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Rethinking Sport Teaching in Physical Education: A Case Study of Research Based Innovation In Teacher Education

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Abstract: This paper focuses on the significance of physical education teacher education (PETE) in the diffusion of 'new' thinking about sport teaching in physical education. It explores issues arising from a case study investigation that sought to respond to the critical commentary about the form and substance of sport teaching in physical education by supporting innovation in school curriculum and pedagogy through pre-service teacher education. The study was designed to challenge PETE pre-service teachers' thinking about sport curriculum and pedagogy in physical education, introduce them to new thinking about models and specifically, the sport literacy model (Drummond & Pill, 2011; Pill, 2009, 2010). Details of the research design are presented and the insights that the data have provided in relation to challenges and opportunities that teacher educators and teacher education courses confront in seeking to promote and support curriculum and pedagogical innovation are discussed.

Introduction

Beliefs about teaching and learning are well established by the time physical education teacher education (PETE) pre-service teachers commence tertiary courses (Grossman, 1991; Mills, 2006; Pajares, 1992). PETE students begin their studies with clear images of schools and teachers from their school experiences. Research suggests that the influence of the lived experience of school physical education is more influential than PETE teacher preparation in the eventual practice of physical educators (Brennan, 2006; Hopper 1999; Jenkins, 2005; McCormack, 1997; Oslin, Collier & Mitchell, 2001). International researchers have recognised that the educational experiences of pre-service teachers when school students plays a significant part in shaping and moulding their understanding of what it is to be a physical education teacher and how teaching should be enacted (McNeill, Fry, Wright, Tan, Tan & Schempp, 2004). Lortie (1975) referred to this as an apprenticeship of observation. Schempp (1989) suggested that "the apprenticeship of observation is an ally of continuity rather than of change" (p. 36). How then, might physical education teacher educators work towards pedagogies that are innovative, rather than reproductive, when beliefs from the past develop expectations of what PETE will offer?

The purpose of this study was to consider pre-service physical education teacher education as a site for pedagogical innovation through the provision of a teaching context presenting a description of 'the possible' for sport teaching in secondary physical education. This description centred on a curriculum and pedagogical model that contrasted to the PETE

pre-service teachers' prevailing experience of being taught physical education at school, and their typical observations of sport teaching in physical education during professional teaching practice. The authors acknowledge that this research challenges the technical and textbook discourse of the "physical education method" (Metzler, 2011, p. 173) that the physical education community of practice (Holmes, 1999; Lave & Wenger, 1991) has traditionally shared. It was anticipated that the research would further inform the limits, constraints and possibilities of PETE pre-service coursework and PETE pre-service teachers as contextual factors (Rogers, 1995) affecting conceptual change toward curriculum alternatives. As Kirk (2010) has highlighted, while the apprenticeship of observation is a powerful influence upon ideas about how to teach (Lortie, 1975) the professional socialisation (Wright, McNeill & Butler, 2004) of university PETE is where those ideas can be confronted and their acuity challenged.

PETE and School Physical Education Curriculum Reform

This study focuses on curriculum and pedagogical innovation for sport teaching, termed *sport literacy* (Drummond & Pill, 2011; Pill, 2009, 2010). Siedentop (1994) defined literate sport participants as understanding the culture, ritual and traditions of a sport. In this research sport literacy is defined as the functional use of sport knowledge for active and engaged citizenship. Four distinct understandings of knowledge are considered in this definition of sport literacy: 1. Sport is an applied, practised and situated set of skills; 2. Sport creates embodied meaning, and meaning that can be communicated, interpreted, understood, imaged and used creatively; 3. Sport creates a 'text', which can be read for understanding; and 4. understanding sport requires a learning process (Pill, 2009). It has two themes for the curriculum: Firstly, that sport in physical education can enhance students' access to practices and ideas that can enable them to make positive contributions to society; and secondly, that sport helps students to understand the self and the society in which they live (Drummond & Pill, 2011).

Literature examining curriculum innovation suggests the term *innovation* is often used interchangeably with the term *change* (Wright, McNeill, Fry, Tan, Tan & Schempp, 2006). The authors accept Rogers (1995) explanation that an innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. More specifically, Rogers (1995) argued innovation by diffusion has four elements: invention of the innovation, diffusion (or communication) through the social system, an adoption period and consequences (Rogers & Shoemaker, 1971). This research considered the first elements of Rogers' innovation by diffusion process. It engaged directly with the role of teacher education in progressing curriculum innovation from university coursework into schools as PETE pre-service teachers translate the curriculum and pedagogical knowledge addressed in coursework into enacted curriculum while on professional teaching practice (PTP). In so doing, the study connected with a sustained line of critical commentary in the physical education field. This commentary suggests an apparent inability of initial teacher education to generate curriculum and pedagogy that can effectively challenge the longstanding dominance of sport-based multi-activity curriculum and associated, traditional pedagogies (see for example, Crum 1983; Kirk, 2010; Locke, 1992; Penney & Chandler, 2000).

It has been postulated that PETE, through the agency of pre-service teachers, may potentially have a key role to play in initiating and/or progressing curriculum change or reform in physical education. Drawing on research undertaken in the UK and Australia, Kinchin, Penney and Clarke (2005) argued universities can be catalysts for curriculum and pedagogical innovation. The research reported here was underpinned by the view that it is PETE pre-service teachers who "will carry PE forward for the next decade or longer" (Pill, 2007, p. 25) and that PETE courses can therefore actively promote curriculum innovation and

change, and provide an ideal environment that supports the adoption of new ideas (Butler, 2005; Macdonald et al., 2002). Tinning, Macdonald, Wright and Hickey (2001) noted that:

Student teachers have a role to play in the process of curriculum change or reform. It is no secret that it is during their undergraduate training that most teachers experience the most intensive training phase of their professional lives. It stands to reason that the preservice phase presents itself as an ideal forum through which new curriculum models can be efficiently and effectively introduced (p. 230).

