not fit in the traditional conception of the muscled man (Bramham, 2003; Gard, 2006; Larsson, Fagrell and Redelius, 2009; Larsson, Redelius and Fagrell, 2011; Tischlet and McCaughtry, 2011) and the casuistry of homosexual teachers and students in the Physical Education class (Clarke, 1998, 2006a, 2006b; Morrow and Gill, 2003).

d) *PE teachers and gender*. These researches haven been focused on teachers' training (Benn, 2002; Flintoff, Fitzgerald and Scraton, 2008; Fernández-García and Piedra, 2010; Rich, 2001), on the teachers' role as change perpetuators or agents (Dowling, 2006; Webb and MacDonald, 2007a, 2007b; Wright, 2002) and on the way of working with boys and with girls (Evans, Davies and Penney, 1996; Nicaise, Cogérino, Fairclough, Bois and Davis, 2007; Shimon, 2005).

As Scraton (1992: 115) declares, research on attitudes and ideas contributes relevantly to understanding how important gender is in Physical Education. This can be proved by the large number of researches that analyse, from the gender point of view, the actions and beliefs of PE teachers (Dowling, 2006; 2008; Evans, Davies and Penney, 1996; Vázquez, Fernández-García and Ferro, 2000; Waddington, Malcolm and Cobb, 1998; Wrigth, 2002), since it is one of the most prolific and prone areas for the development of co-educative activities. The works in Spain of Vázquez, Fernández-García and Ferro (2000) and in England of Waddington, Malcolm and Cobb (1998) confirm the reproduction of sexist stereotypes by Physical Education teachers. As Shimon (2005) asserts, this gender stereotypes make teachers treat, in many occasions unconsciously, differently their male and female pupils. In the Norwegian context, Dowling (2008) establishes the difference among PE teachers, from a negative

emotional response to gender topic due to the predominant socialization manner in PE regarding gender.

However, there are few studies (Brown and Rich, 2002; Rich, 2001) and none in the Spanish context focused on analysing the positioning of these teachers or students in the process of building a gender culture at schools. British researchers Brown and Rich (2002) acknowledge the predominance of heteronormative speech that influences gender positioning of trainee Physical Education teachers, who come to accept, in most of the cases, established order. Emma Rich (2001) concludes that a person positioning is influenced by local and structural structures apart from individual factors. The lack of knowledge observed in this regard leads us to study these tendencies in two Spanish regions PE teachers.

Doing Gender in Physical Education

This paper has as one of its main sources *Doing Gender* theory. This theory, developed from American Sociology (West and Zimmerman, 1987), argues that gender cannot be understood nor as a collection of features or as a variable or an attribute of a person, but it is born as a product of social interactions directed to the production of the gender social order.

Gender is a way of giving sense to actions, it is a system of meanings that organises interactions and gives them a directional sense. The power of this theory lays on the capacity of pointing that micro-possessions make up the daily experience of the sexist discriminations and support the social structure which perpetuates them (Kitzinger, 2009).

Gender does not exist within the individual but within the interactions among people (Crawford and Chaffin, 1997). This theory understands gender building, on one side, as an individual task of every person and, on the other side, as a social construct made in interpersonal relationships (West and Zimmerman, 1987).

According to Crawford (1997; 2006), although at first feminism defined gender as a socialized part of the self and identity (personality features, roles, etc), understanding of

gender is currently broader, so it is necessary to analyze gender as a social system that works in three levels:

- Sociocultural level: gender governs the access to resources and to the power, controlling social positions and relationship patterns between men and women. Beliefs and traditions that are created, are kept and develop in practice communities. They are being progressively acquired while the beginner takes a central place (Daniels, 2001). Due to the prevailing patriarchal tradition, gender construction is not the same for women and for men, since they do not have the same social consideration.
- Relational or Interactive Level: Gender as a dynamic process of representing what being a woman or a man means is built in face to face interactions in daily life situations. Within this level, we can analyse the privileged gender roles in current society, which prevent that boys and girls build their identity with freedom, since going out of the pre-established behaviours for each gender may mean reject and social exclusion, and even the possibility of suffering episodes of violence.
- Individual or Personal level: men and women come to accept the distinctions between genders as part of themselves, linking them with features, conducts and roles which are a norm for people of their sex in their culture. In this level, gender is expressed as a feature of personal identity (expectations, interests, fantasies, desires, etc). This subjective representation of gender is normally, in practice, a more or less automatic answer to social pressures: each person behaves in the way established by patriarchal social background (Crawford and Chaffin, 1997).

Doing Gender theory, which is our basis for this study, shares with Sociocultural theory, initiated by Vygotsky, the idea that a person builds reality by means of interacting with context. Internalization, appropriation and privilege constructs are key in study of teachers'

attitudes towards gender equality. In andocentric society, most young people internalize male chauvinist attitudes of dominant culture and make them its own. However, some people are not influenced by sexist speeches and object them by actions of resistance, giving privileges to other different speeches.

Physical Education teachers' position can vary between the reproduction of hegemonic pattern and resistance towards that model (Chepyator-Thomson and Ennis, 1997; Soler, 2009; Wright, 2002). Rebollo, García-Pérez, Piedra and Vega (2011) refer to the existence of three kinds of positioning for teachers towards gender equality. A low score means a *"blocker"* attitude of adscription and legitimization of the proposed context by the dominant institution and which attempts to block gender construction by means of actions of resistance against different social model. A medium score implies an*"adaptative"* attitude, which adheres and legitimizes the dominant context but adapting itself to situations provoked by normative regime. Last, the highest scores which correspond to a *"co-educative"* attitude, teachers resist against socially proposed principles, questioning gender reality and looping for other explanations, which are coherent with gender perception. Cut-off points which classify teachers are included below in table 2.

Method

Our basic idea is that qualitative ethnographic analysis brings the keys for the analysis of specific cases in order to carry out a study with broad samples that allows to extrapolate conclusions and to compare results between both regions. However, this study starts from a broad research project grants for the *Junta de Andalucía* where it follows a positivist approach, therefore we have opted for a quantitative approach, using a survey-type ex post facto comparative study with instrumentalized surveying techniques on Likert-type scales.

Participants

The study was carried out during school year 2008/2009 in the autonomous communities of Madrid and Andalusia, in which a total of 526 PE teachers and trainee teachers between 18 and 58 years old took part.

In this study PE trainee teachers (58%) and active PE teachers (42%) took part. Within this group, 80% works in public schools and 30% in private schools. As well, this group teaches different compulsory educative levels: Primary Education (70%), Secondary Education (20%) and Pre-University Education (10%).

Instruments

The instrument used in the research is the Likert-type Scale SDG/t (School Doing Gender /teachers), made up of 30 items separated in three subscales: sociocultural (items 1-10), relational (items 11-20) and personal (items 21-30). Answers range between 1 (strongly disagree) and 5 (strongly agree). The sociocultural subscale includes contents referred to the acceptance of equality policies and the inclusion of gender policies in school organization (e.g. "The current laws in force related to co-education harm boys"). The relational subscale includes questions about educational practice, expectations and gender relations in the education field (e.g. "I usually spend more time to explain a concept to girls than to boys"). Finally, the personal subscale observes the acceptance or the reject of gender beliefs, values and stereotypes (e.g. "Leadership and command are more innate in boys than in girls").

The scale's reliability analysis shows that this reaches a high measurement reliability (ALPHA=.920). Following this method, it is achieved a high reliability of each of the subscales: sociocultural subscale .806; relational subscale 1.000; personal subscale, .868. As well, the validity of the instrument is verified when a components saturation above .350 is obtained for each item, with an average saturation of .543 and a typical deviation of .075.

Insert Table 1 here

Procedure

The processes followed for collecting information has been anonymous and voluntary through incidental sampling. The survey is provided to teachers online (www.teonxxi.es) within the First Equality Plan in education centres during the first four-month period of the year 2008/2009.

For the purpose of increasing the sample, the handwritten questionnaire is collected from teachers in centres themselves during the second fourth-month period of the year 2008/2009.

Analysis

The previous data analyses included the hypothesis Kolmogorov-Smirnov contrast test for normal distributions. Results suggest that the sample does not follow a normal distribution (<.05); therefore, we applied contrast nonparametric tests in the subsequent analysis.

At statistical study, SPSS 17 was employed. Descriptive and frequency studies were carried out, as well as contrast tests (Mann–Whitney U test) of the differences in averages. We've calculated the effect size following the criteria established by Grissom (1994).

Insert Table 2 here

From the theory where this paper is approached (Rebollo, García-Pérez, Piedra, and Vega, 2011), three cut-off points are presented in Table 2, for the scores reached at the scale. With this, three types of teachers positioning towards building of a gender culture at school are obtained: blocker, adaptive and co-educative.

Results

Firstly, global scores obtained by Spanish PE teachers offer as a result an average of 117.66. This score positions them as a group with an adaptive attitude but close to the co-educative position. However, as we can appreciate in the distribution of the Figure 1, the broader teachers group is that which shows more co-educative attitudes.

Insert Figure 1 here

There is also a small teachers group (4.9%) which is more explicitly opposed to a change in school culture with gender perspective. The cultural change occurred in Spanish society regarding gender equality makes that being openly opposed to change is frowned upon; these cultural limits about what can be done, said o thought (Dowling, 2006) is only transgressed by a minority of Physical Education teachers.

Secondly, we show the distributions of the PE teachers depending on their sex (Figure 2). Among female teachers, the largest group is that with co-educative attitudes, while within male teachers the biggest group is that with adaptive attitudes.

Insert Figure 2 here

These clear differences between both groups are confirmed by nonparametric contrast hypothesis analysis carried out in attitude scores derived from the Likert scale and shown in Table 3. Significant differences ($p \leq .05$) have been obtained between female ($\overline{X}$=124.62; SD=18.468) and male teachers ($\overline{X}$=114.56; SD=18.375). The value of effect size in this case (-.50) indicates a moderately strong tendency for female PE teachers to obtain a better attitude towards SDG than male PE teachers.

Insert Table 3 here

If we analyse data more carefully, it is observed that there are significant differences ($p \leq .05$) among male and female teachers in each of the three subscales As it can be seen in table 4, the scores obtained by male Physical Education teachers in each of them describe them as teachers with adaptative attitudes towards gender equality. For females teachers, they get scores in the sociocultural and personal subscale which position them as co-educative teachers and in the relational subscale, they are placed as adaptative teachers. It is in these items of the relational subscale where, men and women get the lowest scores. On the contrary, PE teachers get the best scores in the sociocultural scales.

Inser Table 4 here

If we analyse the results following each of the items, rotated if they are negative, we can observe (table 5) that in all the cases, female teachers get higher scores than male teachers. If we check differences by gender by means of a non-parametrical test, it can be pointed out that only in item 17 ("In my work documents, I try to use non-sexist language") there are no relevant differences among women and men and there are relevant differences in all the rest.

It is also to be highlighted that in item 12 ("When I teach, I use masculine to refer to boys and girls because this is correct") that refers to sexist language use, the lowest scores are in both groups.

Insert Table 5 here

Discussion

The main aim of this research is the analysis of Spanish group PE teachers' attitudes regarding building of a gender culture at school. The results of the survey prove that this group of teachers shows adaptive attitudes towards inequality issues. As well, similar to Fintoff's results (1993), there is still a small group of teachers hostile towards changes in favour of a more equal school. As Shimon (2005) states, non-sexist education is still a challenge for many PE teachers, especially for male teachers. These results make us conclude that there is a need of reviewing and improving formal and continuous education which, regarding gender, is being received by PE teachers. In that sense, researches by Fernández-García and Piedra (2010) and Wright (1999) certify the benefits of gender training for teachers.

The *gender gap* found within male and female PE teachers in favour of the female group coincide with the results obtained within general teachers in Rebollo et al. (2011). Male teachers' awareness and training are, therefore, a priority due to their lower scores that position them as the least sensitized and co-educative teachers. The fact of viewing a gender

breach among attitudes towards PE teachers implies adaptation of awareness, training and empowerment measures that are done from the different administrations towards different positions of men and women.

In a more detailed analysis of the results of the scale regarding teacher gender, it has been found out that in all cases, female teachers get better results. However, it is in the relational subscale, this is, the one referred to teaching practice itself where men and women show a less defined position. This seems to suggest that Physical Education teachers lack an established opinion as in the personal and relational subscales. It is precisely to this subscale that items referred to the use non sexist language belong and that cause major problems for male and females teachers. Teachers' need to care for classroom language from a gender equality point of view to avoid discrimination does not seem to be still assumed (Wright, 1995; 1997; 2006; Wright and King, 1991), specially in Latin culture in which language has a defined male bias.

To sum up, we agree with other authors that a specific gender training is necessary among PE teachers (García and Asins, 1994; Scraton, 1993; Vázquez, Fernández and Ferro, 2000), although this training should not be only focused on broadening the theoretical knowledge, but also on internalizing a broad range of practices, activities and ways of communication that take teachers to a more flexible position for developing their students identities and change gender culture at school (Brown and Rich, 2002). Teachers, as a change agent, should play a very important role in building of a gender culture at school (Flintoff, 1993). With this training, teachers should acquire gender entrepreneurship skills that take them to stimulate school culture, turning their knowledge, aptitudes and skills into a tool to reach this objective.

It is also necessary to carry out studies that deepen into the effects of gender training programs of active or trainee teachers. Teachers' obligation of going beyond being mere

knowledge transmitters makes us look for the acquisition of gender empowerment competences. All of this requires a redesign of new training strategies in the interest of a critical training (Wright, 2000) with personal initiative and that keep in mind emotions to which gender culture is inextricably linked (Dowling, 2008).

Sharing Sheila Scraton's opinion (1992) that teacher attitude research only covers just a part of gender problem and being conscious that methodological limits of quantitative research for gender equality study in PE classroom, some studies as that from Vázquez, Fernández-García and Ferro (2000), which foreground the difference between what teachers teachers say and what they do in the classroom. That is the reason why we propose to work with qualitative methodologies that allow us to know teaching practices regarding men and women equality. Finally, we should highlight that this study should be sinergically completed with the rest of participating agents in School Doing Gender, such as parents, pupils or school itself so that we can offer more general and real explanations about gender equality situation in Physical Education lessons.

References

Azzarito, L. 2009. The Panopticon of physical education: pretty, active and ideally white. *Physical Education and Sport Pedagogy*, 14: 19-40.

Barr-Anderson, D., Neumark-Sztainer, D., Schmitz, K., Ward, D., Conway, T., Pratt, C., Baggett, C., Lytle, L. and Pate, R. 2008. But I like PE: factors associated with enjoyment of physical education class in middle school girls. *Research Quarterly for Exercise and Sport,* 79: 58-67.

Benn, T. 2002. "Muslim women in teacher training: issues of gender, 'race' and religion". In *Gender and Physical Education: contemporany issues and future directions*, Edited by: D. Penney, D. 57-79. London: Routledge.

Branham, P. 2003. Boys, masculinities and physical education. *Sport, Education and Society,* 8: 57-71.

Brown, D. and Rich, E. 2002. "Gender positioning as pedagogical practice in physical education". In *Gender and Physical Education: contemporany issues and future directions*, Edited by: D. Penney, D. 80-100. London: Routledge.

Chepyator-Thomson, J. R. and Ennis, C. D. 1997. Reproduction and resistance to the culture of masculinity and femininity in secondary school physical education. *Research Quarterly for Exercise and Sport*, 68: 89-99.

Chepyator-Thomson, J. R., You, J. and Hardin, B. 2000. Issues and Perspectives on Gender in Physical Education. *Women in Sport and Physical Activity Journal,* 9: 99-121.

Clarke, G. 1998. Queering the Pitch and coming out to play: lesbians in physical education and sport. *Sport, Education and Society,* 3: 145-60.

Clarke, G. 2006a. "There's nothing queer about difference. Challenging heterosexism and homophobia in physical education". In *Equity and inclusion in physical education and sport*, Edited by: Hayes, S. and Stidder, G. 91-104. London: Routledge.

Clarke, G. 2006b. "Sexuality and physical education". In *The Handbook of Physical Education*, Edited by: Kirk, D., MacDonald, D. and O'Sullivan, M. 723-739. London: SAGE.

Crawford, M. 2001. "Gender and language". In *Handbook of the psychology of women and gender*, Edited by: Ungher R. 228-244. New Jersey: John Wiley and Son.

Crawford, M. and Chaffin, R. 1997. "The meanings of difference: cognition in social and cultural context". In *Gender differences in human cognition*, Edited by: Caplan, P., Crawford, M., Hyde, J. S. and Richardson, J. 81-130. Oxford: Oxford University Press.

Daniels, H. 2001. *Vygotsky and pedagogy*. London: Routledge.

Davis, K. 2003. Teaching for gender equity in physical education: a review of the literature. *Women in Sport and Physical Activity Journal,* 12: 55-82.

Dowling, F. 2006. Physical education teacher educators' professional identities, continuing professional development and the issue of gender equality. *Physical Education and Sport Pedagogy,* 11: 247-63.

Dowling, F. 2008. Getting in touch with our feelings: the emotional geographies of gender relations in PETE, *Sport, Education and Society,* 13: 247-66.

Enright, E. and O'Sullivan, M. 2010. Can I do it in my pyjamas? Negotiating a physical education curriculum with teenage girls. *European Physical Education Review*, 16: 203-22.

Evans, J., Davies, B. and Penney, D. 1996. Teachers, teaching and the social construction of gender relations. *Sport, Education and Society*, 1: 165-83.

Fernández-García, E., and Piedra, J. 2010. Efecto de una formación coeducativa sobre las actitudes hacia la igualdad en el futuro profesorado de Educación Primaria. *Cultura, Ciencia y Deporte,* 15: 151-58.

Fisette, J. 2011. Negotiating power within high school girls' exploratory projects in Physical Education. *Women in Sport and Physical Activity Journal*, 20: 73-90.
Flintoff, A. 1993. "Gender, physical education and initial teacher education". In *Equality, Education and Physical Education*, Edited by: Evans, J. 184-204. London: Falmer Press.
Flintoff, A., and Scraton, S. 2001. Stepping into active leisure? Young women's perceptions of active lifestyles and their experiences of school physical education. *Sport, Education and Society,* 6: 5-22.
Flintoff, A. and Scraton, S. 2006. "Girls and physical education". In *The Handbook of Physical Education*, Edited by: Kirk, D., MacDonald, D. and O'Sullivan, M. 767-83. London: SAGE.
Flintoff, A., Fitzgerald, H. and Scraton, S. 2008. The challenges of intersectionality: researching difference in physical education. *International Studies in Sociology of Education,* 18: 73-85.
Gabbei, R. 2004. Achieving balance: secondary physical education gender-grouping options. *Journal of Physical Education, Recreation and Dance,* 75: 33-39.
García, M. and Asins, C. 1994. *La coeducación en la educación física*. Barcelona: Universitat Autonoma de Barcelona.
Gard, M. 2006. "More art than science? Boys, masculinities and physical education research". In *The Handbook of Physical Education*, Edited by: Kirk, D., MacDonald, D. and O'Sullivan, M. 784-95. London: SAGE.
González-Pascual, M. 2005. ¿Tienen sexo los contenidos de la Educación Física Escolar? Transmisión de estereotipos de sexo a través de los libros de texto en la etapa de secundaria. *Revista internacional de Medicina y Ciencias de la Actividad Física y el Deporte,* 18: 77-88.
Gorely, T., Holroyd, R., and Kirk, D. 2003. Muscularity, the habitus and the social construction of gender: towards a gender-relevant physical education. *British Journal of Sociology of Education,* 24: 429-48.
Grissom, R. J. 1994. Probability of the superior outcome of the one treatment over another. *Journal of Applied Psychology*, 79: 314-16.
Hannon, J.C. and Ratliffe, T. 2005. Physical activity levels in coeducational and single-gender high school physical education settings. *Journal of Teaching in Physical Education,* 24: 149-64.
Kitzinger, C. 2009. Doing gender. A conversation analytic perspective. *Gender and Society,* 23: 94-98.
Klomsten, A.T., Marsh, H.W. and Skaalvik, E.M. 2005. Adolescents' perceptions of masculine and feminine values in sport and physical education: a study of gender differences. *Sex Roles,* 52: 625-36.
Larsson, H., Fagrell, B., and Redelius, K. 2009. Queering physical education. Between benevolence towards girls and a tribute to masculinity. *Physical Education and Sport Pedagogy*, 14: 1-17.
Larsson, H., Redelius, K., and Fagrell, B. 2011. Moving (in) the heterosexual matrix. On heteronormativity in secondary school physical education. *Physical Education and Sport Pedagogy*, 16: 67-81.
Morrow, R.G., and Gill, D.L. 2003. Perceptions of homophobia and heterosexism in Physical Education. *Research Quarterly for Exercise and Sport,* 74: 205-14.
Nicaise, V., Cogérino, G., Fairclough, S., Bois, J., and Davis, K. 2007. Teacher feedback and interactions in physical education: Effects of student genderand physical activities. *European Physical Education Review*, 13: 319-37.

Paechter, C. 2011. Gender, visible bodies and schooling: cultural pathologies of childhood. *Sport, Education and Society*, 16, 309-22.
Rebollo, M.A., García-Pérez, R., Piedra, J. and Vega, L. 2011. Diagnóstico de la cultura de género en educación: actitudes del profesorado hacia la igualdad. *Revista de Educación,* 355: 521-46.
Rich, E. 2001. Gender positioning in teacher education in England: new rhetoric, old realities. *International Studies in Sociology of Education,* 11: 131-55.
Robinson, D. and Melnychuk, N. 2009. Understanding female students' physical education attitudes: an investigation of students' experiences, beliefs and feeling', Paper presented at *16th IAPESGW World Congress,* July 16-19 in Petroria, South Africa
Rossi, A.S. 1982. *Feminists in politics: a panel analysis of the First National Women's Conference.* New York: Academic Press.
Scharagrodsky, P.A. 2004. Juntos pero no revueltos: la educación física mixta en clave de género. *Cadernos de Pesquisas,* 121: 59-76.
Scraton, S. 1993. "Equality, coeducation and physical education in Secondary schooling". In *Equality, Education and Physical Education*, Edited by: Evans, J. 139-153. London: Falmer Press.
Scraton, S. 1992. *Shaping up to womanhood: gender and girls' physical education*. Buckingham: Open University Press.
Shimon, J. 2005. Red Alert: gender equity issues in secondary physical education. *Journal of Physical Education, Recreation and Dance,* 76: 6-10.
Stidder, G. 2005. Trainee teachers' perceptions of job advertisement in England with regard to gender and Physical Education. *European Physical Education Review*, 11: 309-33.
Subirats, M. and Tomé, A. 2007. *Balones fuera. Reconstruir los espacios desde la coeducación*. Barcelona: Octaedro.
Taboas, M. I. and Rey, A.I. 2007. El cuerpo en las imágenes de los libros de texto de educación física: análisis de dos editoriales. *Kronos,* 11: 25-30.
Talbot, M. 1993. "A gendered physical education: equality and sexism" In *Equity, Education and Physical Education*, Edited by: Evans, J. 74-89. London: Falmer.
Tischler, A., and McCaughtry, N. 2011. PE is not for me: when boys' masculinities are threatened. *Research Quarterly for Exercise and Sport*, 82: 37-48.
Vázquez, B., Fernández-García, E., and Ferro, S. 2000. *Educación Física y género. Modelos para la observación y el análisis del comportamiento del alumnado y el profesorado*. Madrid: Gymnos.
Vázquez, B. 2001. Los valores corporales y la educación física: hacia una reconceptualización de la Educación Física. *Ágora para la Educación Física y el Deporte,* 1: 7-17.
Waddington, I., Malcolm, D., and Cobb, J. 1998. Gender stereotyping and Physical Education. *European Physical Education Review*, 4: 34-46.
Webb, L.A., and MacDonald, D. 2007a. Techniques of power in physical education and the underrepresentation of women in leadership. *Journal of Teaching in Physical Education,* 26: 279-97.
Webb, L.A., and MacDonald, D. 2007b. Dualing with gender: teachers' work, careers and Leadership in physical education. *Gender and Education,* 19: 491-512.
West, C., and Zimmerman, D. 1987. Doing Gender. *Gender and Society,* 1: 125-51.
Williams, A., and Bedward, J. 2002. Understanding girls' experience of physical education: relational analysis and situated learning. In *Gender and Physical Education: contemporary issues and future directions*, Edited by: Penney, D. 146-159. London: Routledge.

Wright, J. 1995. A feminist poststructuralist methodology for the study of gender construction in Physical Education: description of study. *Journal of Teaching in Physical Education*, 15: 1-24.

Wright, J. 1997. The construction of gendered contexts in single sex and co-educational physical education lessons. *Sport, Education and Society,* 2: 55-72.

Wright, J. 1999. Changing gendered practices in physical education: working with teachers. *European Physical Education Review,* 5: 181-97.

Wright, J. 2000. Bodies, Meanings and Movement: A Comparison of the Language of a Physical Education Lesson and a Feldenkrais Movement Class. *Sport, Education and Society,* 5: 35-49.

Wright, J. 2002. Physical education teacher education: sites of progress or resistance. In *Gender and Physical Education: contemporary issues and future directions*, Edited by: Penney, D. 190-207. London: Routledge.

Wright, J. 2006. Physical Education research from postmodern, poststructural and postcolonial perspectives. In *The handbook of physical education*, Edited by: Kirk, D., McDonald, D:, and O'Sullivan, M. 59-75. London: SAGE.

Wright, J., and King, R.C. 1991. I say what I mean" said Alice: an analysis of gendered discourse in physical education. *Journal of Teaching in Physical Education*, 10: 210-25.

Table 1 ***Components saturation of the SDGt items***

Item1	.490	Item11	.481	Item21	.652
Item2	.515	Item12	.406	Item22	.526
Item3	.496	Item13	.461	Item23	.577
Item4	.531	Item14	.531	Item24	.500
Item5	.479	Item15	.482	Item25	.697
Item6	.575	Item16	.510	Item26	.646
Item7	.559	Item17	.556	Item27	.576
Item8	.553	Item18	.600	Item28	.662
Item9	.540	Item19	.599	Item29	.665
Item10	.551	Item20	.367	Item30	.506

Table 2 ***Scores interpreting criteria in the SDG scale***

		Sociocultural	**Relational**	**Personal**	**Global Scale**
	# Items	10	10	10	30
Empirical Scores	Value	10-50	10-50	10-50	30-150
	Median	42	38.5	42	122
Cut-off Points	Blocker	≤ 89	≤89	≤89	≤89
	Adaptive	30-39	30-39	30-39	90-119
	Coeducative	≥40	≥40	≥40	≥120

Table 3 ***Mann-Whitney test for the teachers sex variable***

	Score
Mann-Whitney U test	14585.500
Wilcoxon W	71876.500
Z	-7.320
Asynt. sign.(bilateral)	.000
Effect size	- .50

Table 4 ***Scores of males and females PE teachers with regard three subescales***

	Male	Female	Mean	Z	Sig.
Sociocultural	39.93	43.48	41.05	-7.311	.000
Relational	36.73	39.62	37.64	-5.342	.000
Personal	37.86	41.84	39.09	-6.295	.000

Table 5 ***Scores of males and females PE teachers with regard 30 items***

	Male	Female	Mean	Z	Sig.
Item1	3.33	3.88	3.50	-5.524	.000
Item2	3.59	4.19	3.78	-6.821	.000
Item3	3.96	4.42	4.11	-4.334	.000
Item4	4.36	4.59	4.43	-3.623	.000
Item5	3.70	3.99	3.80	-3.605	.000
Item6	3.85	4.34	4.00	-5.853	.000
Item7	4.15	4.49	4.25	-3.701	.000
Item8	4.25	4.45	4.31	-2.421	.015
Item9	4.33	4.51	4.39	-2.344	.019
Item10	4.42	4.66	4.49	-3.547	.000
Item11	3.80	4.12	3.90	-3.477	.001
Item12	2.89	3.32	3.03	-3.238	.001
Item13	3.18	3.57	3.31	-3.582	.000
Item14	3.29	3.68	3.41	-3.392	.001
Item15	3.60	3.90	3.70	-3.101	.002
Item16	3.91	4.17	3.99	-2.814	.005
Item17	4.17	4.28	4.20	-1.495	**.135**
Item18	4.37	4.76	4.49	-4.676	.000
Item19	4.32	4.61	4.40	-3.823	.000
Item20	3.21	3.44	3.28	-2.187	.029
Item21	3.98	4.49	4.13	-5.232	.000
Item22	3.60	3.86	3.68	-2.231	.026
Item23	3.66	3.92	3.74	-2.438	.015
Item24	3.34	3.72	3.46	-3.661	.000
Item25	4.26	4.73	4.41	-6.401	.000
Item26	3.68	4.40	3.90	-6.250	.000
Item27	3.70	3.89	3.76	-2.306	.021
Item28	3.93	4.43	4.08	-5.496	.000
Item29	4.32	4.58	4.40	-3.961	.000
Item30	3.39	3.87	3.53	-4.589	.000

Figure 1 **Distribution of PE teachers according to their attitude**

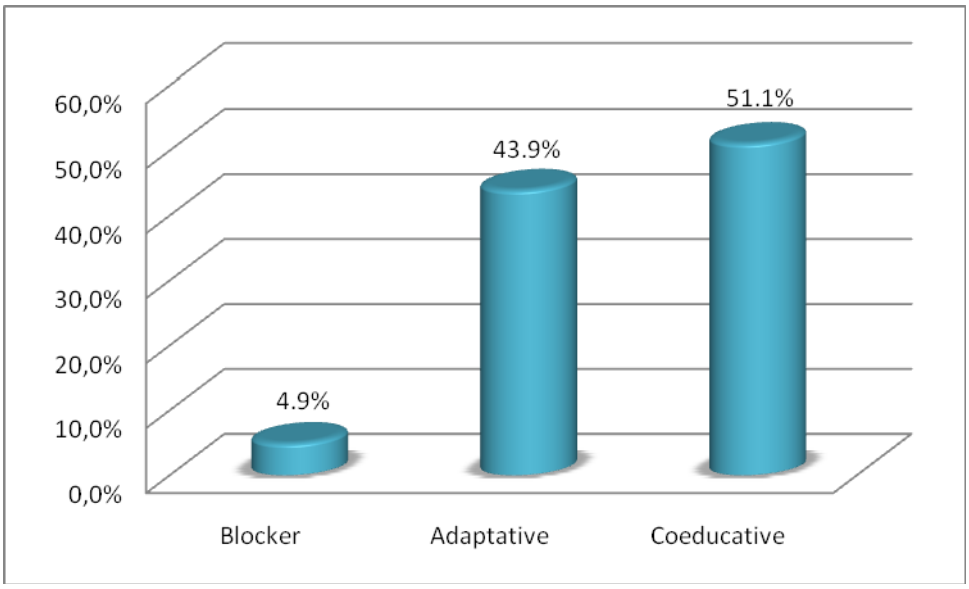
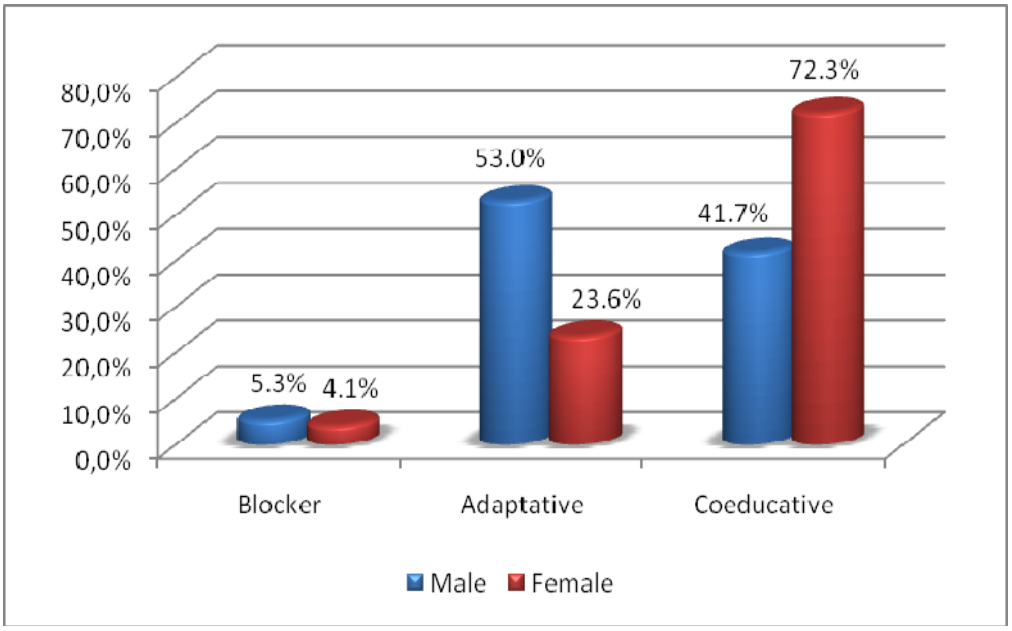


Figure 2 **Distribution of PE teachers' attitude depending on their sex**



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PARTICIPATION MOTIVES OF TURKISH GIRLS AND BOYS PARTICIPATING IN SPORTS COURSES

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ABSTRACT

The aim of this study was to compare sport participation motives of 623 girls and boys who took part in various sports activities in Turkey. A total of 468 boys (M_{age}= 12.05±2.34) and 155 girls (M_{age}= 11.84±1.86) voluntarily completed a Turkish version of "Participation Motivation Questionnaire (PMQ-Oyar, Aşçı, Çelebi & Mülazımoğlu, 2001)". The questionnaire examined the sport participation motives and included 30 motivation items and 8 subscales. The PMQ had a good internal consistency, with a Cronbach Alpha coefficient reported of between .77 and .73. Questionnaires were administered to a total of 9 summer sports courses which included practitioners in soccer, handball, swimming, kick box, fencing, archery, and basketball. SPSS 16.0 was used to analyze the data. A MANOVA was performed to explore gender differences in motives to participate in sports activities. The results demonstrated no statistically significant difference between boys and girls on the 7 different sports motives: F(8, 614)= 1.27, p= .255; Wilk's Lambda= .98, partial eta squared= .02. However, significant difference found between girls (M= 1.16, SD= 0.32) and boys (M= 1.24, SD= 0.37) on the "action/being active" subscale, p= .016. In addition, the skill development (M= 1.11±.21) and team spirit (M= 1.11±.23) were the most effective motives for sports participation of the participants. On the contrary, fun (M= 1.44±.40) and competition (M= 1.36±.40) were found as the least effective motives. Students also required selecting the most important reason for them to participate in sports activities. Results derived from the chi-square analysis demonstrated significant difference between boys and girls. Skill development, improvement in related sport, team spirit was found as the most important

motives for boys; improvement in related sport, skill development, make new friends and team spirit for girls. The obtained results indicated that, motives of the boys attending in sports courses were similar to the motives of girls.

Key word: Participation motivation, sports courses, pre-adolescence, sports

INTRODUCTION

In recent years, research in the field of sport psychology and sport education focused on the reasons of participation of pupils and the young in organized sports. These researches are concerned with the factors which motivates pupils and the young to participate in sports and categorization of these factors (Gill et al., 1983; Gould et al., 1985; Klint & Weiss, 1987). Gould (1982) indicated that the findings related with the participation motivation in sports were crucial for coaches, administrators and leaders in preparing programs. In this way, coaches will be able to determine and meet the needs of pupils who participate in sports, therefore psychomotor and psychological development of participants can be positively supported. In the study by Gill and his colleague (1983) on motivations to participate in sports; it was revealed that skill development and learning, fun, fitness, having new friends and achievement were the most important factors that effect participation in sports.

Gould et al. (1985) found that young swimmers participated in sport because of fun, fitness, skill development and team spirit, whereas Gross et al. (1985) found that pupils participated in sports for fun, skill development, learning new skills, trying to challenge and fitness (in Brustad et al., 2001).

Oyar et al. (2001) conducted a study on 9–17 years old Turkish pupils and young people and reported that the participants mostly participated in sports because of reasons such as “they wanted to use equipment and facilities”, “their parents and close friend wanted them to play”. Besides, the most important reasons that direct them to participate in sports were “going on higher levels of their branch”, “improving their skills”, “being physically healthy”,

“learning new skills”, ”to have fun”. They also stated that the participation motivations like ”friendship”, “being active”, “fun” and “achievement/statute” which are PMQ subscales were more important for girls than boys participating in sports. Similarly, Barber et al (1999) conducted a study on participation motivations of pupils who participated in sports and whose parents are/are not coaches and to find out effects of competition anxiety on pupils. The results of their study revealed that participation motivation of boys differentiated from that of girls in “gaining achievement/status” dimension.

