Learning to teach Sport Education: Investigating a pre-service teacher’s knowledge development

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The pre-service teacher (PST) learning process has been claimed to include multiple and complex forms of learning because various areas of knowledge growth occur at the same time. In the Sport Education (SE) literature, there has been a noticeable dearth of research regarding how PSTs learn, interpret and deliver the model. While several studies report PSTs having experienced SE prior to the formal study being carried out, to our knowledge, only one study has followed PSTs through a series of learning experiences. In this study, we used the three-level model of learning as a framework to investigate a PST’s continuing process of learning to teach SE as part of a PETE program and while teaching during the school placement component of the PETE program. The study was guided by the question, ‘How does a PST’s knowledge of teaching and learning SE develop?’ This study reports on one physical education PST learning to teach SE. The learning experience was composed of four PETE courses (two content courses and two school placements) divided into five phases. Data collection employed five semi-structured interviews, coursework and a focus group. Data were analyzed using a hybrid approach of inductive and deductive theme development. Results revealed that the PST progressively developed conscious awareness and understanding about teaching and learning SE. The comprehensive learning experience made the PST develop understanding of teaching and learning SE that reflected knowledge on an abstract level. Studying the relationships between SE concepts, while connecting them with knowledge from various PETE courses, the theoretical foundation of SE became accessible. We encourage physical education teacher educators to allow for a continuing growth of understanding where PSTs develop knowledge through various SE learning and teaching experiences tailored around their needs and concerns.

Keywords: curriculum and instructional model; learning; models-based practice; pedagogy; physical education teacher education; realistic teacher education; three-level model
Introduction

General education (Cochran-Smith, 2005), as well as physical education teacher education (PETE) (McEvoy, MacPhail, & Heikinaho-Johansson, 2015), researchers urge us to contribute to a broader research agenda by developing a ‘chain of evidence’ that strengthens the link between teacher education programs, pre-service teachers’ (PSTs’) learning, PSTs’ delivery during school placement and as a beginning teacher, and the subsequent effect on the learning experiences of students. This study can be envisaged as contributing to the ‘chain of evidence’ concerned with empirical evidence demonstrating the link between teacher education programs and PSTs’ learning (Cochran-Smith, 2005). That is, this study investigates a physical education PST’s continuing knowledge development of teaching and learning in Sport Education (SE) (Siedentop, 1994; Siedentop, Hastie, & Van Der Mars, 2011).

The PST learning process has been claimed to include multiple and complex forms of learning because various areas of knowledge growth occur at the same time (Calderhead, 1991). Becoming a teacher encompasses an intertwined process between the inward journey of self-as-teacher and the outward conceptions of teaching, that together form complex developmental trajectories of learning to teach (Lee & Schallert, 2016). The aim of this case study is to understand the process involved in a PST’s development of SE teacher knowledge.

The three-level model of professional learning (Korthagen & Lagerwerf, 1996) is advocated as a framework of professional learning that can further develop the body of knowledge in the field of teaching and teacher education by linking the experience to the thinking and learning process of teachers (Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2001). Expanding on empirical data from teacher learning and brain research, Korthagen (2010) concluded that the model reconciles the situated learning perspective (the role of embodied social learning) with traditional cognitive theory (the characteristics of knowledge and knowledge development). In the present study, we use the three-level model
as a framework to investigate a PST’s continuing process of learning to teach SE as part of a PETE program and while teaching during the school placement component of the PETE program. The study was guided by the question, ‘How does a PST’s knowledge of teaching and learning SE develop?’

**Sport Education**

SE is a curriculum and instructional model that was developed amid concerns about the lack of authentic, legitimate opportunities for students to experience sport through physical education (Siedentop, 1994; Siedentop et al., 2011). It is a student-centered model based on constructivist learning theory where students are required to construct knowledge through social interaction with their peers (Dyson, Griffin, & Hastie, 2004). This means that students are involved in tasks that stimulate decision making, critical thinking, and problem solving while being guided by the teacher to discover knowledge and to create their own understanding of the subject matter. SE’s long term learning objectives are to develop students as competent, literate, and enthusiastic sportspersons (Siedentop, 1994). The subject matter in SE is not a range of different sports but sport itself, in which Siedentop (1994) identified the key characteristics as seasons, affiliation, formal competition, record keeping, culminating event and festivity. Students are held accountable by remaining in the same team throughout the season while experiencing a number of roles (e.g. coach, referee, journalist) in addition to that of a player.