The potential for PETE to act as the stimulus for enhancements in curriculum and pedagogy thus lies in the injection of new ideas and the accompanying provision of learning experiences and environments that prompt and support a transformative orientation. As Pill and Brown (2007) observed, this is in contrast to the normative reproductive of the status-quo and recognises that sustained conservatism in physical education has arguably not served the interests of many students in schools well, nor has it helped the professional standing. As argued below, sport teaching is the area of physical education where this status quo is most evident. It appears that physical education largely ignores talk about sport and the nature of education as the process of developing potential (Evans, 2004) across the three domains of education in, through and about (Arnold, 1979) sport.

Many PETE programs have embraced and adopted the idea of models-based instruction (Metzler, 2011) and examine various models or adopt a single instructional model for games teaching (Gurvitch, Lund & Metzler, 2008). Sport literacy is a model that seeks to bring together elements of Bunker and Thorpe's *Teaching Games for Understanding* (TGfU) approach (1982, 1983) and Siedentop's *Sport Education* model (1994). This research thus sought to promote synergies in TGfU and Sport Education and encourage PETE pre-service teachers to see the complementarity of the objectives of each model, rather than regarding them as competing possibilities for secondary school sport teaching.

It was noted earlier that Siedentop (1994) introduced the idea of literate sport participants as an objective of Sport Education. "A literate sportsperson understands and values the rules, rituals, and traditions of sports" (Siedentop, Hastie & van der Mars, 2011, p. 5). The definition separated the literate aspect of learning from the other objectives of Sport Education: competent and enthusiastic sportspersons. Bunker and Thorpe (1982, 1983) proposed game appreciation and understanding as objectives of teaching games for understanding. Sport literacy merges the objectives of TGfU and Sport Education through a revised definition of game appreciation that includes socio-cultural as well as sport skill learning (Drummond & Pill, 2011) (Figure 1). The authors believe this is likely to provide teachers with a larger pedagogical "toolbox" (Gurvitch et al., 2008, p. 452) through which to achieve education in, through and about sport (Arnold, 1979; Drummond & Pill, 2011). Through the adoption of the Sport literacy model, the research sought to shift PETE pre-service teachers' thinking away from instructional models as "one box containing only a few specialised tools with limited application" (Gurvitch et al., 2008, p. 452).

Curriculum and Pedagogical Innovation in Sport Teaching

Internationally, physical education has struggled to break free from the shackles of physical training (Kirk, 2010; Tinning, 2010) and traditional ideas about physical competencies (Kirk, 2010; Laker, 2002). Despite cognition being generally regarded as arguably the most useful and valuable aspect of any field of education (Felshin, 1972; Green, 1998), its marginalisation in sport teaching has repeatedly left physical education open to criticism that it is essentially non-academic and, therefore, extraneous to the purposes of education (Alexander & Luckman, 2001; Alexander, Taggart & Thorpe, 1997; Green, 1998;

Siedentop, 1992). Clennett and Brooker (2006) noted that as a result of Australian physical education teachers' narrow interpretation of curricula the focus of teaching has frequently concentrated on school students developing technical expertise for sport.

The supremacy of one type of knowledge (declarative knowledge of motor skill or sport specific textbook [Pigott, 1982] techniques) has arguably long constrained the knowledge base of sport in physical education. Learning has been both reduced and limited to psychomotor performance (an educational outcome emphasising the learning of fundamental movements, motor and sport performance skills (Lumpkin, 2005). This is reflected in many international commentaries identifying that a curriculum and pedagogical emphasis on technical expertise for sport has frequently led to teaching that simply reproduces textbook movement techniques (Alexander, 2008; Bunker & Thorpe, 1982; den Duyn, 1997a; Grehaigne, Richard & Griffin; 2005, Kirk, 2010; Kirk & Gorley, 2000). Declarative knowledge as motor skill technique is framed within a process of progressive, or 'additive', motor skill acquisition (Annette, 1994; Jenkins, 2005; Kirk, 2010; McMorris, 1998) in a multi-activity curriculum (Alexander, 2008; Capel, 2007; Hastie, 2003; Laker, 2002; Launder, 2001; Taylor & Chiogioji, 1987). The prominence of this model and its associated dominant pedagogy is regarded as a major factor in the educative potential of sport teaching in physical education arguably remaining unfulfilled (Crum, 1983; Locke, 1992; Penney & Chandler, 2000; Siedentop, 1994). What is enacted becomes a triumph of form over substance as sport teaching lacks the "musculature of a focussed teaching-learning pedagogy" (Alexander & Penney, 2005, p. 289). Kirk (1988) explained that the educational value of a subject is a crucial condition in determining its prestige, the resources it can command, and the contribution it can make to the educational experience of pupils. In these terms, the established dominant paradigm of physical education in Australia has remained problematic. It has arguably privileged a technical pedagogical discourse and multi-activity curriculum design centring on invariably brief and fragmented experiences of various sports.

It is argued that physical education is positioned at the periphery of Australian education because of its curriculum form and substance (Penney, 2008). Reflecting on the standing of physical education in Australia, Georgakis (2006) stated "physical education has been located 'outside' the academic curriculum as a non academic subject" (p. 46) to the detriment of its status. The discussion that follows identifies that pockets of innovation in curriculum and pedagogy in physical education have seemingly failed to present any real challenge to dominant sport performance discourses. The current study sought to address this shortcoming.

