

Pre-service teachers' learning and implementation of student-centred models in physical education: a systematic review

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Abstract

This study provides a systematic review of empirical research on Pre-service Teachers' (PST) course units learning and school placement implementation of Student-Centred Models (SCM) in Physical Education Teacher Education (PETE) programs. A systematic review method was used, which included searching in electronic databases, selecting studies based on pre-established inclusion criteria and refining this selection to identify research-based papers. 39 studies were included for analysis and an overview was provided of the main research features (SCM researched, study purpose, study focus and context, and study design). Furthermore, this study discusses how PSTs learn about SCMs in their curricular years and how they implement SCMs in their school placement. Additionally, an overview of the educational impact of PSTs' SCMs implementation is also presented while highlighting empirical gaps and future research suggestions. Results showed that research has neglected the integrated analysis of the different phases of the PSTs' professional development during their PETE programs process. Mentoring programs applying social learning theory in practice and experiencing SCM as learners are key strategies for facilitating PSTs' professional development. Concluding, our findings suggest that offering a theoretical basis is insufficient to development PSTs' understanding of SCMs and PSTs construct their professional development by experiencing the SCMs in first-hand, which seems to contribute to their pedagogical and content knowledge development. A scarcity of knowledge about specific mentoring processes employed by CTs and USs than can support PSTs' delivery of SCMs is highlighted. Moreover, in-depth phenomenological, longitudinal and follow-up analysis with a high range of designs is encouraged.

Keywords: Physical Education Teacher Education, Professional Development, Learner Centred Models, Pedagogical Models

Introduction

Quality teacher education is a critical mechanism for generating effective teacher professional development (TPD) (Avalos, 2011). However, research on general education has consistently suggested that the in-depth understanding of teacher education processes and PSTs' learning how to teach, has long posed epistemological and methodological challenges to academics and practitioners (Cochran-Smith, 2005; Keay & Lloyd, 2009).

Research has noted a lack of evidence that supports the effectiveness of TPD processes due to the inexistence of a single method or strategy for TPD to ensure teacher quality (Kennedy, 2014). Despite of that, it is known that quality TPD should consider teaching contexts focused on teachers' needs and delivered in challenging ways, collaborative and social processes where working together is crucial (Guskey, 2000; Tannehill & MacPhail, 2017).

In the specific field of physical education (PE) teacher education (PETE), the need to guarantee the effective contribution of PE to student development of the 21st century most necessary interpersonal, communicative and cognitive skills (critical thinking, decision-making, creativity, problem-solving and cognitive development and resilience), triggered a worldwide renovation of the PE curriculum (Lund & Tannehill, 2014). Nonetheless, the consequent widespread implementation of student-centred models (SCM) has presented singular challenges to teacher training. Thus, a major mission of PETE is to support the renovation of PSTs' conceptual perspectives and professional praxis, to enable future teachers' transformative learning experiences and effective renovation of PE teaching practice in schools (Hordvik et al., 2019b).

Nonetheless, despite widespread acknowledgment of the marked educational benefits arising from school students' participation in SCM-PE experiences (Hattie, 2012; Le Ha, 2014), and although the curricular implementation of such pedagogical models is currently mandatory in many countries (Lund & Tannehill, 2014), there is still a notable dearth of knowledge about the educational mechanisms that best support professional development towards SCM implementation in schools (Fletcher & Casey, 2014; Hastie et al., 2015; Fletcher et al., 2019). Furthermore, most of the existing review studies on the topic have solely focused on the isolated examination of single SCMs (e.g., Bores-García et al., 2021; Bessa et al., 2019), or on the challenges faced by PSTs while implementing (Silva et al., 2021), showing a limited focus on the PETE process in its entirety, from

learning to implementing the SCM. Thus, in light of the dynamic, multifaceted, situated and relational nature of teaching future teachers about SCM (e.g., teacher education strategies), and teaching future teachers how to teach SCMs, this review respond to an increasingly forceful claim of PETE literature in multiple ways.

In agreement, the aim was to systematically review the research conducted to date on PSTs' journey towards the implementation of SCMs in schools. A thorough overview is provided of the different phases of PETE programs, namely, PSTs' learning during curricular years, their teaching practice during school placements and the educational impact of PSTs' implementation of SCM, a facet significantly overlooked in PETE.