**Learning to teach Sport Education**

There has been a noticeable dearth of research regarding how PSTs learn, interpret and deliver SE (Stran & Curtner-Smith, 2009). While PSTs appreciate SE’s cultural and structural advantages (Curtner-Smith & Sofo, 2004; Stran & Curtner-Smith, 2009) and experience being a facilitator of practice (Deenihan & MacPhail, 2013), they initially misunderstand SE and experience increased workload requirements teaching it (McCaughtry, Sofo, Rovegno, &
Curtner-Smith, 2004). While several studies report PSTs having experienced SE prior to the formal study being carried out (e.g. Deenihan & MacPhail, 2013; Stran & Curtner-Smith, 2010), to our knowledge, only one study (Glotova & Hastie, 2014) has followed PSTs through a series of learning experiences. In the study of Glotova and Hastie (2014), the PSTs’ learning experience included four courses, respectively involving PSTs taking part in a theoretical course, being assistant teachers in a university course, planning a teaching period, and teaching in school physical education. Not unexpectedly, as both learning to teach (Calderhead, 1991) and SE (Hordvik, MacPhail, & Ronglan, in press) is considered a complex endeavor, findings conveyed that deep understanding of teaching SE requires an extended learning experience (Glotova & Hastie, 2014). The challenge that remains is to use a theoretical lens examining the interconnection of content, process and contexts in learning to teach SE (Hordvik et al., in press).

Three-level model of learning

The three-level model of learning (Korthagen & Lagerwerf, 1996) illustrates levels in PSTs’ professional learning. It emphasizes the need to create suitable experiences and the influence of feelings and personal needs in learning about teaching (Korthagen et al., 2001). The three-level model is the theoretical foundation of the pedagogy of ‘realistic teacher education’ that builds on concrete experiences, and the concerns and gestalts (personal accumulations of needs, concerns, values, meanings, preferences, feelings, and behavioral tendencies) provoked by these situations (Korthagen et al., 2001). Given our focus on a PST’s SE knowledge development, we believe the three-level model of learning allows us to investigate the development of knowledge about teaching and learning SE, with special attention to the gradual growth within a single level and the transitions from one level to another.

[Insert Figure 1 here]
The gestalt level

The gestalt level is rooted in practical experiences, and is often unconscious. It encompasses the whole of the PST’s perception of the here-and-now situation and displays the relationship between experiences and internal processes in the PST, acknowledging that the cognitive, affective, motivational and behavioral aspects of human functioning are interrelated (Korthagen, 2010). The implicit learning taking place during the process of gestalt formation is characterized by the ‘development of awareness’ (Marton & Booth, 1997). This concept strongly emphasizes the role of perception in learning in which the PST, after an intended learning process, has ‘become capable of discerning aspects of the phenomenon other than those she had been capable of discerning before’ (Marton & Booth, 1997, p. 142). Referring to the work of Lave and Wenger (1991), Korthagen (2010) emphasizes the situated learning experience in the gestalt formation process and notes a need to balance the experience between being fully contextualized (e.g. teaching in school before having learned about teaching) and fully decontextualized (e.g. learning about teaching solely through theory). A PST will gradually develop abstract gestalts through suitable learning experiences, resulting in ‘desituating’ of knowledge that allows for a transition from the gestalt to the schema level (Korthagen, 2010).

The schema level

The schema level develops through reflection on the gestalt level in which the PST may develop a ‘personal practical theory’ (Korthagen, 2011). This is an important next level in the learning process and, while the gestalt level shows that many of the sources of a PST’s behavior may remain unconscious, (s)he may become consciously aware of at least some of these sources (Korthagen, 2010). When the PST reflects on a situation and related actions, (s)he may develop a conscious schema of concepts, characteristics, and principles that is helpful in describing practice (Korthagen, 2010). The schema level is grounded in concrete
situations, e.g. when students ask the PST how the role (e.g. head coach) in a SE season should be performed, the PST provides students with the correct ‘answer’. Afterwards (within or after the lesson) the PST reflects on the situation, acknowledging that instead of giving the answer, students should be encouraged to consider their role card and discuss the various responsibilities before experiencing the role. In this situation, the PST uses or develops a schema in which the concepts of ‘questions’ and ‘valuable feedback’ become connected, and a pedagogical principle develops where the PST considers how to best stimulate students to use their teammates.