Pedagogical Reform in Sport Teaching

TGfU (Bunker & Thorpe, 1982; 1983) and Sport Education (Siedentop, 1994) are classified as models by Metzler (2011) that have been widely researched and supported as capable of reforming and re-directing sport teaching in physical education towards more substantial learning outcomes. Bunker and Thorpe (1982) described TGfU as a response to their observations that many children complete school neither knowing the sports, nor knowing how to play the sports, supposedly learnt in physical education. Frequently students lacked the knowledge and motor skill proficiency necessary for effective play (Thorpe, Bunker & Almond, 1986) and, therefore, continued involvement in the games encountered in physical education. It was Bunker and Thorpe's (1983) belief that the reliance on skill and drill pedagogy, and its focus on specific motor pattern reproduction, did not adequately take account of the contextual use of motor patterns in games. The TGfU model did not suggest that motor skill learning was unimportant. Rather, Bunker and Thorpe (1982, 1983) proposed that effective motor skill learning must contextualised movement performance to the requirements of the game (Thorpe & Bunker, 2010). A curriculum model outlining a

sequential cycle of teaching repositioned the development of game related decision making as fundamental to learning that would facilitate participation in games occurring prior to the teaching of sophisticated sport specific movement techniques. In the TGfU model, game appreciation and understanding was presumed to “always precede the response factors of skill execution” (Werner & Almond, 1990, p. 26).

The development of TGfU presented a clear contrast to established physical education pedagogy in terms of the skills, knowledge and understanding that were foregrounded in teaching and learning, and in parallel, the ways in which teaching could most effectively engage with the new learning priorities. The pedagogical use of questioning as teaching (Griffin & Sheehy, 2004; McNeill, Fry, Wright, Tan & Rossi, 2008; Mitchell, Griffin and Oslin, 2006) in TGfU emphasised a shift from the transmission method of instruction inherent in the traditional physical education approach to a more dialectic teaching approach (Bell, 2003) where the teacher acts as facilitator (Mitchell et al., 2006), leading students rather than informing (Griffin, Mitchell & Oslin, 1997). In Australia, the TGfU model was developed as a sport teaching approach called *Game Sense* - articulated both as the outcome of sport teaching (Charlesworth, 1993; 1994; Launder, 2001) and as a game-centred model for sport teaching (den Duyn, 1996, 1997a, 1997b; Thorpe, 1997). Contextual sport skill learning became the tenet of Game Sense. Thinking players (den Duyn, 1997b) became the objective of sport teaching and learning.

As indicated above, the Sport Education model (Alexander, Taggart, Medland & Thorpe, 1995; Siedentop, 1994) is also directly pertinent to this research. It emerged from similar concerns about the form and function of sport teaching in physical education within the dominant multi-activity model. Siedentop (1994) highlighted the limitations of the multi-activity model in three areas: the transferability of learning to sport outside of schools; the authenticity of many aspects of school physical education when compared to sport structures and participation opportunities beyond school; and the lack of inclusivity inherent in many traditional physical education curricula.

The distinctions between Sport Education and the traditional sport teaching approach relate to curriculum structure, content and focus, and pedagogical approaches and their relationship to learning objectives. Sport Education emphasises greater depth of content coverage by extending the time spent engaged with one sport and establishing an expanded set of curriculum goals. These include movement technique and tactical understanding, personal and social skill development, and sport cultural and social understanding. The model encompasses opportunities for learning relating to multiple roles in sport in addition to that of player (such as coach, manager, referee, journalist). Kirk and Macdonald (1998) asserted that advocates of Sport Education have grasped the need for a form of physical education that offers students meaningful, authentic and differentiated participation. The results of an Australian study of teachers' perceptions of Sport Education supported the view that Sport Education can be a context for pursuing a broader range of outcomes than is possible via a traditional physical education method (Alexander & Luckman, 2001). Shehu (1998), however, warned of the potential for Sport Education to be a sealed methodology, both in form and content making it more likely to be a sport management strategy than a framework illuminating the character of physical education. Suggesting that the model was flawed in a fundamental way, Shehu argued for a substantial rethinking of the philosophical character of the model so that sport is placed back into the field of physical education from which it is abstracted. Alexander and Penney (2005) identified with Penney, Clarke and Kinchin's (2002) suggestion for further development of the model to promote sustained connections with sport beyond the classroom, arguing the potential for form to triumph over substance and the model resulting in sport without the education.

While TGfU and Sport Education have often been presented as alternative choices for sport teaching in physical education (Metzler, 2011) increasingly, synergies between and within have been acknowledged (Dyson, Griffin & Hastie, 2004; Siedentop et al., 2004) and a

number of hybrid models developed (Alexander & Penny, 2005; Collier, 2005; Gubacs-Collins & Olsen, 2010; Hastie & Curtner-Smith, 2006). Sport literacy (Drummond & Pill, 2011; Pill, 2009, 2010) integrates the two models to re-consider the purpose of sport teaching in physical education and the nature of game appreciation and game understanding. As explained earlier, sport literacy is the integration of the curriculum expectations and pedagogical elements of TGfU/Game Sense and Sport Education. It is an innovation for sport teaching in physical education that seeks to move curriculum and pedagogical considerations away from questions of which model and towards a framework for sport teaching that considers the nature of being sport educated (see Figure 1).