The research questions which guided the review of these studies were: (Q1) What are the main research features (SCM researched, study focus and context, and methodology)? (Q2) How do PSTs learn about SCMs in their PETE curricular years? (Q3) How are PSTs implementing SCM in their PETE school placement? (Q4) What is the educational impact (i.e., PE students' learning outcomes) of PSTs' implementation of SCM? (Q5) What is missing and should be considered in future research and educational processes in PETE programs?

Method

The protocol used by this systematic review follows the PRISMA statement recommendations (Moher et al. 2015) (see Figure 1.). This study was approved by the local Institutional Research Ethics Committee of the first author's institution, and followed the guidelines stated in the Declaration of Helsinki.

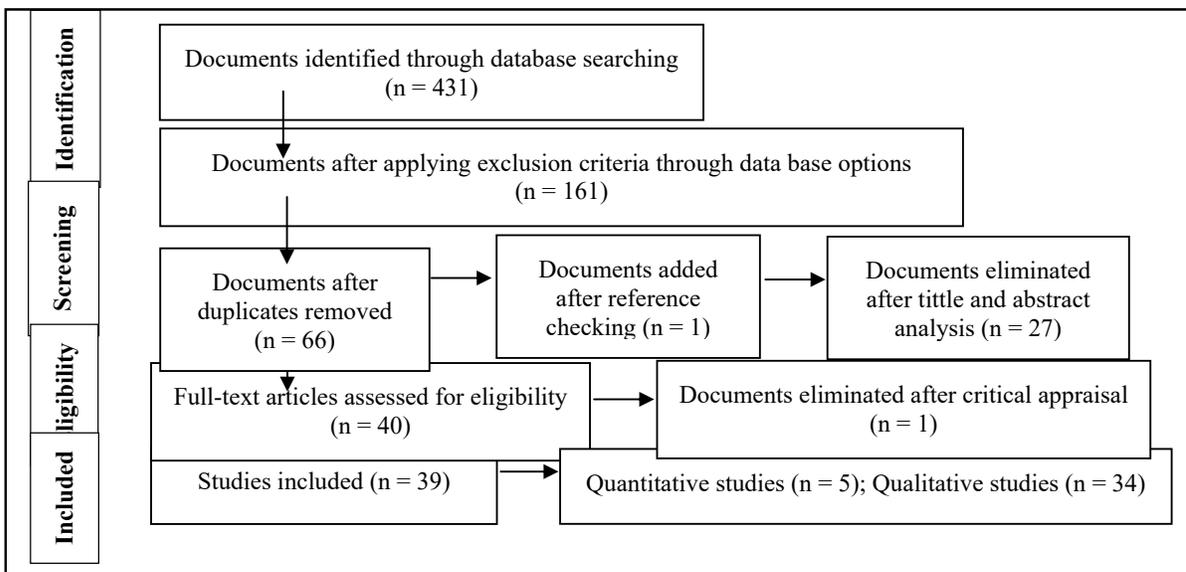


Figure 1. The selection process (Following PRISMA guidelines, Moher et al. 2015)

Eligibility criteria

Following the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines, P.I.C.O.S. was established as follows: Participants - Physical Education Pre-service Teachers; Interventions - related to the process of learning or teaching SCMs by PSTs; Comparisons - between methodologies applied in the studies and teaching or learning processes; Outcomes - in reference to: 1. PSTs learning SCMs process; 2. PSTs implementing/ teaching SCMs process and, 3. Empirical gaps; Study design - empirical studies.

To be included, the studies had to be empirical articles collecting primary data, as we are interested in (a) Physical Education Teacher Education, (b) Pre-service teachers (c) Student Centred Models, (d) published in peer-reviewed international journals, (e) available in full-text and (f) written in English.

Moreover, all methodological features were allowed for the analysis, since this context comprehends a large social interaction complexity that demands a large spectrum of analysis to cover it.

Systematic reviews, conceptual articles, studies out of the field of PE or PETE, or with experienced teachers were not included. There were no restrictions applied to publication year, participants age, gender and research designs.

Several online data bases were consulted for this literature review: Academic Search Complete, ERIC, PsychInfo, Education Source, Web of Science, SCOPUS, Teacher reference center and Academic Search Ultimate.