**The theory level**

The development of an abstract understanding of particular situations leads the PST to the theory level. This level aims to develop ‘deep and generalized understanding of a variety of similar situations (...) [where] a logical ordering is constructed in the knowledge formed before: the relationships within one’s schema are studied or several schemata are connected into one coherent ‘theory’’ (Korthagen, 2010, p. 102). Transition to the theory level is possible only when a PST has developed rich schema and the desire to develop a more theoretical understanding of a range of similar situations (Korthagen, 2010). Practitioners, however, do not often reach the theory level because they focus on directions for taking actions in a particular situation and have a desire to know how to act (Korthagen, 2010).

Using the same example of the PST providing feedback to students, if the PST has reached the theory level, (s)he understands how students learn their role based on schema(s) related to social constructivism. This helps the PST to understand students’ learning processes in general and on an abstract level.

**Level reduction**

The schematized and theoretical knowledge can become self-evident when the two levels are used in a less conscious way, as if the schema or theory have been reduced to one gestalt
This involves sufficient practical experiences that are carefully organized and structured with respect to the PST’s needs and concerns. Again, when students ask the PST how they should perform their role, (s)he is aware of the importance of creating experiences for students and promoting collaboration. In teacher education, the PST develops a conscious schema about teaching and learning where notions such as ‘experience’ and ‘collaboration’ play a central role. Having taught over a period based on this schema, the PST reacts ‘automatically’ and asks the students how the team can develop knowledge about the roles. This ‘level reduction’ allows PSTs to concentrate on other things in which the relevant schema or theory needs less attention during one’s actions (Korthagen, 2010).

**Objective and purpose of the study**

There is a need for longitudinal research studies reporting how PSTs learn, interpret and deliver SE. Moreover, Korthagen et al. (2001) asked for more empirical support and more elaboration of the relations within and across the levels in the three-level model of professional learning. Examining the interconnection of content, process and contexts using the three-level model as a framework has significant implications for understanding teaching and teacher education, and, specifically, the knowledge development of teaching and learning SE. The objective of this study was to investigate a physical education PST’s continuing process of learning to teach SE as part of a PETE program and during the school placement component of the PETE program. The study was guided by the question, ‘How does a PST’s knowledge of teaching and learning SE develop?’

**Method**

**Context and participant**

In Norway, the overall aim of all three year teacher education programs is to educate PSTs with core professional knowledge within five areas; academic competence, didactic
competence, social competence, developmental competence, and competence in professional ethics (KD, 2003). While the first year of the particular PETE program is a general undergraduate education in sport that provides PSTs with a basic academic platform for further studies in sports / physical education, years two and three of the program provides PSTs with PETE-specific pedagogy courses focused on learning ‘how to teach’. The PETE program as a whole is professional, with a fluctuation between theoretical and practical courses (combination of compulsory and optional) and two six-week school placements, each divided into two periods of teaching within the same school.

Purposive sampling was used to select Mateo (age 23 at graduation from the program) who was in his final four semesters of the three-year undergraduate PETE program. Mateo was selected based on his consistency of engagement throughout the study (a consequence of the optional nature of the different content courses). He had graduated from upper secondary school one year prior to entering the PETE program. Not dissimilar to other PSTs (Evans & Williams, 1989; Macdonald, Kirk, & Braiuka, 1999), Mateo shared that he had entered PETE because of an early love of sport. However, he also had a passion to see and help children develop, and working with young people to achieve something together.

The pre-service teacher’s learning experience

Mateo’s specific learning experience was composed of four PETE courses (two content courses and two school placements) divided into five phases. These five phases are denoted in Table 1.

While phase 1 and 2 were carried out during the second academic year, phases 3 to 5 were carried out in the third (final) year of the PETE program. The total workload for Mateo was 66 hours of attending PETE classes, 80 hours total teaching during school placements and an expectation of approximately 200 hours in completing individual and group work in addition
to scheduled class time. The 80 hours teaching complement during school placements was broken down into 11 hours of teaching SE. The structure of the five SE units are outlined in Table 2 (content courses) and Table 3 (school placements).

Phase one: Self-selected team handball course.

The team handball course was part of a self-selected five-credit module in which PSTs select three of five games (team handball, soccer, basketball, floor ball and volleyball). Twelve PSTs participated in the SE unit that consisted of ten 90-minute predominantly practical-based lessons over a five week period. Mateo was learning about teaching SE through a theoretical introduction to a SE element, followed by a practical ‘living the curriculum’ (Oslin, Collier, & Mitchell, 2001) (i.e. PSTs experience a SE season similar to how the model would be delivered in a school context) start-stop-start approach (i.e. the teacher educator interrupting drills explaining how he was teaching and at the same time explaining why he did things in situ), and closing the lesson with a team reflection on the goals of the lesson.