There are also researches on the effect of culture on participation motivations of pupils and the young. In their study on 12–16 years old young people, Yan & McCullagh (2004) stated that culture was influential in participation motivations of pupils and the young from different cultures in participating in sports and physical activities. They also indicated that cultural differences were meaningful in terms of age and sex in participation motivations. According to their findings, researchers suggested that sports and physical activity organizations should be facilitated in order to enable pupils and the young to gain sports experiences expected from them in a multicultural society.

Therefore, the purpose of this study consists of determining the participation motivations of Turkish girls and boys participating in sports courses programs and discussing the psychological and pedagogic dimensions of findings.

METHOD

A total of 468 boys (M_{age}= 12.05±2.34) and 155 girls (M_{age}= 11.84±1.86) participated in the study. Years of sport experience of the participants were M_{total}= 2.33 years (M_{boys} = 2.53±1.96; M_{girls}= 1.73±1.09). Participants voluntarily completed a Turkish version of “Participation Motivation Questionnaire (PMQ-Oyar, Aşçı, Çelebi & Mülazımoğlu, 2001)”. The questionnaire examined the sport participation motives and included 30 motivation items and eight subscales (achievement/status, fitness/energy release, team membership/team spirit,

friendship, fun, competition, skill development, and action/being active). Low scores in PMQ indicate high levels of participation motives. The PMQ had a good internal consistency, with a Cronbach Alpha coefficient reported of between .77 and .73. Questionnaires were administered to a total of nine sports courses which included practitioners in soccer, handball, swimming, kick box, fencing, archery, and basketball. SPSS 16.0 was used to analyze the data. The data were analyzed by calculating the frequency and percentage values; MANOVA and chi-square statistical techniques. The level of significance was accepted at the $p<0.05$ level.

RESULTS

Table 1. PMQ subscales total scores of the participants

Subscales	***N***	***Min***	***Max***	***M***	***SD***
Achievement/Status	623	1.00	3.00	1.34	0.34
Fitness/ Energy release	623	1.00	3.00	1.31	0.30
Team spirit	623	1.00	3.00	1.11	0.23
Friendship	623	1.00	3.00	1.33	0.41
Fun	623	1.00	3.00	1.44	0.40
Competitive	623	1.00	3.00	1.36	0.40
Skill development	623	1.00	3.00	1.11	0.21
Action/Being active	623	1.00	3.00	1.22	0.36

Among Turkish girls and boys participating in various sports activities “team spirit” and “skill development” were the most important; but fun” and “competitive were the least important motives (Table 1).

Table 2. MANOVA results according to sex variable of PMQ subscales

Subscales	*Sex*	*N*	*Mean*	*SD*	*F*	*df*	*p*
Achievement/Status	Boys	468	1.34	0.34	0.36	8.62	0.55
	Girls	155	1.32	0.34			
Fitness/ Energy	Boys	468	1.31	0.31	0.26	8.62	0.61
release	Girls	155	1.30	0.26			
Team spirit	Boys	468	1.11	0.22	0.22	8.62	0.64
	Girls	155	1.12	0.28			
Friendship	Boys	468	1.34	0.42	0.73	8.62	0.39
	Girls	155	1.31	0.38			
Fun	Boys	468	1.46	0.40	3.66	8.62	0.06
	Girls	155	1.39	0.38			
Competitive	Boys	468	1.38	0.40	2.31	8.62	0.13
	Girls	155	1.32	0.42			
Skill development	Boys	468	1.17	0.21	0.46	8.62	0.50
	Girls	155	1.10	0.19			
Action/Being active	Boys	468	1.24	0.37	5.81*	8.62	0.02
	Girls	155	1.16	0.32			

*p<.05

As Table 2 indicated, no significant difference was found between girls and boys for the 7 different participation motives. However, girls and boys were differently responded to the "action/being active subscale", ($F(8, 621)= 5.807$, $p= 0.016$). "Action/being active" subscale was highly important motive for girls ($M= 1.16$, $SD= 0.32$) than boys ($M= 1.24$, $SD= 0.37$), ($p<0.05$).

Table 3. Ranking of the most important participation motivations for boys and girls who participate in sports courses (n= 623) in PMQ questionnaire in accordance with frequency (Top 5).

Sex	***Ranks***	***The most important items***	***f***	***%***
Boys	1.	I want to improve my skills	73	16.6
	2.	I want to go on to higher levels of competition	57	13.0
	3.	I like the team spirit	48	11.1
	4.	I like the team work	42	9.0
	5.	I like to win	21	4.8
	5.	I like the rewards	21	4.8
Girls	1.	I want to go on to higher levels of competition	23	14.9
	2.	I want to improve my skills	22	14.3
	3.	I like the team spirit	14	9.1
	4.	I want to stay in shape	13	8.4
	5.	I like the rewards	11	7.1

The most important 5 participation motives for girls and boys were shown in Table 3. The first 3 participation motives (I want to improve my skills, I want to go on to higher levels of competition, I like the team spirit) were the highly important for both girls and boys. Boys ranked "I like the team work", but girls ranked "I want to stay in shape" as the 4th important motive. Fifth important motive was "I like to win" for boys, and "I like the rewards" for girls.

DISCUSSION AND CONCLUSION

According to the results of this study which aims at discussing the psychological and pedagogical dimensions of participation motivates of Turkish boys and girls who participate in sports courses, pupils were highly motivated by "skill development" and "team spirit"

factors. When positive effects of sports on physical, psychological, and social lives of pupils and young (Wiersma, 2000; Graham et al., 2001:4-11; Gallahue & Donnelly, 2003, Part 1-6), the findings related with the "skill development" and "team spirit" were not suprising. According to Suits (1988), sports include competition and rivalry. Competition necessitates skill development. Therefore, each pupil and young wants to win (Motluk, 2002) and for that reason they have to develop their skills. In addition, skill development positively affects the self confidence (Marsh, 1998). Similarly, sports are influential in cooperation with others, sharing and creating a new social environment. Pupils and the young achieve social interaction like being a team, being a part of a team and making new friends (Wiersma, 2000; McPherson et al., 1989:51). Findings revealed that "Action/being active" was highly important motive for girls than boys. This finding was supported by studies of Gill & Williams (1996), Barber et al. (1999), Koivula (1999) and Oyar et al. (2001). On the other hand, findings of the study, which was on cultural differences in participation in sports, conducted by Yan & McCullagh (2004) on American, American born Chinese and Chinese youngsters at the age of 12-16, were comparable to our findings related with the "skill development" subscale about boys. Similarly, researchers demonstrated that American boys and girls primarily motivated by the "competition" and "skill development" factors to participate in sports and physical activities.

When the most popular participation motivations (top 5) of boys and girls participate in sports courses are compared, the first 3 participation motives (I want to improve my skills, I want to go on to higher levels of competition, I like the team spirit) were found as the highly important factors for both girls and boys. In addition, boys ranked "I like the team work", but girls ranked "I want to stay in shape" as the 4th important motive. Lastly, 5th important motive was found as "I like to win" for boys, and "I like the rewards" for girls. These items may indicate that pupils encourage rivalry and thus hostility. They want to defeat the other

and win at any cost and they want to be popular in the society through sports. However, when these results are taken into consideration, it can be stated that dominant motivations of pupils who participate in sports courses are personal development rather than winning; and intrinsic motivation rather than rivalry. On the other hand, researchers reported that "fun" is the primary motivation for pupils to participate in sports (Stillwell & Willgoose, 1997:277; Barber et al., 1999**).** In our study, "I like to have fun" is in 25th ranks. The reason can be that coaches, instructors, administrators and parents force pupils to win; and the social environment involved in the organization disregards fun.

REFERENCES

Barber, H., Sukhi, H. & White, S. A. (1999). The influence of parent-coaches on participant motivation and competitive anxiety in youth sport participants. *Journal of Sport Behavior*, 22 (2), 162-181.

Brustad, R. J., Babkes, M. L. & Smith, A. L. (2001). *Youth in sport. İn Hantbook of Research on SportPsychology*, (2th. Ed.). R. N. Singer, H. A. Hausenblas (Eds). New York: John Willey & Sons.

Gallahue, D. L., & Donnelly, F. C. (2003). *Developmental Physical Education for All Children*. 4th. Ed. Champaign IL: Human Kinetics.

Gill, D., & Williams, L. (1996). Competitive orientation and motivation of adult sport and exercise participations. *Journal of Sport Psychology*, 19 (4), 203-215.

Gill, D. L., Gross, J. B. & Hudleston, S. (1983). Participation motivation in youth sports. *International Journal of Sport Psychology*, 14, 1-14.

Gould, D. (1982). Sport psychology in the 1980s: Status, direction, and challenge in youth sport research. *Journal of Sport Pscyhology*, 16, 126-140.

Gould, D., Feltz, D., & Weiss, M. (1985). Motives for participating in competitive youth swimming. *International Journal of Sport Psychology*, 5, 390-409.

Graham, G., Holt/Hale, S. A. & Parker, M. (2001). *Children Moving*. (5th Ed), California: Mayfield Publishing Company.

Klint, A. K., & Weiss, M. R. (1987). Perceived competence and motives for participating in youth sports: A test of Harter's competence motivation theory. *Journal of Sport Psychology*, 9, 55-65.

Koivula, N. (1999). Sport participation: Differences in motivation and actuel participation due to gender typing, *Journal of Sport Behavior*, 22 (3).

Marsh, H. W. (1998). Age and gender effects in physical self-concepts for adolescent elite athletes and nonathletes: a multicohort-multioccasion design. *Journal of Sport & Exercise Psychology*, 20, 237-259.

McPherson, B. D., Curtis, J. E. & Loy, J. W. (1989). *The Social Significance of Sport.* Champaign, İL: Human Kinetics Boks.

Motluk, A. (2002*).* Girls get competitive, but only if it's worth it. *New Scientist,* 175, 21-22.

Oyar, Z. B., Aşçı, F. H., Çelebi, M. & Mülazımoğlu, Ö. (2001). Validity and reliability of "Participation Motivation Questionnaire- PMQ". *Hacettepe Journal of Sports Sciences,* 12 (2), 21-32.

Stillwell, J. L. & Willgoose, C. E. (1997). *The physical Education Curriculum*. (5th. Ed.), Boston: Allyn and Bacon.

Suits, B. (1988). The elements of sport. (Ed: Morgan, W. J. & Meier, K. V.), *Philosophic İnquiry in Sport*, İllinois, IL: Human Kinetics Publishers.

Wiersma, L. D. (2000). Risks and benefits of youth sport specialization: Perspectivesand recommendations. *Pediatric Exercise Science*, 12, 13-22.

Yan, J. H. & McCullagh, P. (2004). Cultural influence on youth's motivation of participation in physical activity. *Journal of Sport Behavior*, 27 (4), 378-391.

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Players' Perception on Games Approach in Coaching

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Background: Coaches seek to inspire their players and effectively transfer performance from practices to actual games (competition). The games approach originated as Teaching Games for Understanding (TGFU) is increasingly recognized in coaching profession with its potential on motivation and game performance. While students' engagement and enthusiasm were reported in physical education, there is limited research on players' perception of the games approach in coaching.

Purpose: Since learners are the center component of the approach, the players' perception can provides helpful insight to increase practices performance (i.e., productivity) and further improve the game performance in competition. Thus, the purpose of this study was to determine the players' perception for implementing the games approach in coaching.

Methods and Procedures: Twenty to 30-minute interview with open-ended questions about the games approach were conducted with five female collegiate soccer players during the regular season. Data were analyzed by grounded theory protocol.

Results: Participants expressed that the games approach helped them 1) to recognize their weaknesses and strengths, 2) to think more tactically, and 3) to easily adapt practices into competition. Results supported that the games approach can help players to develop domain-specific knowledge in order to improve game performance. Through information processing, the players intentionally obtain information, analyze game situation, and develop new knowledge combining with existing knowledge. The games approach also provided the opportunities for the players to construct tactical knowledge. The whole-part-whole structure of the games approach helped the players to formulate ultimate goals of the practice before practicing small parts of the game. Therefore, it is more likely that the players effectively transfer their performance from practices to competition. Moreover, the players experienced enjoyment, challenges, and teamwork during practices, which facilitated to fulfill the needs for belonging and fun.

Conclusion: Overall players' perception provided useful information for coaches to improve the effectiveness of their practices using the games approach. As competition is oftentimes a by-product of practices in coaching profession, the games approach showed potential to help players to be ready for competition.

Keywords: word; Coaching, Games Approach, TGFU, Soccer, Players' Perception

Introduction

Motivation and effective transfer from practice to competition are essential parts of successful coaching (Dorfman 2003; Martens 2004). When players are intrinsically motivated, they tend to accept more difficult tasks and improves their game performance (Thompson 1998). Coaches also get challenged by the lack of transferred performance from practices to competition (Light 2005). For example, there is a player who is outperforming during practice but fails to execute the skills in competition. What the player knows is "how to" perform the skills but not "what to" and "when to" use them in the competition.

Inversion game players appear to spend the majority of the game time without contacting the ball (Light 2005). Players spend the rest of the time with thinking where, when, and how to position themselves (Light 2005). Thus, coaches seek an effective way to improve the off-the-ball performance.

Games approach in sports pedagogy is originally introduced as "Teaching Games for Understanding (TGFU)" by Bunker and Thorpe (1982). The games approach emphasizes tactical awareness and internal motivation of playing games. While other researchers further expanded the TGFU model (Australian Sport Commission 1991; Launder 2001; Michell, Oslin, and Griffin 2006), the basic concept of the games approach is consistent with focusing on the game tactics and empowering learners/players as a center of the approach. These game-centered studies in physical education continued to report positive effects on game performance and students' motivation. Yet, there is limited research on the games approach in coaching (Oslin and Mitchell 2006).

In a coaching setting, the "learner" in the TGFU model (figure 1 from Thorpe Bunker and Almond 1986) counterparts with "players." The players start a practice by playing a modified game corresponding to the objectives of the practice. For instance, if the objective is to improve the ball possession by making effective decision in soccer, the first modified game would be a keep away game with limited touches on the ball. With the limited touches, the players are forced to make quick decisions before defenders approach and support their teammates effectively. The coach asks questions to players in order to indicate the important objectives in the game. The coach in the keep away game could ask a question like "what do you need to think about in order to connect the pass to your teammate?" A player might respond "I need to look up before I get the ball." Or "we need to talk to each other more." One important aspect of the games approach is to raise awareness of the game tactics (i.e., making appropriate decision and off-the-ball movement) by asking proper questions. Next, focus of the practice shifts to the question of "in order to perform the modified game better, what skills do we need to improve?" With the keep away game example, the player could practice short-pass skill in a drill setting. Finally, the practice ends with another modified game that can be same as the first game to refocus on the game performance as a whole (Bunker and Thorpe 1982; Mitchell et al. 2006).

While many researchers have assessed numerous variables with the games approach (i.e., sport knowledge, game performance, and motivation), there is limited research about players' perception with the games approach. The games approach is referred as "a player-centered approach" where coaches are the facilitators (Light 2005). Therefore, in order to determine how the games approach affects on the players' learning, it is important to find out their perspectives on the games approach.

In the physical education settings, while most of the students' responses to the games approach were reported through the teachers' perceptions (Allison and Thorpe 1997;

Brooker, Kirk, Braiuka, and Bransgrove 2001; Mitchell et al. 2006; Turner 1996), Tjeerdsma, Rink, and Graham (1996) directly investigated the students' responses on the games approach. With their 9th grade students, the tactical and the combination (tactics and skill) groups were able to indicate reasons for preferring badminton (i.e., skills and strategies) while the students in the control group reported no specific reasons. Many students in the tactical group were excited about the challenges in the game (Tjeerdsma et al. 1996).

From teachers' reports, greater engagement, enthusiasm, and positive attitude with the games approach were identified (Oslin and Mitchell 2006). For example, the teachers who taught field hockey for 6th and 7th graders expressed the enhancement of the students' problem-solving and the engagement in the game (Turner 1996). Overall, perceptions from students and teachers in physical education indicated the positive impacts of the games approach.

In coaching, there was a group interview with Daryl Gibson, who was a professional rugby player in New Zealand, and Anna Veronese, who played for the New Zealand netball team (Kidman 2001). Both players preferred Game Sense (the games approach). Daryl explained that "it also gives the players an opportunity to have input into the team and what they are doing (pp. 97)." Anna described "you also get a chance to say why you thought you should move to that position. It might not necessarily be the right place to go, but at least you can work through it (pp. 97)." Daryl and Anna also mentioned the resistance from other teammates toward the games approach if they were not used to it (Kidman 2001).

Various theories and concepts have been applied to explain the underpinnings of the games approach (Glasser 1998; Piltz 2003; Schmidt and Wrisberg 2004; Swanson and Law 1993). The practice sequence of the games approach is often connected with the whole-part-whole model in motor learning (Swanson and Law 1993). The basic idea of the model is that new content is introduced by providing a whole organizational framework in order to

facilitate the following parts effectively. After the parts are successfully achieved, they are brought together as a whole (Swanson and Law 1993). Correspondingly, the games approach first introduces a game tactics as a whole followed by smaller part practices. The practice concludes with a game in order to bring the parts together. Therefore, the whole-part-whole learning model certainly helps to understand the mechanism of learning in the games approach.

Additionally, constructivist perspective (Perkins 1999) demonstrates the learning process in the games approach. In constructivism, learners construct the new information with previous knowledge. They reflect the learning to develop new knowledge and understanding of the materials. Players in the games approach are in charge of constructing the game situation, organizing the information (i.e., teammates and opponents), and producing their outcome performance. As a result, the constructivism supports the information process as well as the development of the knowledge during the games approach.

Lastly, choice theory (Glasser 1998), which is one of the human behavior and motivational theories, underpins the psychological effect of the game approach. The theory explains the human motivation that is enhanced by an individual choice to satisfy the needs of belonging, power, freedom, and fun. In the games approach, players are making individual decisions and choices within the game structure. In the situation, the players are capable to experience the authority to make decisions and feel the connection with their teammates (i.e., feel of belonging). Thus, the choice theory helps to explain the potential for motivating players in the games approach who satisfy the needs of belonging, power, freedom, and fun.

Purpose of the study

Since the games approach places "a leaner (i.e., a player)" as a center component of the approach, it is important to determine how the players actually perceive their experiences

with the games approach. Since many players usually experience a more conventional skill-focused approach, players' perception and suggestion would be valuable for teachers, coaches, and researchers. Limited research in coaching reported the player's perception with the games approach. Findings from physical education are always useful in the coaching profession. It is important, however, to find out more about the games approach, especially with some critical differences between teaching in physical education and coaching in competitive sports. One primary objective of coaching is to improve the outcome game performance in competition while physical education learning often limits to class setting with the overall goal of promoting physical activities. Players in coaching tend to have more experiences with a specific sport and commit more intensively than students in physical education. Therefore, the purpose of this study was to explore the players' perspective on the games approach in coaching intercollegiate female soccer players.

Research questions

The following were the research questions that have guided this study.

1. How were the typical soccer practices prior to college?
2. How did the participants perceive the tactical aspects of the games approach?
3. How did the games approach affect on the participants psychologically?
4. What were suggestions for implementing the games approach from the participants' points of view?

Methods and Procedures

Qualitative research using mainly open-ended interviews was chosen to answer the research questions. Grounded theory method with open-axial coding (Strauss and Corbin 1998) was applied to analyze the transcripts from the interviews. The grounded theory method helped to determine key findings from the participants' perspectives.

Setting and Participants

Five female players from an intercollegiate soccer team participated in this study. All participants were juniors or seniors of college. They were regular starters from all positions (defenders, midfielders and forwards) who played more of the regular season games.

All participants were informed about the purpose of the study. They were given both written and oral consent before engaging in the investigation. The informed consent was approved by the Institutional Review Board (IRB) at the college before the entire study was conducted.

This study was conducted at a small-liberal art women's college, Fumiko College, in Massachusetts in the United States. The games approach was regularly applied to the daily team practices with the team.

Limitation of the present study

The investigator (interviewer) was the head coach for the soccer team. Thus, there was a play-coach relationship between the interviewer and the participants. Although it was strongly emphasized that the participation in this interview were completely volunteer-basis and their comments would have not affected their status on the team, some influences from the interviewer was expected on the players' responses during the interviews.

Data collection

Five participants sat down with the investigator and talked about their experiences with the games approach. Each participant joined a 20 to 30-minute open-ended interview. All interviews were digital recorded under the participants' agreements. Questions were asked with familiar terms rather than theoretical terms (i.e., thinking vs. tactical awareness and feeling vs. psychological aspects), so the participants could feel more comfortable with the questions.

Data analysis

Interviews were carefully transcribed from the digital recorder for the data analysis. Through the grounded theory method (Strauss and Corbin 1998), the transcripts were coded by open and axial coding.

Results

Four categories were originally developed from the open coding; 1) high school practice experience, 2) perception of tactical aspects of the games approach, 3) perception of psychological aspects of the games approach, 4) Implementation ideas for the games approach. Furthermore, the categories 2 and 3 were selectively analyzed to determine meaning behind each word (i.e., term "thinking" could indicate "analyze" and "decide").

It is commonly believed that the technical skills have to be certified before focusing on the game tactics. Not surprisingly, the participants spent a lot of time in repeated drills prior to college. All participants expressed that the games approach was helpful to think about the game tactics and to realize the problems in a game situation. While some players believed that repetition in the drills would enhance their comfortableness with the ball, others considered that the repeated drills were boring. The primary reason why the participants play soccer was that they enjoyed the game of soccer. Therefore, they preferred to "play" soccer games during the practices. Clarification of the rules and proper challenges during the modified games were important in order to avoid frustration and confusion among the players.

Previous experiences with the games approach before college

Each interview started with a question about typical practice during high school and youth club soccer. Some participants also explained the differences between high school practices and college practices.

Four out of five players experienced the skill-focused approach before they attended to the college. One player had a coach who intended to teach game performance in game

situation. The center of the skill-focused practice was formed with repeated drills in an isolated situation:

It was basically same drills every single day….we did a lot of shuttles (passing between players) when we had to make 100 passes between us.

Although there were various coaching styles among their previous coaches, the basic idea of their coaching was that players needed to develop the technical skills before they focused on the game aspects:

We spent hours on little drills…touching the ball, giving and go, little drills. And we always ended with the game to see and add our skills into games

After the multiple drills, the practice generally moved on to a scrimmage. However, there was not much coaching (i.e., indicating key plays and providing feedback) during the scrimmage:

Our coach did not stop our game and told us what to do. So we were just playing.

Seemingly, there was actually little coaching about game tactics, such as decision-making, moving for support, and timing of runs. Additionally, the college practices were more intense than high school practices. The college players seemed to have stronger intension to improve their game performance during the practices:

We (college players) want to get more out of it (practice). Whereas in college it focuses on things to better on your game (competition) while in high school practices were something that came in between the games (competitions) we had to play.

On the other hand, one participant had a coach who spent a lot of times on teaching how to execute the team tactics on the field. Although the participant raised no specific example of her previous practices during the interview, her coach mainly utilized a walk-through tool and a lot of fundamental tactic trainings.

Players' perception of the tactical aspects of the games approach

Tactical capacity is an ability to recognize a problem occurred during a game and make an appropriate decision in a timely manner in order to execute a skill successfully or move to a proper position based on the game situation. As the games approach emphasizes the propensity to develop thinking players (Light 2005), the participants in this study also experienced the influence of the game approach on their decision-making.

There seemed to be three major strengths with the approach according to the participants. First, they often used the word "thinking" in the games approach. While they were playing the modified games, they were forced to think about the game situation and to make decisions for their next play:

You (are) always thinking and always get on your toes. I had to think a lot. And I guess it was good because we have to think a lot while playing soccer. I think it (the games approach) is more developing a more thinking mind set in terms of playing a smarter game.

While key terms were further analyzed, "think" could indicate an "information process" which occurred in the player's mind. When the participant was thinking a lot, she intensively analyzed the game situation and intended to make appropriate decisions.

Secondly, the games approach helped the participants to realize their weaknesses and to be aware of the purposes during the practice. Identifying problems at the beginning of the practices facilitated them to focus on what they need to improve:

The game was good because we need to see what is working and what is not working. I think starting with scrimmage is good so you see what people need to work on that day. That is the good way to focus practice and know your goals at the end of practice.

Starting with a big picture seemed to enhance the participants' motivation for improvement. It is suggested that having a goal helps to motivate a person (Gould 2001), thus the games approach naturally provided an opportunity to analyze the game, identify the problems and set goals.

Lastly, adaptableness of the games approach practice to competition (regular season game) was frequently emphasized by the participants:

It's easy to take away from that (practice) for the game what you can do. It's more game level. I feel more comfortable after we practice more in game situation where I can learn more from the practice and how I can react in the game. More broad and you can take different parts of practice and adapt into the game.

It was easy for them to transfer performance from the practices into the competition. The easy transition provided confidence and made them feel ready to play the regular season competition.

Some participants explained their perception on the skill-focused approach where many repeated drills dominated during practices. The repetition sometimes helped their body to be familiar with the movements:

I think the repetition is important for developing a skill because more you do you became better. So doing without pressure and then doing it with pressure take the skill further. I feel like that I understand how the ball works with my feet by doing repetition

On the other hand, other participants expressed the mindless practice in drills. The drills were not much useful to be ready for competition:

Body gets used, but one drill over and over again…start going through the motion…..you do not have to think really.

There were definitely the technical drills that I was really frustrated because I did not think that was adaptable. I do not like (the drills) much because there never was a point in the drill where you are going to get 50 shots handed to you.

The drill situation was sometimes unrealistic. For example, a simple shooting drill is a common training in soccer where a player keeps shooting the ball to the goal. However, there is no situation where a player can take multiple shots to the goal without any defenders in a

game. Therefore, some participants disliked the unrealistic situation and felt useless of the practice.

Players' perception of the psychological aspects of the games approach

The participants preferred the games approach and enjoyed the games approach. There were three major reasons: 1) Game is fun:

Playing in general is fun. To be honest I enjoyed a lot more playing games. It brought the excitement and adrenalin to the practice and the wanted to win.

I enjoy practice more when even a simple scrimmage where there is a level of competition within the team and playing.

2) Game is challenging:

It (game) makes me work harder. That's fun for me. Things like goals or something challenging. Its' more fun and I will work harder at it.

3) Game develops teamwork:

I personally like the game situation because it is more rely on others. There are people who you pass to. When I get the ball, the team is depending on you to be able to do that skill while drill no one is depending on you. There is no pressure. But in the game practice there is pressure. There are other people who are relying on you and they need you to do the things well or they cannot do their job anymore. So in a game setting, there is always pressure because there is always people who need you to do better otherwise they lose the possession of the ball and they cannot do their job.

The participants enjoyed the competitiveness that the games approach brought to the practice as well as the fact that they were working together with their teammates. The primary purpose for the participants to be on the soccer team is that they simply enjoy playing soccer games:

I am here to play soccer and learn from playing soccer. I prefer and enjoy more because it's more fun because you are playing games. Basically I enjoy playing soccer. I do not enjoy dribbling to the cones and come back…that is just the way how you get better but that is not why I play soccer.

The participants were also asked about their opinions on the repeated-drill practices. The drills helped to develop confidence and comfortableness among some of the participants:

The isolated drill is good for us to be comfortable with the skills and remind them I know how to do this. I can do this in a multiple situations. I do have no problem with repetitiveness because I feel constrictiveness.

However, other participants expressed that they got bored and felt mindless during the drills:

It (drills) is more standing still…it gets boring. I get bored and frustrated in the drill otherwise I see the point and the benefit of that.

Implementation ideas for the games approach

At the end of the interview, the participants provided suggestion for implementing the games approach to the practices. As a player is situated as a center of the approach (Kidman 2001), it is beneficial to incorporate the suggestion into a practical coaching field.

During the interview, some participants expressed confusion and frustration that the modified games potentially brought to the practices:

It (modified game) sometimes gets harder and frustrated because I do not like not knowing what is going on. When games were with so specific rules, people got frustrated. I kept doing wrong.

Therefore, clear explanation of the rules before the modified games and gradual changes in rules were suggested from the participants:

Slower changes on rules might be good. It took us a while to understand many different rules in games so clear explanation and changing the rules slower might help to have less frustrated and have fun. I think the defined rules would be important to clarify.

In addition, creating a realistic situation during the modified games was also an important suggestion:

I guess some people got frustrated because not many people were involved in the situation (during the modified game). Also on my point of view, if in the game my teammate is going against the four people I would support and make runs for her.

As Light (2005) mentioned that Game Sense (the games approach) facilitated to develop an independent thinker, the games approach with the present study clearly showed the potential to develop the "independent thinker." Freezing (stopping) the game and asking questions was significantly important in order to gain attention and reinforce thinking among the players:

I like being asked questions because I personally paying more attention. When someone asks questions I want to be able to answer questions. And sometimes when you are being told it does not retain as much. So being asked makes me really think about it and be more interactive with the practice.

Discussion

The games approach advocates the players playing games as the central feature of the practice in order to develop their game playing abilities. Although the players are referred as a central part of the games approach, there were limited studies that described the players' perceptions to the games approach (Kidman 2001; Tjeerdsma et al. 1996). Therefore, this study was intended to determine the players' perceptions for implementing the games approach to coaching, especially with female collegiate soccer players.

Five female college soccer players provided their perspectives of the games approach in the open-ended interview settings. According to the participants, the skill-focused coaching appeared to dominate their youth practices. The multiple drills occupied the majority of their practice time in high schools or youth club teams. After the drills, the practice usually ended with a game which is generally called a scrimmage where the coach expected the players to execute the skills that they just practiced in the drills. There was limited tactical coaching delivered during the scrimmage (i.e., decision making, timing, and positioning). Seemingly, idea of the games approach has only reached out the limited number of coaches in the high school and the youth levels in soccer. With the approach, the players experienced a difficulty of grasping a meaningful connection between practice and competition.

Kidman (2001) and others (Kirk and MacPhail 2002; Light 2005) explained that the primary intention to apply the games approach in coaching is to develop "thinking players." The thinking player is able to analyze a game situation, process the information quickly, and make appropriate decisions. Since the players in the inversion games are mostly performing without the ball during the game, the "off-the-ball" movement is one of the critical factors for successful performance on the field (Light 2005). The players constantly have to think where, when, and how to perform in a relation to the game situation with and without the ball. For example, a soccer player needs to think where/when to make a run in order to receive a pass from a teammate. The player then have to make appropriate decision before receiving the pass where/how to perform her/his next play (i.e., passing or dribbling). During the interviews, the participants repeatedly emphasized the fact that they continuously had to think during the modified games. On the other hand, there was less thinking involved and sometimes they were easily going through the motions during the drills. This finding was relatively similar to the 9th graders in the badminton class (Tjeerdsma et al. 1996). They

enjoyed badminton because of the game strategies involved in the game. The thinking process possibly indicated that there was an information process occurring in the participants' mind during the games approach. They perceived information in the game (i.e., game situation, opponents, and ball possession), formed new knowledge in a relation to their existing knowledge (domain-specific knowledge), and developed response selection to execute the outcome performance (Placek and Griffin 2001; Schmidt and Wrisberg 2004). Therefore, thinking that was reinforced by the games approach possibly helped to develop tactical knowledge of the game among the participants.

Furthermore, this whole information process and knowledge development during the games approach connects with the constructivist perspectives on learning. The constructivism considers a learner as active in the process of taking in information as well as building knowledge and understanding (Perkins 1999). A player in the games approach is encouraged to construct meaning, reflect on her/his learning as well as find solutions in a diverse game situation. Learning is a constructive process behind a cognitive perspective. The expertise is developed by constructing the new challenges and connecting with previous experiences (Grehaigne and Godbout 1995). Consequently, the player is in process of taking in the information, building knowledge, and constructing the game performance during the games approach. The participants from this study certainly experienced this information processing and potentially through the constructive process developed the new knowledge of the soccer game.

The games approach also helped the participants to realize their weaknesses and strengths in the game situation. They were able to identify objectives of the practice. Because the games approach started practice by introducing a bigger picture (game situation), the participants seemed to be able to understand their goals at the beginning of the practice. These participants' responses were similar to the professional athletes in New

Zealand (Kidman 2001). The netball player, Anna Veronese, described about Game Sense (the games approach) that "you get work through the reasons why you moved somewhere or what you did wrong, which brings you to a higher level of understanding (pp. 97)." This perspective can connect to the Whole-Part-Whole Learning Model in motor learning (Swanson and Law 1993). Through the first whole in the model, the content is introduced to a player by providing an organizational framework of the game in order to effectively absorb the forth coming concepts (Swanson and Law 1993). With the sequence of Whole-Part-Whole during the games approach, the participants were introduced to the whole framework. As a result, they were able to be aware of the goals of the practice.

Effective transferring of the game performance from practice to competition is always a challenge for coaches. In that sense, the participants strongly indicated the adaptableness of the game approach practice for their competition. One of the major differences between teaching in physical education and coaching in competitive sports is that competition takes place as a by-product of team practice (see figure 3) in coaching. Thus, there is always intention to improve the game performance in the competition beyond the practice. In fact, one of the participants described "in college the players are actually working on something to benefit the game (competition)." Many coaches have noticed the importance of training for the game (competition) while there are still some athletes who train to train (Light 2005). For example, there is a soccer player who can score many goals during a practice but she/he cannot perform the same way during the game. The player failed to improve the shooting skill in a game situation. Therefore, the games approach showed the significant potential to enhance the transfer of game performance from practice to competition.

TGFU was originally introduced from the direct observation in a physical education class where motivation of the students to play a game was subjugated by the teachers' skill dominated approach (Thorpe 1992). The results from this study suggested that there was not

much difference between students in physical education and players in competitive sports regard to their motivation to play. The participants in this study indicated that they played soccer because they simply liked the game of soccer. They enjoyed the games approach because they were playing their favorite game. This finding supported that the games approach applied the immense power of play to motivate and enthuse the participants (Piltz 2003). The approach effectively stimulated the pure feeling of enjoyment that participants internally experienced in a game. When challenge is appropriate with the player's ability, the playful environment generates the state of enjoyment that provides a powerful international motivation (Piltz 2003). When the player experience the feeling of involvement and proper challenges in sport activities, he/she is more intrinsically motivated (Duda and Treasure 2001; Tjeerdsma et al. 1996). The participants in this study constantly involved in the game actions. The game environment continuously challenged them. Therefore, they were intrinsically motivated and enjoyed the games.

Furthermore, the games approach seemed to enhance the participants' motivation by providing feel of belonging and teamwork. They explained the positive pressure during the games approach because the individual's play was influencing with each other. The 9th graders in the badminton class expressed the similar enjoyment of the social interaction with their friends (French, Werner, Rink, Taylor, and Hussey 1996). Choice theory described that motivation of human behaviour is based on the individual attempts to satisfy and fulfilling the needs for belonging, power, freedom, and fun (Glasser 1998). Supports from the teammates as well as team collaboration in the games approach facilitated the participants to fulfil the needs for belonging and possibly increased their motivation for improvements. From the psychological perspective, the games approach has potential to enhance the player's intrinsic motivation by providing continuous challenges, fun environments, and feeling of belonging.

Finally, the participants provided useful suggestion for implementing the games approach. They described the importance of the appropriate break-down for skill practice. When the coaches break down a large game into small-part practices, there are several key factors that the coaches need to consider, such as number of the decision-making involved in a drill as well as time spending on a task (see figure 2). The participants got bored when the part practice (i.e., fundamental drills) was not challenging enough or when there was a lot of waiting time (i.e., standing skill). On the other hand, the appropriate amount of repetition with proper number of decision-making opportunities was able to provided confidence and comfortableness among the participants. Therefore, depending on the level of the players, coaches need to properly adjust the small-part practice. With the appropriate level of break down, the players can experience proper challenges and improve their confidence.

Since rules and structures of the game are usually modified in the games approach practice, clear explanation of the modified rules is essential in order to avoid confusion or frustration from players. The participants also suggested that the modified rules needed to be somewhat realistic, so they could develop more realistic game thinking. The ultimate goal of using the games approach, especially in coaching is to improve the actual game performance (i.e., full field size, full number of players, and full game rules). Therefore, it is important for coaches to imply the same tactical concepts and the realistic game structure during the games approach practices.