Titles and abstracts of retrieved articles were individually evaluated by the research team to assess their eligibility to be included in this article. The study abstracts that did not provide enough information according to the eligibility criteria stabilized were retrieved for full-text evaluation. In a second phase, articles were excluded if, based on the full text, focused solely on concept analysis without empirical results of a SCMs or only about

PSTs with no relation to SCMs. After both reviewers proceed to this analysis and disagreements were resolved through discussion, there were 40 articles remaining. The following step included the analysis of risk bias to define if the articles corresponded to the quality level required to integrate this systematic review.

Analysis of risk bias

The quality of the selected studies (n = 40) was evaluated using critical appraisal tools. The quality and validity of the qualitative and quantitative research studies included was assessed using the “Critical Appraisal Skills Programme (2018)” (CASP) toolkit, allowing the researchers to assess the appropriateness of the methodology, participants, study design, and data analysis, comprising 10 questions for qualitative studies and 12 for quantitative. We selected the CASP tool because it is a widely used for studies appraisal and user-friendly appraisal tool, despite its limitations in terms of sensitivity (Hannes et al., 2010). Each study was given a rating: low, medium, or high quality based on the average number of “YES” classifications. Low-quality studies were excluded from the analysis. After the critical appraisal, one article was excluded because of low quality, leaving 39 studies for analysis (QN = 5, QL = 34). The three authors assessed the quality of each study, discussing the any disagreements till consensus was achieved.

Data extraction

Included studies were analysed, by the first author, through a thematic analysis after creating a table of contents present in each study on an Excel database. The coding was reviewed by the second and third authors. Successively, summary tables were generated to summarize the data of the selected studies according to the following categories: authors and year, study purpose, SCM applied, study context and sample/ participants, study design, data collection and analysis, main findings of the study (Table 1.).

Results and Discussion

Authors (year)	Purpose	SCM	Focus and context	Study Design	Data collection and analysis
Curtner-Smith & Sofo (2004)	Determine PSTs conceptions of the teaching-learning process while teaching SE and Multi-activity units during an early field experience.	SE	Implementing SCMs – school placement	Exploratory Longitudinal	Critical incident technique and a reflective questionnaire. Analytic induction and frequency counts.
McCaughtry et al. (2004)	Use cognitive–developmental learning theory to investigate how teachers learn to teach the SE.	SE	Learning SCMs – curricular years	Emergent design Longitudinal	Ethnographic observations (participant observation) and interviews. Constant comparison.
McMahon & MacPhail (2007)	Identify the mechanisms that facilitate or inhibit learning to teach SE from the perspective of PST.	SE	Learning SCMs – curricular years	Hybrid case study action research Longitudinal	Teacher interviews and diary entries. Constant comparative method.
Wang & Ha (2009)	Examine PSTs perception of TGfU.	TGfU	Implementing SCMs – school placement	Exploratory Longitudinal	Semi-structured interviews Inductive content analysis
Stran & Curtner-Smith (2010)	Discover the relative importance of different knowledge types in PSTs teaching of SE and the ways in which they acquired and developed this knowledge.	SE	Implementing SCMs – school placement	Exploratory Longitudinal	Non-participant observations, formal, numerous informal, and stimulated interviews, significant incident and journal reports were submitted via email; the teaching portfolio was reviewed. Analytic induction and constant comparison.
Deenihan et al. (2011)	Implement the recommendations in the literature and examine PSTs’ experiences of ‘living the curriculum’ in their PETE programme through SE.	SE	Learning SCMs – curricular years	Exploratory Longitudinal	Weekly observations, researcher and lecturer reflections and interviews and focus groups with the lecturer and PSTs. Thematic coding.