Mateo’s group coursework included a description of the SE model, a reflection on how to teach affiliation and roles in school, and which aspects of the SE unit he thought had been easy/difficult to understand. Mateo was assessed through a written exam and not his submitted coursework.

Phase two: School placement lower secondary school.

Mateo was placed in a lower secondary school that catered for approximately 450 students. The school had a sports hall including two full size team handball courts, two beach volleyball courts, an all-weather basketball court and opportunities to use the nearby forest. The school had twelve full-time physical education teachers and a female physical education teacher was assigned as Mateo’s cooperating teacher. Mateo’s coursework included lesson plans and a reflective diary related to his experience of teaching SE.
The school placement was a four-week period carried out in Mateo’s fourth semester of the PETE program, five weeks after completion of the team handball course. Because of unpredicted events, Mateo only taught two (not four as planned) 60-minute SE lessons in team handball to 29 students (14 girls and 15 boys aged between fourteen and fifteen years). He started the first lesson by selecting six teams (all teams were mixed as regards gender and race). The student teams created a team name and team cheer, and were provided with their own home court and team color matched to the color of school vests. While deciding not to define and use permanent roles (in agreement with the teacher educator), Mateo used task cards for independent practice, allowing teams to pick students to undertake the role of fitness trainer (leads team warm-up) and coach (leads team practice). The students collectively helped organize the team equipment.

Phase three: First period of a self-selected games course.

Twenty-one PSTs participated in the games course that was a self-selected seven-credit module in which PSTs select one of three activities to specialize in (games, outdoor education or alternative movement activity). The first period of the SE unit consisted of thirteen 90-minute predominantly practical-based lessons over a seven week period. Mateo was learning about teaching touch rugby and team handball using SE through a ‘living the curriculum’ experience and closing the lesson with a team reflection on the ‘how’ and ‘why’ of teaching. This encouraged Mateo to be constantly constructively critical towards teaching and learning SE. Mateo’s group coursework contained the development of a comprehensive SE season design.

Phase four: School placement upper secondary school.

Mateo was placed in an upper secondary school that catered for approximately 800 students. While having two divided gymnasiums, one the size of a basketball court and the other the size of two volleyball courts, the school was located in a densely populated area with limited
opportunity for outdoor activities. The school had six full-time physical education teachers and a male physical education teacher was assigned as Mateo’s cooperating teacher. Mateo’s coursework included his teaching philosophy, lesson plans and a reflective diary related to his experience of teaching SE.

The upper secondary school placement was composed of two three-week periods in the fifth and sixth semester of the PETE program. The first period was carried out two weeks after completion of the games course, with a ten week period between the two placements. Mateo taught six 90-minute floorball SE lessons to 30 students (16 girls and 14 boys aged between sixteen and seventeen years). The student teams had their own home court, created a team name, and selected a team color matched to the color of school vests. In terms of team and role selection, Mateo’s cooperating teacher selected three mixed ability teams. The selection was based on gender, race and the cooperating teacher’s perception of student skills.

In addition to the role of player, Mateo required students to select peers in their respective teams to undertake the role of captain, manager, head coach, referee, time- and scorekeeper, statistician and event coordinator. Mateo used task cards to facilitate team warm up and practice, and provided the time- and score-keepers and statisticians with specific game task cards.

**Phase five: Second period of a self-selected games course.**

The last period of the games course was a SE unit consisted of ten 90-minute predominantly practical-based lessons over a five week period. While Mateo’s first two content courses (phase 1 and 3) had concentrated on learning ‘how’ to teach the various SE features, this period focused on how various net and invasion games can be delivered through SE and how teachers can adjust and modify the model with respect to both students’ and teachers’ needs. The focus had shifted from foregrounding SE to how various games could be used in the model. The lesson structure usually included a practical section with techniques and tactics
related to the game while enacting SE aspects (e.g. team lead warm up and practice), and ending with a team and/or class discussion on how to teach a specific SE element that usually had been used within the specific lesson (e.g. instructional strategies and assessment).

Mateo’s group coursework contained a SE season design, practical presentation of related SE aspects and final reflection/discussion with the teacher educator.