Conclusion

Figure 3 describes the overall relationship between the practice structure and the players' perception with the games approach. Games approach practice is basically broken down into three parts; 1) starting with a modified game, 2) practicing in smaller parts, and 3) completing with whole game performance. It is critical to indicate the competition as a by-product of the practices in coaching. In addition, the first modified game with clear

explanation and realistic rules helps to realize the objectives and the purpose of the practice. The middle part of practice needs to be properly broken down in order to increase the player's comfortableness with the ball. The final game develops the feeling of readiness and confidence toward the competition. The overall concept of the games approach helps the players to transfer their performance from the practice to the competition. The next practice would be developed from the reflection of the competition as well as the analysis of the next opponents (Figure 3).

References

Alison, S., and R. Thorpe. 1997. A comparison of the effectiveness of two approaches to teaching games within physical education: A skills approach versus a games for understanding approach. *The British Journal of Physical Education* 28, no. 3: 9-13.

Australian Sports Commission. 1991. *Sport for young Australians: Widening the gateways to participation.* Canberra: Australian Sports Commission.

Brooker, R., D. Kirk, S. Braiuka, and A. Bransgrove. 2001. Implementing a game sense approach to teaching junior high school basketball in naturalistic setting. *European Physical Education Review* 6: 7-26.

Bunker, D., and R. Thorpe. 1982. Model for the teaching of games in secondary schools. *Bulletin of Physical Education* 19, no. 1: 5-8.

Duda, J. L., and D. C. Treasure. 2001. Toward optimal motivation in sport: Fostering athletes' competence and sense of control. In *Applied Sport Psychology: Personal Growth to Peak Performance,* ed. J. M. Williams, 43-62. California: Mayfield Publishing Company.

Dorfman, H. A. 2003. Coaching the Mental Game: Leadership Philosophies and Strategies for Peak Performance in Sport – And Everyday Life. Lanham, Maryland: Taylor Trade Publishing.

French, K. E., P. H. Werner, J. E. Rink, K. Taylor, and K. Hussey. 1996. The effects of a 3-week unit of tactical, skill, or combined tactical and skill instruction on badminton performance of ninth-grade students. *Journal of Teaching in Physical Education* 15, no. 4: 418-438.

Glasser, W. 1998. *Choice theory. A new psychology of personal freedom.* New York: Harper Collins.

Gould, D. 2001. Goal setting for peak performance. In *Applied Sport Psychology. Personal Growth to Peak Performance,* ed. J. M. Williams, 190-205. California: Mayfield Publishing Company.

Grehaigne, J. F. and P. Godbout. 1995. Tactical knowledge in team sports from a constructivist and cognitivist perspective. *Quest* 47: 490-505.

Kidman, L. 2001. *Developing decision makers: An empowerment approach to coaching.* New Zealand: Innovative Print Communications Ltd.

Kirk, D. and A. MacPhail. 2002. Teaching games for understanding and situated learning: Rethinking the Bunker-Thorpe model. *Journal of Teaching in Physical Education* 21: 177-192.

Launder, A. G. 2001. *Play practice. The games approach to teaching and coaching sports.* Champaign, IL: Human Kinetics.

Light, R. 2005. Making sense of chaos: Australian coaches talk about game sense. In *Teaching Games for Understanding. Theory, Research, and Practice,* ed. L. L. Griffin and J. Butler, 169-181. Champaign, IL: Human Kinetics.

Martens, R. 2004. *Successful Coaching*. Champaign, IL: Human Kinetics.

Mitchell, S. A., J. L. Oslin, and L. L. Griffin. 2006. *Teaching sport concepts and skills: A tactical games approach.* Champaign, IL: Human Kinetics.

Oslin, J. and S. Mitchell 2006. Game-centered approaches to teaching physical education. In *The Handbook of Physical Education,* ed. D. Kirk, D. MacDonald, and M. O'Sullivan, 627-651. London. SAGE Publications.

Perkins, D. 1999. The many faces of constructivism. *Educational Leadership* 57, no. 3: 6-11.

Piltz, W. 2003. Teaching and coaching using a "play-practice" approach. In *Teaching Games for Understanding. In Physical Education and Sport,* ed. J. Butler, L. Griffin, B. Lombardo, and R. Nastasi, 189-200. Reston, VA: National Association for Sport and

Physical Education.
Placek, J. H., and L. L. Griffin. 2001. Chapter 9. The understanding and development of learners' domain-specific knowledge: concluding comments. *Journal of Teaching in Physical Education* 20, no. 4: 402-406.
Schmidt, R. A., and C. A. Wrisberg. 2004. *Motor Learning and Performance.* Champaign, IL: Human Kinetics.
Strauss, A. and J. Corbin. 1998. *Basics of Qualitative research: Techniques and Procedures for Developing Grounded Theory.* Thousand Oaks, CA: SAGE Publication, Inc.
Swanson, R. A. and B. Law. 1993. Whole-part-whole model. *Performance Improvement Quarterly* 6, no. 1: 43-53.
Thompson, L. 1998. Teaching strategies to enhance motivation to learn in elementary physical education. *The Canadian Association for Health, Physical Education, Recreation and Dance* 64, no. 3: 4-7.
Thorpe, R., D. Bunker, and L. Almond. 1986. A change in focus for the teaching of games. In *Sport Pedagogy: The 1984 Olympic Scientific Congress Proceedings,* ed. M. Pieron, and G. P. Graham, 163-169. Champaign, IL: Human Kinetics.
Thorpe, R. 1992. The Psychological factors underpinning the 'teaching for understanding games' movement. In *Sport and physical activity: Moving towards excellence,* ed. L. Almond, T. Williams and A. Sparks, 209-218. London: E and FN Spon.
Tjeerdsma, B. L., J. E. Rink, and K. C. Graham. 1996. Student perceptions, values, and beliefs, prior to, during, and after badminton instruction. *Journal of teaching in Physical Education* 15, no. 4: 464-476.
Turner, A. 1996. Teachers' perceptions of technical and tactical models of instruction. *Research Quarterly for Exercise and Sport* 67: A-90.

Figures

Figure 1 Procedures forTeaching games for understanding approach (Thorpe, et al., 1986)

Figure 2 Continuous model of breaking the game into parts

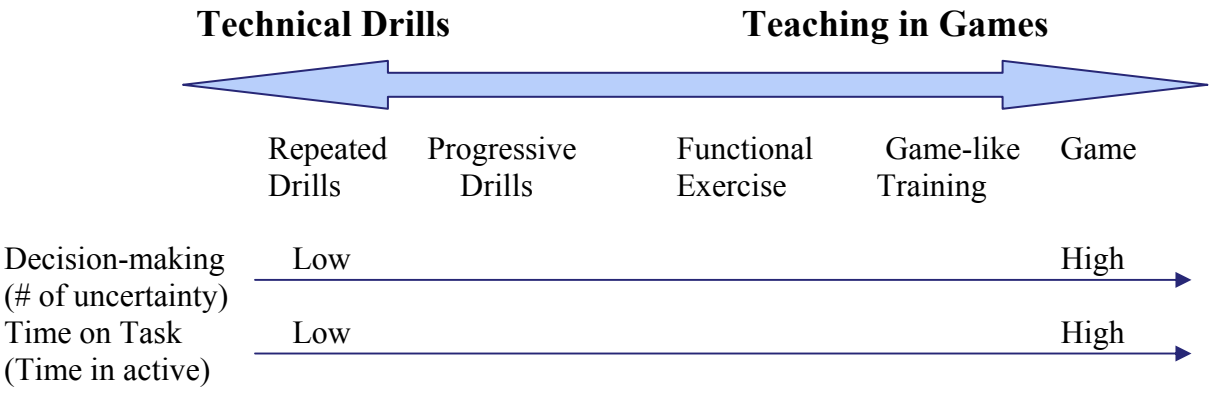
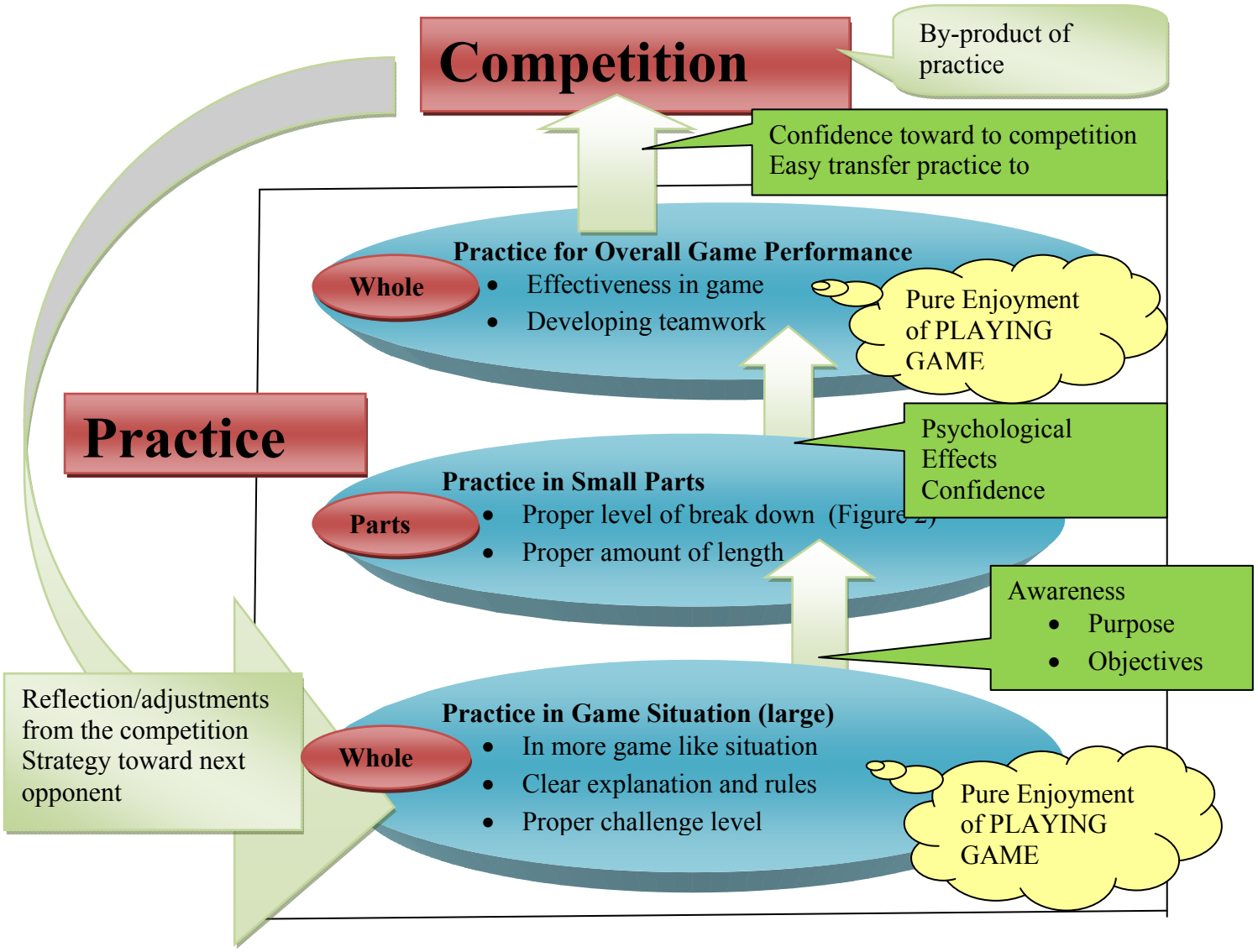


Figure 3 Player's perception on the game approach practice toward competition



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Out and about: supporting a rural primary school implementing a programme of outdoor and adventure activities

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Abstract

Background: Outdoor and adventure activities (OAA) is a strand of the Irish primary school curriculum (1999) offering children opportunities to develop a love of outdoor activity as they develop the skills required to engage in walking, orienteering and outdoor challenges. OAA is taught infrequently (Coulter 2007; Murphy 2007; Woods et al, 2011) in Irish primary schools. Brown (2006) identified challenge, a sense of uncertainty and appropriate sequencing of activities as important pedagogical features of OAA. Constraints identified to teaching OAA have been timetabling, class size and organisation of resources. Supports identified by teachers to enhance their teaching of OAA include provision of (a) opportunities to watch 'model' lessons (b) video recordings illustrating appropriate subject content, and (c) mentoring support through a series of lessons (Coulter 2007).

Purpose: This study sought to (a) establish the needs of teachers (n=5) in one rural school related to implementation of OAA, and (b) attempt to meet these needs through ensuring that the children would be provided with opportunities to engage in OAA.

Research Design: The professional development intervention involved establishing a partnership between the school and a College of Education and implementing an intervention to support teachers as they taught OAA. Analysis of conversations and formal interviews with the teachers (n=5) pre- and post-intervention, analysis of field notes, and a review of documents informed the study.

Findings: The findings indicate that providing inexpensive resources for teaching aspects of OAA encouraged teachers to teach aspects of the strand. The teachers reported that focussed continuous professional development in their own school context provided them with the pedagogical content knowledge necessary to enhance teaching OAA. The aligning of existing outdoor and adventure resource materials in the form of lesson plans, with the practical experience of some of the activities was identified as helpful in developing the confidence and competence of teachers as well as developing their pedagogical content knowledge.

Conclusion: The provision of 'the box', of inexpensive resources and materials, the key to the resourcing issue, as well as the development of a DVD to support the existing resource materials emerged as key considerations for the teaching of OAA in Irish primary schools.

Keywords: outdoor and adventure activities; physical education; orienteering; outdoor challenges; continuous professional development

Introduction

Outdoor and adventure activities (OAA) is a strand of the Irish Primary Physical Education Curriculum (1999). It is concerned with participation in outdoor challenges, walking, cycling, camping, orienteering and water-based activities as well as the promotion of the understanding and appreciation of the strand by children. The key aims of OAA are to introduce children to the adventure of exploring unfamiliar environments and to promote the development of qualities such as trust, co-operation and problem solving. While Outdoor and Adventure Activities (OAA) as outlined in the Irish Primary Physical Education Curriculum (1999) is the focus of this study, it is informed by outdoor education, adventure education and experiential education.

Outdoor Education

Outdoor Education generally describes a curriculum which includes activities outdoors that provide excitement, challenge and sometimes a degree of risk where competition may be of little importance and cooperation in the natural environment is emphasised. Stiehl and Parker (2010) argue that natural settings are the key backdrop to children identifying and resolving real–life problems and for acquiring knowledge and skills that can be applied within outdoor pursuits. They argue that curriculum and the method of instruction are of equal importance.

Adventure Education

Dyson and Brown (2010) describe the concept of adventure education as a process where activities are undertaken that are uncertain, mysterious, explorative, interesting, curious and challenging. They see the teacher as a facilitator and encourage reflection as a key element of process. Activities are arranged sequentially to encourage children's independence through collaborative tasks and an atmosphere of cooperation and trust is created. There is a strong emphasis on the experience, with teacher questioning playing a key role in developing qualities of relationships and in teaching children to become reflective learners. Stiehl and Parker (2010) view outdoor education as placing greater emphasis on skill development such as that required for hiking or canoeing rather than the emphasis in adventure education on activities such as ropes courses and 'new' games.

Experiential Education

The foundation of experiential education can be traced back to some of the work of Dewey (1938). Dewey was aware of the development of the child through the quality of the experience in which the child is participating. He believed that education occurred through and in the experience. Pupils should reflect on and learn through their engagement in the activity, and this engagement should involve the mental, emotional and physical dimensions. The key learning should be related to aspects of information applicable to real life situations. Outdoor and adventure activities have their foundation in these kinds of learning experiences.

Purpose of Study

This study sought to explore the needs of teachers in one rural Irish primary school and to attempt to meet these needs through a professional development intervention and in turn ensure that the children were provided with opportunities to engage in OAA. The research questions that guided this study were:

- What is the provision for the OAA strand in this particular rural school and what supports are currently in use?
- What supports can be identified to encourage the enhanced teaching of OAA?

- Can a partnership between the school and the college of education lead to enhanced teaching of OAA by the teachers that can improve the learning experiences of the children?

Theoretical framework

The theoretical framework underpinning this study is based on constructivist theory. Rovegno and Dolly (2006, 242) summarised the general principles of constructivism: 'Learning is an active process, learners construct knowledge in relation to their prior knowledge which is socially constructed'. They pointed out that it was 'critical for teachers to recognise the role of prior knowledge and experience in generating misconceptions, monitor how students are making sense of information during the learning process, and understand that acquiring in-depth accurate knowledge within a complex domain takes considerable time and instruction'. It was recognised that beginning teachers may have difficulty progressing and sequencing content but with experience this skill develops. The teachers begin to 'contextualise their knowledge in terms of how the children respond to their tasks and learn'. This theory underpinned the study as it provided a framework within which teacher learning could be viewed and the process of teacher learning was constantly under the lens of the researchers. The application of this theory in terms of teacher learning will be discussed further as the intervention is described below. Firstly, it is important in considering the research questions that both physical education and the OAA programme in Irish primary schools are explained.

Current Provision

Physical education and outdoor and adventure activities in Irish primary schools

Physical education is one of twelve subjects taught by generalist primary teachers in Irish primary schools. It is recommended that children experience 60 minutes of physical education per week. OAA has been one of six strands of the Physical Education Curriculum since 1999. The literature both in Ireland and abroad highlights the marginalised position of OAA in physical education programmes (Brown, 2006; Coulter, 2007; Ofsted, 2009). One of the aims of physical education is to 'promote enjoyment of and positive attitudes towards physical activity and its contribution to lifelong health related fitness thus preparing the child for the

active and purposive use of leisure time' (Government of Ireland, 1999). Woods, Tannehill, Quinlan, Moyna, and Walsh (2010), Murphy (2007) and Coulter (2007) reported that OAA activities were taught infrequently in Ireland. The Physical Education Curriculum (1999) recognises that the OAA strand may not have been traditionally considered by Irish primary schools in their physical education programmes. Since 2004 pre-service teachers in the college of education involved in this study have experienced OAA activities within their physical education modules. However Tsangaridou (2008) and Rovegno and Dolly (2006) highlight the importance of field-based experiences in the development of pre-service teachers' physical education practices. Currently in Ireland we do not have an indication of the extent to which pre-service teachers teach OAA during these field-based experiences. Hence, it was difficult to ascertain to what extent teachers in this study had experienced outdoor and adventure activities as part of their initial teacher education. This lack of prominence of outdoor and adventure activities as a key learning area within the physical education curriculum is reported internationally (Brown, 2006; Martin, 2000; Pickup and Price, 2007; Stidder and Haasner, 2011). However, the issue of planning and resourcing the teaching of the strand is an important consideration.

Planning and resourcing outdoor and adventure activities

Barriers to the provision of quality physical education are recognised both in Ireland and internationally (Deenihan, 2005; Hardman, 2007). Barriers include limited indoor facilities in particular and poor weather conditions, lack of resources/facilities, time constraints, time allocation for physical education at pre-service level, low levels of teacher confidence and competence, lack of CPD time for physical education and lack of breadth of content taught (Broderick and Shiel, 2000; Deenihan 2007; INTO 1996; Murphy 2007; Woods et al. 2010). Darmody, Smyth and Doherty (2010, p. 36) reported that many schools have access to space for the teaching of physical education outdoors but are restricted within their programmes by lack of access to indoor space. Hence, it would seem wise for schools with such restrictions to develop a coherent OAA programme in physical education maximising use of outdoor space. The study of Darmody and colleagues (2010) revealed that in the schools involved in the study it was generally felt that the outdoor environment is rarely used for teaching and learning but the potential value of the outdoor environment was recognised. When children were asked to draw pictures of their 'favourite' place, outdoor spaces (mainly the schoolyard and sports pitch or school grounds) were chosen. This study also highlighted that children are

most positive about subjects that are more activity based. They reported that physical education was ranked very highly by the 'vast majority' of the children. Hence, this would suggest that OAA involving activity based work outdoors would be enjoyed by children. This provided a solid starting point for the intervention described in this study.

Brown (2006, p. 691) recognised that 'there are many articles and books on how to organise adventure education programs but that there are few studies on adventure education within physical education'. Burrus-Bammel and Bammel (1990) highlighted the barriers identified by teachers, which included lack of instructional resources and misgivings about their level of competence (Brown 2006, p. 698). However, Dyson and Brown (2010, p. 244) point out that in relation to adventure education 'teachers need to begin slowly, and progressively expand their repertoire of activities'. Stiehl and Parker (2010, p. 269) stressed that 'some outdoor and adventure activities require neither extensive training nor undue funds or equipment'. In Ireland physical education lessons plans and resources based on the Physical Education Curriculum were developed to support the teaching of the six strands of the Physical Education Curriculum, namely the Primary Schools Sports Initiative (PSSI, 2006) resource materials. The materials were distributed in CD Rom format to all schools as implementation of the Physical Education Curriculum began. The PSSI (2006) materials include some materials related to the teaching of OAA.

Teacher learning and professional development

The main focus of this study is enhancing the learning of teachers in OAA through continuous professional development (CPD) underpinned by the desire to enhance the learning of children. While physical education and OAA in Irish primary schools have been described above, it is important to recognise and reflect on the participants in this study: the teachers as life-long learners as they endeavour to gain the competence and confidence to teach OAA. Many challenges for teachers have been highlighted for example, curriculum demands, inclusion, behavioural management and language support to name but a few (The Teaching Council, 2010; PISA, 2009). Coping with the demands of these changes in the school environment in general can be challenging for teachers possibly contributing to the lack of emphasis on specific subjects of the curriculum or strands within these subject areas.

The rapid development in the knowledge environment requires that teachers are life-long learners committed to CPD. 'Professional development should be a learning experience for all who are involved. It is a purposeful and intentional process designed to enhance the

professional knowledge and skills of educators so that they might in turn, improve the learning of all students' (Guskey, 2002, p. 121). The literature highlights the complexities of teachers' learning. Bubb (2005, p. 11) recognises that 'teaching is a job that can never be done perfectly' but that 'one can always improve' and that teachers will need different levels and types of support at different times during their careers. She maintains that one needs to know how adults learn before getting into the 'nitty gritty' of identifying needs. Earley and Bubb (2004) identified six stages in the process namely: identification of needs, analysis of needs, finding the best way to meet the needs, implementation of CPD, monitoring of CPD and finally, evaluation. Bubb (2005, p. 24) valued 'in house' professional development as it involved networking among the teachers and mentoring within the same school. It worked particularly well when it was well managed and purposefully organised with a climate of openness and mutual support. The stages of the process outlined by Bubb informed the research design of this study which was based 'in house'.

Teacher learning in physical education in Irish primary schools

The Irish primary school curriculum recognises the in-career development of teachers and the importance of meeting their needs. 'Any staff members who wish to avail of in-service training for physical education should be encouraged and supported' (Government of Ireland 1999 p. 28). Furthermore it is recommended that 'courses designed to enhance the teacher's implementation of a strand or strands of the physical education programme should be provided' (p. 28). When the Physical Education Curriculum was implemented in 2006 it was preceded by a programme of in-service courses held over the course of two days involving school closure. The in-service programme was facilitated by generalist primary teachers with an interest in physical education, 'cuiditheoirí', who were specifically trained to introduce the Curriculum. Infrequently CPD can be mandated and held during the school day. However more frequently it is elected and delivered in the teacher's own personal time.

A recent Irish report by the Education Centre Network (2010, p. 12) based on a study of primary teachers (n=804) in 958 schools reported that 41% of respondents attended an elective CPD course in the school year 2007-2008 while 40% attended a mandatory course. This would indicate the commitment of teachers to this endeavour. When the respondents were asked to prioritise current-challenging subjects in the curriculum three curricular subjects came to the fore: music, drama and physical education. Within physical education, 29% of teachers indicated that the gymnastics strand was challenging followed by dance

(24%) and OAA (23%). From the perspective of OAA this would suggest that teachers could benefit from increased support to encourage them to teach the strand with more confidence. The report suggested that primary teachers preferred professional learning to take place immediately after school rather than later in the evenings. Fifty eight per cent of the teachers preferred a two-hour stand-alone course. These findings have particular relevance to the study that is the focus of this paper which will be discussed below.

While the review of literature within this paper has focussed on describing physical education in Irish primary schools, on issues related to OAA in the physical education programme and on teacher learning in a general context, it is important that the complexities of teacher learning (Bubb, 2005; Tsangaridou, 2010) are recognised as the particular study which is the focus of this paper is described.

Goals of professional development that informed the intervention

The goals of professional development defined in the literature were important considerations as the intervention was implemented. Guskey (2002, p. 124) identifies three broad categories to establish goals for professional development experiences, namely cognitive, psychomotor and affective goals. The cognitive goals relate to knowledge. Shulman (1986) recognised seven types of knowledge ranging from content knowledge to pedagogical knowledge, knowledge of curriculum, knowledge of the learners and their characteristics and knowledge of educational contexts, school aims and philosophy. Guskey (2002, p. 125) stresses the value of educators engaging with teaching the subject matter and putting it into practice. The psychomotor goals relate to the skills and practices that the educators acquire through engagement in professional development. The educators need the confidence to know what they can actually do with the knowledge in their context perhaps with adaptations. Finally the affective goals are identified as the 'attitudes, beliefs, or dispositions that participants are to develop as a result of a professional development experience'. Perhaps these attitudes and dispositions will be new or simply older ones altered. While cognitive and psychomotor goals can be evaluated through, for example, interviews; affective change is more likely to be achieved once the teachers have gained evidence that their new knowledge and skills have resulted in a change or improvement in their students' learning. Guskey's (2002, p. 139) model of teacher change suggests that 'these improvements typically result from changes that teachers have made in their classroom practices'. Examples include the introduction of new instructional methods, the use of new materials or curricula or the modification in teaching

procedures or class format. Guskey therefore concludes that it is not the actual professional development experience itself that resulted in the shift in attitudes or beliefs but rather the evidence of change in the learning of their students.

Evaluation of professional development

In addition to defining the goals of professional development Guskey (2002, p.122), emphasised the importance of evaluating professional development in terms of assessment of teacher learning. The providers of professional development must be aware of what the learners know and are able to do at the end of the process and support this with evidence. This learning may then bring about changes to children's learning. With reference to evaluation of professional development programmes, Graber and colleagues (2008, p. 156), identified specific in-service programmes focussing on high quality physical education that were deemed successful in upgrading the knowledge and skills of classroom teachers and specialist physical educators. These include SPARK (Sports, Play, and Active Recreation for Kids) and CATCH (Child and Adolescent Trial for Cardiovascular Health). McKenzie, Sallis, Faucette, Roby and Kolody (1993) reported that regular training and continuing support of classroom teachers lead to significantly better physical education lessons from the perspective of physical activity levels and active instructional behaviours. The continuing support of teachers, reflected in their study, was an important aim of this intervention. However, it remains crucial that we examine how best we can provide meaningful ongoing support on completion of the intervention.

Resource-led professional development

The work of Keay and Spence (2011, p. 38) impacted on the approach adopted in the study which is the focus of this paper. They reported that resource-led CPD has 'the potential to extend the learning of classroom professionals and make a significant impact on improving the learning of the children in their classes'. The need for contextualised CPD linked to the teacher's own teaching environment was highlighted following the evaluation of two resource-led professional development initiatives in physical education. The teachers in their study looked forward to the CPD and were hoping to gain confidence and learn new skills as well as gain knowledge and receive resource materials related to their teaching. The conclusion was drawn that the usefulness of the resources linked to the CPD was dependent on the applicability to the individual school context and that it was important that the

resources could be modified to the class context. It was suggested that the provider of CPD must (a) take time to understand individual contexts and design the learning activities to meet the needs of the specific school, and (b) provide opportunities for teachers to try out the materials and activities with their children, and (c) prompt teachers to make adaptations if the teacher felt it was appropriate to accommodate the children's requirements. These considerations informed the design of the intervention which was the focus of the study.

Professional development undertaken in communities of practice

The study has been influenced too by the literature on the value of teachers working together as a community of practice, recognised by Wenger (2006) and in the context of physical education by Tannehill (2011). Wenger (2006) defined a community of practice as a group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. Armour (2011, p. 235) highlighted that adult learners 'value collaborative learning opportunities' underlining the importance of supporting the creation of collaborative learning opportunities within schools. This study is characterised by an emerging focus of the community of practice within the school on physical education.

Research Design

Methodology

A qualitative methodology was employed in this case study. The participants included the Principal, teachers (N=5), pupils (N=101) and physical education staff from a college of education (N=3). The principal of the school requested assistance in developing the schools' outdoor and adventure activities programme. Whole school support in the form of an intervention was designed and implemented by the college of education staff. Data collection had two purposes (i) to inform the intervention and (ii) to evaluate the intervention. Ethical approval was granted by the Ethics Committee of the College of Education.

The professional development intervention

The stages of the professional development intervention are described below with reference to data collection at certain points that impacted on the intervention.

- The professional development intervention was introduced to the school staff on the second site visit following an interview with the principal and a focus group interview with the teachers (described below) that provided key guidance to the researchers on the supports required within the intervention. Firstly a presentation was made to the staff giving an overview of the Outdoor and Adventure Activities strand. Secondly, a 'Box' containing lessons exemplars from the PSSI (2006) resource materials and other resources such as photographs and maps of the school grounds were also provided. The resource 'Box' was used to support modelling of the exemplar lessons from the orienteering strand unit. The school had the practical resources and equipment necessary to implement the outdoor challenges strand unit.
- Modelling of outdoor challenges and orienteering activities, using 'the box' as the basis for the work, took place.
- The teachers then dedicated two hours to planning OAA programmes appropriate to each class level without the support of the researchers.
- The teachers subsequently taught the programmes to their classes over a six-week period. Ongoing support was offered by the researchers if needed, through the use of e-mail and telephone.
- The third site visit involved video recording the children as they undertook the activities and providing additional support as identified by the teachers. The purpose of the recordings was to create a resource which might assist new teachers to the school or assist participating teachers as they teach the programme in the future. The recording also allowed for informal observations of the teachers and children during the lessons by the researchers.
- An orienteering event at a nearby forest was planned by the researchers for fifth and sixth class and undertaken as a culmination of their OAA programme. This was another opportunity to take photographs and record some video clips for future use by the school.

Data collection

The collection of data reflects the sequence in which the study was undertaken.

i. Prior to the design and development of the intervention an interview with the school principal was conducted to inform the researchers about the teaching of outdoor and adventure activities in the school. The school plan for physical education was provided by the principal for review by the researchers.

ii. A second site visit involved interviewing the teachers and the principal in relation to their understanding of outdoor and adventure activities and clarifying what supports they required. It was agreed with the Principal to provide professional development for teachers during the 'Croke Park Agreement' hours. [The Croke Park Agreement was negotiated between the Government and the Public Sector Unions and was implemented for the first time during the academic year 2010/2011. The agreement has a core objective to ensure that the Irish public service continues its contribution to the return of economic growth and prosperity to Ireland while delivering excellence in quality service. Teachers are expected to cooperate with the implementation of change occurring in education policy. This agreement requires teachers to work an additional 36 hours on a whole-school basis over the course of the school year.] The school agreed to devote approximately six hours of this time to working on the outdoor and adventure activities strand of the school's physical education programme, using the PSSI (2006) resource materials. The two face-to-face support sessions provided by the researchers was scheduled in two-hour blocks after school. This time was identified as the preferred time for professional support by teachers described above (Education Centre Network, 2010).

iii. A post intervention interview with the teachers was held during lunchtime on the fourth and final site visit to evaluate the efficacy of the professional development intervention.

iv. The teachers kept a whole school diary of their teaching across all phases of the study, which they had initiated themselves, and this along with researcher field notes informed the evaluation of the intervention.

Data analysis

All interviews, observations, whole school diary input and field notes were analysed. The trustworthiness of the data was established by using multiple data sources to cross check links. All researchers were involved in the analysis of the data. This included coding

individually, whereby the researchers coded the same data to ensure clarity of language, meaning and reliability; coding together to establish agreed thoughts, themes and steps in the analysis process; and working together to construct an argument based on key messages within the data that was balanced, robust and made sense (Richards, 2005).

Limitations

There are some limitations pertinent to this study. The study was carried out in a five-teacher rural school and therefore could not be considered a representative sample. The professional development facilitators were also the evaluators of the effectiveness of the professional development intervention. While this has its limitations, for example the potential of reporting bias or teachers being subject to social desirability bias, the extension of the role of facilitators to evaluators provided valuable opportunities to modify the study to facilitate the changing needs of the teachers involved over time.

Findings

The findings that will be described are related to the three research questions outlined earlier in the paper.

Pre-intervention provision for OAA in the school

It was evident that the physical education culture in the school had been defined as 'kicking a football' but the physical education programme had progressed to include gymnastics and dance due to initiatives implemented by the school principal. The teachers were 'dipping' into OAA activities sporadically and appeared to be aware of its benefits. However, it was clear that the OAA strand was marginalised as 'once-off' lessons were identified by the teachers. It was apparent that references to these activities were made using colloquial terms: 'a trip to the wood', 'map work', 'crack the code', 'egg hunt', 'an outdoor and adventure day' and there was little evidence of the language of the strand as described in the Curriculum being used. This suggested that teachers had a superficial rather than a deep understanding of what they were teaching. Teaching sites for OAA mentioned by teachers included the forest, local woods and an outdoor and adventure centre, with little reference to activities undertaken in the school grounds. While cycling was identified as an activity undertaken by the children in

the context of a cycling training scheme facilitated by an external provider, the following comment was made:

> *'We have done cycling, which, actually when I looked at the curriculum is in the strand and we do that every four years' (T1)*

This suggested that cycling hadn't been recognised as part of OAA. As teachers discussed OAA they concluded that OAA were undertaken within other subject areas but they were not planned within an integrated framework:

> *'We did some connected to the Primary School Science week' (T2)*

Graber and colleagues (2008) recognised the struggle by classroom teachers to overcome challenges. Challenges identified to the inclusion of OAA in the physical education programme included the amount of preparation time required by the teacher to implement a programme and their experience of implementation of activities that did not 'fill' the time allocated for the physical education lesson duration. It was clear that teachers did not combine activities from the different strand units of the OAA strand when planning lessons and hence, the lessons they taught lacked the breadth and depth of experience for children that such an approach to planning could provide. There was a tendency by the teachers to dismiss or even overlook OAA activities that had been taught previously due to failure on their part to recognise the legitimacy of some of the activities in terms of children's learning. While one teacher was struggling to adapt an activity from the Curriculum for an infant class, the language used to describe the challenge appeared to indicate the teacher's own lack of confidence in her ability to understand the content of the activity and to adapt it to her own class.

> *'I just basically wrote out and drew my own very basic sketch of the school. And that the infants would understand you know kind of like an aerialish [sic] map, very basic. And I just wrote numbers and then just made something up with like laminated numbers with letters on the back' (T4)*

Another teacher described her attempt to teach an activity from the strand (that appeared to encompass elements of an outdoor challenge and an orienteering activity) in a way that indicated that she did not fully understand the rationale for children engaging in the activity or what they might be learning from the experience:

> *'They make an obstacle course with beanbags. They do that based on the school map. So I suppose we have… [undertaken some teaching in the strand]' (T4)*

It can be concluded that the initial approach of teachers to the teaching of OAA was somewhat haphazard although there was evidence of a real determination to teach an enhanced OAA programme. The participants were clear on what supports they might benefit from as part of this effort.

Supports to enhance the teaching of OAA

One teacher was unhappy with the lack of detail within the Physical Education Curriculum itself to support the teaching of OAA.

> *'I don't think it gives many exemplars' (T5)*

This might suggest that provision of more exemplar activities would be useful. Another teacher recognised that the PSSI resource materials did provide more detail

> *'They [the PSSI lesson plans] are too detailed and you find them a bit confusing'(T1)*

but that the resource was too difficult to 'visualise' and the practical experience of the proposed activities would be necessary.

> *'I think that would be great… to actually do practical little activities…because I think they [the resource materials] are loaded' (T3)*

Supports identified to promote the inclusion of OAA in the physical education programme included a request for a bank of resources containing, for example, maps and photographs of the school that could be adapted for use with different class levels in this multi-class context.

> *'Resources… a bank of resources that we could all use…that you could have a bank that you could call on or to help…[as you teach the lessons]' (T4)*

In terms of planning, clarification of sequencing of activities was requested.

> *'Should you be doing it as a full unit of work, you know, doing 4 or 5 weeks altogether that's what I'm wondering?' (T1)*

These findings informed the second stage of the intervention and provided the researchers with guidance on possible supports that we need to provide if support is to be replicated across schools.