Parker & Curtner-Smith (2012)	Determine the extent to which PSTs employing the SE rejected and combatted or supported and reinforced masculine bias and sexism.	SE	Educational impact of PSTs implementing SCMs – school placement	Exploratory Longitudinal	Non-participant observations, formal and informal interviews, stimulated recall interviews and documents analysis. Analytic induction and constant comparison.
Perlman (2012)	Provide an initial examination into the influence of using the SE approach on PSTs autonomous instruction.	SE	Educational impact of PSTs implementing SCMs – school placement	Quasi Experimental Longitudinal	Learning Climate Questionnaire (LCQ) and Sport Motivation Scale (SMS). Repeated measure ANOVA's
Stran et al. (2012)	Examine PSTs perceptions teaching a SE-TGfU hybrid and identify facilitators and inhibitors that PSTs experienced when implementing the model.	SE/TGfU	Implementing SCMs – school placement	Exploratory Longitudinal	Focus group interviews, critical incident reflections, daily lesson plans, and field notes. Thematic analysis.
Wang & Ha (2012a)	Examine the approaches used in mentoring and investigate the interactions occurring between PSTs and mentors during the mentoring process.	TGfU	Implementing SCMs – school placement	Exploratory Longitudinal	Individual semi-structured interviews and written artefacts. Deductive content analysis
Wang & Ha (2012b)	Examine the factors influencing PE PSTs perception of TGfU.	TGfU	Implementing SCMs – school placement	Exploratory Cross-sectional	Individual semi-structured interview. Deductive content analysis.
Cohen & Zach (2013)	Examine whether the CL teaching model contributed to the teaching efficacy and planning skills of PSTs	CL	Learning SCMs – curricular year and Implementing SCMs – school placement	Experimental Longitudinal	All participants filled out PE teaching efficacy questionnaires before and after the intervention, at the end of the intervention, their unit plans were analysed using rubrics determining planning abilities. Two-way ANOVA
Deenihan & MacPhail (2013)	Explore one PST's experiences delivering SE during a school teaching placement after undertaking a practical SE module in his PETE	SE	Implementing SCMs – school placement	Case study Longitudinal	Pre, mid- and post teaching placement interviews, observation reflections and interviews. Thematic coding.
Wang & Ha (2013a)	Examine factors determining the teaching behaviour of PSTs towards TGfU.	TGfU	Implementing SCMs – school placement	Exploratory Longitudinal	Documentation, systematic observation and interviews. Frequency counts and content analysis.
Wang & Ha (2013b)	Examine the views, learning experiences, and understandings of PSTs, cooperating teachers, and university supervisors of TGfU.	TGfU	Implementing SCMs – school placement	Exploratory Cross-sectional	Individual semi-structured interview. Deductive content analysis.
Glotova & Hastie (2014)	Introduce SE to students in a Russian PE pedagogical college and track their understanding of the model through a series of learning experiences.	SE	Implementing SCMs – school placement	Action-research Longitudinal	Quizzes, surveys, individual interviews, observations, field notes. Deductive data analysis.
Chen & Curtner-Smith (2015)	Examine whether and the degree to which SE delivered by PSTs with teaching orientations served to combat or reinforce sexism and	SE	Educational impact of PSTs implementing SCMs – school placement	Exploratory Longitudinal	Formal, informal and stimulated recall interviews, passive participant observation, and document analysis. Analytic induction and