**Data collection**

Ethical approval for the study was granted from the Norwegian Social Science Data Services and Mateo signed a consent form. Several data collection procedures were completed to explore the research questions and included semi-structured interviews (Bryman, 2012) with Mateo, his coursework (including his interpretation of SE, teaching philosophy, unit and lesson plans and reflective diaries) and a PST focus group (Kitzinger, 1994). Figure 2 illustrates the data collection points. One focus group and five in-depth interviews were carried out during the four semesters: (i) end of the team handball course and prior to school placement (focus group); (ii) end of school placement; (iii) end of the first period of the games course and prior to school placement; (iv) in between school placement; (v), end of school placement; and (vi) end of the second period of the games course. The aim was to document Mateo’s continuing experience and ongoing knowledge development of teaching and learning SE. His coursework was collected after the first SE unit and on completion of the two school placements, with the aim of documenting the intended and subsequent teaching experience, and allowing Mateo to present a more considered interpretation of SE (compared to relying solely on answering questions in the interviews).

Importantly, Mateo was in no way penalized or advantaged for expressing his experience of teaching and learning SE or by having his coursework used as a data source for the study. We also recognize the possibility that Mateo expressed himself in part to please the teacher educator (first author). However, his experience of learning about, and teaching, SE
included experiences of satisfaction and success, but also resistance, struggles and failures.

Mateo was doubtful towards various aspects of SE and some of the experiences he shared were also highly personal and emotional, suggesting that Mateo was positively disposed to sharing his honest experiences of learning about, and teaching, SE.

[Insert Figure 2 here]

**Data analysis**

A hybrid approach of inductive and deductive theme development (Fereday & Muir-Cochrane, 2006) was used to analyze and triangulate Mateo’s interviews, focus group and coursework. Acknowledging the longitudinal nature of the study, our analysis was ongoing, and throughout data collection the first author conducted and listened to the interviews, and wrote analytic memos that were used to facilitate follow up questions. We therefore adopted an interpretive approach for the inductive analysis, recognizing the difficulty of using a solely inductive approach within a field one is familiar with (Hatch, 2002).

First, all interviews were transcribed and Mateo’s coursework was compiled in a word processing document. Second, data were read and re-read before the entire data set were inductively coded, identifying important features relevant to understanding Mateo’s experience and knowledge development of learning and teaching SE. In this phase, our attention was drawn towards the three-level model of learning and how the networks appeared and developed in Mateo’s experience. The third stage of the analysis involved a coding of the three levels. Fourth, we connected the codes and identified themes and patterns in the data (Crabtree & Miller, 1999) using the research question as a heading (i.e. How does a PST’s knowledge of teaching and learning SE develop?). The aim of the analysis was to identify Mateo’s knowledge development, and therefore, in this stage, the identified examples were collated into themes along the five learning experiences (team handball course, school placement in lower-secondary school, first period of the games course, school placement in
upper-secondary school, and second period of the games course). Finally, the previously
stages were closely scrutinized to confirm the findings and ensure the legitimation of the
clustered themes.

Results

This study investigates a PST’s knowledge development of teaching and learning SE. We
present the case of Mateo, who learned to teach SE through a five phase learning experience
that involved two university PETE courses (three periods) and two school placements. In the
following sections, while presented within distinct segments, we have strived to consider
Mateo’s knowledge development within the individual phases and across the learning
continuum.

Developing awareness and understanding of teaching and learning SE

At the outset of the first phase (team handball course), Mateo struggled to comprehend the
contextualized learner experience (i.e. ‘living the curriculum’) and understand the various SE
aspects, feeling confused about identifying with the teacher and student involvement in the
model. However, after making an effort to read about SE, Mateo recognized ‘why things had
been said and why things were done as they were’ (Interview 1). Consequently, he developed
an awareness of the learner experience while appreciating various SE aspects. The school
placement advanced Mateo’s awareness and understanding of teaching the model,

I got a ‘aha’ experience of why things are done as they are [in SE], why the model is
as it is... The focus is drawn away from oneself, you get time to work more closely
with each individual. That’s what I feel was different and positive [compared to
traditional teaching]. (Interview 1).