Sport literacy is defined as the functional use of sport knowledge for active and engaged citizenship (Pill, 2009). Remaining true to Arnold's (1979) definition of education in physical education, sport literacy aims to integrate teaching and learning to value in learning in, through and about sport. Specifically, learning in sport the sport skill acquisition that enables an individual to be able to move and make tactical decisions efficiently and effectively in game situations; learning about sport so as to be able to recognise that sport is structured in certain ways to bring about certain things; and learning through sport an embodied experience of play.

Sport literacy has two principles for sport teaching: Sport in physical education can enhance students' access to practices and ideas that can enable them to make a positive contribution to society; and sport helps students to understand the self and the society in which they live. The role of physical education in promoting sport participation in school and beyond is linked with the development of skills and understandings enabling the functional use of sport knowledge within active and engaged citizenship (Drummond & Pill, 2011).

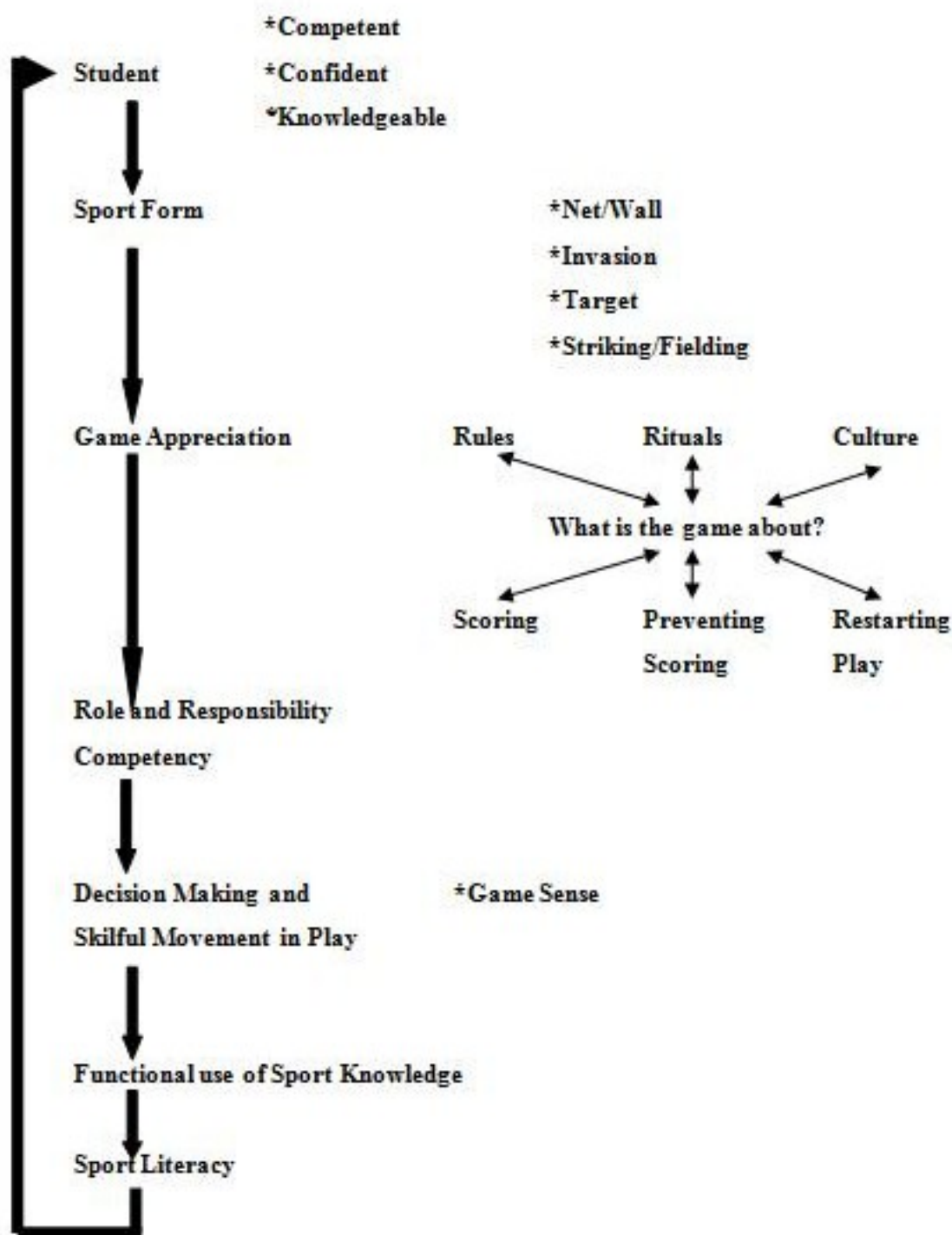


Figure 1. A framework for developing sport literacy

Study Design

This research sought to respond to the critical commentary about the form and substance of sport teaching in physical education by supporting innovation in school curriculum and pedagogy through pre-service teacher education. The research was underpinned by an interpretivist perspective (Pope, 2006) and adopted a case study design,

focusing specifically upon a cohort (N= 52) of Year 4 PETE pre-service teachers within the lead author’s institution. A case study design suited the research intention to reveal understanding as an extension of the experience (Kervin, Vialee, Herrington & Okely, 2006) of the PETE pre-service teachers with an unfamiliar curriculum model. The lead author adopted the dual roles of a PETE educator and researcher, and thus pursued pedagogical innovation in physical education in and through the teacher education context in which he worked. The research utilised multiple data sources and methods to increase the reliability of the data and the process of collecting it (Punch, 2000). Data sources included surveys and semi-structured interviews and related to four defined stages in the research. The research design and methods are summarised in Table 1. Ethics approval was obtained before commencing data collection and all participants provided informed consent.