Towards enhanced teaching of OAA: Collaboration and partnership approach to facilitating teachers' learning

The complexity of teacher learning has been acknowledged (Bubb, 2005; Tsangaridou, 2010) and the study attempted to find out if the teachers believed that their learning had been enhanced as a result of the intervention. Teachers believed that their pedagogical content knowledge, one of the seven types of knowledge identified by Shulman (1986) increased following the intervention;

> *'I would be much quicker to teach it next year, I know exactly what to do' (T4)*

The teachers' understanding of the sequencing of activities improved as well as their understanding of the necessity to plan the lesson beyond opening 'the box' of resources;

> *'I should not have done photo star then because it was handy, because it was not in the progression' (T3)*

As their OAA teaching progressed and they became more confident teaching the activities, the teachers' thinking moved on to question what else they could incorporate into their OAA programmes. They had begun to 'contextualise their knowledge' as identified by Rovegno and Dolly (2006). However, as a consequence of the intervention and working through the intervention as a staff or community of practice, it would appear that the teachers were motivated and supported to undertake the task of teaching OAA. Coulter (2011) and Brown (2006) identified lack of resources providing support for teaching OAA as a key challenge to the implementation of the strand. In this study the school principal had also identified this constraint. The key to the success of the intervention, they believed, was the resource box

> *'Having 'the box' there made up with all the materials ready to go'*

Keay and Spence (2011) and Bubb (2005) highlight the importance of CPD in the school context. This was evident in the following comments of the teachers:

> '*It is much more relevant when it is in your own school' (T4)*

> *'To personalise them [the resources] for your own school is the labour' (T1)*

While the PSSI (2006) resource materials were considered 'super' as a resource and 'everything is on it', it was not considered by the teachers easy to follow without assistance. From the teachers' perspectives they benefited from the collaboration with external 'experts'. Therefore it is clear that the partnership approach was a significant element of the

intervention. With reference to their use of the PSSI resource materials they acknowledged that the support they received to use the resources was crucial:

> *'You do need to explain…[the activities described in the resource materials] (T2)'*
>
> *'You guys came and showed us' (T4)*

Evidenced in the interview data and from the observation data, the cognitive and psychomotor goals described by Guskey (2002) had been achieved as a result of these professional development experiences. There was some evidence too that the affective goals (although as Guskey points out these were more difficult to measure) were being reached as teachers commented on seeing the evidence of children's learning as contributing to their motivation to teach OAA;

> *'When we did the snake walk, as well, I found it fascinating…They were able to do it. I was really surprised at how well they did it' (T2)*

Finally, it appeared that a community of practice as recognised by Wenger (2006) with a focus on physical education had been initiated strengthening the 'working together' ethos that had been apparent in work by teachers in this school related to other subject areas. The collaboration was valuable to the researchers as educators because it informed their work in initial teacher education. It provided an insight into the needs of teachers who were teaching OAA as well as experiencing how teachers learn (Guskey, 2002; Bubb, 2004).

Conclusion

The findings related to this study emphasise the significance of supporting the learning of teachers in OAA. As this support is provided it is important that we recognise that 'it is unfair to expect too much too soon from those involved' in implementing programmes based on the knowledge acquired and skills developed as a result of their engagement with a professional development experience (Guskey, 2002, p. 141). As collaborators in a partnership we need to allow more time for the teachers in this school to teach the strand and to develop their expertise. This time may provide us with some further evidence of goals related to teacher professional development being reached, particularly those in the affective domain.

If we, the researchers, wish to contribute to improved provision of OAA we must acknowledge two major factors: our limited availability as facilitators of learning and the importance of meeting the needs of individual school contexts. Although use of technology in

this study was not extensive, it may prove to be the key to ensuring that interventions can be designed to meet the needs of a variety of schools related to teaching OAA. Perhaps production of a DVD aligned with the PSSI (2006) resource materials could provide the additional pedagogical content knowledge and guidance on resourcing that the researchers provided. The work of Keay and Spence (2011) described earlier suggests that the personalisation of resources to match the context of the school is an important element of effective CPD. We believe that the development of 'the Box', the key to the resourcing challenge, could be explained very simply using a DVD. Support staff at schools could personalise or contextualise the OAA resources that were used in this intervention. The development of a DVD to guide teachers and the development of 'the Box' of resources within schools is reflective of an approach that aligns with the view of Stiehl and Parker (2010) that teaching of OAA does not require extensive training or equipment.

Further study is necessary to determine if this technology used independently of facilitation could prompt teachers to work together as a community of practice on planning an OAA programme within the CPD time mandated by the Croke Park Agreement in the Irish context. We believe that addressing the support and resourcing issues described above, using some aspects of technology, is the key to providing ongoing support to teachers as they teach OAA within programmes of physical education. This professional support for teachers is crucial to encourage them to raise the status of OAA in Irish primary schools and provide important learning opportunities for children within programmes of OAA.

Reference List

Armour, K. (2011). Effective career-long professional development for teachers and coaches. In K. Armour (Ed.), *Sport Pedagogy: An introduction for teaching and coaching* (pp. 229-243). London: Pearson.

Broderick, D. & Shiel, G. (2000). *Diet and activity patterns of primary school children*. Dublin: St. Patrick's College.

Brown, M. (2006). Adventure education in physical education. In D. Kirk, D. Macdonald, & M. O' Sullivan (Eds.), *The handbook of physical education* (pp. 685-702). London: Sage Publications Ltd.

Bubb, S. (2005). *Helping teachers develop.* London: Paul Chapman Publishing.

Coulter, M. & Woods, C. B. (2007). It's all about out of the classroom: Classroom teachers' perspectives on teaching physical education. In A. MacPhail, D. Tannehill, & M. O'Sullivan (Eds.), *Evidence-based research in physical education, physical activity and youth sport* (pp. 18-27). Limerick: University of Limerick and Irish Sports Council.

Darmody, M., Smyth, E., & Doherty, C. (2010). *Designing primary schools for the future* (Research series no. 16).

Deenihan, J. (2005). *Physical Education provision in primary schools* Dublin: Fine Gael.

Dyson, B. (2006). Students' perspectives of physical education. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The handbook of physical education* (pp. 326-346). London: Sage Publications Ltd.

Education Centre Network (2010). *Continuing personal and professional development needs of teachers in Ireland* (Rep. No. 1). Dublin: Education Centre Network.

Government of Ireland (1999). *Primary School Curriculum*. Dublin: The Stationary Office.

Graber, K. C., Locke, L. F., Lambdin, D., & Solmon, M. (2008). The landscape of elementary school physical education. *The Elementary School Journal,* 108, 3, 151-159.

Guskey, T. R. (2002). Professional development and teacher change. *Teachers and Teaching Theory and Practice, 8,* 381-391.

Hardman, K. (2007). *Current situation and prospects for physical education in the European Union* Brussels: European Parliament.

Hopper, B., Grey, J., & Maude, P. (2000). *Teaching physical education in the primary school*. London: Routledge Falmer.

Keay, J. & Spence, J. (2011). School-wide professional development: New resources and new learning in primary schools. *Physical Education Matters, 6,* 34-38.

Martin, B. (1997). *Finding the Griz: Using orientation activities*. Davies Sports.

Martin, B. (2000). Teaching outdoor and adventurous activities. In R. Bailey & T. MacFayden (Eds.), *Teaching Physical Education 5*-11 (pp. 187-197). London: Continuum.

McKenzie, T. L., Sallis, J. F., Faucette, N., Roby, J. J., & Kolody, B. (1993). Effects of a curriculum and in-service program on the quantity and quality of elementary physical education classes. *Research Quarterly for Exercise and Sport, 64,* 178-187.

Murphy, F. (2007). *Capacity building for primary physical education: Enhancing teacher expertise for quality teaching and learning.* PhD St Patrick's College, A college of Dublin City University.

Ofsted (2009). *Physical education in schools 2005/2008: Working towards 2012 and beyond* (Rep. No. Ref 080249).

Pickup, I. & Price, L. (2007). *Teaching physical education in the primary school.* London: Continuum International Publishing Group.

PISA (2009). *The organisation for economic co-operation and development (OECD) Programme for International Assessment (PISA)*.

Primary Schools' Sports Initiative (2006). *Resource materials for teaching physical education in primary schools*. Dublin: Department of Education and Science.

Richards, L. 2005. *Handling qualitative data*, London: Sage.

Rovegno, I. & Dolly, J. P. (2006). Constructivist perspectives on learning. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The handbook of physical education* (pp. 242-261). London: Sage Publications Ltd.

Stidder, G. & Haasner, A. (2011). Learning and teaching through on-site outdoor and adventurous activities. In G. Stidder & S. Hayes (Eds.) *The really useful physical education book; Learning and teaching across the 7-14 age range* (pp. 79-102) London: Routledge.

Stiehl, J. & Parker, M. (2010). Outdoor Education. In J. L. Lund & D. Tannehill (Eds.), *Standards-based physical education curriculum development* (2nd ed., pp. 247-269). Sudbury, MA: Jones and Bartlett.

Teaching Council (2010). *Draft policy on the continuum of teacher education* Dublin: The Teaching Council.

Tsangaridou, N. (2006). Teachers' beliefs. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The handbook of physical education* (pp. 502-515). London: Sage Publications Ltd.

Wenger, E. (2006). Communities of practice: A brief introduction. www.ewenger.com/theory/ [On-line].

Woods, C. B., Moyna, N., Quinlan, A., Tannehill, D., & Walsh, J. (2010). *The Children's Sport Participation and Physical Activity Study. Research Report No.1*. Dublin: School of Health and Human Performance, Dublin City University and The Irish Sports Council.

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"I drawed my own idea": research methods employed to investigate the place and meaning of 'physical education' to preschool children

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Background: Preschool physical education has not been extensively researched. Furthermore, research in physical activity and physical education rarely seeks children's perspectives (Macdonald et al., 2005). The current paper focuses on one aspect of a qualitative study concerned with investigating the place and meaning of 'physical education' to preschool staff and children in nursery classes.

Purpose: This paper details the research methods employed to investigate children's perspectives. Participants were 48 children, aged three to five years. It is proposed that elements of the research approach taken, and methods and resources employed, may be transferable to other contexts, and therefore may assist in engaging other diverse populations in physical education, physical activity and sport.

Methods: Two main methods were employed; group mind-mapping and interviews. Group mind-mapping involved children sitting in small groups around a large piece of paper, on which they drew pictures related to, and talked about, what they did during opportunities for 'physical education', physical activity or outdoor play. Interviews were informal, and featured a variety of resources, including photographs and colouring sheets related to 'physical education', physical activity and play. Children had opportunities to draw pictures, and also participated in a picture card sorting activity. A teddy bear featured in some interviews.

Findings: Group mind-mapping was an inclusive activity that provided a useful foundation for the interviews. Interviews generated richer data. Resources used during mind-mapping and interviews were generally successful in engaging children's interest and encouraging conversation. Colouring sheets and photographs usually held children's attention and

stimulated conversation, but occasionally distracted them from answering questions. Children tended to choose to colour in, rather than draw. Drawings they did make were often unrelated to the themes of the interviews. The picture card sorting activity was successful in assisting children to talk about what 'play' meant to them. The teddy bear was very popular, and successful in that children were eager to answer 'his' questions.

Keywords: physical education; preschool; children's talk; research methods.

Introduction

Preschool physical education has not been extensively researched. Furthermore, research in physical activity and physical education rarely seeks children's perspectives (Macdonald et al., 2005). This paper focuses on one aspect of a qualitative study concerned with investigating the place and meaning of 'physical education'[4] to preschool staff and children in nursery classes. It details the research methods employed to investigate the children's perspectives. I believe that elements of the research approach taken, and methods and resources employed, may be transferable to other contexts, and therefore may assist in engaging other diverse populations in physical education, physical activity and sport.

I begin by providing a brief background to the larger study. I then discuss the research methods used with the children, and outline their potential strengths and weaknesses, based on my experiences.

Background to the study

The study was designed to answer the research question, 'What is the place and meaning of physical education to staff and children in nursery classes at three preschool settings in Edinburgh?' In order to investigate this question, the following sub-questions were addressed: 'What are the discourses of physical education at these preschools?' and 'How do staff and

[4] I use quotation marks because 'physical education' was a term most participants did not use regarding preschool contexts.

children engage with these discourses in order to construct their subjectivities?' A poststructuralist, Foucaultian theoretical framework underpins the study. The intention of the analysis is to identify prevailing discourses of physical education at the three preschools, and to interrogate and problematise the 'work' of these discourses.

Underpinned by a poststructuralist perspective, the study regards children as 'co-constructors of knowledge who have worthwhile and insightful understandings of the world around them' (Janzen, 2008, p. 292). I align with research related to the sociology of childhood, which views children as agents (Mayall, 2002) who have a right to have their voices heard in relation to events that concern them (Cobb, Danby & Farrell, 2005). While psychology has traditionally regarded children as adults-in-training (Sorin, 2005), sociologists of childhood focus on the present tense of childhood (Mayall, 2002). Aligning with the latter, I sought children's perspectives and regarded them to be equally as important as adults' perspectives.

I received ethical approval for the study from the ethics committee of The Moray House School of Education, The University of Edinburgh. Fieldwork was carried out between March 2010 and January 2011 at three preschools, which I refer to by the pseudonyms of Oakdale, Cheery Faces and Sunnyland. Fourteen adults and 70 children participated. Parents consented to their children's participation. I engaged in participant observation at each preschool and held interviews with practitioners and children. Children also participated in a group drawing and discussion activity called group mind-mapping. Some children (22) were observed only, while 48 participated in group mind-mapping and/or interviews (see Table 1). Pseudonyms are used throughout the paper to protect participants' anonymity.

Table 1 Total number of child participants

Preschool	Observed only	Observed and involved in group mind-mapping and/or interviews	Total
Oakdale	2	18	**20**
Cheery Faces	0	12	**12**
Sunnyland	20	18	**38**
Total	**22**	**48**	**70**

Research methods used to generate children's talk

Background

Group mind-mapping and interviews were the main research methods used to generate children's talk. The notion that interviewing children is easy is a misconception (Westcott & Littleton, 2005) and data quality can be an issue (Scott, 2004). However, solutions to such issues 'deserve consideration, given the potential benefits of collecting data directly from children themselves' (Scott, 2004, p. 100). Less structured interviews are most appropriate for young children (Scott, 2004). Using resources and stimuli can 'engage children's interest, foster thought and reflection, and soften the effects of the high-control, adult-dominant, question-and-answer format' (Brooker, 2001, p. 166). Thus, as well as stimulating and encouraging children, such resources can help to address the adult-child power imbalance in the interview situation. Scott (2004) believes that visual stimuli are useful in interviews with young children, as they 'make the issue far more concrete than verbal representation alone' (p. 102). She also maintains that visual aids can be helpful if children have vocabulary problems or limited attention spans.

Activities such as sorting cards and drawing are more suitable for young children than a rigid question and answer format, and can help children to focus (Mauthner, 1997). Drawing can allow children 'to use a graphic expressive technique to elaborate on verbal concepts' (MacDougall, Schiller & Darbyshire, 2004, p. 369). MacPhail and Kinchin (2004) cite

numerous researchers in proposing the following strengths of drawings as a data collection method:

- It is a fun, attractive activity for children
- It is a quick, efficient way to collect a large amount of information as no training or practice (for children) is needed
- Children can freely choose what they want to include without being limited by researchers' frames of reference
- Children who may be unwilling, unable or too upset to participate in interviews can have the opportunity to express their views
- Children can provide more of their own retrieval cues (i.e. drawing one thing may lead to retrieval of other related aspects they also wish to include).

MacPhail and Kinchin (2004), again citing numerous other researchers, propose that possible weaknesses of drawings as a research method are that they only reflect values that can be represented graphically, and that they are limited by the skill of the participant.

Other resources researchers have used with young children include picture card sorting activities and teddy bears. For instance, to investigate if young children could distinguish between play and non-play, Howard (2002) and Howard, Jenvey and Hill (2006) used an activity called the activity apperception story procedure (AASP), which required children to examine and sort photographic stimuli. Dahl and Aubrey (2005) used a teddy bear in their investigation of two- to four-year-olds' views of their nursery provision, and found that it 'helped children to construct a narrative around their nursery setting' (p. 3). Dahl and Aubrey asked the children to tell the teddy what 'he' would like or dislike about nursery, and if there were any things 'he' should know in order to have a good time there.

As well as using resources and activities during children's interviews, it is necessary to pay attention to other factors in order to strive for high quality data. Scott (2004) and

Westcott and Littleton (2005) emphasise the importance of taking care when constructing interview questions. According to Scott (2004), questions should be unambiguous and 'pertinent and relevant to the children's own experience or knowledge' (p. 107). Westcott and Littleton (2005) propose that 'the style of questioning itself is crucial' (p. 151). They cite Westcott, Davies and Bull (2002, cited in Westcott & Littleton, 2005) when outlining the following points that should be taken into consideration:

- Open-ended questions encourage longer responses; avoid closed-ended questions that require single-word responses
- Children should not be questioned in a suggestive manner
- Repeating questions in exactly the same form usually results in children changing their responses, as they think their first answer must be wrong
- Try not to interrupt children; tolerate long pauses
- Children's language or terminology should not be taken for granted or assumed.

Westcott and Littleton (2005) also advise interviewers to employ good social skills, use humour and try to build trust. Numerous researchers agree with this latter point. For instance, Mooney and Blackburn (2003), who investigated children's views of childcare quality, assert that researchers must spend time with the children so that positive relationships can develop. Similarly, Almqvist *et al.* (2006), who investigated four- and five-year-olds' perceptions of health, explain that before conducting interviews with the children, they spent time at their preschools in order to create comfortable relationships. Aligning with this viewpoint, Coates and Coates (2006), whose research involved three- to five-year-olds, found that success in eliciting drawings and narratives from the children was dependent on having empathetic, positive relationships with them 'in a non-threatening context, based on mutual trust and a familiarity of the situations in which the children worked' (p. 226).

In order to gain this familiarity, I conducted weekly observations at the preschools for a number of weeks before asking children to participate in the other research methods. I felt that this would help me to get to know the participants, and give them a chance to get to know me. While group mind-mapping and interviews were the two main research methods used to generate children's talk, I will briefly discuss the observations.

Observations

Throughout the period of fieldwork, I conducted a total of 70 observations. They usually lasted between approximately 20 and 50 minutes, depending on when the particular situation I was observing ended. I felt it was important to do observations for numerous reasons. As mentioned, I believed it would allow the participants and me to get to know one another. Clark, McQuail and Moss (2003) note that observation is a research method that is often used in the early childhood field. Similarly, Stacey, one of the participating staff members at Oakdale, mentioned that preschools frequently have students in conducting observations. She described students doing observations as 'part of the normal life of the nursery' (Oakdale field-notes, 8-Sept-2010). I therefore envisaged that having me doing observations would not be a strange situation for the participants. Although I was generally sitting in what I hoped were inconspicuous positions so as not to distract the participants, doing observations gave me the chance to, for example, smile at and briefly chat with them. Children often came over to ask what I was doing and why. I was honest in my explanations, as reflected in the following extracts from my field-notes:

> Rosie looks at my notebook and asks me what I'm doing. I tell her I'm writing down all the activities the children are doing. "Is that all right?" I ask. She nods. (Oakdale field-notes, 8-September-2010)
>
> Lily, who has been running around the yard, comes over and asks what I am doing. I explain that I'm writing down all of the activities that the children are doing. She asks me why I'm doing this. I say that I'm doing a big project and that this is like my homework. (Sunnyland field-notes, 15-June-2010)

Being honest with the children was important in relation to ethics and consent. As will be explained later, individual children's consent was explicitly sought each time they participated in group mind-mapping and interviews, but it was not as easy to do this regarding observations. I worried that doing so would distract the children from what they were doing. I also knew it was not possible in terms of time. However, as the field-note excerpts presented above show, I tried to make the reasons for my presence as transparent as possible for the children.

Another reason I felt it was important to do observations was to gain an understanding of the preschool contexts and what 'physical education' at each entailed. Thus, observations would inform group mind-mapping and interviews. Doing observations and writing accompanying field-notes also allowed for the analysis of interactions. I was therefore not solely reliant on participants' 'talk'. Doing observations ensured that the study featured methodological triangulation.

I envisaged that spending the first few weeks at each preschool doing observations and getting to know the participants would mean that when I asked them to participate in other research methods, I was not a 'stranger' and they would feel more comfortable and willing to participate. After approximately two to four months of weekly observations at the preschools (it differed for each setting), I started doing group mind-mapping and interviews with the children. Table 2 details the number of children who participated in these methods, which I will now discuss.

Table 2 Child participants in group mind-mapping and interviews

Preschool	**Group mind-mapping only**	**Interviews only**	**Both group mind-mapping and interviews**	**Total**
Oakdale	5	0	13	18
Cheery Faces	0	3	9	12
Sunnyland	5	3	10	18
Total	10	6	32	**48**

Group mind-mapping

I first learned about group mind-mapping during my initial meeting with the nursery teacher (Amanda) and nursery nurse (Alison) at Oakdale, prior to starting fieldwork. The following extract from my field-notes refers to this meeting:

> I explained to Amanda that I intended to have interviews/conversations with the children and ask them to draw pictures. She asked if I had noticed the mind-maps on the wall outside the nursery classroom. As I hadn't, she led me outside and explained that an activity they often do with the children is group mind-mapping. This involves placing a large sheet of paper in the centre of a table and gathering the children who want to participate around. A word is written in the centre of the page (an example on the wall was 'café') and the children are asked to think of things associated with that word. As they make suggestions, each individual child is given a pen to draw a picture of their suggestion. Alongside the individual pictures, Amanda or Alison write the words the children have suggested. (Oakdale field-notes, 20-January-2010)

As well as being an activity that the children (at Oakdale) would be familiar with, there were other reasons why I felt that group mind-mapping would be a useful research method to employ. Firstly, it was an inclusive activity; while I intended to ask particular children to participate in interviews, all those who were present and willing to participate in group mind-mapping could do so. This relates to another reason why I chose to employ it: as well as being a method of data generation in itself, I envisaged that doing group mind-mapping would give me an idea of which children to ask to participate in follow-up interviews. For instance, if certain children appeared to be chatty and keen to participate, they would likely be willing to participate in interviews too. Similarly, if children made particularly compelling comments about 'physical education' during mind-mapping, I would

know to try to have follow-up interviews with these particular children. Conversely, if children were disinterested or unwilling to participate in group mind-mapping, I would be aware that they may similarly be uninterested in doing interviews. I envisaged that doing group mind-mapping would also provide me with an awareness of any speech or language issues that particular children may have had. In this way, group mind-mapping, like participant observation, was a way to help me get to know the children better, as well as help them to become more familiar with me.

I did mind-mapping with four groups of children at Oakdale, four groups at Sunnyland and three groups at Cheery Faces. One group had six children, while all others had three or four. Each session followed a similar procedure. The children sat with me at a table. I explained what I wanted to do and introduced the audio-recorder. Since I align with research that views children as agents (Mayall, 2002), I believe that as well as seeking parental consent regarding the children's participation in the study, it was important to seek consent from the children themselves. The British Educational Research Association's (BERA's) *Revised Ethical Guidelines for Educational Research* (2004) proposes that researchers must comply with Article 12 of the *United Nations Convention on the Rights of the Child,* which declares that children who are able to form their own views should 'be facilitated to give fully informed consent' (BERA, 2004, p. 7). Seeking the children's consent was important for addressing the adult-child power imbalance, by giving them a sense of control (Weithorn & Sherer, 1994, cited in Hill, 2005). Throughout the research process, children were asked if they were happy to participate in the data generation procedures. Thus, ethical considerations were taken into account throughout the period of fieldwork, and not just regarded as something to be taken care of at the start (Hill, 2005).

In order that they were fully aware of what data generation involved, every time the audio-recorder was used, I explained to the children what it was and how it worked. I

encouraged them to switch it on and off. I let them speak into it and played back what they said. I also allowed them to listen back to the recordings of the mind-mapping sessions and interviews, which they frequently asked to do. During an interview with Joanna and Beth at Oakdale, they demonstrated that they were aware of why I was using the audio-recorder:

JOANNA: *[Re audio-recorder]* And does that know what we say all the day?
NOLLAIG: It does, and at the very end, I'll stop it and…
BETH: So when you leave here, you'll still have our voices?
NOLLAIG: A-ha, I'll stop it and you'll be able to hear it back at the end.
(Joanna and Beth, Oakdale, interview)

I envisaged that allowing the children to familiarise themselves with the audio-recorder would ensure that they could give *'informed* consent…[and have] a sense of ownership of the project' (Robson, 2009, p. 4, emphasis added). I always asked for their permission to use it (and they always assented).

After gaining the children's assent to use the audio-recorder, at Oakdale, I wrote 'gym hall' in the centre of a large piece of paper we were sitting around. I explained that I wanted the children to tell me, one at a time, about things they did in the gym hall. When they made suggestions, I encouraged them to draw pictures of what they were talking about. I asked follow-on questions like: what does that mean? Who goes to the gym hall? What do they do there? I asked similar questions to the children at Cheery Faces and Sunnyland, but used different terminology; as Cheery Faces and Sunnyland did not have gym halls, I asked about 'the garden' or 'the play park', as this was where they did most of their 'physical education'.

I made other slight alterations to how I did group mind-mapping at Cheery Faces and Sunnyland. While one group at Oakdale had six children, the groups at Cheery Faces and Sunnyland were comprised of fewer children (three or four), as I felt that this would both be more manageable for me and give the children a better chance to have their voices heard. Another change I made was to assign each child a specific space in which to draw his or her

pictures. I did this because on numerous occasions during mind-mapping at Oakdale, children got upset when others drew on what they felt was their space. I also showed the children at Sunnyland and Cheery Faces photographs of the areas I was talking about in order to stimulate conversation.

At all three preschools, when children ran out of space on the mind-map, I offered them other sheets of paper to draw on. I loosely adapted Christensen and James's (2004) concept of 'the circle', which involved giving children individual sheets of paper inscribed with a large circle. Christensen and James told the children that the circle represented their week, and asked them to divide it up so that it illustrated their weekly activities. I gave the children at Oakdale, Cheery Faces and Sunnyland pages on which I had inscribed a large rectangular shape. I asked them to imagine that the rectangle represented the gym hall or garden (which were rectangular shaped) and to draw things that they did there. I encouraged them to tell me about their drawings. I also offered them colouring sheets related to 'physical education'.

Of the 11 mind-mapping sessions, the longest lasted over 17 minutes, while the shortest was eight-and-a-half minutes. The average length was about 12 minutes. After mind-mapping, it was important to have interviews with some children in order to follow up on comments made and generate richer data.

Interviews

The interviews were informal, and, similar to the mind-mapping sessions, featured visual resources including photographs and pictures to encourage conversation. Questions planned for children's initial interviews were similar to those asked during mind-mapping. They included: what do you do in the gym hall/garden/play park/playground? Who goes there? What do they do? Why do you go there? Follow-up questions in subsequent interviews

included: can you do whatever you like? Do the adults teach you things? Do you learn things in the gym hall/garden/play park/playground? What things are you good at? Are there things you are not so good at? Do you ever need help to do things? For children who participated in a small number of interviews, or whose interviews were very short, I did not get to ask all of these questions. However, with other children, I asked these and many more questions, including: do you ever do exercise at nursery? What do you do? What does 'exercise' mean? Is it important to do exercise? Do you ever do things at nursery to help you be healthy? What do you do? Is it important to do things to be healthy? Is it important to play?

The number of interviews children participated in varied. Some children left to go to primary school during the period of fieldwork and so only took part in one interview, while those who were present throughout 2010 generally participated in numerous interviews, though this varied. For instance, at Sunnyland, Oscar participated in one interview, while Abbie participated in eight. The main reason for this variation related to children's willingness to participate. In the cases of Oscar and Abbie, I asked Oscar on numerous occasions if he was interested in doing interviews, and he declined. Abbie, on the other hand, tended to come over every time I was in the nursery and ask if she could 'have a chat'!

Duration of interviews also varied from child to child. They generally lasted between ten and 20 minutes, but some were shorter and some longer. For instance, one interview with Elle at Oakdale lasted less than three minutes, as she said she wanted to stop, while one with Ian and Bill at Cheery Faces lasted almost 25 minutes. The variation in both duration and number of interviews children participated in meant that the quality of data generated varied from child to child. I envisaged that informal, conversational interviews, featuring a variety of resources and activities, would help generate high quality data.

In their initial interviews, I showed the children photographs and pictures of the places they engaged in 'physical education' and of equipment I had seen them using. As I had done

during mind-mapping, I sometimes asked children to draw on the rectangular templates and encouraged them to talk about their drawings. I felt that asking children to draw pictures may have been helpful for the same reasons as those suggested by Scott (2004) regarding visual aids. Anning and Ring (2004) write that 'making drawings gives young children opportunities to represent intricate personal narratives and use them to communicate with significant others in their lives' (p. 117). Although this statement refers to children's communication with those closest to them, I believed that drawing pictures may also have helped them to communicate better with me as a researcher.

I noted earlier how possible weaknesses of using drawings are that they only reflect values that can be represented graphically, and that they are limited by participants' skills (MacPhail & Kinchin, 2004). These issues were addressed in the current study because drawings were used in conjunction with interviews. The children were therefore not limited to expressing values that could only be represented graphically, and they had the opportunity to explain their pictures and so resolve the issue of designing what I as the researcher may have considered to be unclear pictures. Indeed it did not matter if children's pictures were unclear, as I did not intend to analyse them; since my analysis was concerned with the children's 'talk', drawings were used to encourage conversation and therefore generate interview data, rather than as a source of data in themselves.

As well as giving children opportunities to draw, I offered them colouring sheets related to 'physical education', physical activity and play. Again, this was to engage their attention and encourage conversation. Another activity, which also involved visual resources, that I did with the children was a picture card sorting activity. I did this towards the end of the period of fieldwork (November and December 2010), at each setting, as I had noticed when I asked the children about play that they appeared to find it difficult to explain what it was. I envisaged that showing them a variety of pictures and asking them to choose which ones

showed people playing and which ones showed people not playing would help them to elucidate what they understood by 'play'. The picture card sorting activity was loosely based on Howard's (2002) AASP, which was discussed earlier. Because of my focus on generating and analysing children's 'talk', this activity, like the drawings and colouring sheets, was used to generate interview data, rather than to be analysed in itself.

A final resource used in the interviews was a teddy bear, which I named Patch. This was again a resource I used towards the end of the period of fieldwork (November and December 2010), as I wanted to do something different with the children to stimulate their interest and ensure they continued to provide rich data. Taking a similar approach to Dahl and Aubrey (2005), I told the children that Patch had never been to nursery before and asked them to tell 'him' about, for example, things they did in the garden or if there were any rules out there 'he' should know about. I envisaged that, as well as engaging the children's interest, using Patch may have been helpful with regard to the adult-child power imbalance. I hoped that it would make the children feel less like they were facing questions from a 'powerful' adult and more like they were telling a 'newcomer' about their 'physical education'. By allowing the children to, for example, hold Patch if they wanted to, I hoped that they would feel more in control of and comfortable with the interview situation.

I will now outline potential strengths and weaknesses of group mind-mapping, interviews and the various resources used, based on my experiences.

Findings

Overall, the mind-mapping activity worked quite well, although some sessions were more successful than others. Some children spoke frequently, while others barely spoke at all. Some children just scribbled on the mind-map, while others were neat and careful with their drawings. Some children left the table after a brief time (I made it clear that it was fine to finish when they wanted to), while others stayed talking and drawing until staff members

called them to do something else. This variation is illustrated in the following extracts from my field-notes:

> The first group got on very well with the mind-mapping and all four of them were willing to engage with the activity and with the topic. Along with the mind-map, I showed them some of the laminated photographs that I intended to use in the follow-up conversations. I showed the first group three general photographs of the garden, and when Morgan spoke about playing basketball, I showed him the photo of the basketball net, which he was very interested in and talked a lot about. (Sunnyland field-notes, 25-June-2010)
>
> The children were a bit unfocused and – apart from Janusz – the mind-map only held their attention for a short amount of time. While completing the mind-map, they were inclined not to focus on the topic – the gym hall – and drew and spoke about a lot of random, unrelated notions (for example, apples and balloons). (Oakdale field-notes, 16-June-2010)

Most data generated during mind-mapping related to activities the children did and equipment they used, so it was not as rich as what was generated by some of the interviews. Many comments were similar to the following:

> I like playing on the climbing bars. (Matthew, Oakdale, mind-mapping)
>
> Running in the play park. (Amber, Cheery Faces, mind-mapping)
>
> Em…I like playing with the balls in the garden. (Oscar, Sunnyland, mind-mapping)

Thus, it was necessary to have follow-up interviews in order to generate richer data. A strength of group mind-mapping, however, is that it was an inclusive activity that helped me and the children get to know each other better. It helped me to decide which children to ask to participate in follow-up interviews, as I became aware of who was willing to sit and chat with me. Some children also made comments during mind-mapping that I was keen to follow up on. For instance, I was eager to have interviews with Russell and Ashleigh when they mentioned ‘exercise’:

> NOLLAIG: …do you ever do anything else in the gym hall?
>
> …
>
> RUSSELL: Em…we exercise our bodies.
> NOLLAIG: “We exercise our bodies”. … Who knows what ‘exercise’ means?
> ASHLEIGH: I know, I know.
> NOLLAIG: What about you, Ashleigh?

ASHLEIGH: It means we have to keep our body fit.
(Russell and Ashleigh, Oakdale, mind-mapping)

In an interview with Russell, I encouraged him to elaborate on what he meant by exercise:

NOLLAIG: Can you tell me about your space bubble [activity] that you do in the gym hall?
RUSSELL: Well, we run around and we make sure our bodies are healthy and fit.
NOLLAIG: Make sure your bodies are healthy and fit? Very good. And what does that mean?
RUSSELL: That means so that you can get fit.
NOLLAIG: And what does 'to get fit' mean?
RUSSELL: So that you get lots of exercise.
NOLLAIG: So you get lots of exercise – oh cool. And what does that mean? What does 'exercise' mean?
RUSSELL: Well, I don't know what it means.
NOLLAIG: Well, can you give me an example of an exercise?
RUSSELL: Yeah, well, you have to balance yourself.
(Russell, Oakdale, interview)

As interviews were usually conducted either individually or in pairs, I could ask the children more questions, and they had better opportunities to answer, as they were not interrupted or distracted in the same way as they sometimes were during mind-mapping.

During mind-mapping and interviews, children tended to choose to colour in far more frequently than to draw. Colouring sheets were so popular that on some occasions when I tried to use different resources, children wanted to know why I had not offered them the chance to colour in. This is illustrated in the following interview extract:

NOLLAIG: Is there anything in the gym hall that makes you happy?
ROSIE: Don't know.
NOLLAIG: You don't know? Can you think of one thing?
ROSIE: No, I have enough talking.
NOLLAIG: Do you? You have enough talking already? Do you want to finish up and go do something else?
ROSIE: No.
NOLLAIG: No? So do you want to stay here?
ROSIE: Me want a colouring in.
NOLLAIG: Would you like…will you…would you like to do a colouring in sheet?
ROSIE: Yeah.
NOLLAIG: Yeah? And would like to stay here talking to me doing your colouring in sheet?
ROSIE: Yeah.
NOLLAIG: Yeah. Okay, I'll get you out a colouring in sheet.

(Rosie, Oakdale, interview)

In this way, colouring sheets had both advantages and disadvantages. In most cases, they engaged the children's concentration, which meant that they stayed sitting with me and were not easily distracted or looking to finish interviews after a brief time. Children were generally willing to chat and answer questions as they were colouring. Images on the colouring sheets often stimulated discussion too, as illustrated by the following excerpt from an interview with Abbie and Jane at Sunnyland:

ABBIE: *[Re colouring sheet]* She's running and this is running.
NOLLAIG: Yeah, all those children are running. Jane, do you like running?
JANE: A-ha.
NOLLAIG: Where do you run?
JANE: Mmm…everywhere.
NOLLAIG: Everywhere? Do you run out in the garden?
[Jane nods]
NOLLAIG: Yeah? You're nodding your head. Can you tell me, why do you run?
ABBIE: 'Cause to…to get fun.
NOLLAIG: To get fun? Aww is running really fun?
ABBIE: Yeah.
NOLLAIG: Yeah? Excellent! And how does it make you feel?
ABBIE: Em…happy.
NOLLAIG: Happy? How does it make your body feel if you're running around?
ABBIE: *[Excitedly]* Em…fun!
NOLLAIG: *[Excitedly]* Fun! What do you think, Jane? How does running make you feel?
JANE: A bit happy, a lot happy.