While the first two phases (team handball course and school placement) enabled
Mateo to paraphrase various SE aspects, in the beginning of the third phase (first period of the
games course), Mateo immediately realized the surface nature of his knowledge, ‘I got surprised that I remembered or knew... that little... in relation to the understanding [of teaching and learning SE], compared to what I believed’ (Interview 2). The learning experiences in phase three encouraged Mateo to continuously reflect and discuss teaching and learning in SE, resulting in him acknowledging various aspects of the model,

It’s important that everyone develop affiliation to the team and feel that they are useful,... make a contribution to the team and experience mastery ... Also, I believe it’s positive that [students through roles] learn a lot more about the activities. It becomes more thorough through the extended period of time. (Interview 2)

He further conveyed an acknowledgment for the comprehensiveness and complexity of SE and appreciated the student-centered teaching within the model, ‘students are collaborating towards a shared learning outcome..., take responsibility, explain, teach and help each other... rather than getting something directly told, how it should be and how it should be done’ (Interview 2). Moreover, Mateo recognized the alignment between various SE aspects,

They are in a way connected... for example, working in teams and having routines relates to festivity. If you arrange a culminating event, it addresses the festivity while also involving the roles in which they [students] get to work with and develop prior [to the culminating event]. (Interview 2)

Ahead of the first period of phase four (second school placement), although Mateo was feeling anxious he was confident that he would be in control. Consequently, the diverse experiences he had in this period was surprising to him. Mateo revealed that students struggled to understand the task cards he provided them, and in the last lesson, he experienced a demoralizing incident,
The tournament turned completely off the rails, it was complete chaos... they [the students] flew around like crazy chickens, no one knew where they were going and what to do... almost like they had forgotten their roles and their responsibilities. They didn’t understand which court they should go to... People started shouting. Equipment suddenly disappeared, pens and whistles flew around. (Interview 3)

**Developing conscious understanding of teaching and learning SE**

Mateo admitted to reflecting on particular situations from the first period of school placement. Acknowledging that the students needed to learn and practice their roles before performing them, in the beginning of the second period of phase four (second school placement) Mateo used direct instruction before providing students with further responsibility. While admitting his need to become more familiar with student-centered teaching, Mateo shared how he reflected on particular situations within lessons,

It took time with the points that went well in the end. It was difficult at first to find my role when things go by themselves. How much and on what should you interrupt? I could sometimes catch myself, ‘Huff, you’re just standing there dulling [not doing anything] rather than focus on something that you for example can provide feedback on’. (Interview 4)

Reflecting on his entire school placement experience, Mateo was able to unpack SE in considering how a teacher can adopt single concepts of the model,

You might ignore some aspects, as long as they’re not absolutely fundamental and central to the model. Then it can work without being negative for the achievement of the objectives ... [Using aspects of SE] is something I imagine using in future physical education classes. I believe that every single part of SE, its concepts and characteristics can be positive, even if you don’t use everything. For example, it’s
possible to use team and affiliation without the roles. It’s a great way to promote cooperative learning, and can be used in the majority of activities. (Course work 3)

Learning about progression and modification in phase five (second period of the games course), Mateo showed an ability to connect different SE concepts. This enabled him to consider the extent to which teachers need to modify the model,

You can add elements half way through a season ... However, I would not have started with just a few aspects of the model ... I had quite a good experience when introducing a lot [of elements] right away... You need to consider, but I would certainly start with affiliation and roles ... But you can of course have a gradual progression. Roles for example, gradually add more roles to the next season or halfway through the season... if you feel that it is a good flow... [or] if the students need new challenges. (Interview 5)

Connecting SE aspects to a broader philosophy of teaching and learning

Moreover, after the last phase (second period of the games course) Mateo was able to reflect on SE as the foundation for his teaching. He reflected on teaching and learning connecting concepts both from SE and other PETE courses related to the Norwegian physical education curriculum,

We have recently studied physical education in more depth, the purposes of the subject, and the Norwegian Education Act... The model represents a lot [related to that]... both in terms of the Norwegian school, and physical education, it shares many of the same principles and represents many positive aspects. (Interview 5)

Mateo also implicated his own philosophy, and that of SE, in acknowledging that the foundation of the model can be used for other activities and across subjects,
Collaborative learning is very central for me in relation to what I have experienced myself and what I believe in, in terms of ... teaching philosophy. I think it’s something I will use in the future, whether it’s a theoretical subject like social studies as well as in physical education. (Interview 5)

The PETE program did not allow Mateo further SE learning experiences and on completion of the last phase, conscious of the overstated confidence he felt after the first two phases (team handball course and school placement), and aware of the comprehensiveness and complexity of using SE, Mateo questioned the extent of his knowledge about teaching through the model,

I believe it’s a lot to learn, both on the level of detail in terms of the theory [of SE] ... [and also] in terms of experiences [with the model]. I still have an extremely long way to go, considering how much you experience [teaching through the model] and the changes I wanted to make across the six lessons. (Interview 5)

Discussion

The objective of this study was to investigate Mateo’s continuing process of learning to teach SE as part of a PETE program and during the school placement component of the PETE program. The three-level model of learning was used as a framework to understand the question, ‘How does a PST’s knowledge of teaching and learning SE develop?’