James et al. (2015)	masculine bias. Examine PSTs perceptions of an advanced basketball class that was taught by a PST using the SE curriculum model.	SE	Implementing SCMs – school placement	Exploratory Longitudinal	constant comparison. Formal interviews, document data, written assessments, sample practice plans, course syllabi, course outline, and grading plan were also collected. Thematic analysis.
Wahl-Alexander & Curtner-Smith (2015)	Examine the influence of negotiations between pupils and PSTs on PSTs' instruction within multi-activity (MA) teaching and SE.	SE	Implementing SCMs – school placement	Exploratory Longitudinal	Non-participant observation, formal, informal, stimulated recall interviews, critical incident reflections, document analysis. Induction and constant comparison.
Braga & Liversedge (2017)	Examine PSTs' perceptions of the challenges and facilitators associated with the implementation of a SE.	SE	Learning SCMs – curricular year and Implementing SCMs – school placement	Exploratory Longitudinal	Focus group semi-structured interviews. Induction and constant comparison.
Deenihan & MacPhail (2017)	Examine the influence of organizational socialization on PSTs' delivery of SE.	SE	Implementing SCMs – school placement	Exploratory Longitudinal	Pre- and postteaching placement interviews and midteaching placement focus groups. Thematic coding and constant comparison.
Eriksson et al. (2017)	Examine the impact of using SE in a Finnish school context by analysing and understanding the PST teaching as well as his students' experiences.	SE	Implementing SCMs – school placement	Action research Longitudinal	Personal reflective journal, video observations, student group interviews, and student diaries. Induction and constant comparison.
Hordvik et al. (2017)	Analyse how did the PETE faculty member experience teaching about teaching SE and how did the PSTs experience learning about teaching SE.	SE	Learning SCMs – curricular years	Self-study Longitudinal	Open-ended reflective diary and focus groups. General inductive approach, content analysis and constant comparison.
Schwamberger & Curtner-Smith (2017)	Investigate the influence of a PETE on PSTs ability to promote moral and sporting behaviour in SE.	SE	Educational impact of PSTs implementing SCMs – school placement	Case study and Longitudinal	Formal, stimulated recall focus group, informal interview, nonparticipant observation, document analysis, entries into an electronic journal, critical incident reports. Analytic induction and constant comparison.
Burgueño et al. (2018)	Examine the influence of a SE intervention on basic psychological need satisfaction in school students in the sport teaching-learning process that takes place in PE.	SE	Educational impact of PSTs implementing SCMs – school placement	Quasi experimental Longitudinal	Psychological Needs in Exercise Scale; A priori, non-equivalent control group using pre- and post-intervention measures and intra- and inter- analyses; Mann-Whitney U test; Wilcoxon signed-rank test; Pearson's correlation
Mooney et al. (2018)	Explore PSTs experiences of a SE unit designed to support their transition into an initial teacher education degree and to consider how these experiences shaped perceptions of belonging and pedagogical practice.	SE	Learning SCMs – curricular years	Narrative Longitudinal	Semi-structured interviews, participant observations (field notes) and student evaluation data about their participation in this unit. Critical discourse analysis that specifically sought to identify discourse– power

Sinclair & Thornton (2018)	Explore the use of a 'living the curriculum' experience to influence PSTs' conceptions of learning and teaching in PE; and examine the usefulness of visual methods to further understand students' experiences in PETE.	SE/ TGA	Learning SCMs – curricular years	Visual Methods Longitudinal	relations that shaped participants' perceptions of 'fitting in'. PSTs created a photo-collage that depicted their experiences in the class. Semi-structured focus group interviews centered on discussion of the PSTs' photo collages. Open and axial coding.
Cañabate et al. (2019)	Identify the ways in which PSTs represented their professional learning through reflection, ascertain whether and how PSTs were reflective, and identify in which ways reflection by PSTs fostered personal critical professional competence.	CL	Learning SCMs – curricular years	Experimental Longitudinal	Reflective narrative assessment and the rubric for students' identity construction assessment. Mean, standard deviation, two-way ANOVA analysis and items correlation.
Hordvik et al. (2019a)	Examine PSTs experience of teaching a specific content (SE) in various school contexts.	SE	Implementing SCMs – school placement	Case study Longitudinal	Focus group interviews and PST coursework. Only 2 PSTs detailly analysed. Nonlinear analysis process: data walking, rhizomatic mapping, situational analysis, and memo writing.
Hordvik et al. (2019b)	Understanding how a PST's knowledge of teaching and learning SE develops.	SE	Learning SCMs – curricular year and Implementing SCMs – school placement	Case study Longitudinal	Interviews focus group and coursework. A hybrid approach of inductive and deductive theme development.
Legrain et al. (2019)	Examine the influence of a scaffolding procedure (CLS design) on PSTs knowledge, skills and self-efficacy in comparison to a Cooperative Learning (CL) and a direct instruction (DI) experience.	CL	Learning SCMs – curricular years	Experimental Cross sectional	Pre-test/post-test design was used to consider PE PSTs motor skill, knowledge for practice, and self-efficacy improvements. The post-test also examined participants' pedagogical knowledge. RM- ANOVAs HSD Tukey post hoc MANOVA
Luguetti et al. (2019a)	Explore both PSTs and youth's experiences of an APM for working with youth from socially vulnerable backgrounds and to interrogate the way in which a pedagogy of love emerged.	APM	Implementing SCMs – school placement	Participatory action-research Longitudinal	Observations collected as field notes, collaborative group meetings, reflective diaries, generated artefacts, focus groups and interviews. Induction and constant comparison.
Luguetti et al. (2019b)	Capture the complexity, tensions and struggles of delivering and experiencing an authentic Artistic Gymnastics SE season within learning communities.	SE	Learning SCMs – curricular year	Action-research Longitudinal	Collaborative lecture group meetings; reflective diaries; lecturer observations collected as fieldnotes; Facebook posts; and focus groups. Induction and constant comparison.
Schwamberger & Curtner-Smith (2019)	Determine the extent to which a coaching-oriented PSTs, promoted or negated moral and sporting	SE	Implementing SCMs – school placement	Case study Longitudinal	Fieldwork, formal, informal, stimulated recall interview, critical incident reports, entries to a