(Abbie and Jane, Sunnyland, interview)

However, there were occasions when colouring in was a distraction for the children. The following interview extract illustrates what I mean by this:

NOLLAIG: Do you ever do things out in the garden to help you be healthy?
SHONA: Yeah.
NOLLAIG: Yeah? What sort of things would you do to be healthy?
[Silence for approximately three seconds]
NOLLAIG: Can you think of anything?
SHONA: *[Re her colouring sheet]* Look – this looks like a telescope.

(Shona, Sunnyland, interview)

There were occasions when other resources used, such as the photographs, similarly distracted children from answering questions, but in general, these visual resources were useful in engaging the children's attention and encouraging them to talk.

Drawing was an activity that, despite the literature advocating its use in research with children, did not always work very well in this study. There were occasions when it was useful, as sometimes children eagerly drew and talked about pictures related to 'physical education':

> This is the slide where someone climbs in the gym hall. (Nadia, Oakdale, mind-mapping)
> I'm going to draw the tractor. (Taylor, Cheery Faces, mind-mapping)
> I drawed balls. (Oscar, Sunnyland, mind-mapping)

However, children often chose to draw pictures that were completely unrelated to what I was asking them about:

> I am drawing a fairy godmother. (Taylor, Cheery Faces, mind-mapping)
> This is a magic door, a magic door. (Abbie, Sunnyland, mind-mapping)
> Look! Look at the dinosaur. (Jason, Oakdale, mind-mapping)

Thus, I found that drawing was an activity that sometimes engaged the children's imaginations in ways that were not helpful regarding generating data concerned with 'physical education'. As the colouring sheets and photographs were perhaps less abstract, the children tended not to engage with these resources in such imaginative ways, and therefore usually stayed more focused on what I was asking them about.

This was also the case with the picture card sorting activity, which was another resource I felt worked well. It allowed the children to elucidate what they considered to be play and non-play, something many of them struggled to do in previous interviews:

> NOLLAIG: Can anybody tell me, what does play mean?
> AIDAN: What?
> NOLLAIG: What do you do when you play? What does it mean? Can anyone tell me?
> AIDAN: No.
> ELEANOR: No, I don't know.
> BILL: Or me.

(Aidan, Eleanor and Bill, Cheery Faces, interview)

The following excerpt provides an example of how the picture cards helped the children overcome the difficulties of explaining what play meant to them:

NOLLAIG: Is there another picture where somebody is playing?
AMBER: *[Picking up the picture of a boy sitting at a desk]* That's not one.
NOLLAIG: You've picked one up and you're saying he's not playing, is it?
[Amber nods]
NOLLAIG: What's he doing?
AMBER: He's not playing.
NOLLAIG: All right. What do you think he might be doing instead?
AMBER: Em…he's sitting down at his desk.
NOLLAIG: Sitting down at his desk – so he's not playing?
AMBER: Yeah.
(Amber, Cheery Faces, interview)

The final resource used with the children was the teddy bear. While talking to Patch engaged the children's imaginations, they tended to stay focused on the questions 'he' asked, rather than constructing imaginative stories for him. Patch was very popular and the children were eager to answer 'his' questions, and thus provide data. I was glad I introduced Patch when I did as 'he' added a certain novelty to the interviews and reinvigorated the children's interest. The following interview extract is illustrative of how fond some of the children were of Patch:

ERIN: Can I give Patch a cuddle?
NOLLAIG: Yeah, give him a big cuddle.
[Erin gives Patch a big hug]
NOLLAIG: Aww that's a lovely cuddle, Erin. Thank you so much for chatting to him.
ERIN: Can you take Patch…can you take Patch to my house at North Road?
NOLLAIG: Would you like him to go to your house at North Road?
[Erin nods]
NOLLAIG: That's a lovely invitation – thank you very much, Erin.
(Erin, Oakdale, interview)

Since the children liked Patch so much, they were eager to chat to 'him'. The following excerpt shows how Ben and Dan keenly told Patch about the garden:

BEN: Um…um…Patch?
NOLLAIG: *[Facing Patch to Ben]* Yes?
BEN: Um…um…we…we run about in the garden.
NOLLAIG: *[Moving Patch as if he is running around]* Like this?
BEN: Yeah!
NOLLAIG: Running about – oh right. So is it important to run about out there, do you think?

DAN: Yeah, and we've got another garden.
BEN: It's not…it's not a running race – it's…it's just run around, run around and run, run, run!
NOLLAIG: Okay, and why do you do that?
BEN: 'Cause we…we…we just go…um…we play around running.
NOLLAIG: Okay. So it's good fun, is it?
BEN: Yeah, we…
DAN: Um…Patch?
BEN: We go on the…
DAN: *[To Patch]* Can I tell you something?
NOLLAIG: *[Facing Patch to Dan]* Yes.
DAN: We have another garden and there's trikes in another garden.
(Ben and Dan, Cheery Faces, interview)

Patch was generally a very useful resource; children were eager to talk to 'him' and answer 'his' questions, so using Patch helped generate data.

Conclusion

Group mind-mapping was an inclusive activity that provided a useful foundation for the interviews. Interviews were vital for generating richer data. Resources used during mind-mapping and interviews were generally successful in engaging children's interest and encouraging conversation. Colouring sheets and photographs usually held children's attention and stimulated conversation, but occasionally distracted them from answering questions. Children tended to choose to colour in, rather than draw. Drawings they did make were often unrelated to the themes of the interviews. The picture card sorting activity was successful in assisting children to talk about what 'play' meant to them. The teddy bear was very popular, and successful in that children were eager to answer 'his' questions.

I suggest that elements of the research approach taken, and methods and resources employed, may be transferable to other contexts, since many of the guidelines in the literature concerning interviewing young children also apply when interviewing older children and adults. As Hill (2005) asserts, 'in many ways the similarities between children and adults are greater than the differences' (p. 64).

References

Almqvist, L., Hellnäs, P., Stefansson, M. & Granlund, M. (2006) ‘‘I can play!’ Young children’s perceptions of health.’ *Pediatric Rehabilitation,* 9 (3), 275-284.

Anning, A. & Ring, K. (2004) *Making Sense of Children’s Drawings.* Maidenhead, Berkshire: Open University Press.

BERA (2004) *Revised Ethical Guidelines for Educational Research.* Available online at: http://www.bera.ac.uk/files/guidelines/ethica1.pdf (Accessed 12.40pm Wednesday 11th November 2009).

Brooker, L. (2001) ‘Interviewing children.’ In G. MacNaughton, S.A. Rolfe & I. Siraj-Blatchford (Eds.), *Doing Early Childhood Research: International Perspectives on Theory and Practice* (Page 162-177). Buckingham: Open University Press.

Christensen, P. & James, A. (2004) ‘Childhood diversity and commonality: some methodological insights.’ In P. Christensen & A. James (Eds.), *Research with Children: Perspectives and Practices* (Page 160-178). London: Falmer Press.

Clark, A., McQuail, S. & Moss, P. (2003) ‘Exploring the field of listening to and consulting with young children.’ Available online at: http://www.dcsf.gov.uk/research/data/uploadfiles/RR445.pdf (Accessed 2pm Friday 16th October 2009).

Coates, E. & Coates, A. (2006) ‘Young children talking and drawing.’ *International Journal of Early Years Education,* 14 (3), 221-241.

Cobb, C.L., Danby, S. & Farrell, A. (2005) ‘Governance of children’s everyday spaces.’ *Australian Journal of Early Childhood,* 30 (1), 14-20.

Dahl, S. & Aubrey, C. (2005) ‘Children’s views: what the children of Bright Eyes nursery think about the play and learning opportunities available in their setting.’ Available online at: http://www.ness.bbk.ac.uk/support/local-evaluation-findings/documents/1312.pdf (Accessed 4.50pm Saturday 13th November 2010).

Hill, M. (2005) ‘Ethical considerations in researching children’s experiences.’ In S. Greene & D. Hogan (Eds.), *Researching Children’s Experience: Approaches and Methods* (Page 61-86). London: SAGE Publications Ltd.

Howard, J. (2002) ‘Eliciting young children’s perceptions of play, work and learning using the activity apperception story procedure’. *Early Child Development and Care,* 172 (5), 489-502.

Howard, J., Jenvey, V. & Hill, C. (2006) ‘Children’s categorisation of play and learning based on social context’. *Early Child Development and Care,* 176 (3-4), 379-393.

Janzen, M.D. (2008) 'Where is the (postmodern) child in early childhood education research?' *Early Years,* 28 (3), 287-298.

Macdonald, D., Rodger, S., Abbott, R., Ziviani, J. & Jones, J. (2005) ''I could do with a pair of wings': perspectives on physical activity, bodies and health from young Australian children.' *Sport, Education and Society,* 10 (2), 195-209.

MacDougall, C., Schiller, W. & Darbyshire, P. (2004) 'We have to live in the future.' *Early Child Development and Care,* 174 (4), 369-387.

MacPhail, A. & Kinchin, G. (2004) 'The use of drawings as an evaluative tool: students' experiences of sport education.' *Physical Education and Sport Pedagogy,* 9 (1), 87-108.

Mauthner, M. (1997) 'Methodological aspects of collecting data from children: lessons from three research projects.' *Children & Society,* 11, 16-28.

Mayall, B. (2002) *Towards a Sociology for Childhood: Thinking from Children's Lives.* Buckingham: Open University Press.

Mooney, A. & Blackburn, T. (2003) 'Children's views on childcare quality.' Available online at: http://www.dcsf.gov.uk/research/data/uploadfiles/RR482.pdf (Accessed 1.50pm Tuesday 20th October 2009).

Robson, S. (2009) 'Producing and using video data: ethical questions and practical consequences in research with young children.' Paper read at the British Educational Research Association (BERA) conference, Manchester, September 2nd – 5th.

Scott, J. (2004) 'Children as respondents: the challenge for quantitative methods.' In P. Christensen & A. James (Eds.), *Research with Children: Perspectives and Practices* (Page 98-119). London: Falmer Press.

Sorin, R. (2005) 'Changing images of childhood – reconceptualising early childhood practice.' *International Journal of Transitions in Childhood,* 1, 12-21.

Westcott, H.L. & Littleton, K.S. (2005) 'Exploring meaning in interviews with children.' In S. Greene & D. Hogan (Eds.), *Researching Children's Experience: Approaches and Methods* (Page 141-157). London: SAGE Publications Ltd.

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Using Technologies to Support in Physical Education lessons - Primary Education Trainee Teachers Views.

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Abstract

Background: This short research paper explores how final year BA Primary Education trainee student teachers view technologies to support in Physical Education lessons. Their first impressions were that technology and Physical Education appeared to be conflicting approaches. This was supported by the National Curriculum for England (DfEE 1999) which suggested teachers should provide pupils with opportunities to apply and develop their technological capability in all subjects, except Physical Education.

Purpose: According to Woods (2010) technology appears to undermine Physical Education as it is considered to contribute to the 'couch-potato culture', whereas Physical Education aims to address this issue among children and young people. However, Physical Education is one subject area within where pupils cannot see tangible evidence of their progress which may potentially lead to a lack of interest or enjoyment. Through using technologies to support within Physical Education, new exciting opportunities can occur to discover and acquire new talents (Dhanda, 2007) and for engagement in learning and understanding their own and others body movements (Bailey, 2001). BECTA (2005) completed a survey and discovered many teachers are reluctant to use technology with Physical Education, as they feel that Physical Education should be about 'doing' as time is so limited that practical activity should be a priority.

Participants and Setting: The paper examines whether the student teachers also have this view to technologies supporting within Physical Education. Within the case study trainee teachers (N = 44, 19 = specialists in ICT and 25 = specialists in Physical Education) analysed the

technologies experienced within their professional school placements. They researched and devised a bank of approaches to using technologies within Physical Education lessons.

Conclusion: The paper provides a more detailed exploration of the experiences and innovative resources that could be used within a primary school Physical Education lesson to motivate, engage the children.

Keywords: Physical Education, ICT, Primary Education Trainees, Use of Technologies

Introduction

The National Curriculum for England (DfEE 1999) suggests teachers should provide pupils with opportunities to apply and develop their technological capability in all subjects, except Physical Education, but why should these be limited or not expected in Physical Education lessons? This study examines Primary Education student trainee teachers' views of the use of technologies to support in Physical Education lessons and explores the ways in which these student trainee teachers would use technologies to support their own Physical Education lessons. As Bailey (2001) suggests that technologies can enhance and open up new opportunities for learning and teaching, which DfES (2004) agreed with and extended the idea that technologies can be used as tools to enhance subjects and add extra value to teaching and learning.

BECTA (2005) carried out a survey and discovered that many teachers are reluctant to use technologies within Physical Education lessons. They felt that Physical Education lessons should be more about 'doing' as time for this subject within the primary school setting is so limited that practical activity should be a priority. Even though they found that children are unable to observe their work in Physical Education lesson. BECTA (2005) therefore argued that technologies could be used to analyse performance and have positive outcomes in the teaching and learning of Physical Education. As DfES (2004) suggested that using technologies in Physical Education lessons is important as it can provide good opportunity for pupils to review, refine, redraft and modify their work that is in progress.

Six years on, from BECTA's 2005 survey, the student trainee teachers within this study have grown up in a world that has never been without the internet, nor mobile phones, they commonly communicate through social networking, are taught through virtual classrooms and who may be regarded as being digitally literate (Nehrling (2009)). It was therefore interesting to examine their views as to how they could use different technologies to support in Physical Education lessons to see if they had the same view as the teachers within the BECTA (2005) survey. The student trainee teachers were all in their third year at University and were either Physical Education specialists or ICT specialists, they were asked to reflect on activities they had seen being currently used in primary school setting and to devise activities that they viewed as way in which technologies could further support in Physical Education lessons. This short paper reflects upon the types of diverse activities that these students devised and their current experiences within primary school setting.

Background: Physical Education and Use of Technologies

The use of technologies and Physical Education lessons seems to at first glance to be two conflicting areas. Howells (2011) suggests that Physical Education should encompass individual physical development, health and wellbeing and has a crucial role in primary school education. Green (2002) also emphasised the importance of Physical Education and suggested it is 'the most suitable 'vehicle' for the encouragement of a lifestyle which is both healthy and physically active. Bailey (2001) agreed and asserted that Physical Education can contribute to children's physical, mental and emotional wellbeing. Additionally, Green (2008) states, that Physical Education lessons play an important role in promoting a healthy lifestyle to children. However Woods (2010) suggests that technologies appears to undermine Physical Education as it is considered to contribute to the 'coach-potato culture', whereas Physical Education aims to address this issue among children and young people. Physical activity, which is often, (though not entirely) or more often assumed is, to be addressed through Physical Education lessons in school. According to the World Health Organisation (WHO) Europe (2006) "is a fundamental means of improving physical and mental health," (p.ix). Yet

over the past century, for many people, physical activity levels have decreased due to changes in lifestyle such as modern technology.

People use cars to drive more and further to work, dropping children off at school on the way to increasingly sedentary jobs. Other advances in modern technology mean that the "simplest tasks are becoming mechanised and people do not need to use as much energy to survive" (WHO, 2007 (no page number)). These factors are contributing to more sedate and sedentary lifestyles. This change in daily physical activity levels has had dramatic effects on individual health and wellbeing, with the WHO (2007) estimating nearly 600,000 deaths per year in the European Region being associated with physical inactivity. However Oliver et al (2007) were keen to identify that inactivity is not just a decrease in physical activity, but behaviour associated with unhealthy activities such as increased consumption of fatty foods, which the WHO Europe (2006) also acknowledge. In addition to the decrease in physical activity an increase in unhealthy diets has contributed, according to England's Department of Health (2005), to "rapid increases in obesity in both adults and children with 22% of men and 23% of women in England now obese" (p.6). These lifestyle changes are becoming an accepted part of life in some quarters.

In a recent podcast (BBC radio 5, 2009) it was suggested that Britain is becoming lazy. In a poll they conducted of 2000 adults, a third of the respondents suggested that they were "too lazy to run to catch a bus, over half will not walk up two flights of stairs to reach their office" (no page number, audio track), 75% admitted they did not get enough exercise and a third of respondents would rather watch a programme on the TV if the remote was broken than get up and change the channel on the TV. It was also suggested within the podcast that the UK Government is investing £75 million in England to counter obesity levels over the next 3 years, which is vital to ensure that children do not develop habits of sedentary behaviour or physical inactivity. Nigg (2003) suggests that "technology has contributed to a secular decline in physical activity", however he also argues that though it is currently untested "technology may have a beneficial impact on physical activity adoption and maintenance in the future" (p.57). Consequently it could also be claimed that technology is beginning to encourage people to be aware of their inactivity, through the introduction of high tech products that enable people to be physically active within their own home. This is supported by research by Guo, et

al (2010) who suggest, that when children are given something 'new' to use, their instinct is to want to play with it and experiment with its functions. Therefore the use of new technologies could enhance activity, but there is a need for this potential enhancement to be longitudinally researched to consider how physical activity is adopted and maintained in the children's life long future (Nigg, 2003).

However, since Nigg's (2003) article, games have been developed to incorporate, motivate and increase physical activity levels e.g. the Wii Fit, My Fitness Coach, Kinet Your Shape. This select range of products allow for a much more interactive method of physical activity rather than just using traditional fitness videos, which all too soon tend to languish in a cupboard. The Wii Fit Plus, now also includes physical activity measurements tools of METs, which is defined as the "energy cost of an activity" (Sports Coach 1997, no page number) and calorie counts, related to the activities performed. It explains to the user that MET is a measurement of physical activity and the games have different activities to complete that have a different METs rating, so this may be raising awareness and promoting the amount of physical activity that is targeted per day. A third of the games are designed to use energy expenditure that is the equivalent to moderate intensity exercise (Smith, 2009) and potentially they could be used with primary school children to help them lose weight and be more physically active (Khan 2008). For example one school, in Kent, in the South East of England, (where this study is based) has recently starting using the Wii Fit game within their breakfast club to educate children about physical activity and to provide opportunities for physical activity to take place. The Wii Fit Plus game has been endorsed (Wallop 2009) by the Department of Health, however it is noted that the Wii Fit manufacturer, Nintendo sponsors the Department of Health's Change for Life programme. It may be the case that further research is needed to assess whether these products actually increase physical activity, how this may differ for age, gender and social-economic status and if they are used consistently and regularly.

Foley and Maddison (2010) have reviewed and "assessed active video games as a means of increasing energy expenditure and physical activity behaviour in children" (p.7). They found that active video games elicited greater energy expenditure compared to non active video games, however the physical activity intensity level was found to be only between mild to moderate, not moderate to vigorous, which is recommended by UK (previous) Government (DofH 2005) and WHO (2010).

They suggest that there is the potential of these games to aid and develop physical activity levels of children, but as suggested previously further larger studies are required to examine long term benefits for children. However in 2006 the use of video games was seen as a very positive way to increase physical activity of children. Into the curriculum of all 765 public schools in the state of West Virginia, America, USA a routine was introduced of using active dance mat video games, in which "players step on pressure sensitive pads in the order dictated by on screen arrows" (Ashcroft and Snow 2008, p.53). A study from West Virginia University found that was a healthy way to increase physical activity levels of children. This was followed in 2007 by California Governor Arnold Schwarzenegger supporting the introduction of the home version of Dance Dance Revolution (DDR) into all his schools in California, and into State Universities as a Physical Education credit option (Ashcroft and Snow 2008) showing how highly this particular video game and modern technology were valued as a key opportunity to increase physical activity levels of children in school and at University. Combining the use of technologies and Physical Education lessons can help children to recognise the importance of their own and others participation, it will also allow groups to recognise if they have put their learnt skills in practice. Bailey (2001) states many benefits would not be available without the use of technologies. As Physical Education is the one subject, where pupils can not necessarily see tangible evidence of their progress, without the use of technologies, which may lead to a lack of interest. Using technologies alongside Physical Education, such as the Wii Fit and Dance Mats as explained previously can help to address this problem as pupils can use media to track their developments and improvements.

Esliger (2010) also examined the impact of modern technology on children by examining the differences of physical activity for children aged between 8 and 13 years old for a period of 7 consecutive days with the focus on what physical activity happened outside school, through the use of Actigraph accelerometers. (Accelerometers "when applied to the measurement of physical activity, an accelerometer can assess the magnitude and total volume of movement as a function of time" (Cliff et al, 2009 p.559)). The children involved in the comparison study included those who did not have access to modern technology such as those in rural Saskatchewan families and those children who are from the Old Order Amish, or Mennonite families, who as a culture choose not to access modern

technology. They found that the children from the Old Order Amish and Mennonite families were more sedentary and were 44% less active than those children who have access to modern technology. This is a surprising result, compared to previous research, suggesting that modern technology has a positive factor on children's physical activity, this links to the suggested potential of such products as the Wii Fit Plus. The downside to the advantages of these new technology related activities may be the poorer socio-economic classes that would most benefit may have least access to them.

In a world full of modern technology, primary school children (alongside the student trainee teachers) will have never known a world without a mobile phone nor an i-pod. Many schools now use for example Nintendo DSi to promote learning (in Mathematics in particular) and they use i-pods to enhance listening and communication skills. Bonwell and Eison (1991) suggested that strategies that promote active learning should be used in the classroom, as it allows the pupils to do things and to think about what they are doing. Horowitz (2004) agrees with Bonwell and Eison's previous (1991) research and suggested that interactive processes increase children's attentiveness. As it is important to ensure children stay focused within the classroom settings however Guo, et al (2010) highlight that within the lesson that not only the pupils need to be familiar with the technology being used, but also the class teacher to be sufficiently 'skilled' to ensure that any technical problems can be quickly and effectively dealt with. Therefore it is important to examine not only the new generation of teachers but also what current practice is occurring within primary schools today. Do final year student trainee teachers and primary schools feel familiar and sufficiently skilled to ensure that they are able to enhance lessons?

Ofsted reported on the importance of ICT (2005/8) and stated that ICT used within schools was seen to raise pupils' confidence and improve their attitudes to learning, however it also reported that progress in using ICT to improve learning in other curriculum subjects was often limited. This is echoed by the National Curriculum (1999) which suggests that technological opportunities should be provided for all subjects expect Physical Education. Kennewell et al (2008) suggest that, 'what is required is an understanding of the ICT potential of situations,' (2000 p18) and once this potential has been identified, it is almost necessary to incorporate ICT with Physical Education in certain lessons. For example how can a child self assess, or improve and evaluate their own performance, or as

suggested as a key skill within the National Curriculum "to improve the quality and control of their own work" (DfEE 1999)? How can this be done without using visual methodology such as technologies to compare their movement and skills? BECTA (2009) suggest and support the use of less subject specific hardware such as video cameras to provide pupils with the opportunity to watch back their performances and analyse and self assess their work, this would then achieve the Physical Education National Curriculum goals. This view is also supported by Ofsted (2009) who state that a Physical Education lesson which was identified as 'good' consisted of the children using observation, evaluation and feedback to improve their work. The use of peer and self assessment is also identified by Black and William (1998) as a key feature of formative assessment to support children in their learning. Peer evaluation has been proven to be a worthwhile way of using ICT in assessment. Although time, resources and skills are needed to ensure that the children are able to assess movement effectively and efficiently when using video cameras.

Cook and Finlayson (1999) and Loveless (2003) agree with each other and suggest that not only should technology be integrated into the teaching of other subjects, but the learning opportunities provided through the use of technology to support learning allows children to think and learn in different ways. These views are also shared by Williams and Easingwood (2007) who claim that when technology becomes an integral part of the daily activities within schools, as it is outside of school, children are given opportunities to enhance their learning of both subject area and their ICT skills. Leask and Meadows (2000 p1) also suggests that technology will enhance the lifelong learning and well being of the children as ICT is important in everyday life, since computers and associated technologies are increasingly necessary in all businesses and commercial concerns.

To state that technologies can enhance and therefore be of benefit to a Physical Education lesson however is not sufficient. As recently as 2009, Ofsted highlighted that ICT was still not even being effectively exploited in the schools that they visited within a small scale research study. Although these finding could be somewhat tenuous, due to the scale of the study, and potential issues with generalisation in terms of socio-economic backgrounds, Ofsted found that only 1 in 10 schools were using it in schools or as a means of assessment. Issues which specifically hindered its implementation into Physical Education included severe time restraints, lack of training and

difficulties with the use of hardware and software (Thomas and Stratton 2006), which meant that technology is often then, not used. In contrast however, Thomas and Stratton (2006) also identified that teachers view ICT as a helpful tool in assisting the teaching of Physical Education and suggest that this is being demonstrated by an increase in the use of ICT within Physical Education lessons. When Prior and Hall (2004) investigated the use of ICT across the curriculum, they found that although its use within Physical Education is increasing, there is still little use of it in primary schools. Thomas and Stratton (2006) suggest that one reason for this could be a lack of training for teachers and equipment within schools, another reason why it is important to investigate the current use of technologies is this view in 2011 still the same as in 2004. Lavin (2008) however argues that it is imperative that ICT be included in Physical Education at Key Stage 2 due to the experiences these children already have not only across the curriculum but also outside of school.

Higgins and Packard (2004) suggest various ways in which Physical Education and ICT could be used however some of the ideas they suggested were not necessarily developing the children in Physical Education through the addition of ICT. In fact through using ICT, children were unable to develop their thinking skills because of the inclusion of computers and technology. They do however go on to say that as teachers it is our duty to analyse whether the ICT activity is necessary highlighting that we should use ICT only when it is, '...of value in helping to demonstrate an idea, illustrate a concept to encourage pupils' (Higgins and Packard, 2004, p126). With this multitude of differences of opinion as to whether technologies should be used and if they should how they are used within a primary setting, provided the researchers with the context to examine further, as within the Teacher Education setting, the researchers actively promote how technologies can be used and how technologies can enhance such subjects as Physical Education, but it was unknown to what extent this was being done within the local area and by the student trainee teachers.

Research questions

The purpose of this research was to explore the student trainee Primary Education teachers' views of using technologies within Physical Education lessons

The following research questions are addressed in the study:

1) What technologies are currently being used within primary school setting to support Physical Education lessons?
2) What innovative technological resources could be used to support Physical Education lessons to motivate and engage children?

Method

Participants

44 student trainee teachers (9 males, 35 females, 25 Physical Education specialists, 19 ICT specialists) aged between 20 and 24 years participated in this mixed methodology research (case study, and action research). The student trainee teachers all volunteered from two different specialist research module classes, Physical Education and ICT. The student trainee teachers were all from the same University and had all completed 3 Primary Education placements within the South East of England in schools which followed the National Curriculum, with the focus of the research upon the last block placement that the student trainee teachers had completed. These specialist research module classes were chosen to investigate the use of technologies within Physical Education, as a specialist teacher can be considered crucial in ensuring that the quality of experience for the primary aged children is as high as possible. Price (2008) suggests a specialist can model good practice. Carney and Howells (2008) echo this view suggesting that a specialist is needed to understand how children work by having appropriate pedagogical as well as specific subject knowledge. Ethical consent was gained from the participants prior to starting the research.

Methodology

The research approach used was an action research style case study research. This approach is supported by Greig et al (2007) who suggest that research that involves humans needs to be seen from as many different directions or angles as possible as humans are very complex. This research "searches for the truth" (Cohen et al 2007, p.5) and seeks to explore, enquire and investigate the current use of technologies to support Physical Education.

The case study approach was used as the participants were all from the same degree programme, at the same University, to "proved detailed information" (Thomas et al, 2005, p.19). Silverman (2006) supports this approach as it allows for a "deeper understanding of a social phenomena" (p.56) such as the current use of primary school practice from the viewpoint of the trainee teachers, who will be the new generation of primary school teachers from September 2011. An action research, style of research was used which McNiff (2002) defined as "a way of research your own learning" this is important in particular for the researchers as teacher educators, to ensure they are knowledgeable about current practice (alongside student trainee teachers). Teaching itself is a reflective and reflexive profession (Browne and Haylock, 2004) by looking at the practice that is occurring within the primary school setting provided insights, analysis and potential technological resources to motivate and engage the children within the Physical Education lesson. Pearce (2010) adds that action research "is often carried out by practioners within their own working contexts" (p.503) which she regarded as a very "supportive form of enquiry" (p503) and therefore is highly suitable for both final year students trainee teachers and the researchers involved in this study. Radford (2006) suggested that schools are "complex and chaotic" (p.182) but he valued the importance of evaluating the school and the classroom. Therefore to be able to know current use of technologies to support Physical Education, the current practice needed to be explored, by using the student trainee teachers, allowed for a more varied analysis of professional practice, across the whole of the Kent, South East of England. As Harrington and Donnelly (2008) state that "before any strategies….can be employed" the actual practice that is occurring needs to be known. From this knowledge the trainee teachers would also examine the innovative resources that could be used within a primary school Physical Education lesson to motivate and engage the children.

The results of the study would be disseminated and presented by the students within their Physical Education and ICT research groups to support the development of not only their own practice but other student teachers practice. Radford (2006) described this process as developing towards more effective and better practice. This dissemination would also increase awareness of how the use of technologies is currently supporting Physical Educations across the South East of England. Increasing awareness, Radford (2006) suggested was an important part of action research.

Data analysis and results

What technologies are currently used in primary school to support Physical Education?

Figure 1 shows the total percentage of each type of technologies that are used in primary school currently found by final year student trainee teachers within the Kent (South East of England) area to support Physical Education lessons. They found the most popular use of technologies was the use of digital cameras with 50% of schools using these to support Physical Education lessons. It was reported by the student trainee teachers that digital cameras were used in the majority of cases to record performances, movement and used to help children with self evaluation of their own movements and skills, linking to National Curriculum (DfES 1999). These techniques and technologies were also often used just with juniors and not with infant aged children. The second most popular use of technologies was the use of digital videos recorders. 35% of schools that the student trainee teachers had been in used digital videos recorders to record a series of performances or movements to help the children self evaluate a whole skill or particular sequences of movements in games, gymnastics and in dance, again with particular links to National Curriculum (DfES 1999). Again they found that this was only used with junior children. The third use of technologies was that of physical activity measurement tools. 10% of schools that the student trainee teachers had had experience of teaching within, used mainly pedometers to analyse the physical activity levels of the children within athletics or health related exercise sessions, this was linked to the schools physical activity policies. The final use of technologies that were recorded by the student trainee teachers was

that of stop watches. 5% of schools used stop watches to record speed of events or to record length of activities.

What innovative technological resources did the trainee teachers suggest to support Physical Education?

Digital Video Recording

The types and modes of technologies used and suggested by the student trainee teachers were very similar to those currently used within school (see figure 2). These results were surprising as it was expected by the researchers that the student trainee teachers would use a wider variety of resources. Yet this could be explained by Thomas and Stratton (2006) as a lack of equipment available in schools, so the student trainee teachers used what was available in the schools rather than introducing new equipment, which was potentially their own equipment. However how the student trainee teachers were suggesting the current technologies were to be used were new and innovative, a sample of the ways in which they were used are illustrated here in the findings.

Interestingly though from figure 2 it is possible to see that the student trainee teachers did not regard nor suggest stop watches to be a technology used in Physical Education, this could be due to potentially them considering them a measurement tool within Physical Education rather than an ICT tool to support Physical Education. The student trainee teachers suggested 70% of the resources should be digital video recording. They suggested a variety of different methods to use the digital video recording, including for tracking participation and involvement within the different activity areas, which could also be used for assessment of the children's ability. Haskins et al (2006) stressed the importance of children having an active lifestyle as obesity levels are increasing and Lawler (2007) explained the importance of movement and therefore the student trainee teachers suggested that the children could create multimedia films and productions to work collaboratively. As BECTA (2009) state that children like to learn in groups especially with friends and to undertake practical activities, such as making their own exercise video and then share this with the class to complete each day. This would allow the children to apply ICT skills in Physical Education and physical activity, to ultimately understand the importance of exercise and an active lifestyle. This activity would also link to the outcome of 'Being Healthy' within the Every Child Matters agenda (DfES 2003).

An alternative use of digital video recording that was suggested was that of evaluate specific activity area skills linking to National Curriculum (DfEE 1999) of the children's own and others performance, to be able to evaluate and analyse to ultimately improve. The student trainee teachers also suggested using the digital video recording to promote and advertise the importance of physical activity and encourage others to attend after school clubs. This idea is supported by BECTA (2009) who suggested that using technologies within Physical Education could help develop ownership of the children's work and where to take their own work this can be reflected in both the analysis of their performance and advertisements. Another use of digital video recording was the creating of multimedia films in conjunction with other curriculum areas, to emphasise the importance of movement and how this is important for the brain. Lawler (2007) and Green (2008) both suggest that Physical Education can be used to promote health and wellbeing of children.

Digital cameras

Digital cameras were suggested as an innovative resource by the student trainee teachers to be used in such a way as to aid in the development of space in particular of early years children. This is a particular area that the student trainee teachers identified as missing currently from practice within primary schools. They also felt that the use of digital cameras was suitable for all ages of children to allow them to analyse and evaluate performance not only of themselves, but also of others and therefore they felt confident in using them with the infant aged children. This could also help aid the children in how to choose and apply skills and tactics (DfEE 1999), through visually seeing themselves and others in different situations. The role the student trainee teacher gave themselves was more of a facilitator, in asking the children key questions as supported by the work of Mosston and Ashworth (2002) e.g. who is involved? Who has the ball? Who was in space? This would help also with communication, language and literacy skills to help with the children's overall physical literacy (Whitehead 2010). This kind of benefit would not be available without the use of technologies (Bailey 2001). The student trainee teachers however did identify the need for the classroom teacher to be skilled enough to be able to analyse the photographs correctly to ensure they were able to suggest improvements the class and individual children could make, which might put some teachers off as

Thomas and Stratton (2006) suggested due to lack of confidence in training. However the student trainee teachers felt confident that they would not have difficult in this type of use.

Physical Activity Measuring Tools

The main physical activity measuring tools suggested by the student trainee teachers was the use of pedometers. Pedometers have been suggested by BECTA (2009) as a good way of integrating use of technologies within Physical Education lesson. However the focus for the student trainee teachers was on tracking participation and involvement in particular within striking and fielding games where there is the potential for children to be less active, due to the nature of the activity. The student trainee teachers wanted to use the pedometers as more of an awareness raising exercise for the children to begin to understand and to take responsibility of their own physical activity levels, which links to schools physical activity policies. A target system could be used to improve a child's motivation to participate, providing them with a sense of achievement (Woods, 1998). This would also encourage discussions, and monitoring over a series of lessons and to use the pedometers to increase physical activity within the Physical Education lesson to improve overall wellbeing. As Howells (2011) suggest that Physical Education lessons could and should encompass individual physical development, health and wellbeing, which the use of pedometers in this way could link to individual physical wellbeing. The student trainee teachers suggested that pedometers are easy to use and are not an expensive measuring tool compared to other physical activity measuring tools and could easily be purchased through current supermarket active scheme enabling all children to be included and for teachers to be able to access this tool with ease.

Discussion

Initially the student trainee teachers felt that technology and Physical Education appeared to be conflicting approaches. As supported by the National Curriculum for England (DfEE 1999) which

suggested teachers should provide pupils with opportunities to apply and develop their technological capability in all subjects, except Physical Education. This view was also supported by Woods (2010) in that ICT may appear to undermine Physical Education as it is considered to be contributing to the 'coach potato society', with the increase of modern technology to help improve life, to be less energy consuming, it seems to be decreasing physical activity (WHO 2007). However this case study action research has suggested that the innovative ideas and current practice within primary schools of technologies to support within Physical Education lessons can have the potential to enhance and motivate young children (Bailey 2001).

It could be argued that the results the students trainee teachers found for using technologies within only junior aged children could be as suggested by BECTA (2005) due to teachers being reluctant to use technology with Physical Education, as they felt that Physical Education should be able doing as time is so limited that practical activity should be a priority or is it due to as Radford (2006) suggested to schools being "complex and chaotic" (p.182). However the student trainee teachers suggested activities that used technologies for all ages and some that focused in particular in development of early year children. Further research is required to examine the opinions of the class teachers currently in school, as to why technologies are not used with infant aged children and to evaluate what they believe is the importance of using technologies and how these could be used to support Physical Education lessons in the future.