Stage	Methods
Stage 1 November – December 2008	Documenting sport literacy as a framing system for sport teaching within physical education. Autoethnographic accounting for the research project.
Stage 2 February 2009	Web-survey 4th Year PETE pre service teachers.
March-April 2009	4th Year PETE pre service physical education studies curriculum specialisation topic.
April 2009	Post Topic Survey 4th Year PETE pre service teachers experiences of learning to teach and design sport curriculum using sport literacy.
Stage 3 April – May 2009	4th Year PETE pre service teachers Professional Teaching Practice 4.
May 2009	Semi structured interviews with physical education teachers Web-survey 4th Year PETE pre service teachers Professional Teaching Practice 4 sport teaching experiences.
Stage 4 June-September 2009	Semi-structured interviews with 4th Year PETE pre service teachers.

Table 1: Overview of the Research Stages and Methods

Participants in the study had experienced TGfU-Game Sense and Sport Education as individual curriculum models in two coursework topics prior to being introduced to the idea of sport literacy. Sport Education had been experienced through practical participation in a 26 hour (13 weeks, two hours per week) Australian Football League Sport Education Program (2003). TGfU had been introduced as game sense in a curriculum studies topic through den Duyn’s (1997b) recommendations to make sport teaching more game-centred to develop thinking players. The PETE pre-service teachers experienced Sport literacy in their final curriculum studies topic. A purposeful sampling strategy common in qualitative research (Creswell, 2008; Devers & Frankel, 2000) was employed to investigate the PETE pre-service teachers’ thoughts, feelings and insights related to learning to plan and enact sport teaching in physical education using the sport literacy model.

Data analysis occurred during each phase of the study (see Table 1), and as Thomas and Nelson (2001) described, was a progressive “process of making sense out of the data” (p. 340). Data analysis began with a word frequency analysis used to initiate the process of open coding category conceptualization (Grbich, 2007; Strauss & Corbin, 1990). Constant comparative analysis (Strauss & Corbin, 1990), where an inductive process of qualitative

analysis of data took place to test for similarities and differences, further refined the categories and allowed meaning to be drawn from the categories. The next step in the data analysis was axial coding (Gratton & Jones, 2007; Strauss & Corbin, 1990). This involved positioning each category at the centre of the process being explored (as the core phenomenon) and then relating the other categories to each one. The identification of key themes from within each data set (intra textually) was then analysed across the data sets (inter textually) to generate meta-themes and provisional categories (Creswell, 2008) that were progressively refined in order to establish the main themes representative of the total data.

The following section draws on data arising from each stage of the study that are particularly pertinent for teacher educators. It presents and critically discuss the findings (main themes) arising relating to the insights into the limits, constraints and possibilities that centre on the dynamic between PETE and the curriculum and pedagogy of physical education in schools.

Findings and Discussion: Issues for Teacher Education

As indicated in the introduction to this paper, many of the matters raised by this research have relevance to teacher education broadly, not only PETE. That said, a strong case also emerges for further research that specifically pursues PETE as the context for pedagogical innovation. Discussion here addresses selected themes that arose from the research and that are most pertinent to debates about the content and structure of teacher education courses and their capacity to prompt and support curriculum and pedagogical reform in schools. Data arising from the study provided rich insights into the limits and possibilities for PETE to provide the context, content and environment in which future teachers can rethink sport teaching in physical education.

Prior Learning and Established Understandings

It was very apparent that the PETE pre-service teachers' expectations and understandings going into the sport literacy curriculum studies topic were informed by ritualised curriculum practices and the habituated enactment of sport teaching existing during their apprenticeship of observation (Lortie, 1975; Schempp, 1989). Their understanding of sport teaching in physical education and perceptions about the design and enactment of sport teaching appeared nested in experiences of physical education at school, school observation experiences as part of their university course work to date, and community sport/sport coaching interactions. Notably, all of these prospective influences appeared to have reaffirmed rather than disrupted a traditional, behaviourist approach to sport teaching in physical education.

Prior to the sport literacy topic, the pre-service teachers viewed sport in physical education as substantially concerned with teaching the technical skills of various sports and how to progress or extend the development of those skills, and the rules of sport. While tactics were also commonly cited as knowledge integral to teaching students how to play a sport, there was no evidence in the responses of a requirement for physical education teachers to have a broader understanding of sport in order to plan and enact sport units of work. Curriculum and pedagogical thinking appeared focused upon and limited to sport-specific, skills-based teaching. For example, this was typical of the comments articulating the recognised knowledge base for teaching sport: "A basic knowledge of the sport to enable them to plan a unit around this in relation to how to do the skills, how the game is played (i.e. rules), tactics of the game" (PETE pre-service teacher comment, Survey 1). Some responses

pointed towards greater depth of understanding of pedagogy and planning, but retained a similar orientation. One PETE pre-service teacher commented that;

PE teachers require in-depth knowledge of the skills, rules and tactics that they wish to cover in each unit throughout the year - importantly making connections between the units where necessary. [In-depth knowledge of the skills, rules and tactics] will allow PE teachers to plan effectively i.e. taking into account the need to adapt their [PE teacher]units depending upon what year level and ability group they are teaching and how to devise appropriate assessment methods which meet their [PE teacher]desired outcomes
(PETE pre-service teacher comment, Survey 1).