	behaviour while teaching middle school girls within two 18-lesson SE.				reflective journal, analysis, interviews	electronic document group
Luguetti & Oliver (2020)	Explore the challenges PSTs faced when learning to use an activist approach across time.	APM	Implementing SCMs – school placement	Participatory action-research Longitudinal	Analytic induction, constant comparison	Collaborative group meetings, reflective diaries, observations collected as field notes, generated artifacts, interviews and focus groups.
McEntyre et al. (2020)	Produce a quantified negotiation profile for one PSTs (George) while he taught three SE seasons.	SE	Implementing SCMs – school placement	Quasi Experimental Longitudinal	Inductive and constant comparison.	47 lessons in 6th, 7th and 8th grade SE season on handball were filmed and coded with the negotiation instrument.
Richards et al. (2020)	Understand the influence of a sequence of methods courses and early field experiences on U.S. PSTs understanding and implementation of the TPSR with youth from a community affected by poverty.	TPSR	Implementing SCMs – school placement	Phenomenological Longitudinal	Descriptive analyses; Kruskal–Wallis test	Autobiographical essays, critical incident reports, reflective journals, non-participatory observations and field notes, and semi-structured interviews.
Shiver et al. (2020)	Understand the ways in which socialization experiences influenced the development of culturally relevant PE through the TPSR while teaching in an afterschool program in a high-poverty school.	TPSR	Implementing SCMs – school placement	Phenomenological, Case study Longitudinal	Deductive analysis through the lens of occupational socialization theory, and inductively as theory divergent trends were sought. Open and axial coding.	Critical incident reflections, weekly online journal responses, writing assignments, field notes, systematic observations reflections, and semi-structured interviews.
Nieves et al. (2020)	Examine PSTs experiences applying the TPSR at the elementary level.	TPSR	Implementing SCMs – school placement	Case study Longitudinal	Inductive and deductive analysis, constant comparison, open and axial coding and theme development.	Focus group, observations, and diary reflections. A priori coding system (Fuller’s Task Concern Stage), category coding and pattern matching.

Table 1. Summary of data extraction from studies included. In regarding the content of table two from left to right, the first column presents the ‘Author(s)/ year’, which provides the author(s) of the study and the year of publication. The second column, ‘SCM’, shows the model used (Sport Education (SE), CL (Cooperative Learning), TGfU (Teaching Games for Understanding), APM (Activist Pedagogical Model), TPSR (Teaching Personal and Social Responsibility), SE/ TGA (Sport Education/ Tactical Games Approach). The next two columns, ‘Study design’ and ‘Data collection and analysis’, provide the applied research design and the methods used. The last column ‘Focus and context’ is related to the phase of the PETE program ‘learning’ in ‘curricular years’ or ‘implementing’ in ‘school placement’ and ‘educational impact of implementation’.

PSTs’ learning ‘about’ SCMs: examining experiences, perceptions and representations in the PETE curricular years

Regarding experiences, perceptions, and representations of PSTs on learning SCMs during PETE curricular years, 12 articles were analysed, in SE (n = 8), CL (n = 3) and SE/TGA (n = 1). Several research designs were employed: qualitative methodology (including exploratory, emergent design, hybrid case-study/ action-research, self-study, case study, action research, visual methods) and experimental, quantitative research.