It is acknowledged that this case study action research has limitations in the results as it did not ask teachers within school why they did not use technologies within Physical Education for infant aged children, nor did it question why the student trainee teachers designed the innovative resources that they did suggest. The study was able to provide as Silverman (2006) suggested a deeper understanding of the social phenomena of what is happening currently within primary practice within South East England, and search for truth (Cohen et al 2007) within a real life context (Yin 1994). Even though the results produced more questions, it was able to seek and explore and to enquire what innovative uses of

technologies the student trainee teachers would like to use to support Physical Education lessons. It has allowed the researchers to also examine their "own learning" (McNiff, 2002), to reflect upon their own practice as Browne and Haylock (2004) suggested and to consider broadening and enhancing how the use of technologies is taught at a teacher education level, to using technologies that are beyond those currently used in practice. However as Bell (2005) critiques the use of case studies and questions "the value of the study of events" (p.11) as this only allows for a snapshot of information. Yet Thomas et al (2005, p.292) argue against Bell (2005) and suggest that "one of the advantages of a case study is that of formulating new ideas". It could be suggested that this case study action research has indeed formulated new ideas and actively engaged the student trainee teachers into being more aware and considering how they would motivate and engage the children through the use of technologies in Physical Education lessons. It is suggested for further research that a longer longitudinal case study could be used to investigate how technologies could be used across different activity Physical Education areas.

Conclusion

In conclusion, as Thomas and Stratton (2006) suggested that the use of technologies within a Physical Education lesson can have significant impact on motivation and ultimately on enjoyment. In particular using a variety of different technologies would ensure that the children found them interesting and become inquisitive to use, enhancing the activity (Guo et al 2010). The student trainee teachers were able to identify the importance of using technologies within Physical Education and highlighted the 4 main different methods that are currently used within school within the South East of England. It could be argued that the student trainee teachers themselves were able to devise new exciting opportunities, for the use of technologies to support within Physical Education, as supported by Dhanda (2007). Their

innovative resources allowed them to devise resources that could as Bailey (2001) suggested to open up new opportunities for learning and teaching and to add value to teaching and learning as supported by DfES (2004). However it could be argued that many of their suggestions were developments upon the previous use of technologies that they had experienced within their school placements, rather than totally new ideas and resources, however as Thomas and Stratton (2006) suggested this could be due to lack of equipment available in school. This confidence in the enhancement of previous technologies and ideas could be potentially explained as this group of student trainee teachers, are from a generation who may be regarded as digitally literate (Nehrling, 2009). Therefore they do not foresee using such technologies as a hindrance, but more as an enhancement for the children's learning and their own personally teaching.

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References

Ashcroft B. and Snow J. (2008) (p.53) Arcade Mania! The Turbo-Charged World of Japan's Game Centres. Kodamsha, Toyoko.

Bailey R. (2001) Teaching Physical Education: A Handbook for Primary and Secondary School Teachers. Routledge: London.

BBC radio 5 (2009) Britain becoming lazy. http://www.bbc.co.uk/podcasts/series/5lnpi/ accessed online December 2009, last updated December 2009.

BECTA (2005) The Becta review, evidence on the progress of ICT in education. http://dera.ioe.ac.uk/1428/1/becta_2005_bectareview_report.pdf accessed online January 2010, last updated unknown.

BECTA (2009) Harnessing Technology Review 2009. The role of technology in education and skills. http://dera.ioe.ac.uk/1422/1/becta_2009_htreview_report.pdf accessed online January 2010, last updated unknown.

Bell J. (2005) *Doing your Research Project. A guide for first-time researchers in education, health and social science.* 4th edition Open University Press. McGraw-Hill Education.

Black P.J. and William D. (1998) Inside the Black Box: Raising Standards Though Classroom Assessment. King's College London.

Bonwell, C.; Eison, J. (1991). *Active Learning: Creating Excitement in the Classroom AEHE-ERIC Higher Education Report No. 1*. Washington, D.C.: Jossey-Bass. ISBN 1-87838-00-87.

Browne A. and Haylock D. (2004) *Professional Issues for Primary Teachers,* Sage: London.

Carney P. and Howells K. (2008) The primary physical education specialist. *Primary Physical Education Matters*. Autumn Vol 3 (3) p.iii – iv.

Cliff D.P., Reilly J.J., Okely A.D. (2009) Methodological considerations in using accelerometers to assess habitual physical activity in children aged 0 – 5 years. *Journal of Science and Medicine in Sport* 12 p.557 – 567.

Cohen L., Manion L. and Morrison K. (2007) Research Methods in Education 6th edition. Routledge; Taylor and Francis Group. London.

Cook, D. & Finlayson, H. (1999) *Interactive Children, Communicative Teaching: ICT and classroom teaching*, OUP, Buckingham

DfEE – Department of Education and Employment (1999) The National Curriculum. Handbook for primary teachers in England. Key stages 1 and 2. Qualifications and Curriculum Authority. London.

DfES – Department for Education and Skills (2003) Every Child Matters: Change for Children. Accessed online Sept 2007, last updated December 2007 http://www.everychildmatters.gov.uk/publications/
Online accessed 21st December 2007

DfES Using e-learning and technology – QIA Excellence Gateway accessed online, website no longer available.

Department of Health (2005) Choosing Activity: a physical activity action plan (p.6). Retrieved October 26, 2009 from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4105710.pdf

Dhanda, P (2007) Creativity and the Curriculum, website no longer available.

Esliger D.W., Tremblay M.S., Copeland J.L., Barnes J.D., Huntingdon G.E., Bassest D.R. Jr (2010) Physical Activity Profile of Old Order Amish, Mennonite and Contemporary Children. *Medicine and Science in Sports and Exercsie.* 42 (2) p.286 – 288.

Foley L. and Maddison R. (2010) Use of Active Video Games to Increase Physical Activity in Children: A (Virtual) Reality? (p.7) *Pediatric Exercise Science* 22 p. 7 – 20.

Green K (2002) Physical Education and "the Couch Potato Society" – Part one. *European Journal of Physical Education* 7 p.95 - 107.

Green K (2008) Understanding Physical Education. Sage Publications Ltd. London.

Greig A, Taylor J and MacKay T (2007) Doing Research with Children (2nd edition). Sage: London.

Guo S. Zhang H. and Zhai R. (2010) A potential way of enquiry into human curiosity. *British Journal of Educational Technology* 41 (3) p.E48 – E52 (5).

Harrington, D.M. and Donnelly, A.E. (2008) *Physical Activity Levels of Adolescent Females Using Accelerometry: Prelimary Findings.* Engaging Young People in Physical Activity and Sport. Proceedings of Third Physical Education, Physical Activity and Youth Sport Forum. University of Limerick.

Haskins R., Paxson C. And Donahue E. (2006) Fighting Obesity in the Public Schools. The Future of Children Princeton-Brookings. Accessed online http://futureofchildren.org/futureofchildren/publications/docs/16_01_PolicyBrief.pdf January 2010, last updated unknown.

Higgins S. And Packard N. (2004) Meeting the Standards in Primary ICT: A Guide to the ITT NC. Routledge: London.

Horowitz, Harold M. (2004) as cited in Johnson P. (no date) Why we need a Qwizdom Interactive Learning System. Accessed online December 2010, last updated unknown http://74.125.155.132/scholar?q=cache:uNkYboK9XCYJ:scholar.google.com/&hl=en&as_sdt=2000

Howells K (2011) Chapter 7 An Introduction to Physical Education in Driscoll, P., Lambirth A. and Roden J (2011) The Primary Curriculum. A Creative Approach. Sage Publications Ltd

Kennewell S., Parkinson J., Tanner H. (2008) Developing the ICT – Capable School. Routledge: London.

Khan U. (2008) Nintendo Wii could help primary school pupils lose weight. The Telegraph. Accessed online http://www.telegraph.co.uk/education/primaryeducation/3387044/Nintendo-Wii-could-help-primary-school-pupils-lose-weight.html September 2010, last updated November 2008.

Lavin J (2008) (ed) Creative approaches to Physical Education. Helping children to achieve their true potential. Routledge Falmer: London.

Lawler P. (2007) PE4Life. Developing and Promoting Quality Physical Education. Human Kinetics Ltd.

Leask M and Meadows J. (2000) Teaching and learning with ICT in the primary school. Routledge: London.

Loveless A. Role of ICT. Continuum International Publishing Group. London.

McNiff J. with Whitehead J (2002) *Action Research Principles and Practice.* 2nd Edition, Routledge Falmer: London.

Mosston M and Ashworth S (2002) 5th edition Teaching Physical Education. Benjamin Cummings Publishers. London

Nehrling, M (2009) 'Who are the post-millennials?' *mLearning-World.com*, 6th June, Available at http://mlearningworld.blogspot.com/2009/02/who-are-post-millennials.html

Ofsted 2005 / 2008 The importance of ICT: information and communication technology in primary and secondary schools. Accessed online January 2010, last updated 3rd March 2009 http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Documents-by-type/Thematic-reports/The-importance-of-ICT-information-and-communication-technology-in-primary-and-secondary-schools-2005-2008

Oliver M., Schofield G.M. and Kolt G.S. (1) (2007) Physical Activity in Preschoolers. Understanding Prevalence and Measurement Issues. *Sports Medicine* Vol 37 (12) p.1045 – 1070.

Pearce C. (2010) Teaching, research and further qualifications in Arthur J. and Cremin T. (eds) (2010) Learning to Teach in the Primary School. 2nd edition. Routledge, London.

Price (2008) as cited in Carney P. and Howells K (2008) *The Primary Physical Education Specialist.* Primary Physical Education Matters Autumn Vol 3 No. 3 p. iii – iv.

Prior G. And Hall L. (2004) ICT in Schools Survey: Findings from a survey conducted in Spring 2004. DfES: London

http://www.becta.org.uk/page_documents/research/ict_in_schools_survey_2004.pdf Accessed online January 2010, last updated unknown.

Radford M (2006) Researching classrooms: complexity and chaos. *British Educational Research Journal* 32 (2) p.177 – 190.

Silverman D. (2006) Interpreting Qualitative Data (3rd edition) Sage, London.

Smith R. (2009) Wii virtual exercise as good as the real thing. The Telegraph. Accessed online: http://www.telegraph.co.uk/health/healthnews/6581238/Wii-virtual-exercise-as-good-as-the-real-thing.html September 2010, last updated November 2009.

Sports Coach (1997) METS –Units of Energy accessed online October 2010: http://www.brianmac.co.uk/mets.htm last updated 1st January 1997.

Thomas J.R., Nelson J.K., Silverman S.J. (2005) 5th edition. Research Methods in Physical Activity. Human Kinetics: Champaign.

Thomas A. and Stratton G. (2006) British Journal of Educational Technology Volume 37, Issue 4, pages 617–632

Wallop H. (2009) NHS endorses Nintendo Wii Fit video game. The Telegraph, accessed online http://www.telegraph.co.uk/technology/nintendo/6430935/NHS-endorses-Nintendo-Wii-Fit-video-game.html September 2010, last updated October 2009.

Whitehead M. (2010) Physical Literacy (International Studies in Physical Education and Youth Sport). Routledge: London.

Williams J. and Easingwood N. (2007) Primary ICT and the Foundation Subjects. Continuum Publishing Group.

Woods D (1998) The UK ILS Evaluations Final Report Coventry UK: Becta http://www.becta.org.uk Accessed online January 2010 last updated unknown.

Woods D. (2010) ICT: An Uncertain Future? http://dougwoods.co.uk/blog/ict-an-uncertain-future/ Accessed online May 2010, last updated 25th May 2010.

WHO Europe (2006) (p.ix) Physical activity and health in Europe. Evidence for Action. Access June 2010 http://www.euro.who.int/__data/assets/pdf_file/0011/87545/E89490.pdf last updated 2006.

World Health Organisation (WHO) (2007) The pan-European programme on Transport, Health and Environment (THE PEP), a joint WHO/Europe and UNECE policy platform to promote policy integration between the three sectors and action on selected priority areas. Accessed online October 2010:
http://www.euro.who.int/__data/assets/pdf_file/0006/97818/PEPBrochureFeb08v8_A3.pdf

Yin (1994b) as cited in Berg KE and Latin RW (2008) *Essentials of Research Methods in Health, Physical Education, Exercise Science and Recreation*. 3rd edition, Lippincott, Williams and Wilkins: Baltimore.

Figures

Figure 1 The percentage of different types of activities that use technologies, reported by the student trainee teachers currently used within school

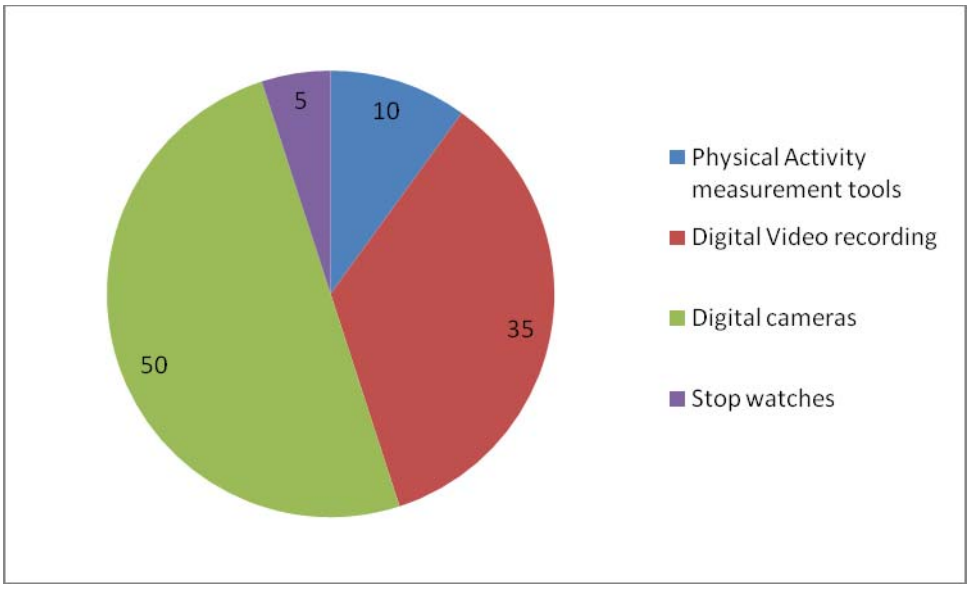
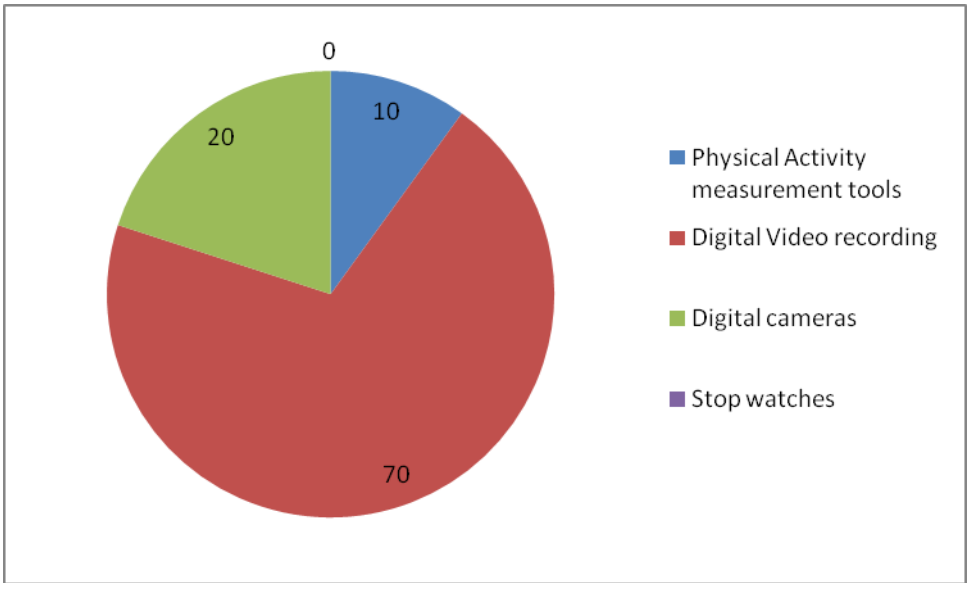


Figure 2 Percentage number of the different types of activities that use technologies that student trainee teachers suggested for use within Physical Education lesson



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Measuring physical activity of children – Development of a new self-report questionnaire

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Background: Physical activity is generally being associated with health and well-being. There is strong evidence that an active lifestyle during childhood can help to prevent the incidence of multiple diseases later in life. However, there is still a lack in scientific knowledge concerning the quality and quantity of physical activity of children which can be primarily attributed to methodological problems regarding validity and feasibility of assessment.

Objectives: Despite their comparatively low level of validity, self-report questionnaires are a core instrument for research questions in the field of sport pedagogy because of their high feasibility among big samples. Therefore, the present study aimed at developing a new self-report questionnaire for children providing precise results regarding their physical activity.

Method: The developmental process included multiple stages and lead up to a survey involving N=216 third and fourth grade school children. The questionnaire covered different types of physical activity during leisure-time and school as well as transportation and sport activities and considered aspects such as duration, frequency and intensity. This subjective self-report method was linked to an objective parameter in order to monitor the results from the questionnaire as well as to improve the accuracy of evidence. Statistical analyses involved descriptive analyses, Pearson's correlation coefficient as well as analyses of variance (ANOVA) in respect of the independent variables sex, age and location of school.

Results: Based upon a five-point scale, school children reported a neutral level of physical activity (M = 3.0). Different sub-indices were identified showing that leisure-time activity was evaluated higher than school activity, followed by transportation activity and sport activity.

Pedometer results suggested that almost 70% of the children were sufficiently active. However, the correlation of self-report and objective measure was low.

Conclusion: The questionnaire developed is suitable for young target groups in terms of comprehensibility. In combination with an objective parameter, meaningful conclusions regarding the overall level of physical activity can be drawn. Applying the questionnaire exclusively in order to assess physical activity of children, further improvement is needed to receive precise and valid results.

Keywords: physical activity, assessment, health benefits, childhood, self-report, validity, feasibility

Introduction and cognitive interest

Physical activity is generally being associated with physical as well as psychological health and well-being. In contrast, physical inactivity is known as a significant parameter within the complex network of numerous diseases. Looking at human evolution, physical activity as well as physical fitness has been a core factor in the history of *Homo sapiens*; however, today we can observe inactive lifestyles among a significant part of population.

Although health-related consequences from inactivity usually do not appear until (late) adulthood, the roots of these diseases can often be traced back to youth and childhood. According to international recommendations, the development of a lot of diseases can be countered from childhood on by regular physical activity of moderate to vigorous intensity for at least 60 minutes per day. Furthermore, physical activity of more than 60 minutes will provide additional health benefits, and activities that strengthen the musculoskeletal system should be considered explicitly (World Health Organization 2010). Although one has to be aware of methodological problems and inconsistencies, several studies come to the conclusion that today many children do not meet requirements for physical activity in respect of duration, frequency and intensity anymore (Armstrong 2007; Bös, Worth, Heel, Opper, Romahn,

Tittlbach, Wank and Woll 2009; Kehne 2011). Changes in society over the last decades can be held responsible for this overall decline in physical activity: Growing urbanization, motorization, extensive media use as well as the breakup of traditional family structures lead to the fact that children spend much of their time indoors, communicating mostly via phone or internet with friends. Also, they are experiencing a fragmented environment – known as "islandisation" in the social sciences – where most distances are covered via motorized vehicles. Consequently, children have fewer opportunities to be sufficiently active in everyday life. Even the expanded availability of organized sport programs and their remarkable popularity among young people (Brettschneider and Naul 2007) are not able to prevent the overall decrease of physical activity. A closer look at the data available emphasizes a growing gap between children being highly active and training extensively on the one hand, and children leading a predominantly sedentary lifestyle, not being active in their leisure time at all on the other hand (De Knop 1998; Brettschneider and Naul 2007).

Despite numerous national and international studies, there is still a significant lack in scientific knowledge concerning the quality and quantity of children's physical activity. The main reason for the insufficient knowledge base may be attributed to general methodological problems involved with measures of physical activity. Especially regarding the feasibility of measurement, researchers are often faced with problems when choosing among the various methods. Some of the methods available are unsuitable for big samples due to personnel, time and financial requirements. However, other methods that demand fewer resources are criticized in terms of their validity. The choice of measurement is severely dependent on the scientific discipline as well as on the concrete goals of a specific study because the method of measurement has to match the research questions established. Additionally, measuring physical activity of *children* leads to specific problems because the activity behaviour of young children differs immensely from the one observed in adolescents and adults (Dollman,

Okely, Hardy, Timperio, Salmon and Hills 2009). Spontaneous bursts of high-intensity activity are often followed by brief periods of rest. "Further, unlike adults, much of their physical activity is acquired through informal play and games and may therefore be difficult to capture using any kind of recall-measures" (Salmon 2009, 513).

Since "the accurate measurement of physical activity is critical for determining current levels of physical activity, monitoring compliance with physical activity guidelines, understanding dose-response relationships between physical activity and health and determining the effectiveness of intervention programs designed to improve physical activity" (Sirard and Pate 2001, 440), there is still a desperate need to work on further development and improvement in this field (also Salmon 2009). The present study was designed to further contribute to developmental processes in this area of research by considering some of the known deficits and developing a new self-report questionnaire for children.

Physical activity and health

Physical activity is defined as "any bodily movement produced by skeletal muscles that results in energy expenditure" (World Health Organization 2011); therefore, physical activity may be considered as a generic term or a complex concept covering at least four different dimensions (Bouchard, Blair and Haskell 2007):

- Work (occupation & household)
- Transportation
- Leisure-time
- Exercise and sport

In the past, *work* was the most important component of daily activities because it required a great amount of energy expenditure. Today, due to industrial development, occupations as well as chores in everyday life demand considerably less physical activity. *Transportation* refers to physical activity performed when people travel either actively (e.g. on foot, by

bicycle) or passively (e.g. by car, by bus) to and from places. Similar to work related activities, today people are less active in terms of transportation than decades and centuries ago. Furthermore, *leisure-time* activities also play an important role. This sort of activity is selected on behalf of personal needs and interests, and it is carried out during a person's discretionary time of the day (e.g. excursions, shopping, bowling). Quite often, physical activity is used synonymously with *exercise* or *sport;* in the context of the present study it is important to differentiate between theses terms. Exercise and sport constitute subcategories which are characterized through planned, structured and repetitive processes. Usually, people follow a specific external objective when they engage in any kind of exercising – being asked for their reasons, many people mention health and fitness benefits as their major motives (Markland and Ingledew 1997; Ingledew and Markland 2008).

The first links between physical activity and health can be found in ancient China (2500 BC); later on in history, the Greek physician Hippocrates (460-370 BC) established an early tradition of maintaining health through a combination of diet and exercise. An extensive scientific analysis of the relationship between physical activity and health started after World War II, when the focus of public health issues shifted towards chronic, non-communicable diseases and the possible influence of individual behaviour and structural prevention (Hardman and Stensel 2010). Today, there are numerous (epidemiological) studies analysing the benefits of physical activity on health and well-being as well as health-related consequences of physical inactivity. There is compelling evidence showing that inactive individuals have an increased risk of mortality:

> "The associations between inactivity or low fitness and mortality are strong, graded, and temporally consistent, and they remain after adjustment for numerous potentially confounding variables. Sedentary habits and low cardiorespiratory fitness are among the strongest predictors of premature mortality and pose a major public health thread in most countries of the world" (Blair and LaMonte 2007, 158-159).

Hardman and Stensel (2010) also report of strong evidence for a dose-response relationship between mortality and the level of physical activity, indicating that an active lifestyle reduces rates of mortality 20% - 80% as compared to a sedentary lifestyle. Moreover, considering the large number of nowadays (chronic) diseases, such as cardiovascular disease, diabetes mellitus, metabolic syndrome, cancer, obesity, joint and bone health as well as mental diseases like anxiety, sleeping disorders and depression, there is also strong evidence for benefits from physical activity. Bouchard, Blair and Haskell (2007) as well as Hardman and Stensel (2010) provide a current and concise overview of the effects of physical activity on these diseases.

Looking at the prevalence of activity and inactivity in Europe, Hardman and Stensel (2010) found that in most of the countries analysed less than one-third of the population is sufficiently active to benefit with respect to their present and future health. The Netherlands, Slovakia, Slovenia, Austria, Estonia, Germany and Denmark show the lowest rates of inactive people among countries of the European Union, whereas Italy, Ireland, Spain and above all Malta (approx. 80%) exhibit significantly higher rates.[5] For 2008, the World Health Organziation (2011) came to the conclusion that worldwide 31% of adults were insufficiently active to gain health benefits. The highest rates of inactivity (up to 50%) were found in North and South America as well as in the Eastern Mediterranean Region. According to Hardman and Stensel (2010), representative surveys on physical activity levels have two features in common: (1) With increasing age a rapid decline of physical activity can be observed. (2) Men reach higher levels of activity than women.

Regarding children as a specific target group, Kehne (2011) found that boys are more physically active than girls and that there is a strong correlation between physical activity and socio-demographic variables such as parental education and migration background.

[5] Assessment methods of physical activity varied a lot between the studies taken into account. Therefore, data has to be interpreted carefully.

In contrast to many other health-related behaviours – such as the consumption of alcohol or tobacco – physical activity is a positive behaviour, which has to be built up and fostered instead of given up. Considering the fact that many people do not reach a sufficient level of activity, two reasonable alternatives for countering physical inactivity within the population arise: In the first instance, a sufficient amount of physical activity should be part of an individual lifestyle, preferably from early childhood on. Therefore, children need to experience the joy and the benefits of being active as early as possible in life. Second, specific lifestyle interventions can help inactive people to adopt an active lifestyle. The present study, however, does not aim at promoting this field of applied science. It rather focuses on a basic tool which is often employed within these kinds of studies, namely on methods of assessing physical activity.

Methods of assessment

As mentioned above, physical activity has been recognized as a potential prevention and intervention strategy for numerous (chronic) diseases in the last decades. Therefore, different measures of physical activity during childhood as well as adulthood have been developed and applied in numerous studies.

When designing a study on physical activity, researchers are faced with the difficult question of choosing the proper method which is primarily dependent on the target group (e.g. age, cultural background). However, further aspects need to be considered in the selection process. There are different resources available offering orientation guidelines, e.g. Dollman et al. (2009) provide a decision flow chart to select proper measurement approaches as well as corresponding hypothetical research scenarios. Generally, the methods of assessment can be devided into three groups. Figure 1 shows the three types of measures including the best elaborated methods in each section.

[Figure 1 near here]

Furthermore, Figure 1 indicates the hierarchy of validation: Primary measures may be used to validate secondary as well as tertiary measures. Secondary measures may serve as a validation standard for tertiary measures (Sirard and Pate 2001; Beneke and Leithäuser 2008). Besides the validation of a measure, its feasibility has to be considered as well. Müller, Winter and Rosenbaum (2010) offer a classification scheme of different measures according to their validity and feasibility. Figure 2 emphasizes the conflicting relationship of these aspects: Methods which can be applied without great effort in a study usually show severe deficits in terms of their validity, whereas methods with a high validity suffer from poor practicability.

[Figure 2 near here]

The following sections provide a closer look at the three groups of measures depicted in Figures 1 and 2.

Primary measures: Criterion standards

Criterion standards are often referred to as the "Gold Standard" for measuring physical activity of children and adults. They lead to the most precise results and measure physical activity either directly or via its energy expenditure.

Sirard and Pate (2001) consider *direct observation* to be the most practical and appropriate measure of physical activity. Drawbacks are the immense (timely) effort for the experimenter and potential reactions of study participants towards the experienced "surveillance". Several well-tested observational systems are available; an overview concerning different techniques as well as reliability and validity can be obtained from Sirard and Pate (2001, 442). The *Doubly Labeled Water* technique (DLW) measures physical activity over a period of time of more than three days via the total energy expenditure of a person. Study participants have to consume water which is enriched with heavy, non-radioactive forms of deuterium (^{2}H) and oxygen (^{18}O). The elimination rates give very precise evidence concerning energy expenditure. However, the high costs involved prevent the

application for large samples (Müller, Winterstein and Rosenbaum, 2010). *Indirect calorimetry* also measures energy expenditure, using O_2 intake and CO_2 production as parameters. The precise results are opposed to the extensive need for technical equipment and the insufficient monitoring ability "under long-term free living conditions especially in young children" (Sirard and Pate 2001, 443).

Secondary measures: Objective assessment

Objective assessment of physical activity involves less technical effort than methods of the criterion standard. The devices needed have become smaller and lighter in the last couple of years to prevent irritation of study participants.

Heart rate monitoring measures energy expenditure and relies on the linear relationship between heart frequency and oxygen intake (VO2). Unfortunately, this method is not as robust when physical activity is low. Moreover, it may be affected by psychological and environmental stress as well as by substances like caffeine and medications. *Accelerometers* measure acceleration produced by body movement in an objective and nonreactive way. Results are displayed either via steps or via ´activity counts` which describe the duration, intensity and frequency of physical activity in order to estimate energy expenditure. Meanwhile, these technical devices are quite small and also re-usable. Sirard and Pate (2001) consider accelerometers a promising alternative when primary measures are not available. Compared to accelerometers, *pedometers* are even smaller, simple and, therefore, inexpensive electronic devices counting steps to detect physical activity. Today, many mobile phones are already equipped to count steps of the person carying the phone. Pedometers are limited to activities like walking and running. Activities like cycling or swimming cannot be assessed. Compared to accelerometers, findings show a lower but sufficient validity and indicate the overall suitability for population-based assessment of physical activity (Sirard and Pate, 2001).

Tertiary measures: Subjective assessment

All subjective measures presented in this section collect data retrospectively and rely on a person's memory concerning their physical activity. Another similarity of these measures are the immensely varying and rather low rates of validity when compared to primary and secondary measures (Sirard and Pate, 2001; also Corder, van Sluijs, Wright, Whincup, Wareham and Ekelund 2009) which may result from intentional as well as unintentional under- or over-reporting.

Self-report questionnaires provide sets of questions on physical activity which can be administered easily within a sample. Numerous different questionnaires on physical activity are available. They differ from each other with respect to the period of time assessed and the scope of the instrument. Unfortunately, especially young children – due to their lower cognitive functioning as compared to adults – have difficulties in answering questions correctly. Structured *interviews* try to overcome this problem by employing a trained administrator who guides study participants through the questions. Although administrators might help with the comprehension, they may also produce additional bias. Besides, the costs for personnel rise significantly. Another opportunity for preventing errors due to children's lower cognitive functioning are *proxy reports* which collect data on the basis of information received from a third person (e.g. parent or teacher). So far, only limited information is available on this type of physical activity measure. *Activity diaries* are capable of assessing physical activity comprehensively within a specific period of time. Due to the high burden for participants having to keep the diaries thoroughly themselves as well as the fact that severe problems for young children have to be anticipated, activity diaries are rarely employed in studies.

Interim conclusion and deduction of the study's objectives

Physical activity can be assessed using a large number of methods. To summarize, primary measures lead to valid results, but they are limited in terms of their feasibility for different reasons. The secondary measures presented display lower but sufficient validity and are comparatively easy to apply within field studies. Tertiary measures are applicable to large samples because of the small financial, time and personnel costs. The validity differs a lot depending on the method employed and the target group. Further limitations to be considered are the recall bias leading to less precise results, as well as the influence of social desirability.

In respect of all advantages and disadvantages, Beneke and Leithäuser (2008) come to the conclusion that currently there is no ideal method of assessing physical activity during childhood. Especially the fact that children – even more than adults – show very complex activity patterns including a lot of spontaneous and impulsive activities (Salmon 2009; Müller, Winter and Rosenbaum 2010) leads to assessment problems. Many research questions in the field of sport pedagogy depend on applicable, economic and precise measures in order to analyse big samples. As stated above, self-report questionnaires are quite commonly used due to their high feasibility, but they show deficits in terms of valid results. With respect to the concept of physical activity and its methods of assessment displayed above, the present study aimed at developing a new self-report questionnaire for children considering different types of physical activity in everyday life, their duration, frequency and intensity. Following Troiano (2009), who suggests that progress is being made with approaches combining subjective measures with objective measures, the self-report data has been complemented by data derived from pedometers in order to monitor the subjective results from the questionnaire as well as to improve the accuracy of evidence.

Method

Procedures

The study employed several different steps (Figure 3) in order to meet the objectives established.

[Figure 3near here]

In the course of a pilot study, physical activity of children was assessed using a questionnaire which had been used in various previous studies of the research group from the University of Paderborn (Gerlach 2008; Kehne, 2011) as well as employing a pedometer which is comparatively inexpensive and easy to apply (ACCUSPLIT®). The objectives of the pilot study were to evaluate the instruments concerning their practicability among third and fourth graders and to determine the correlation of subjective and objective results. For both aspects significant deficits were identified. Consequently, further attempts focused on a realignment of the questionnaire as well as on an apparently more sophisticated pedometer (OMRON®). For the self-report, the questionnaire for the measurement of habitual physical activity in epidemiological studies (Baecke, Burema and Frijters 1982; Wagner and Singer 1998) was adapted to be suitable for children and extended by relevant aspects deducted from the pilot study. The revised questionnaire was tested in the context of two case studies with a 9- and an 11-year-old girl. The girls' physical activity was also measured via ACCUSPLIT® as compared to OMRON® pedometers over a period of three days. Results showed that the revised questionnaire correlated significantly higher with steps measured via pedometers than the previous version. Furthermore, the (more expensive) OMRON® device did not deliver more precise results than the ACCUSPLIT® pedometer. Consequently, the main investigation used the revised questionnaire in combination with the ACCUSPLIT® pedometer.

Three schools were asked to participate in the study. After authorization through the principals, PE teachers were contacted and asked for support and parents had to sign a consent

form. On the first day of the study, children received the pedometer and were supervised by an investigator and their PE teacher on how to handle the devise during the next three days. On the third day of the study, the investigator returned to the school, collected the pedometers, and the children had to complete the questionnaire.

Measures

Table 1 shows the components of the questionnaire[6] used to analyse the level of activity within the sample and clarifies which items accounted for *School Activity*, *Sport Activity*, *Leisure-time Activity* and *Transportation Activity*. A combination of all four indices was employed to find evidence on the total amount of reported physical activity.

[Table 1 near here]

On the basis of the three day measure via ACCUSPLIT® pedometers, study participants were grouped according to the average numbers of steps taken on one day.[7] Tudor-Locke and Bassett (2004) suggest the following categories which have been adopted for data analysis in this study:

- less than 5.000 steps/day: sedentary lifestyle
- 5.000–7.499 steps/day: low active lifestyle
- 7.500–9.999 steps/day: somewhat active lifestyle
- 10.000 steps/day: active lifestyle
- more than 12.500 steps/day: highly active lifestyle

Sample

216 school children – 52.3% girls and 47.7% boys – from the city of Paderborn (Germany) participated in the study. 53.2% of the participants were third-graders, 46.8% were fourth-graders. The average age was 9.04 years (SD = 0.74). 28.2% of the students went to schools

[6] According to the target group, the questionnaire was designed in German.

[7] Many children declared that they rode by bicycle or went swimming during the sample period. Therefore, the numbers of steps were adjusted according to the *Step Counter Conversions* of the Vermont Department of Health (2011).

in an urban region of Paderborn, whereas 71.8% went to schools situated in rural areas of Paderborn.

Statistical analysis

Data were analysed using descriptive and inferential statistics. In order to determine the correlation between results from self-report and pedometer, Pearson's product-moment correlation coefficient was computed. Furthermore, analyses of variance (ANOVA), which are widely robust against violation regarding homogeneity of variance and normality, were conducted to identify group differences. Significant mean differences (significance levels $p < 0.05$, $p < 0.01$; $p < 0.001$) were complemented by the effect size Eta^2 (η^2) in order to indicate the proportion of explained variance and, therefore, to estimate the practical relevance of results. According to Cohen (1988), an effect of $\eta^2 = .01$ has to be regarded as small, $\eta^2 = .06$ symbolizes a medium effect and starting from $\eta^2 = .14$, large effects can be presumed.

Findings

According to the total activity index derived from the questionnaire, study participants evaluated their activity level quite neutral based upon the underlying five-point scale ($M = 3.0$; $SD = 0.4$). A differentiation regarding the four sub-indices showed that pupils rated their leisure-time activity ($M = 3.5$; $SD = 0.6$) higher than their school activity ($M = 3.2$; $SD = 0.3$), their transportation activity ($M = 2.9$; $SD = 0.8$) and their sport activity ($M = 2.3$; $SD = 0.9$). The assessment of physical activity via pedometer showed that the elementary school students took on average 12.112 steps per day ($SD = 4.098$). Following the classification of Tudor-Locke and Bassett (2004), 2.4% of the children led a sedentary lifestyle, 9.0% showed low activity, 19.4% were somewhat active, 24.6% led an active lifestyle and 44.5% could be classified as highly active. Therefore, 30.8% of the study participants did not reach a sufficient level of activity, whereas 69,2% can be classified as

adequately active. Due to the specific structure of the study, it was not possible to provide separate pedometer results for each of the sections from the questionnaire displayed above (e.g. leisure-time activity).