The pre-service teachers regarded experience as a sport participant or player as essential in providing the knowledge for sport teaching, and saw that experience in a specific sport as essential if they were to design and enact sport teaching for quality learning. A theme evident from the analysis of data across all of the data sources was that the pre-service teachers appeared to assume that the development of sport knowledge and cognition had to wait until after the development of enabling sport skills. Furthermore, they expressed uncertainty as to whether thinking and problem-solving activities were as important as teaching motor skill responses by repetitive drill practice. The persistence of this behavioural paradigm into this final year of the PETE students' degree highlighted the challenge of shifting thinking beyond the view of sport teaching established in the apprenticeship of observation. Encounters with constructivist physical education models for sport teaching (such as TGfU and Sport Education) during PETE course work had seemingly had little impact on students' understandings of the form, function and potential of sport in physical education.

The Limits and Possibilities of Innovation

To enable the pre-service teachers to experience the intentions of a sport literacy framework first hand during their coursework they were placed into learning situations indicative of teaching with a sport literacy intention. The emphasis was not on learning to play the sport as a school student would learn to play, but rather to experience the curriculum and pedagogical emphases associated with learning to teach volleyball through the lens of sport literacy. Key tenants of the experience were, therefore, learning to play volleyball, learning through volleyball personal and social competencies, and learning about the sport of volleyball as a social and cultural construction (See Table 2).

Week	Content Summary
1	Education in, through and about sport. Sport literacy and the purpose, form and function of sport teaching in physical education. Volleyball practical: <ul style="list-style-type: none"> - pre-tests: skills, knowledge and understanding; and - players assigned to teams, individual roles and responsibilities allocated, team practice session, volleyball game sense, fair play code of conduct contracts.
2	South Australian Curriculum Standards and Accountability Framework H&PE curriculum outcomes and standards expectations for Physical Activity and Participation, and Personal and Social Develop strands. Volleyball Referee workshop. Volleyball practical - Individual roles and responsibilities, team practice session: volleyball game sense.
3	Designing teaching and assessment of learning in volleyball. Volleyball practical - team competition, round 1. Individual roles and responsibilities.
4	Designing teaching and assessment of learning about volleyball. Volleyball practical - Individual roles and responsibilities, team practice session: volleyball game sense.
5	Designing teaching and assessment of learning through volleyball. Volleyball practical - team competition round 2. Individual roles and responsibilities
6	Senior Years (Year 11 and 12/13) physical education and sport literacy Volleyball practical – Individual roles and responsibilities, team practice session: volleyball game sense
7	What does it mean to be sport educated? Volleyball practical: <ul style="list-style-type: none"> - post-tests: skills, knowledge and understanding; and - culminating event: Fair Play Cup finals series. Unit evaluation: Education in, through and about sport

Table 2: Topic Week by Week Content Summary

Both quantitative and qualitative data arising from the study indicated that the PETE pre-service teachers' response to the pedagogical strategies of sport literacy were positive and viewed favourably in relation to the design and enactment of sport teaching in secondary school physical education. For example, one PETE pre-service teacher commented:

I believe it is important to develop students' sports literacy because sport plays such a huge role in the community. There are so many different aspects to sport that playing and mastery of specific skills is just one component. The alternate roles (such as coaches, umpires etc) may well appeal to different people who are less proficient at the specific skills but who's interest is still valid as it is very much another component of sport

(PETE pre-service teacher comment, Survey 1)

The model was viewed as enhancing their ability to plan quality sport teaching within physical education (90.7%). It was seen as consistent with the intentions of the Middle and Secondary Years Outcomes of the South Australian Curriculum Standards and Accountability (SACSA) Framework (Department of Education and Children's Services, 2004) as it assisted their capacity to plan (86%), teach (93%) and assess (90.7%) sport units of work that address student achievement of the curriculum (SACSA) outcomes addressing *physical activity and participation* and *personal and social development*. Most signalled an improved game knowledge (81.4%) and game understanding (79%). All those signalling undecided or disagreement with the proposition that game knowledge or understanding had improved were experienced in competitive volleyball.

Data suggested that practical and theoretical interactivity with a pedagogical curriculum model promoted critical reflection on acculturated and institutional experiences of sport teaching. Experiencing a curriculum model ‘as enacted curriculum’ permitted examination of the proposed benefits from a personalised perspective that would not be possible if instruction has been restricted to theoretical posturising and textbook interrogations of technique. This comment by one of the PETE students captured the feeling about the potential of course work topics such as this to create an enhanced understanding of possibilities for sport teaching in physical education:

It's [sport literacy] altered my philosophy of teaching PE. Doing the curric studies topic and learning about tactical games was easily one of the best topics. Opened my eyes, there is more to the game than being able to do the skill correctly. Even little things like the students being aware of their movement off the ball, like when they are not doing a set, not just standing there, moving and anticipating. I wouldn't have talked about time and space, I would have just talked about how to perform the set correctly. Made me aware that there is more knowledge required to be successful in a game than simply skill acquisition. Saw sport as, learn these skills and then play a game, but now I understand the game differently

(PETE pre-service teacher comment, PTP4 interview)

Perhaps the most significant point to note from a progressive standpoint, was that the data analysis clearly indicated that the sport literacy coursework topic was instrumental in the pre-service teachers feeling that they had the curriculum and pedagogical knowledge to *design and enact sport teaching differently* to the format and approach that they had been exposed to during their apprenticeship of observation. For example,

I love the fact that skills are not the number one factor. I have witnessed how alienating skill based teaching can be and believe a lifelong participation in sport would be much more likely

(PETE pre-service teacher comment, Survey 2)

It [sport literacy] put students towards the forefront of their own education, giving them a deeper sense of ownership and feeling of being a worthwhile member of the class

(PETE pre-service teacher comment, Survey 2)