While we believe that the findings of this study convey an understanding about PSTs’ SE knowledge development that extends beyond the present case, we acknowledge the contextual limitations that the reader should recognize when considering the transferability of our findings. While Mateo’s learning experience was relatively comprehensive, the short nature of the two school placements did not allow ample opportunities to teach SE. Studying a cohort of PSTs, while including a thorough investigation of their entire PETE education,
could have provided insightful knowledge about how PSTs develop knowledge of teaching and learning SE. We also recognize that observation of Mateo’s SE teaching would have allowed valuable insight into his SE teaching practice and subsequent growing knowledge.

While there is a growing body of research on PSTs learning to teach SE (e.g. Curtner-Smith & Sofo, 2004; Deenihan & MacPhail, 2013), there has been a noticeable dearth of research considering how PSTs learn, interpret and deliver SE (Stran & Curtner-Smith, 2009). Appreciating that researchers have followed PSTs through a series of learning experiences (Glotova & Hastie, 2014), we have recently encouraged researchers to use a theoretical lens in examining teaching and learning SE (Hordvik et al., in press). Acknowledging the limitations of this study, the use of the three-level model of learning as an analytic construct generates a more theoretical view of interconnection of content, process and contexts in learning to teach SE and, specifically in this study, how Mateo developed knowledge of teaching and learning SE.

**Understanding Mateo’s SE knowledge development**

Knowledge growth within the three-level model of learning involves a process of a gradual development within a single level and in a transition process from one level to another (Korthagen et al., 2001). The knowledge development during the gestalt level is often unconscious and characterized by the ‘development of awareness’ (Marton & Booth, 1997). PSTs’ develop their perception through ‘suitable learning experiences’ (Korthagen, 2010), which in this study relates to where Mateo become capable of discerning other aspects of SE than he was capable of discerning before.

Findings from the first three phases of this study (team handball course, first school placement, first period of games course) suggest that Mateo gradually developed awareness of various SE teaching and learning aspects. The first two phases allowed Mateo contextualized experiences as a learner (i.e. ‘living the curriculum’) and teacher (i.e., school placement),
resulting in him developing awareness of critical SE aspects (e.g. teams, roles, holistic learning and teacher as facilitator). While being able to paraphrase the critical aspects and subsequently deliver them as a teacher, Mateo did not exhibit a high degree of perception towards teaching and learning SE. This prevented him in developing a more discerned understanding of a SE teaching practice (Korthagen, 2010). The lack of discussion and reflection on the learner experience in the first phase, together with limited opportunity to teaching during school placement, might be one explanation of the limited awareness Mateo displayed after the first two phases. Phase three (first period of the games course) allowed Mateo further experiences as a learner, while being encouraged to reflect on the ‘hows’ and ‘whys’ of teaching and learning SE. Structuring his knowledge from phase one and two, this phase allowed Mateo to more critically consider the SE aspects he previously had become aware of. However, while having developed abstract gestalts concerning the notion of learning in SE, findings from phase four (second school placement) showed that he had not yet developed abstract gestalts of teaching SE. Hence, he needed additional contextualized experiences of teaching SE in order to ‘desituate’ knowledge of teaching within the model (Korthagen, 2010). Phase four (second school placement) represented an interesting case in Mateo’s knowledge development. The school placement context (two three-week periods) encouraged Mateo to immediately progress his SE teaching, resulting in him not allowing students to learn and practice their role. Consequently, the arrangement of a competition day in lesson three resulted in a negative experience for Mateo. Interestingly, while the challenging situations made him more sceptic towards SE, they also represented an important experience in his developing awareness of the relations between teaching and learning within the model. This enabled the development of abstract gestalts of teaching in SE, resulting in ‘desituating’ knowledge of teaching and learning the model (Korthagen, 2010). Consequently, Mateo could
transfer from the gestalt to the schema level.

Knowledge within the schema level develops through reflection on the gestalt level where PSTs develop conscious schema of concepts, characteristics, and principles that is helpful in describing their SE teaching practice (Korthagen, 2010). The challenging situations in the first period of phase four (second school placement) could potentially have triggered Mateo’s former gestalts (Korthagen, 2010), where his former notions of a teacher-centered teaching approach could have been reinforced. However, using his established SE knowledge while reflecting on the concrete situations, Mateo started to developed a conscious network of concepts, characteristics and principles that helped him understand the struggles he had experienced (Korthagen, 2010). This made him consciously aware of some of the reasons for ‘why’ he had faced these challenges (i.e. students need time to learn their role), enabling him to change ‘how’ he was teaching (allowing students more time practicing their role).