Regarding the consistency of self-report and pedometer, a significant correlation was found ($p = .001$). However, the correlation coefficient turned out to be rather low ($r = .31$). In order to further investigate the findings, mean differences were analysed concerning sex, age and location of school (urban vs. rural area).Table 2 and Table 3 provide the corresponding statistics.

[Table 2 near here]

[Table 3 near here]

Activity measures via questionnaire and via pedometer did not lead to the same results: The total activity index based on self-report data did not show any significant group differences with respect to the independent variables analysed (Figure 4); on the contrary, the step count revealed differences (Figure 5). Boys conducted on average 13.300 steps per day ($SD = 4.222$), while girls came up with $M = 10.810$ steps ($SD = 3.543$). This statistically significant difference led to a medium-sized effect ($\eta^2 = .10$). Concerning the age, data indicated that older children took significantly more steps per day than younger children. Again, a medium-sized effect could be observed. ($\eta^2 = .07$). The post-hoc analysis showed that eight- and nine-year-old children did not differ substantially from each other ($M = 11.643$; $SD = 3.324$ and $M = 11.291$; $SD = 4.251$). In contrast, ten-year-old children walked considerably more than their school mates ($M = 13.801$; $SD = 4.052$). Besides gender and age differences, data also exposed a group difference regarding the location of schools: Children attending a school in a more rural region took significantly more steps ($M = 12.456$; $SD = 3.704$) than their counterparts from urban schools ($M = 11.227$; SD 4.897). However, the effect turned out to be rather small ($\eta^2 = .02$).

Conclusion and further perspectives

The sections above highlighted the importance of suitable measures for physical activity of children which differs significantly from adult activity (Dollman et al. 2009; Salmon 2009). Self-report questionnaires are a common tool in sport pedagogical research because of their high degree of feasibility among large samples. However, this subjective method of assessing physical activity shows severe deficits in terms of validity. Therefore, the objective of the present study was to develop a self-report questionnaire suitable for application in the field of sport pedagogy and to validate this subjective method against an objective parameter.

The questionnaire developed turned out to be suitable for young children regarding comprehensibility. The sub-indices (leisure-time activity, school activity, transportation activity and sport activity) helped to create a thorough picture of children's total physical activity. The application of pedometers posed no significant problems; however, the fact that many children rode a bicycle or went swimming made it necessary to adjust the numbers of steps measured via pedometers accordingly (see footnote 4). Pedometer results indicated a gap between children who were sufficiently active (69.1%) and children who showed a deficient level of activity (30.8%) which was comparatively low in this study. Furthermore, results were consistent with previous findings regarding differences between boys and girls and age cohorts (e.g. Kehne 2011) and the effect sizes suggest a practical relevance of the findings.

The correlation of results from self-report and pedometer was significant but low which is consistent with previous studies (Sirard and Pate 2001; Corder et al. 2009). In contrast to pedometer measures, self-report data did not show any power of discrimination regarding the independent variables sex, age or location of school. Therefore, the primary objective of this study could not be achieved completely and further work is needed in order to receive precise and valid results when assessing physical activity exclusively via self-

report. It is suggested to maintain the four different sub-indices used in this study and to further improve their validity by considering new parameters thoroughly. This could be achieved by employing the "gold standard" of *direct observation* in the context of single case studies and by drawing corresponding conclusions to specify and to substantiate the content of the questionnaire. Certainly, the suitability for children must be considered carefully throughout further development.

However, the combination of self-report and objective measures in this study allowed meaningful conclusions regarding the overall level of physical activity within the target group, and a solid base for further investigation was provided.

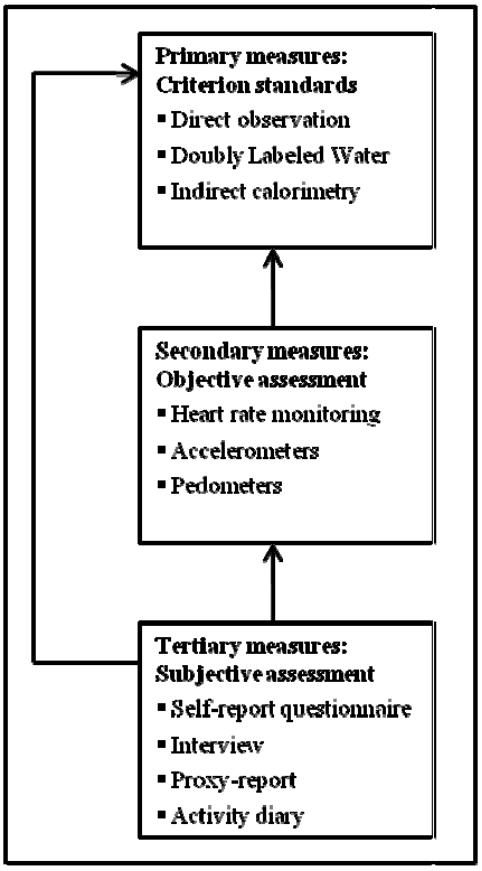


Figure 1: Validation scheme for measures of physical activity (Sirard and Pate 2001; adapted by the authors)

Figure 2: Assessment of physical activity with respect to feasibility and validity (Müller, Winter and Rosenbaum 2010; adapted by the authors)

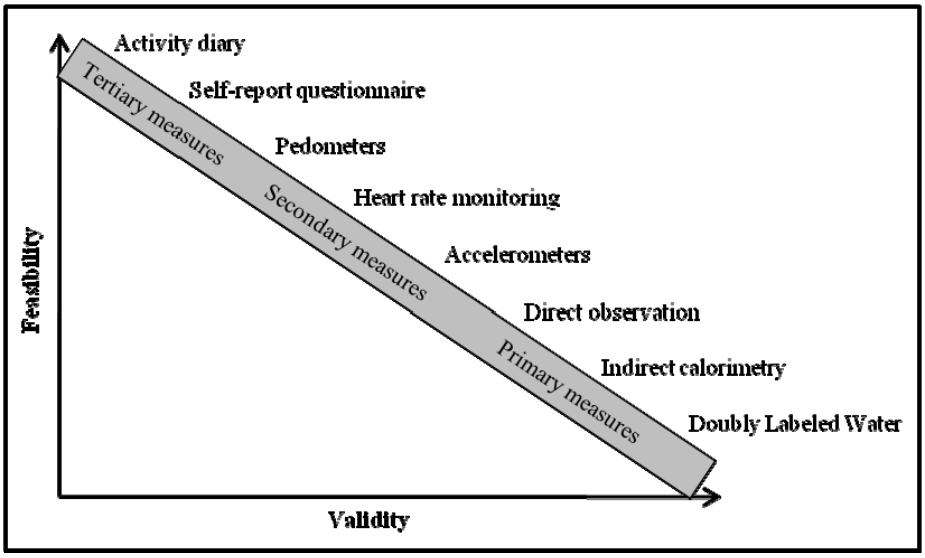


Figure 3: Main steps of the procedure

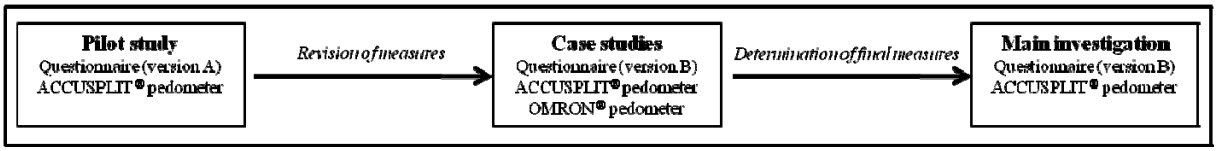


Figure 4: Activity indices derived from questionnaire data

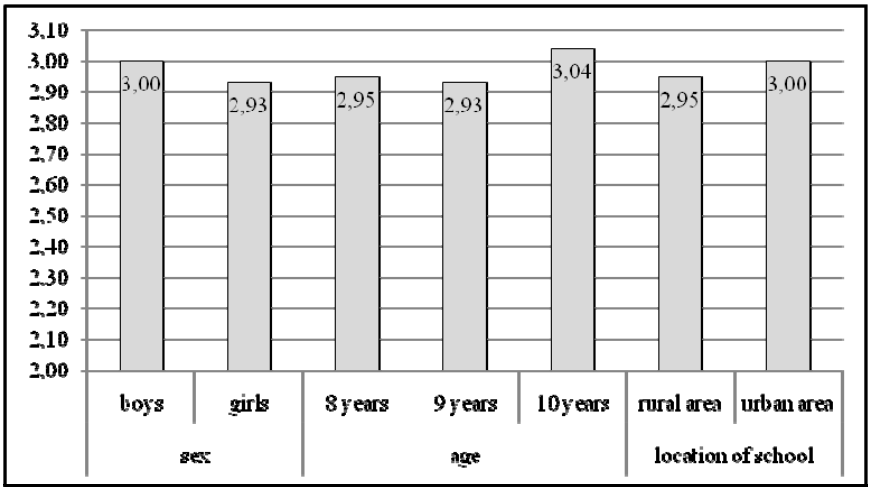
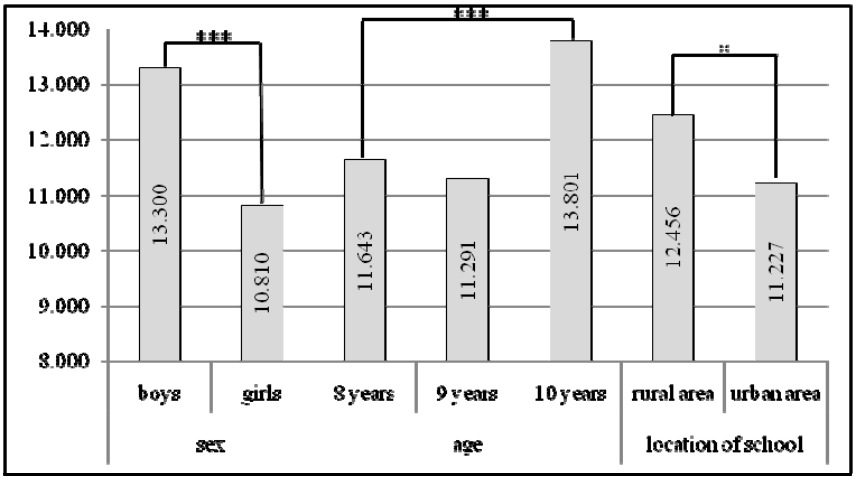


Figure 5: Daily number of steps measured via pedometer



Note: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 1 Overview of questionnaire components

Section of the questionnaire	Items
Introduction suitable for children	▪ Asking participants for support ▪ Explanation of anonymity ▪ Instructions to complete the questionnaire
Personal data	▪ Age (in years) ▪ School grade (3rd grade or 4th grade) ▪ Sex (girl or boy)
Activity during school life ➢ Index *School Activity*	▪ Activity during classes and during breaks ▪ Estimated effort during physical education class ▪ Estimated activity level compared to other pupils → five-point scales
Organized sport activity (e.g. in a club) ➢ Index *Sport Activity*	▪ Engagement (yes or no) ▪ Type of sport and hours per Week ▪ Additional type of sport and hours per week ▪ Estimated exhaustion (five-point scale)
Covering distances during leisure-time ➢ Index *Transportation Activity*	▪ Walking ▪ Cycling ▪ Riding by bus ▪ Riding by car → five-point scales
Covering the distance to and from school ➢ Index *Transportation Activity*	▪ Walking ▪ Cycling ▪ Riding by bus ▪ Riding by car → times per week and minutes per way
Leisure-time activities ➢ Index *Leisure-time Activity*	▪ Frequency of playing and romping ▪ Estimated exhaustion when playing and romping ▪ Estimated activity level compared to other children → five-point scales
Additional information	▪ Hours of cycling and swimming when wearing the pedometer

Table 2: Assessing physical activity via self-report: Overview of multivariate analyses

Independent variable	F	df	p	η^2
Sex	1.37	1	.244	.01
Age	1.22	2	.299	.01
Location of school	0.44	1	.507	.00

Table 3: Assessing physical activity via pedometer: Overview of multivariate analyses

Independent variable	F	df	p	η^2
Sex	21.09	1	.000	.10
Age	7.91	2	.000	.07
Location of school	3.88	1	.050	.02

References

Armstrong, N. 2007. Physical fitness and physical activity patterns of European youth. In *Obesity in Europe. Young people's physical activity and sedentary lifestyles*, ed. W.-D. Brettschneider and R. Naul, 27–55. Frankfurt: Peter Lang GmbH.

Baecke, J.A., J. Burema and J.E. Frijters. 1982. A short questionnaire for the measurement of habitual physical activity in epidemiological studies. *The American Journal of Clinical Nutrition* 36, no. 5: 936–942.

Beneke, R. and R.M. Leithäuser. 2008. Körperliche Aktivität im Kindesalter – Messverfahren [Physical activity during childhood – Methods of Assessment]. *Deutsche Zeitschrift für Sportmedizin* 59, no 10: 215–222.

Blair, S.N. and M.J. LaMonte. 2007. Physical activity, fitness, and mortality rates. In *Physical activity and health*, ed. C. Bouchard, S.N. Blair and W.L. Haskell, 143–159. Champaign: Human Kinetics.

Bös, K., A. Worth, J. Heel, E. Opper, N. Romahn, S. Tittlbach, V. Wank and A. Woll. 2009. Motorik-Modul: Eine Studie zur körperlichen Leistungsfähigkeit und körperlich-sportlichen Aktivität von Kindern und Jugendlichen in Deutschland [Motor activity module: A study concerning physical capability.and physical-athletic activity of children and adolescents in Germany]. Baden-Baden: Nomos.

Bouchard, C., S.N. Blair and W.L. Haskell. 2007. Why study physical activity and health? In *Physical activity and health*, ed. C. Bouchard, S.N. Blair and W.L. Haskell, 3–19. Champaign: Human Kinetics.

Brettschneider, W.-D. and R. Naul. 2007. Obesity in Europe. Young people's physical activity and sedentary lifestyles. In *Obesity in Europe. Young people's physical activity and sedentary lifestyles*, ed. W.-D. Brettschneider and R. Naul, 7–26. Frankfurt: Peter Lang GmbH.

Cohen, J. 1988. *Statistical power analysis for the behaviour sciences*. Hillsdale: Lawrence Erlbaum Associates.

Corder, K., E.M.F. van Sluijs, A. Wright, P. Whincup, N.J. Wareham and U. Ekelund. 2009. Is it possible to assess free-living physical activity and energy expenditure in young people by self-report? *American Journal of Clinical Nutrition* 89, no. 3: 862–870.

De Knop, P. 1998. Worldwide trends in youth sport. In *Physical activity and active lifestyle of children and youth*, ed. R. Naul, K. Hardman, M. Piéron and B. Skirstad, 52–62. Schorndorf: Hofmann.

Dollman, J., A.D. Okely, L. Hardy, A. Timperio, J. Salmon and A.P. Hills. 2009. A hitchhiker's guide to assessing young people's physical activity: Deciding what method to use. *Journal of Science and Medicine in Sport* 12, no. 5: 518–525.

Gerlach, E. 2008. *Sportengagement und Persönlichkeitsentwicklung. Eine längsschnittliche Analyse der Bedeutung sozialer Faktoren für das Selbstkonzept von Heranwachsenden* [Sport engagement and development of personality. A longitudinal impact analysis of social factors on the self-concept of adolescents]. Aachen: Meyer & Meyer.

Hardman, A.E. and D.J. Stensel. 2010. *Physical activity and health. The evidence explained.* New York: Routledge.

Ingledew, D.K. and D. Markland. 2008. The role of motives in exercise participation. *Psychology and Health* 23, no. 7: 807–828.

Kehne, M. 2011. *Zur Wirkung von Alltagsaktivität auf kognitive Leistungen von Kindern. Eine empirische Untersuchung am Beispiel des aktiven Schulwegs* [The effect of daily activity on cognitive efficiency of children. An empirical study using the example of an active way to school]. Aachen: Meyer & Meyer.

Markland, D. *and D.K.* Ingledew. 1997. The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. British Journal of Health Psychology 2*, no. 4:* 361–376.

Müller, C., C. Winter and C. Rosenbaum. 2010. Aktuelle objektive Messverfahren zur Erfassung körperlicher Aktivität im Vergleich zu subjektiven Erhebungsmethoden [Current objective techniques for physical activity assessment in comparison with subjective methods]. Deutsche Zeitschrift für Sportmedizin 61, no. 1: 11–18.

Salmon, J. 2009. Physical activity in young people – Assessment and methodological issues. *Journal of Science and Medicine in Sport* 12, no. 5: 513–514.

Sirard, J.R. and R.R. Pate. 2001. Physical activity assessment in children and adolescents. *Sports Medicine* 31, no. 6: 439–454.

Troiano, R.P. 2009. Can there be a single best measure of reported physical activity? *American Journal of Clinical Nutrition* 89, no. 3: 736–737.

Tudor-Locke, C. and D.R. Bassett. 2004. How many steps/day are enough? Preliminary pedometer indices for public health. *Sports Medicine* 34, no.1: 1–8

Vermont Department of Health. 2011. *Step Counter Conversions.* Vermont Department of Health: http://healthvermont.gov/family/move/documents/StepCounterConvrsn.pdf.

Wagner, P. and R. Singer. 2003. Ein Fragebogen zur Erfassung der habituellen körperlichen Aktivität verschiedener Bevölkerungsgruppen [A questionnaire for the measurement of habitual physical activity in different population groups]. *Sportwissenschaft* 33, no. 4: 383–397.

World Health Organization. 2010. *Global recommendations on physical activity for health.* Geneva: WHO Press.

World Health Organization. 2011. *Global strategy on diet, physical activity and health*. World Health Organization. http://www.who.int/dietphysicalactivity/pa/en/index.html.

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Students' Experiences of Using Heart Rate Monitors during Physical Education Lessons

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***Background**:* The importance of promoting an active lifestyle from young age is widely recognized and physical education provides an opportunity to address the health-related needs of all children. The use of heart rate monitors in physical education is advocated as a technological supplement to traditional teaching methods. However, researchers analyzing innovations suggest that there are challenges to move from innovation and advocacy to widespread and effective implementation. Moreover, there is lack of research on students' view of the use of technology in physical education

Purpose: The purpose of this study was to analyze students' experiences of using heart rate monitors during physical education lessons.

Participants and setting: Four intact classes with 75 students from grade five and six participated in this study. Students were during two lessons taught five different heart rate monitor activities based on guidelines about the use of technology in physical education published by the National Board of Education.

Data collection and analysis: This is a qualitative and descriptive study of students' learning experiences. Students completed after each lesson a questionnaire about their experiences of heart rate monitors and the different activities. In addition, student activity was measured by heart rate monitors. All qualitative data were analyzed using inductive content analysis.

Findings: Student activity showed high individual variation and they were engaged in MVPA for in average 25% of lesson time. About 80% of the students liked to use the heart rate monitors and half of the students wanted to try them again during a physical education lesson or to use them during leisure time. Several students enjoyed following their heart rate but some felt that monitor was uncomfortable.

Discussion: The results showed that heart rate monitors can supplement more traditional forms of instruction, but there are challenges that teachers need to consider. The guideline recommending 50% MVPA during physical education lesson time is not easy to achieve and some students may feel that lessons are physically too demanding. However, the use of heart rate monitors can utilize individualized instruction and provide students some sense of competence and autonomy.

Keywords: heart rate monitors, innovation in physical education, student voice

Introduction

International health and fitness data suggests that many children are not on their way to healthy, physically active lifestyles. Numerous children live sedentary lifestyles due to a lack of opportunity, success, or self-motivation in physical activity. The importance of promoting an active lifestyle from young age is widely recognized and physical education provides an opportunity to address the health-related needs of all children. Therefore, organizations recommend that at least 50 percent of physical education class time should be spent in moderate to vigorous physical activity.

Research has provided a clear picture of the intensity of students' activity during physical education lessons. Fairclough and Stratton (2006) reviewed the literature on physical activity levels during elementary school physical education and concluded that elementary grade students spent about one third of lesson time in moderate to vigorous physical activity. Students were generally more active in physical education classes when they got older and girls were as active as boys. However, Stratton (1997) and Fairclough and Stratton (2005a) found that student activity changed with lesson content with invasion games providing more activity than dance, track and field, fitness, or gymnastics.

Several studies have showed that school and teacher interventions to increase students' physical education activity levels can be successful (Fairclough and Stratton 2005b; Jago et al. 2009). Fairclough and Stratton (2005b) showed that teachers could increase girls' physical education activity levels without negatively impact on students' motivation or perceptions of competence or planned lesson objectives. Similarly, McKenzie and others (2004) stated that teachers were able to provide more opportunities for physical activity within certain lesson contexts, without major changes in the structure of lessons.

The use of technology has been one approach to promote physical activity and research shows that pedometers help to increase daily physical activity in general (Lutes and Steinbaugh 2009) but also specifically to promote activity among youth (Lubans, Morgan and Tudor-Locke 2009). Pedometers used with goal-setting and self-monitoring strategies have a motivational potential for improving personal levels of physical activity (Clarke et al. 2007). In addition, McManus and others (2008) showed with children that the short-term heart rate monitor feedback increased overall activity and percentage of

time spent being vigorously active. However, the improvements were not retained when feedback was removed.

Educators advocate the use of heart rate monitors in physical education as technological supplements to traditional teaching methods. Historically, heart rate telemetry was used as a research method to examine school-age children's physical activity patterns. Later, heart rate monitors have become an educational means to enhance students' understanding of exercise and the impact physical activity has on health, wellness, and physiology (Benham-Deal and Deal 1995). Already in 1995, Strand and Mathesius presented an outline how to use heart-rate monitors in physical education and described coursework and lab experiences that introduce students to the monitors and teach the use of the technology. This has been followed up by other scholars sharing their experience and providing more guidelines about using heart rate monitors in physical education classes at different levels (Tipton and Sander 2004; Nichols et al. 2009). Likewise, others have provided helpful suggestions to teachers about the use of pedometers in physical education as technological supplements to traditional teaching methods (Beighle, Morgan, and Pangrazi 2004; Brewer and Nelson 2005)

However, researchers analyzing curricular innovations suggest that there are challenges to move from innovation and promotion to extensive and successful implementation. McCaughtry and others (2008) noted that at the beginning, the teachers expected they would have few challenges that they would not be able to overcome, but later on they expressed several limitations to implementing pedometers in physical education. All students were motivated in the beginning and were motivated during the lessons because the pedometers were new and provided immediate feedback. Conversely,

after the immediate novelty disappeared, the lesser skilled and less active students appeared to remain interested longer than the more skilled students.

Although students talk enthusiastically about innovative instructional models there is a lack of value placed on students' perspectives by reform and policy movement (Dyson 2005). Similarly, there is lack of research on participants' view of the use of technology in promoting physical activity and physical education. Nevertheless, recently Gardner and Campagna (2011) investigated through mixed-method design midlife women's experiences wearing the pedometers and found that they were easy to use, fun and a source of motivation. The increased awareness of physical activity was an important outcome although some participant stated that the novelty began to wane away after one month of use. Likewise, Partridge, McClary King and Bian (2011) studied high school students' perceptions of using heart rate monitors during physical education class and found that physical education was not as enjoyable since heart rate monitors were introduced. Students' physical education grades were impacted by the heart rate monitors which made the classes more demanding than before. However, physically more active students reported liking the heart rate monitors less than less active students. Therefore the purpose of this study was to analyze students' experiences of using heart rate monitors during physical education lessons.

Methods

Participants and research setting

Four intact classes with 75 students from grade five and six (age 11–12 years) participated in this study. The participating classes consisted of two co-educational classes (n=20 and n=18), one single-boy class (n=19) and a single-girl class (n=18). The

population was initially 79 students but 75 students (31 girls and 44 boys) returned written informed parent consent.

Data were collected during two indoor physical education lessons. All four classes followed the same lesson structure during both lessons. Five different heart rate monitor activities were taught based on guidelines about the use of technology in physical education published by the National Board of Education. The classes were normally taught by classroom teachers specialized in physical education but heart rate monitor lessons were conducted by one of the researchers. The first lesson consisted of three heart rate monitor activities (Same rate – different speed, Familiarize yourself with your heart, Heart rate relay) and a large group game. The second lesson consisted of two different heart rate monitor activities (Follow the leader, Heart rate bingo) and a large group game. Although the lessons were scheduled for 90 minutes, actual lesson duration was noticeably less. Roll call, changing into physical education uniforms and fitting of heart rate monitors reduced active teaching time to an average of 50 minutes.

In the activity *same rate – different speed* the teacher determines a heart rate that students should try to reach and maintain by moving freely in the gym. In *familiarize yourself with your heart* students receive a worksheet with different tasks and after each task they filled in their heart rates. During the activity *heart rate relay*, students are divided into small teams and one student at a time moves to the other end of the gym and back. Before the next student may start, the previous student's heart rate has to be within a certain interval. In *follow the leader*, students were divided into smaller groups and are following the leader's movements. The leader is the student whose heart is rate closest to what the teacher states at the switch. The switch takes place with one-minute intervals and the teachers changes the target value every time. In *heart rate bingo*, the teacher

places tags with heart rate values under cones and students have a bingo sheet to be filled. Students may mark a cross on the bingo box for each value that is achieved. Students should try to get as many lines as possible.

Data Collection

The students completed immediately after each lesson a questionnaire to assess students' experiences of the lesson. They were required to respond about different activities to statements on a four-point Likert scale and to open-ended questions whether the activity was perceived to be fun or boring. At the end of the second lesson, students completed a seven-item questionnaire to assess their perceptions of heart rate monitors in general. Five of the items covered statements on Likert scale about enjoyment, experience and future intensions to use heart rate monitors. They were also expected to respond to three open-ended questions about how they perceived the use of heart rate monitors.

In addition, student activity was measured by heart rate monitors. Heart rate monitors (Polar E600, Polar Electro, Kempele, Finland) were programmed to record once every 5 second. The heart-rate threshold for MVPA was set at 143 beats per minute, based on findings from previous research in the same age group. The teacher demonstrated and explained what heart rate is and how to secure the monitor in the beginning of the first lesson. The lesson format and questionnaire was piloted with one fifth grade class and the structure of the activity and the questionnaire was somewhat remodeled.

Data analysis

Data were analyzed using SPSS version 17.0 (SPSS, Chicago, IL) and statistical significance was set at $p < 0.05$. All t-tests were two-tailed and categorical variables were analyzed with χ^2 tests. An inductive content analysis was conducted to examine the data from the open-ended questions. Two authors identified and coded together the raw data to determine what particular categories emerged. In the analysis, data were categorized and recategorized until identified categories were exhausted. Triangulations were consistently conducted to enhance the trustworthiness of the information. Categories were developed according to salient evidence that emerged from the analyzing processes. One third of the data was recoded one month later in order to verify the accuracy of the categories and there were only minor differences.

Findings

The average heart rate was for girls 124 beats per minute with a range from 108 to 140 beats while the average heart rate was for boys 126 beats per minute with a range from 99 to 147 beats. The average maximal heart rate was for boys 189 beats per minute (range 168 – 220) and for girls 181 beats per minute (range 150 – 203) and the difference was statistically significant ($p<.05$). Boys spent in average 28.1% of class time in moderate to vigorous physical activity (MVPA) while girls spent 22.3% ($p<.01$) and the average MVPA for all students was 25.7% of lesson time. Figure 1 shows heart rate data for one student with a MVPA close to the average of all students.

Figure 1 near here

Most of the students (83%) liked to use the heart rate monitors during physical education lessons. One qualitative category that came up was that students enjoyed it

because they could see and follow their heart rate variation in different activities and some students liked to observe how high and low heart rate values they could achieve (see Table 1). Another category was the variation that students experienced compared to regular physical education lessons and that heart rate monitors was something new and exciting. Eleven students responded that everything was fun. On the other hand, almost half of the students indicated that nothing was boring when they used hear rate monitors. Another negative category was that the monitors were uncomfortable and the students noticed that the heart rate monitors strapped, chafed or were sticky. Some student felt that it was complicated to attach and use the monitor while others experienced the different lesson content as difficult, boring or too demanding.

Table 1 near here

About half of the students wanted to try them again during a physical education lesson or to use them during leisure time. There was a positive significant relationship between how students liked hear rate monitors and the willingness to use heart rate monitors again both in school (χ^2 [6, N = 68] = 52,4, p < ,001) and during leisure time (χ^2 [6, N = 68] = 19,53, p < ,01).

Student responded to open-ended questions and qualitative data from different activities were analyzed and categorized into seven mutual categories both for enjoyable and boring experiences. The category *activity* was reported in both a positive and a negative perspective and could mean the activity, a certain task or movement in the activity, the rules or specific demands in the activity. To *follow their own heart rate* implied that the student could observe the heart rate and how it reacted to different activities. The category *movement* described in positive sense a possibility to move and negatively the demand of having to make an effort. Here running was a common word in

both positive and negative responses. *Emotional aspects* represented both positive and negative emotions. Positive experiences were such as excitement, challenge and joy of success. Negative experiences were such as feeling of failure, that it was monotony or frustration with a task. The category *other* had statements related to the monitor and some social aspects within the lesson. Some students had responded with *everything* or *nothing* in both enjoyable and boring experiences.

Table 2 shows that about three quarter of the students enjoyed different activities and the heat rate relay was the most popular activity while follow the leader was least popular. However, the differences were just marginal. Students' enjoyable experiences were mainly described by activity, follow the heart rate and movement categories. Student negative experiences were primarily from the nothing and the activity category.

Table 2 near here

The most frequent response to enjoyable experiences for the activity *Same heart rate – different speed* was to see and follow their own heart rate. Many students also liked to run and move. On the other hand, the most negative experiences were linked to the activity category. Here this meant that, it was difficult to obtain the heart rate at the specified level. The activity was also seen monotony for some students.

In *familiarize yourself with your heart* students reported that the most positive experience was to follow how their heart rate varied in different tasks. The activity consisted of several tasks that were perceived as fun by some but boring to another part of the students. However, half of the students replied that nothing was boring. The task "write down your heart rate when you have shouted as loud as you can in a minute" was perceived unpleasant by five students.

In the activity *heart rate relay* students responded that the most positive experiences was the activity category. The students also liked to run and move. The relay was a challenging experience and students felt they had to plan how to move and that it was difficult to exactly reach the target zone. This challenge was also a negative experience and some students did not like the competitive element.

The category activity and movement were the most positive experiences in the activity *follow the leader*. Student liked the activity when they could come up with own movements. Some students felt that the activity was physically demanding and even pointed out that they were sweating, which was perceived as boring. In addition, some students liked to lead their group and did not want to follow others, while others did not like the leadership role.

Students reported most frequently the category activity and emotional aspects as enjoyable experiences from the activity *heart rate bingo*. This activity was perceived different and exciting. The activity allowed for example the students to decide for themselves how to move, which they appreciated. Students also indicated that it was fun to succeed in reaching the correct heart rate and to get bingo. However, negative experiences were related to the difficulty of getting the heart rate to increase and drop in a short time and to reach the exact heart rate. Certain heart rates were perceived as too high or too low. Some students felt that the activity was too demanding while others thought it was boring to not have time to receive bingo.

Discussion

Results from these data showed a large variation within different students in average and maximal heart rate and MVPA during the same physical education classes

which emphasizes the importance of individualized instruction. Heart rate monitors provide an individualized measure of the physiological response to physical activity, which is dependent on the exercise intensity, frequency and duration. However, students did not in average meet the objective to be physically active for 50% of lesson time while these students were in average physically active at a MVPA level one fourth of the time. The objective of being physical active half of the lesson time at MVPA level is not easy to achieve but several researchers have shown that it is possible or at least higher than 25% (Fairclough and Stratton 2006). The primary goal for these lessons was not to enhance fitness. Instead, the aim was that students would get acquainted with and learn about their own heart rate using heart rate monitors. Although the aim was not to achieve health benefits, we would still have liked the intensity to be higher.

The lesson setup can be questioned because the intensity was so low. In some of the activities, there were tasks where, for example students had to reach as low heart rate as possible, or to observe the heart rate after lying on the floor a certain time. This will lower the activity level for the whole lesson. The time for instruction and organization has also been rather long and this may have been due to that the teaching content and the structure was unusual and different from normal lessons. In addition, these activities have not been planned in such a way that students need to maintain a high heart rate level for a long time. There are activities in the guidelines published by the National Board of Education that are better suited to provide higher activity levels.

More than 80% of the students found it enjoyable to use heart rate monitors and more than half of the students would consider using them again. The result can be compared with research in which approximately 80% of students say they enjoy school physical education (Romar 1995; Soini et al. 2007) or that school physical education is

interesting (Eriksson et al. 2003). This means that we cannot expect that all students would like everything that we do in physical education.

However, only 12% of the students did not want to use heart rate monitors again in physical education classes, 17% of students thought that everything was enjoyable and 47% said nothing was boring when they used heart rate monitors. The positive attitude to heart rate monitors support the idea of bringing in new approaches to develop teaching in physical education towards a more student-centered approach.

Strand and Mathesius (1995) suggested that heart rate monitors can be a tool to develop positive student attitudes towards physical education and a physical active lifestyle. When new methods are included in teaching, the interest may initially be large but diminish after some time (McCaughtry et al. 2008). If the intervention had been going on for a longer duration, the results might have been different. Students' experiences might be influenced by that the participation was something beyond the ordinary physical education and that teaching was conducted by a different teacher than normal. However, this variation was something that the students liked.

Heart rate monitors provide a possibility to carry out instruction based on students' individual abilities. In our study, there were no gender differences in students' experiences of the use of heart rate monitors. This may be the result of that the activities in these lessons were designed in a way that supports students' individual potential and they receive a feeling of being able make their own decisions. Student limited knowledge and participating in repulsive activities will decrease motivation for physical activity (Chen and Darst 2002). Therefore, if the starting point in teaching is that students are working at their individual level, then perhaps might the feeling of inadequate knowledge and skills be avoided.

Heart rate monitors may be a way to individualize teaching physical education. We believe that the use of heart rate monitors can create an understanding among students that all students are different in terms of workload and performance. The use of heart rate monitors can also create a task-oriented climate in which students *compare themselves with themselves.* A task-oriented climate has shown to have a positive relationship with motivation (Jaakkola et al. 2006), satisfaction (Spray et al. 2006) and performance (Soini et al. 2007; Spray 2006).

For a major part of the students, this was the first time they used heart rate monitors, which may partly explain why more than half of students responded that the most enjoyable aspect of using heart rate monitors were to observe and follow their heart rate. This novelty could also be seen when some of the students felt that the watch was too large and the strap was uncomfortable. However, we believe that the use of heart rate monitors is a habit and that students get accustomed by using it.

Most of the students liked the various activities and they enjoyed distinctive aspects of the activity, to follow their heart rate and to be able to move. Previous research has showed that the movement feature is a significant motivation factor in physical education (Eriksson et al. 2003; Luke and Sinclair 1991). Conversely, this study showed that some students may experience movement and physical effort adversely, which also has been previously reported (Luke and Sinclair 1991, Partridge, McClary King and Bian 2011).

Activities during the lessons were more task oriented than performance oriented and the students likes that in some activities they had some influence. To be involved in decision making and planning in physical education motivates students (Luke and Sinclair 1991) and increases the sense of autonomy (Soini et al. 2007). Competence and

autonomy are two of the three basic needs addressed in the self-determination theory (Deci and Ryan 2000) and can be addressed during lessons with a heart rate monitor. This sense of competence and autonomy during the lessons in the study, may have influenced students' positive attitude towards the use of heart rate monitors. Nevertheless, for example some students did not like the pulse bingo when they fail to get bingo or that it was difficult to reach some hear rate values. Luke and Sinclair (1991) showed that lack of sense of competence and success can lead to amotivation.

According to Lee (1997), there are several factors that influence students' thinking and behavior. Students' perceived and actual competence, goal orientation and values influence along with factors in the school environment, their motivation and attitudes toward physical education. We believe that the heart rate monitors may develop a sense of student competence and create a motivational climate, since lessons with heart rate monitors are based on the view that all students are individuals with different needs. To feel competent and independent with the ability to influence creates positive attitudes and motivation to participate in physical education and will develop a physical active life-style.