The opportunity to live the curriculum as learners can thus be seen as valuable in pre-service teachers coming to know, understand and appreciate the efficacy and value of a curriculum pedagogical model in achieving student learning. At the same time, however, the data analysis clearly indicated that coursework interventions and experiences such as the sport literacy topic are, of themselves, insufficient in constructing PETE as an agency for curriculum renewal. The research findings lent support to the contention that university coursework has a central role to play in exposing pre-service teachers to alternative ways of viewing curriculum form and function. However, it was equally apparent that consistent and sustained action and support directed towards enabling pre-service teachers as agents of curriculum and pedagogical change in the field is required in PETE courses. One of the challenges seen for PETE in this regard reflects that the pedagogical content knowledge of physical education teachers can be highly context specific, due to the variability of experience with the sports they are likely to teach (Griffin, Dodds & Rovegno, 1996), and that the enacted curriculum is, in Ennis' (1995) view, closely connected to pedagogical content knowledge. Therefore, the range of sports a teacher has been pedagogically exposed to during PETE appears destined to constitute a constraint on the development of a physical education teacher's ability to implement a progressive curriculum approach such as sport literacy. The reality in PETE, throughout Australia and internationally, is that courses can never directly engage with the full spectrum of sports that teachers may subsequently

encounter and be required to teach in schools. Providing pre-service teachers with the opportunity to formulate a framework through which to both interrogate specific sport knowledge and frame content and pedagogical knowledge emerged as a vital function of PETE courses. It was evident from the data analysis that for this group of PETE pre-service teachers university course work experiences had been limited in this regard. The pre-service teachers remained focused on sport-specific experiences, feeling that they had not been exposed to enough practically based sport experiences during their course work. This quote typifies the PETE pre-service teachers' feelings about practically based sport experiences during their course work:

I really believe that we have not done anywhere near the amount of practical we should have. For us to have a unit plan and at least a session or a block of practical experience for most sports, so that we feel confident and we have the knowledge of skills, rules, safety and understanding of the game to deliver a range of sports to students
(PETE pre-service teacher comment, Survey 1)

The nature of a university teacher education programme, where learning is packaged into discrete learning modules (called topics at this institution, and referred to as units or papers elsewhere) was positioned as problematic from the PETE student perspective and emerged as an impediment to the notion of enabling students as agents of change. The discrete learning structure equated to a fragmentation of learning from a student perspective. Fragmentation of pedagogical and content knowledge may inhibit the capacity of PETE to nurture and embed new thinking about the curriculum and pedagogy of physical education. As Humphries (1981) observed three decades ago:

It is taken for granted, apparently, that in time students will see for themselves how things fit together. Unfortunately, the reality of the situation is that they tend to learn what we teach. If we teach connectedness and integration, they learn that. If we teach separation and discontinuity, that is what they learn. To suppose otherwise would be incongruous
(Cited in Lake, 2000, p. 5)

A further structural and pedagogical feature of teacher education is that teaching and learning involves both university and school-based components. For PETE generally and for this study in particular, a key question which arose was whether students would have the opportunity to enact the new pedagogies that they had encountered in their university course, when on school practicum placement, and furthermore, would they feel supported in the school context to take what might well be deemed pedagogical risks? As Wright (2001) emphasised, both the mentor teacher and PTP school placement are dominant influences in the development of teacher understanding about their role and function as professionals. Exposure to sport literacy principles in action in school settings emerged as an enabling factor in pre-service teacher understanding of the application of sport literacy pedagogical strategies. The contextual development of pre-service teachers' curriculum and pedagogical content knowledge and understanding through teaching practicum was important in coming to know and appreciate the practical application of sport literacy to frame sport teaching. At the same time, however, this experience highlighted the fragility of new pedagogical knowledge. One of the pre-service teachers reflected: "I hadn't a lot of experience or observation of sport literacy as a model. I hadn't experienced it as [a school] student. It's limited, sort of at the infancy stage of doing, and if those ways don't work then I am stuffed" (PETE pre-service teacher, post PTP 4 interview).

Opportunities to see evidence of planning to achieve sport literacy in school physical education curriculum documents, and observation of teachers enacting sport teaching using the principles of a sport literacy design were on the pre-service teachers list of desirable practicum experiences. The data arising from this study suggested, however, that a traditional

approach to sport teaching prevails in most secondary school settings, presenting pre-service teachers with a sharp contrast in pedagogical thinking and approach to that central to sport literacy. Furthermore, while the pre-service teachers desired supportive and knowledgeable school mentors to expand their understanding of the planning and enactment of the type of sport curriculum advocated by sport literacy, they were unlikely to be encouraged to pursue this vision for sport teaching. For example,

When I showed my plan to my mentor and asked him to check that it met the curriculum expectations he was like, 'that's great they are teaching you that stuff at Uni, but we don't pay too much attention to it, just do what you think

(PETE pre-service teacher comment, Survey 1)

Pre-service teachers are more likely to receive encouragement, support, constructive feedback and ideas from effective mentor teachers who have had adequate preparation for their role (Oh, Ankers, Iltis & Tomyoy, 2005; Tannehill & Zarajsek, 1990). Gillespie (2011) recently drew attention to mentor teachers' influence in relation to how pre-service teachers conceive their role as teacher and the appropriateness of curriculum and pedagogical choices, and pointed to a need for PETE to therefore place more emphasis on mentor value orientations in their placement of pre-service teachers. This research lent support to this call and Gillespie's (2011) accompanying emphasis of the significance of PETE students' value orientations in considering prospective engagement with curriculum and pedagogy in physical education. In this study the analysis of the post PTP4 interviews indicated that beliefs and value orientations of the PETE pre-service teacher are influential in deciding to implement and persisting with the implementation of a progressive sport teaching framework such as sport literacy.