Moreover, in the second period of the last school placement, teaching based on his recently developed knowledge while reflecting on his current experience, Mateo developed a conscious schema of teaching and learning SE that helped him understand his ‘in situ’ teaching practice. This resulted in Mateo developing a ‘personal practical theory’ of teaching SE (Korthagen, 2011) where he started to know how to act in concrete SE situations (e.g. when and how to provide feedback). Furthermore, the final phase (second period of games course) advanced Mateo’s personal practical theory with him acknowledging the role of progression and modification in SE, while noting appreciation towards personal needs as a teacher and student needs as learners. We suggest that Mateo needed additional experiences of teaching SE to be able to convert the recently developed conscious understanding into unconscious practical actions.

PSTs who have reached the theory level display an abstract understanding of a variety of similar situations (Korthagen, 2010). Importantly, the findings from this study do not
support a theory level in Mateo’s knowledge, enabling a generalized understanding of several SE teaching and learning situations. We do, however, suggest that Mateo, after the final phase (second period of the games course), demonstrated understanding of teaching and learning SE that reflected knowledge at an abstract level (Korthagen, 2010). Studying the relationships between SE concepts, while connecting them with knowledge from various PETE courses, the theoretical foundation of SE became accessible for Mateo.

Consequently, we suggest that the findings of this study convey that the comprehensive learning experience resulted in Mateo developing knowledge about teaching and learning that goes beyond learning to teach SE. Hence, SE offered him a tool to operationalize practice on an abstract level in which he understood theory through practice. This highlights the longitudinal nature of learning to teach SE, supporting researchers who suggest that learning to teach the model requires a comprehensive learning experience that allows PSTs to develop deep knowledge of teaching and learning SE (Glotova & Hastie, 2014; Hordvik et al., in press). We suggest that further suitable learning experiences of learning and teaching SE could potentially allowed Mateo to develop deeper and generalized understanding of a variety of SE teaching and learning situations.

Acknowledging the possibility that Mateo’s knowledge growth was somewhat stifled because of contextual constrains (i.e. lack of exposure to other curriculum and instructional models, and limited opportunities to teach in school), we believe the longitudinal design of this study and the application of a theoretical lens allow us to suggest implications for future SE practice and research in PETE.

**Implications for teacher education practice and future research**

In discussing the extent to which the three-level model represents a theory of teacher learning, Korthagen et al. (2001) asked for more empirical support and elaboration of the relations within and across the levels. This study conveys that the three-level model offers a way to
investigate a PST’s knowledge development in a ‘different context’ (PETE), highlighting how
gestalts and schemata are built from suitable experiences, with the potential for theory to
develop through multiple and structured learning experiences. Moreover, our analysis
suggests that most of the level reduction potentially occurs when PSTs teach SE in school,
either through extended teaching experiences within their PETE program or when they begin
to work as teachers. The three-level model of learning provided us with a theory to understand
one PST’s SE knowledge development. We encourage researchers to use the three-level
model as a framework to both develop (physical education) teacher education practice and to
conduct ‘realistic research’ that is grounded in ‘the real practice of teaching teachers, taking
into account the real people involved’ (Korthagen et al., 2001, p. 272), that is, the PST and the
teacher educator.

We believe that Mateo’s continuing SE knowledge growth allows us to suggest two
connected implications for physical education teacher education. First, teacher educators need
to acknowledge that learning to teach SE and other curriculum and instructional models is
more than learning how to deliver models of teaching. Teacher educators need to allow for a
continuing growth of understanding where PSTs develop knowledge through various teaching
and learning experiences tailored around their needs and concerns. Complementing this,

physical education teacher educators need to collaborate on both a structural and situational
level. This implies collegial discussion about the program design (disposition of practical and
theoretical courses) and consideration of the most effective way to sequence the introduction
of curriculum and instructional models.

Finally, returning to the concept of ‘chain of evidence’ mentioned at the start of the
paper, we encourage researchers to explore how teachers operationalize what they have
learned in teacher education and further investigate how this is visible in their teaching
practice, and in turn how this practice promotes meaningful learning experiences for students (Beni, Fletcher, & Ní Chróinín, 2016).
References


Kitzinger, J. (1994). The methodology of focus groups: The importance of interaction between research participants. *Sociology of Health & Illness, 16*(1), 103-121.