References

Beighle, A., C.F. Morgan, and R.P. Pangrazi. 2004. Using pedometers in elementary physical education. *Teaching Elementary Physical Education* 15, no. 1: 17-18.

Benham-Deal, T., and. Deal L.O. 1995. Heart to heart: using heart rate telemetry to meet physical education outcomes. *The Journal of Physical Education, Recreation & Dance* 66, no. 3: 30-35.

Brewer, J., and S. Nelson. 2005. Using and caring for pedometers. *Strategies: A Journal for Physical and Sport Educators* 18, no. 5: 28-29.

Chen, A., and P.W. Darst. 2002. Individual and situational interest: The role of gender and skill. *Contemporary Educational Psychology* 27, no. 2: 250-269.

Clarke, K.K., J. Freeland-Graves, D.M. Klohe-Lehman, T.J. Milani, H.J. Nuss, and S. Laffrey. 2007. Promotion of physical activity in low-income mothers using pedometers. *Journal of the American Dietetic Association* 107, no. 6: 962-967.

Deci, E., and Ryan, R. 2000. The "What" and "Why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry* 11, no.3: 227–268.

Dyson, B. 2006. Students' perspectives of physical education. In *Handbook of physical education*, ed. D. Kirk, D. MacDonald, and M. O'Sullivan, 326-346. London: Sage Publications.

Eriksson, C., K. Gustavsson, T. Johansson, J. Mustell, M. Quennerstedt, K. Rudsberg, M. Sundberg, and L. Svensson, 2003. *Skolämnet Idrott och hälsa i Sveriges skolor - en utvärdering av läget hösten 2002*. Örebro universitet: Institutionen för idrott och hälsa.

Fairclough, S., and G. Stratton. 2005a. 'Physical education makes you fit and healthy'. Physical education's contribution to young people's physical activity levels. *Health Education* Research 20, no. 1: 14-23.

Fairclough, S., and G. Stratton. 2005b. Improving health-enhancing physical activity in girls' physical education. *Health Education Research* 20, no: 4: 448-457.

Fairclough, S., and G. Stratton. 2006. A review of physical activity levels during elementary school physical education. *Journal of Teaching in Physical Education* 25, no. 2: 239-25.

Gardner, P.J., and P.D. Campagna. 2011. Pedometers as measurement tools and motivational devices: new insights for researchers and practitioners. *Health Promotion Practice* 12, no. 1: 55-62.

Jaakkola, T., M. Soini, and J. Liukkonen (2006). Liikuntanumeron yhteys yläasteikäisten oppilaiden liikuntamotivaatioon. *Liikunta ja tiede* 43, no. 6: 18-25.

Jago, R., R.G. McMurray, S. Bassin, L. Pyle, S. Bruecker, J.M. Jakicic, E. Moe, T. Murray, and S.L. Volpe. 2009. Modifying middle school physical education: Piloting strategies to increase physical activity. *Pediatric Exercise Science* 17, no. 3: 217-236.

Lee, A. 1997. Contributions of research on student thinking in physical education. *Journal of Teaching in Physical Education* 16, no. 3: 262-277.

Lubans, D.R., P.J. Morgan, and C. Tudor-Locke. 2009. A systematic review of studies using pedometers to promote physical activity among youth. *Preventive Medicine* 48, no. 4: 307-315.

Luke, M. and G. Sinclair. 1991. Gender differences in adolescents' attitudes toward school physical education. *Journal of Teaching in Physical Education* 11, no. 1: 31-46.

Lutes, L.D., and E.K. Steinbaugh. 2010. Theoretical models for pedometer use in physical activity interventions *Physical Therapy Reviews* 15, no. 3: 143-153.

McCaughtry, N., S. Rocco Dillon, J.J. Martin, and K.L. Oliver. 2008. Teachers' perspectives on the use of pedometers as instructional technology in physical pducation: A cautionary tale. *Journal of Teaching in Physical Education* 27, no. 1: 83-99.

McKenzie, T.L., J.F. Sallis, J.J. Prochaska, T.L. Conway, S.J. Marshall, and P. Rosengard. 2004. Evaluation of a two-year middle-school physical education

intervention: M-SPAN. *Medicine & Science in Sports & Exercise* 36, no. 8: 1382-1388.

McManus, A.M., R.S.W. Masters, R.M.T. Laukkanen, C.C.W. Yu, C.H.P. Sit, and F.C.M. Ling. 2008. Using heart-rate feedback to increase physical activity in children. *Preventive Medicine* 47, no. 4: 402-408.

Nichols, R., K.L. Davis, T. McCord, D. Schmidt, and A.M. Slezak. 2009. The use of heart rate monitors in physical education. *Strategies: A Journal for Physical and Sport Educators* 22, no. 6: 1-40.

Partridge, J.A., C. McClary King, and W. Bian. 2011. Perceptions of heart rate monitor use in high school physical education classes. *The Physical Educator* 68, no. 1: 30-43.

Romar, J-E. 1995. *Case studies of Finnish physical education teachers. Espoused and enacted theories of action*. Åbo: Åbo Akademi University Press.

Sallis, J.F., T. McKenzie, J. Alcaraz, B. Kolody, N. Faucette, and M. Hovell. 1997. The effects of a 2-year physical education program (SPARK) on physical activity and fitness in elementary school students. *American Journal of Public Health* 87, no. 8: 1328-1334.

Soini, M., J. Liukkonen, T. Jaakkola, E. Leskinen, and P. Rantanen. 2007. Motivaatioilmasto ja viihtyminen koululiikunnassa. *Liikunta ja tiede* 44, no. 1: 45-51.

Spray, C., J. Wang, S. Biddle, and N. Chatzisarantis. 2006. Understanding motivation in sport: An experimental test of achievement goal and self determination theories. *European Journal of Sport* Science 6, no. 1: 43-51.

Strand, B., and P. Mathesius. 1995. Physical education with a heartbeat. Part 2. *Journal of Physical Education Recreation and Dance* 66, no. 9: 64-68.

Stratton, G. 1997. Children`s heart rates during British physical education lessons. *Journal of Teaching in Physical Education* 16, no. 3: 357-367.

Tipton, J., and A.N. Sander. 2004. Heart rate monitors promote physical education for children. *Teaching Elementary Physical Education* 15, no. 1: 14-16.

Tables

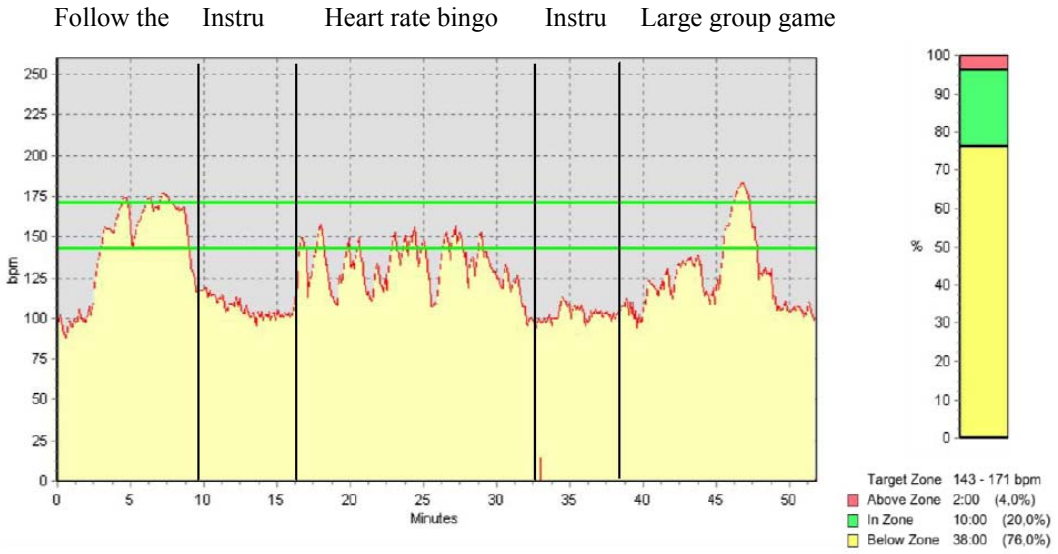
Table 1 Students' experiences of the use of heart rate monitors during physical education classes

Category	Positive N	Positive %	Negative N	Negative %
Follow the heart rate	32	50.8		
Variation	8	12.7		
To move	3	3.2		
To learn	1	1.6		
Everything	11	17.5	3	5.1
Nothing	5	7.9	28	47.5
Do not know	4	6.3	3	5.1
Uncomfortable			14	23.7
Complicated			8	13.5
Lesson content			3	5.1
Total	63	100	59	100

Table 2 Students' positive and negative experiences in different activities

	Same heart rate - different		**Familiarize yourself**		**Heart rate relay**		**Follow the leader**		**Heart rate bingo**		**Total**	
	Percentage of students enjoying the activity											
Enjoyment	74.2%		76.9%		77.6%		64.3%		70.0%			
	Students positive and negative statements											
	+	-	+	-	+	-	+	-	+	-	+	-
Activity	6	11	13	19	13	11	23	15	14	13	69	69
Follow the heart	18	3	23	0	6	1	9	0	4	0	60	4
Movement	12	7	2	3	10	2	13	9	7	4	44	25
Everything	6	1	11	1	10	2	4	4	9	2	40	10
Emotions	3	2	2	4	5	2	1	5	11	8	22	21
Nothing	3	28	2	31	4	32	5	19	5	21	19	131
Other	5	3	3	2	6	7	1	4	4	9	19	25
Total	53	55	56	60	54	57	56	56	54	57	273	285

Figure 1 One student's heart rate from the second lesson.



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Promoting Student Ownership in a Non-Traditional Physical Education Teacher Education Internship Course

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Abstract

Background: Recently in education the idea of promoting *student ownership* has emerged as a means of authentically engaging students in their own learning. Providing them with ownership over their experiences can lead to students making a greater connection with what they are learning. In Teacher Education, student ownership takes the form of education *belonging* to the students rather than a "service" that professors are providing to them (Scott, 2009).

Purpose: In this inquiry the experiences of pre-service teachers were explored when they were given the opportunity to have increased ownership of course content and organization through the use of a social constructivist teaching approach.

Context of the Study: The inquiry took place within the context of a non-traditional, elective internship course in a Physical Education Teacher Education (PETE) program.

Data Collection: Data were collected using several different methods including interview, participant observation, and document analysis.

Data Analysis: Data were analyzed inductively using interpretive methods. Assertions were made based on interpretation of the data associated with the most prominent theme.

Findings: The idea of ownership emerged as a prominent theme across data sources and most often emerged when students discussed the nature of the course, and their relationships with their peers. Interpretation of the various data sources yielded the following assertions: (1) Increased ownership was fostered through the nature of the

course and the way it was taught, and (2) The development of a team or group atmosphere encouraged feelings of ownership among the interns.

Conclusions: Although hesitant at first, students came to enjoy the fact that the course instructor gave them the freedom to make decisions, and have in-depth discussions. In addition their appreciated the interdependence that their developed with their peers. Consequently, they described this as being fundamentally different from all of their other PETE-related courses. The students were able to bridge a gap from being passive participants of their education to active learners in an authentic teaching and learning process. Closely tied to this is previous research of social constructivism with respect to teaching and learning. **Implications:** These findings are significant because strategies have been identified that could lead to increased ownership of pre-service teachers' learning. These strategies can assist in the preparation of quality Physical Educators who are increasingly engaged, and pro-active in the profession.

Key Words: Physical Education Teacher Education (PETE); ownership; social constructivism; pre-service teachers; field experience.

Introduction

Today's student is living in a world of Google, Wikipedia and smart phones where information is immediately accessible. Similarly in education he or she is increasingly being exposed to a reality of the banking concept in education where the student is the bank account and the teacher is the one responsible for depositing information into that account (Freire, 1993). This combination of convenience and passive learning has lead to a generation of students that seem disengaged and often times disinterested in their own learning. This is especially evident in higher education. William Lowe Bryan, the President of Indiana University from 1902-1937, once said that

"Education is one of the few things a person is willing to pay for and not get." It is difficult to assert whether students fail to engage in their learning because of their own attitudes and beliefs about education or because of the lack of quality in the education they are receiving.

As a result of these emerging societal and educational trends *engagement* has become an educational buzzword. However, some believe that in order to truly engage students in their own learning a sense of ownership must be fostered (Scott, 2009). Scott (2009) suggested several strategies to foster this sense of ownership and he calls for an educational experience that promotes mutual accountability between the student and the teacher. Basically this calls for a shift to a democratic rather than authoritarian approach to educating students. Vokoun & Bigelow (2008) assert that "the more alternatives we give students for participating in their own learning, the more engaged they will become" (p.74); essentially providing students with choices as a means of increasing engagement.

One way a sense of ownership, engagement or a meaningful connection to the content, has been fostered is through the use of social constructivism (Rainer & Matthews, 2002; Azzarito & Ennis, 2003; Chen, Martin, Sun & Ennis, 2007; Powell & Kalina, 2009; Carlson, 1999). When considering Physical Education this has yielded findings that suggest using social constructivist pedagogy in Physical Education classes allows students to make a deeper connection between their lives and what they are learning (Azzarito & Ennis, 2003). Further, students have the potential to become more engaged in their learning because the curriculum has the potential to provide students with more meaningful experiences.

Most of the research on the social constructivist teaching approach has been done in the context of K-12 schooling. Some scholars have explored social constructivism

within the broader context of teaching in higher education (Rainer & Matthews, 2002; Carlson, 1999). Following a social constructivist framework many scholars have shifted from a teacher-centered to a learner-centered approach to delivering teacher education (Rainer & Matthews, 2002). According to Carlson (1999) teacher education programs tend to follow a pattern of theory to practice and have little opportunity to make connections between the two. This type of theory to practice model may contribute to pre-service teachers being ill prepared for the realities they will face in their future public school teaching positions. She suggests that using a social constructivist approach to teaching can be "a vehicle for critical empowerment" (p. 203). Liston and Borko (2009) called for flexibility in teacher education with pre-service teachers being prepared to "inquire into as well as voice their understanding of students, learning, schools and the varied cultural contexts of schooling" (p.107). In line with Vygotsky's ideas about social constructivism, cooperative learning, where students not only work with the teacher, but also cooperatively with each other has the potential to create a supportive learning environment that can lead to more successful problem solving (Powell & Kalina, 2009).

Rainer and Matthews (2002) focused their research efforts on exploring how they, as faculty members, can most appropriately encourage students to foster ownership with respect to their learning. When translated to teacher education their initial framework suggests balancing the relationships of power and authority, providing opportunities for speaking one's truth and hearing oneself and others, creating spaces for everyone to contribute, and urging students to become resourceful for one another among others.

Considering that finding ways to encourage student ownership has become an area of interest in education and that several scholars have suggested using a social constructivist framework to accomplish this, the intent of this research was to describe

the sense of student ownership that emerged during a non-traditional Physical Education Teacher Education (PETE) internship course which was taught using a social constructivist framework.

Methods & Procedures

Context of the Study

During the Fall 2009 semester at a large university in the Western United States five PETE majors enrolled in an elective internship course titled "Physical Activity Promotion and Facilitation." Some of the objectives of this course included, among others: Planning and executing a physical activity promotion campaign at a high school, collaborating with colleagues and school personnel in order to organize an out-of-class time physical activity program at the high school, as well as assessing the day-to-day facilitation events by reflecting on challenges, successes and needs of the participating high school students.

Enrollment in the internship course required the PETE majors to go to an area high school twice a week before school and to attend a two-hour weekly seminar on the university campus. The course instructor, Peyton, was a graduate teaching assistant who had previously taught all five of the students enrolled in the course. In the early seminar meetings Peyton set the stage for the course and guided the discussion by providing readings about out-of-class physical activity programming. In addition she sent out weekly prompts asking the students to respond to a specific question or reflect on experiences they had in seminar or at the high school. As the semester progressed Peyton's role in the seminar meetings changed and the students' really took over the various required leadership roles. The requirements of their roles ranged from creating a seminar agenda to delegating various planning and promotional tasks.

The course syllabus provided to the PETE students was intentionally very vague in nature. This allowed for the course to basically create itself, or more specifically, for the students to create the content of the course. The intent here was to foster learning through social interaction between the students, the teacher and the experiences they were having at the high school. Another reason for the general course description was that the individuals who designed the course really wanted the students to make the course and the eventual physical activity program their own. Their reasoning was that if the ideas and course activities were generated by the students themselves there was a greater chance that they would be actively engaged in their learning. The PETE majors were regularly reminded by Peyton that the physical activity program was theirs and that they needed to decide what needed to be done to make it successful.

Peyton regularly reflected on what was occurring in seminar and at the high school throughout the semester and made several adjustments to her role as the course instructor. Although at times she did report some frustrations with the students' inability to quickly render a decision or voice an idea, she maintained a supportive demeanor throughout the course. She described her role less as instructor of the course and more of facilitator of student learning. Her intent was to guide the students by using careful and timely prompting without providing them with answers or overly scripting their experiences.

Participants

The individuals involved in this inquiry were members of an elective Physical Education internship course at a large university in the western United States. All five participants were PETE majors enrolled in a teacher licensure program; four females who ranged in age from 21-27 and one male who was in his early 40's.

Stefanie grew up and went to school in the region. At the time of the study she was in her last semester of coursework before her student teaching experiences. Adrian attended high school in the early 1980's and had returned to school to pursue his Bachelor's degree and teaching certification in Physical Education. He was also in his last semester before student teaching. Olivia grew up in a large family of teachers and had a passion for physical activity and quality teaching. She was completing her last semester of coursework before she was to begin her student teaching. Taylor moved around a lot as a child and she had two semesters to complete before she would be ready for student teaching. Sara was enrolled in the Physical Education certification program as a Master's student and had previously earned a degree in sports management. At the time of this study, Sara, Olivia, Stefanie and Adrian were simultaneously enrolled in their required pre-student teaching practicum.

The interns were provided with an information letter describing the study, which was approved by the university's office of Research Integrity and Assurance. They were assured that their participation in the study would not affect their grade or how they were going to be treated by the course instructor.

Field Experience Setting

The field experience took place at Valley High School which was located near the university in an upper-middle class neighborhood. Valley High School has an extensive bussing system that at the time of the study transported approximately 542 students from other areas as far as 20 miles away from the school. This partly accounts for the diverse student population of approximately 2,476. The high school accommodates students from grade 9 through 12, with 57% white, 22% Hispanic, 14% black, 5% Asian and 2% American Indian students.

The interns spent two mornings per week at the high school implementing their physical activity program which they named *The Den* during an early seminar meeting. Although Peyton and other university personnel were present at every physical activity session the interns were the ones who were responsible for running the program. At *The Den* the interns were responsible for securing facilities, working with school personnel to appropriately promote physical activity sessions, as well as organizing and facilitating physical activity sessions. *The Den* was open every Tuesday and Thursday from 7:00 A.M. until the first bell sounded at 7:44 A.M. The interns used a variety of venues on the school campus for the physical activity sessions including the main gym, an auxiliary gym, a hallway space, the football field, a softball field and an outdoor concrete court area. When the bell rang for the school day to begin the interns cleaned up and stored the equipment they had used that day. They then participated in debriefing discussions with Peyton and other university supervisors before leaving the school campus.

Data Collection

Data were collected using three techniques: interview, participant observation and document analysis. Multiple techniques were used for data collection in order to avoid the problems associated with *inadequate variety in kinds of evidence* (Erickson, 1986).

Interviews. Interns were interviewed three times, at the beginning, middle and end of the semester. Each interview was semi-structured and explored topics that were relevant based on observations and inquiries into the interns' prior experiences. The first interview served to get to know the interns and learn about their past experiences in Physical Education as well as their current beliefs about teaching and Physical Education. Halfway through the semester another interview explored the interns' experiences up to that point in the seminar and their field experience. At the end of the semester a

culminating interview served to sum up the interns' experiences and how some of their beliefs had shifted or changed. Approximately 18 months after the completion of the course four of the five interns (all of which have since graduated from the PETE program) were interviewed again to re-visit their experiences in the course. In addition to the formal interviews, informal interviews were also used at times to clarify an observed action or to gain greater insight into a specific event during the seminars or at Valley High School.

Participant Observation All school-based physical activity sessions and seminars throughout the semester were observed and detailed fieldnotes were taken using a lap top computer. During each session at *The Den*, the observed intern wore a wireless microphone so the investigators could hear all the interactions they had with students and their peers from a distance. Concrete examples and direct quotes were used in the fieldnotes when describing the events that occurred during the interns' experiences in the field and during the seminar meetings.

Document Analysis A final technique used to collect data for this inquiry was document analysis. Examples of documents that were analyzed include responses to weekly prompts, copies of the seminar agendas that were produced by the interns and promotional materials designed and produced by the interns throughout the internship experience.

Data Analysis

Data were analyzed inductively using an interpretive approach. The results were generated from data collected with the purpose of describing the experiences PETE majors had while creating and implementing an out-of-class physical activity program. After several readings of the entire data corpus the theme *ownership* emerged across all

data sources. Once this theme had been identified assertions were made based on interpretations of the data associated with the *ownership* theme. With respect to teacher education, Rink (1993) describes such methods of data analysis as a means of explaining specific and situational events without the intent to control or predict outcomes. Thus the intent here is not to generalize. Rather to provide context to the experiences of five PETE majors and to potentially spark discussion about the current methods and practices being used in PETE.

Results

Assertion 1 – Increased ownership was fostered through the nature of the course and the way it was taught. Each of the interns recognized from the very beginning of the course that it was not going to be like other classes they had taken during their teacher education program. There were two distinctive patterns that emerged in the data that supports this assertion: (1) the structure of the course and (2) the teacher and how she taught the course. During the midway interview Sara said, "I've never had a class where the students are supposed to kind of run it. You know Peyton is telling us to make it our own and that has never, never happened in a class for me." Olivia described the class as exploratory, "It's kind of fun to go in with your teacher and you're kind of all on the same page and that never happens so I think that's good because you're all on an even playing field." Taylor appreciated the fact that she had some autonomy saying "I'm used to teachers telling me what needs to be done for assignments instead of the other way around. It's kind of cool."

The interns really appreciated the differences between this course and their previous PETE classes. Some even discussed the ways in which they believed they were learning more. In her midway interview Stefanie said:

It's not necessarily like a class where you go down and you get lectured on and everything like that. Yeah we have Monday seminar but we're like actually working towards something. It's not like you read your textbook and memorize chapter 13 type thing. So we learn more from experience and hands on.

Similarly Olivia explained:

Well in typical classes you go in, the teachers go in and the teacher has their lesson plan for the day or their PowerPoint for the day, or their activity for the day and they teach you and tell you how things are going to go, like with (other teachers) it's PowerPoint then it's in the gym telling us how to teacher talk or whatever. With this (class) it's kind of like we are all going in together and well let's see if this works, see if this doesn't I have no idea, we've never done this before in any way so it's kind of fun that way.

Although the interns recognized the differences they were also very aware that not all classes could be taught in this manner. Sara pointed out her adapted Physical Education class in particular and explained that it was necessary for her teacher to teach her about the disabilities before she could go out and work with students with disabilities. However she followed this up with "sometimes the way it is taught is just so monotone and it kills me so I have to basically teach myself the night before the test…(with this course) I'm not like bored listening to lecture…I'm learning as I'm going."

As could be expected all of the interns at some point or another mentioned the lack of tests, books and papers associated with the course; and not surprisingly they liked this aspect. Although they did have readings assigned to them, they saw them more as something to help them rather than something they had to memorize because they were going to be tested on the information. Adrian explained:

It's a different kind of workload. It wasn't let's read a book, it's more we need to do this, and how are we going to get this done. It was more like Peyton pushing us to think critically, than to open a book and have it in front of us.

Stefanie mentioned the way she learns best and how this was encouraged in the course, "I can't remember anything from a textbook. I learn more visual and actually doing things than somebody telling me something and then I have to regurgitate that information."

Another major pattern that consistently emerged across data sources was that of Peyton's role as the teacher of the course. Midway through the course Stefanie explained, "She's (Peyton's) more of like a supporter and brings up ideas and kind of like discovery learning, where she sets a problem in front of us and then we have to work together to solve that problem." She continued:

Making us actually think outside the box and come up with our own ideas and try our own ideas out even though she may know that they're not the best but try them out and if we fail then she may help us figure out something better.

In the follow-up interview Olivia discussed the difference between the way Peyton taught the course and the way some of her other teachers teach:

I thought it was different because she was more just, um, I don't know because she was obviously the teacher, she was the person we went to and got our information from, but she would just kind of like lead us into discussion, or like give us like uh, like a step up on an idea, like maybe you should think further about this, or do you really think this would work because of this, and she just kind of put it out there for us and then we would take over from there. So instead of it being a constant teaching, teaching, teaching, listen to me, now we're going to do this, it was kind of more just like, she was just kind of there to guide us and figure things out. So that was a little different.

Although all of the interns recognized Peyton as the teacher of the course, at some point or another all of them referred to her as some variation of a "guide," a "facilitator," or as an "encourager."

The method of teaching the course led to the students saying things such as what Taylor said in her exit interview, "It's not how the teacher wants it, we didn't have to follow a bunch of strict teacher-made rules." They seemed to really value the sense of power they had over the direction of the course while at the same time recognizing the importance of Peyton to their success. In the follow-up interview Sara described Peyton's role this way:

She would get us rolling and when we were stuck and we weren't talking she would be there to you know start up conversation or get us thinking. She wasn't telling us what to do, I just think she did a really good job just kind of letting us navigate through, but she was always there to get us on the right path.

It was very obvious that this course was extremely different from any course the interns had ever been enrolled in for a variety of reasons. The reasons discussed in relation to this assertion are just a few of the most commonly mentioned by the interns throughout the course and during the follow-up interviews.

Assertion 2 – The development of a team or group atmosphere encouraged feelings of ownership among the interns. During interviews and prompts the interns regularly referred to their classmates as teammates or group members. If they were asked a question that specifically referenced their classmates they would turn around and answer the question replacing the word "classmate" with a word that was more group or team oriented. Adrian discussed how different the course was from his other classes because "…it's more of a teamwork thing. We have to rely on each other to get the stuff

done, because if we don't we all look bad." He continued, "…that's what this class is about, coming together as a group and rowing the boat the same way."

This sense of "group" or "team" took very little time to develop; however, it wasn't present from the very beginning. In her exit interview Sara explained:

(At the beginning) I think everyone was kind of embarrassed to say what they were thinking, but I think by the end we're all just comfortable with each other. We're willing to give our opinions and feedback to other people if we don't like what they did or what they said.

Similarly Stefanie said:

I think it took us a while to actually learn to collaborate with each other. I think that some people were kind of reluctant to actually get into doing it, but then after a while it was kind of just like, I don't want to say that we stopped being stubborn about things, but we all kind of just put down our barriers and were like 'okay let's just do this.'

From the very beginning the course instructor took steps to foster interdependence and a sense of group. Olivia explained:

Peyton said in her email that she should be the last person we go to for approval for like signs, like look to each other first to get feedback and I think that's really good because we are quick to go to her first.

The idea of going to the teacher first for guidance or approval is deeply rooted as a result of their long history of dependence on course instructors as students. Olivia added that it was difficult to not just go to Peyton to get immediate feedback. She said "Twelve, fifteen years of schooling that's just what you do." Therefore this transition to seeking approval and feedback from their peers was not something they were used to, but it became part of their experience throughout this course.

Very shortly into the semester the group identity was born. Along with this came a sense of comfort and trust and a recognition that they relied on each other to be successful. Sara commented that "Everybody has a chance to give input, and there is never dumb input so it gives everyone a chance to like say what they want to say, which is good." Sara discussed how this group identity helped to increase the feelings of ownership she experienced:

Absolutely yeah because like I said Peyton wasn't sitting up there telling us what to do it was like us talking, we had group leaders, you know, our ideas, I mean she obviously helped us and gave us ideas but for the most part it was all our ideas and you know she really pushed us to talk even though in the beginning we didn't want to because we didn't really know each other, but definitely I think that is why we felt like that.

Very rarely did they ever take individual credit for their successes or ideas with respect to planning for seminar or implementation of ideas at *The Den.* In a prompt response Olivia acknowledged the importance of the roles each interns filled. She said "I am proud of the role I have taken as a part of this team."

The interns were very quick to discuss how important the "group" was to them. In the follow-up interview Stefanie explained how important her classmates were:

Like 500 million percent, and I know that is not a real percentage but they were SO important and I thought that our group that we had there, like honestly I would have never like, I mean I'm kind of a weird one so I never would have really like hung out with them outside of the class but once we got to know each other I was like oh my gosh you guys are awesome and it worked out pretty well together which was really cool we ended up just doing, just having fun all the time which was awesome I mean we even carpooled which was amazing.

Adrian even commented that had the program been started by any other group of individuals that it wouldn't have been as successful, and Taylor said that it was "the best group I have even been part of." Sara recognized that their programmatic success occurred because "…everyone had their own role…everybody had input and they needed to do their job."

It was really exciting to see these classmates develop into friends and teammates. The novelty of the course definitely could have also lent itself to the sense of community experienced by the interns. Olivia said:

We had a bunch of other classes together (at the time) so we kind of had that camaraderie of being in *The Den*, being up at 6:45 together, you know we'd be sitting in other classes and kind of hang out and be like oh this happened today and the other people would be like what are you talking about? What are you doing? So yeah, I think that was kind of nice, it wasn't just a normal class, it's not like oh yeah we're in a (PETE) whatever class. It was like we're part of this thing, *The Den,* we go to the school and we do this, you know.

The sense of community fostered by the nature of the course definitely lent itself to the overall sense of ownership felt by the interns, not only over the direction of seminar but also over the ideas implemented at the high school.

Discussion

Historically students progress through teacher education programs in a theory to practice manner (Carlson, 1999). Physical Education Teacher Education programs are no different. Most programs are structured to present classroom or lab-based coursework early in the program while later progressing to actual field-based, or *practice* experiences (Ayers & Housner, 2008; Placek & Silverman, 1983). This course was different in that

the learning occurred on-the-fly within the context of an internship experience. It was the experiences the PETE majors were having that were shaping their learning and growth as pre-service teachers.

Consistent with other findings regarding student perceptions of a social constructivist classroom (Hand, Treagust & Vance, 1997) the interns really appreciated the fact that they had increased voice in the classroom. The fact that it was their ideas that were being implemented, rather than the ideas of a power figure being imposed onto them, seemed to really increase their ownership over the educational experiences of this course. Hand et al. (1997) asserted that students were comfortable with the added responsibility imposed on them because of a shift in the control over their learning. Due to the fact that the interns were less dependent on the teacher required them to step up and shape their learning experiences on their own.

Although hesitant at first, students came to appreciate the fact that the course instructor gave them the freedom to make decisions, and they described this phenomenon as being fundamentally different from all of their other PETE-related courses. The students were able to bridge a gap from being passive participants of their education to active learners in an authentic teaching and learning process. Carlson (1999) indicated that "Teachers, at whatever level, are imposers in one way or another" (p. 214). The interns also recognized, and appreciated Peyton's role as the internship course teacher. However, they did indicate that they felt that they were on a somewhat level playing field with her, and that they each held important leadership roles within the context of the development of the course experiences. The role of the teacher in a social constructivist-type classroom is extremely important since the construction of knowledge depends not only on students' interactions with each other, but also those they have with the teacher

(Powell & Kalina, 2009). Contrary to what some may believe, providing students with ownership of their learning requires the teacher to be extremely proactive, reflective and strategic in the classroom. As the interns recognized very early on, their teacher never abandoned them, but rather was there to guide them and support their learning.

According to Vygotsky (1962) cooperative learning is an integral part of accomplishing social constructivism in the classroom. The teacher has a definite role, but the students must also interact with and learn from each other. The interns in this study definitely appreciated the added freedom they had to exchange ideas and lead discussions. Similarly Hand et al. (1997) reported that students taught using a social constructivist framework responded positively regarding the ability to have more student-led discussion. The fact that the interns developed a real group identity was invaluable to the success of their program, *The Den,* and the outcomes of the course in general. There was an emphasis on collaboration as a result of the team atmosphere that was created. This led to the interns focusing on their successes and failures as a collective unit, rather than placing praise or blame on a specific individual which is consistent with findings discussed in relation to social constructivist Physical Education (Azzarito & Ennis, 2003).

It is important to acknowledge that some of the experiences discussed by the interns could have been influenced by the fact that this class was extremely novel in comparison to the other classes in their PETE program. Not only were there only five students enrolled in the course, they also met at non-traditional times and in locations other than the typical classroom used by all PETE classes. With that said, the interpretation of the data associated with this study is in line with Rainer and Matthews' (2002) ownership development framework discussed in the introduction of this paper.

Therefore, there is warrant to suggest that the social constructivist framework that guided the experiences of the interns in the course fostered the interns' feelings of ownership over their learning.

Implications for PETE

As notes earlier, if we are to truly engage students in their own learning we must foster a sense of ownership (Scott, 2009) Further, Scott (2009) suggested that "Education is currently presented to students as a complete service package" (p. 36). Consequently there is very little room for "inspiring students to create their own education" (p. 36). This is especially true in K-12 education. However, in higher education and consequently in PETE, it would seem that there is more flexibility for the inspiration he suggests. Azzarito and Ennis (2003) recognize the lack of engagement often experienced during Physical Education classes delivered using a traditional approach. The same could be argued for PETE where it is more important than ever that we encourage ownership if we hope to develop a generation of quality Physical Educators who are reflective, proactive and engaged practitioners.

References

Ayers, S.F. & Housner, L.D. (2008). A descriptive analysis of undergraduate PETE programs. *Journal of Teaching in Physical Education, 27*, 51-67.

Azzarito, L. & Ennis, C.D. (2003). A sense of connection: Toward social constructivist physical education. *Sport, Education and Society, 8*, 179-198.

Carlson, H.L. (1999). From practice to theory: A social constructivist approach to teacher education. *Teachers and Teaching: Theory and Practice, 5*, 203-218.

Chen, A., Martin, R., Sun, H. & Ennis, C.D. (2007). Is in-class physical activity at risk in constructivist physical education? *Research Quarterly for Exercise and Sport, 78,* 500-509.

Freire, P. (1993). Pedagogy of the oppressed (New rev. 20th-Anniversary ed.). New York, NY: Continuum.

Hand, B., Treagust, D.F. & Vance, K. (1997). Student perceptions of the social constructivist classroom. *Science Education, 81*, 561-575.

Liston, D., Whitcomb, J. & Borko, H. (2009). The end of education in teacher education. Thoughts on reclaiming the role of social foundations in teacher education. *Journal of Teacher Education, 60,* 107-111.

Placek, J.H. & Silverman, S. (1983). Early field teaching requirements in undergraduate physical education programs. *Journal of Teaching in Physical Education, 2*, 48-54.

Powell, K.C. & Kalina, C.J. (2009). Cognitive and social constructivism: Developing tools for an effective classroom. *Education,* 130, 241-250.

Rainer, J.D. & Matthews, M.W. (2002). Ownership of learning in teacher education. *Action in Teacher Education, 24,* 22-30.

Rink, J.E. (1993). Teacher education: A focus on action. *Quest, 45,* 308-320.

Scott, J. (2009). Student ownership of education: Practicing democracy in schools. *Education Canada, 49,* 36-38.

Vokoun, M.J. & Bigelow, T.P. (2008). Dude, what choice do I have? *Educational Leadership, 66,* 70-74.

Vygotsky, L.S. (1934/1962). *Thought and Language.* Cambridge, MA: MIT Press.

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[i] Adventurous Activities is the term used in Wales to describe activities of a challenging and Outdoor nature in the Physical education Programme of study (DCELLS, 2008). Other terms such as *outdoor and adventurous activities* and *outdoor education,* which reflect earlier curriculum models and teachers' personal preferences, are for the purposes of this research, used synonymously.

[ii] Ofsted is the Office of Standards in Education in the UK.

[iii] ACCAC is the Qualifications, Curriculum and Assessment Authority for Wales.

[iv] DCELLS is the department for Children, Education, Lifelong Learning and Skills.

[v] ESTYN is Her Majesty's Inspectorate for Education and Training in Wales.

[vi] DFEE is the Department for Education and Employment.

[vii] PESS is the Physical Education and School Sport Project in Wales.

[viii] Trinity is the University of Wales Trinity St David, Carmarthen.