The pre-service teachers provided with teacher mentor support or indifference towards an alternative framing of the learning environment were more likely to indicate willingness to attempt the objectives of sport literacy. Notably, the mentors of PETE pre-service teachers in South Australian schools, where this research was conducted, currently receive no guidelines or professional learning in the mentoring of pedagogical content knowledge in specific subject disciplines. Furthermore, as is the case for many teacher education institutions, the allocation of pre-service teachers to school mentors is an imprecise process and based to a large extent on mentor availability. Currently, notions of master teacher (Schon, 1987) and of highly accomplished teacher (Darling-Hammond, 2006) do not feature in the mentor and PETE pre-service teacher partnership allocation.

The personal challenge of teaching for a broader suite of objectives and expectations of students' learning were evident in the positive responses about future intentions of using sport literacy for the design and enactment of sport teaching. This is reflected in the following comments by two different PETE pre-service teachers. Talking about what would influence them to continue with a sport literacy intention with their sport teaching, they said:

Teaching a skill and drill approach I would be bored. Using a combination of TGfU-Sport Ed, being flexible to the class and the sport will be important to me. I think if you are inclined to be reflective about your teaching you are more likely to teach this way. I don't know, possibly you care more about your teaching and what you are trying to achieve. I don't think there is a point turning up every day and not giving a flying uncle about what the kids learn. If you don't care what the kids are learning it is time to give the game away. I feel I am more engaged in a TGfU-Sport Ed. I find it enjoyable to teach this way

(PETE pre-service teacher comment, PTP4 interview)

I also felt it opened me up as a teacher. As I went on I didn't feel like I had to control everything and this helped me to assess kids. Kids are

running it. You could look at if the students are achieving the outcomes you want them to achieve. You've got time to look at things a bit. I don't see it as separate models anymore. I could apply the things that I think are valuable for the kids learning. I observed kids doing tennis and they were just mucking around. But in this approach, I could see them linking into the questions and this focussed them. I linked the waterpolo to soccer and the soccer kids started asking me questions, could we apply this to soccer, how could we apply this to soccer, and that's deeper understanding. Kids come out of their shell. You didn't previously see them that capable physically, maybe academically as well. But this style of teaching got them involved a lot more, especially the sport education teams (PETE pre-service teacher comment, post PTP interview)

Many of the PETE-PS teachers recognised that their practice needed to be different from the practice that they had experienced firstly as students in PE and secondly, that which they typically observed and experienced while they participated in PTP placements. Thus, for these pre-service teachers, their PTP experience had not served to support the notion of PETE as an apprenticeship for innovation in physical education curriculum and pedagogy.

Conclusion

This study is acknowledged as limited in duration and in being confined to one teacher education institution. Certainly, we advocate for further research of this nature in other PETE institutions. Furthermore, we advocate for the extension of innovation to encompass both university based learning experiences *and* school-based placement experiences. In saying this we recognise the considerable merits in mentor teachers being active participants in PETE developments and associated research that seek to extend pedagogical thinking and practice in physical education in schools. Notably, the results from this study lead us to question whether PETE is providing sufficiently rich learning opportunities and environments to enable PETE pre-service teachers to effectively frame, disrupt and *reframe* their pre-established conceptualisation of physical education. PETE pre-service teacher education has been portrayed in literature as potentially a context and formative experience that transforms pre-service teacher beliefs about practice initially formed during the apprenticeship of observation (Schempp, 1989). This study lends support to the notion that PETE can provoke a shift in the knowledge and pedagogical boundaries of pre-service teachers. At the same time, it reaffirmed observations from past research that inherent conservatism in schools continues to limit the likelihood that ideas and innovations introduced via PETE will serve as strong interventions for improved pedagogical practice in schools (Clennett & Brooker, 2006).

According to Schempp (1989) the apprenticeship of observation serves to:

- Acquaint individuals with the tasks of teaching;
- Begin the individual's identification as a potential teacher;
- Provide a framework for the assessment of teaching technique; and
- Personalise a teacher's analytical orientation toward the work of teaching.

In physical education, this socialisation influences, informs and shapes the pedagogical motivation for the design and enactment of sport curriculum content. Pre-service PETE teachers learning and developing curriculum and pedagogical content knowledge for sport teaching alongside the deliberate and reflective careful promptings of a teacher educator is necessary (Grossman, 1991), *but not sufficient* to support the strong case (Kinchen et al., 2005) for curriculum renewal through PETE. Our data highlighted the pervasiveness of a

normative discourse prompted by subtle, not so subtle and hidden actions (and inaction) of mentor teachers, and indicated that an occupational socialisation into a community of practice interacting around traditional sport teaching practices occurs during PTP. The results from this study suggest that while PETE course work can impact PETE pre-service teacher curriculum and pedagogical understanding of sport teaching, the practicum experience is fundamentally influential. In this instance that experience highlighted the conservatism of much sport teaching in schools and consequently, was not complementary to pedagogical innovation. Rather, it presented the PETE pre-service teachers with tensions and dilemmas in relation to physical education curriculum and pedagogy. Portraits of the possible for sport teaching became stymied by institutionalised patterns of relationships within a community of practice (secondary physical education teaching) that do not encourage pedagogical progressiveness as it is outside the norm of experience and expectation (Wheatley, 1997). Thus it is apparent from the analysis that a new model for the relationship between PETE course work and PTP placement is necessary if PETE is to play the particular and crucial role in securing the conditions for the radical reform (Kirk, 2010) that he suggested is needed to transform sport teaching in physical education.

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