Findings revealed that, when experimenting with SE and SE/ TGA in the role of ‘students’ during the course units, PSTs’ interaction with the model’s particular pedagogical features (e.g., persistent affiliation, teamwork) prompted an enhanced sense of belonging and social connectedness among them (Mooney et al., 2018). This aligns with the idea that PETE programs should allow their PSTs to experience the curriculum firsthand (i.e., in the role of ‘students’) (Oslin, 2002; Kinchin, 2003; McMahon & MacPhail, 2007). As suggested by Oslin et al. (2001), such ‘Living the curriculum’ experiences impact positively on PSTs’ content knowledge development (“knowing how to perform an activity”; Hastie, 2021, p. 2), which, consequently, facilitates their development of pedagogical content knowledge (“what and how to teach particular content to particular students”; Ward & Ayvazo, 2016; Deenihan et al., 2011). Conversely, during the course units, some TEs were reluctant to invest in teaching SE to their PSTs for feeling it restricted their ability to input their expertise knowledge. The TEs felt that the introduction of the structural features of the SE (teamwork, peer-teaching tasks, formal championship, role playing, etc.) in the course units removed opportunities for PSTs experiencing the specialized content development (tactical/technical) of the subject-matter itself (e.g., sports-based activities) (Alexander & Penney, 2005; Deenihan et al., 2011). Furthermore, when experiencing an authentic SE season within learning communities TE and PSTs developed into two separate communities of learners, due to challenges that arise in the relationship between master and apprentices (Luguetti et al., 2019b). In this matter, Hordvik et al. (2017) offered a valuable insight on how to help PSTs bridge the theory and practice ‘gap’ by providing them with: (i) learning outcomes that focus on the how and why of teaching; (ii) course work in which PSTs need to reflect and discuss the different dimensions of the model while designing a SE season; and (iii) teachable moments, with the TE explaining the how and why of practice in situ. Moreover, PSTs reported experiencing the model as a student in the 10 weeks preceding the field experience, establishing the routines pertinent to the SE model, and having knowledgeable and helpful supervisors as facilitators to future SE implementation (Braga & Liversedge, 2017). In addition, during learning of SE, some TEs engaged PSTs in the planning, design, and teaching of sport content to their fellow higher education peers in a tactical-focused way (e.g., developing tactical concepts and small-sided games). Some PSTs felt frustrated as they were not capable of designing appropriate small-sided games and opted to teach less complex, decontextualized, traditional skills-drills tasks (McCaughy et al., 2004). Finally, an experimental study on CL aimed at identifying the ways in which PSTs represented their professional learning through reflection on instructional teaching approaches. Results showed that, engaging in systematic reflection processes helped PSTs identifying aspects of their professional identity that could best contribute to their sustainable and ongoing development of teaching competences (Cañabate et al., 2019).

PSTs’ implementation of SCMs: assessing experiences, perceptions and representations in PETE school placements

Regarding the experiences, perceptions and representations of PSTs collected during their implementation of SCMs during school placement training, this review analysed 25 studies related to SE (n = 13), TGfU (n = 5), CL (n = 1), APM (n = 2), TPSR (n = 3) and hybrid SE/TGfU (n = 1). The range of research designs included mostly qualitative methodologies. Namely, exploratory studies, case studies, action-research, narrative and phenomenological, and one quasi experimental design (quantitative methodology).

Findings in PSTs’ implementation of SE found a hierarchy in the importance of different knowledge types in their ability to teach SE. The effective implementation of SE did not seem to require high levels of content and pedagogical content knowledge from PSTs (Stran & Curtner-Smith, 2010). PSTs reported that, spending time and energy on planning, establishing fair teams, and assessing student learning were challenges to the implementation of a SE season (Braga & Liversedge, 2017). Moreover, implementing a SE season for the first time and engaging in an action research project simultaneously, was described as a complex and time-consuming process for the PSTs, despite being a support for problem identification during the model implementation (Eriksson et al., 2017). Also, the school requirement of including multiple sports in one season of SE was found to rush PSTs toward disregarding the necessary time to train their students to master the ‘novel’ pedagogical features of SE (e.g., role playing, peer-teaching, and interpersonal cooperative social interactions, etc.) (James et al., 2015). Additionally, results indicated that PSTs’ occupational socialization, conceptual orientation, prior sporting experiences, their training experiences in the PETE programs, and specific circumstances of the school context (e.g., organizational socialization, Cooperating Teachers’ (CT) knowledge of SE) in which they were teaching influenced the nature of the SE season offered to students (Deenihan & MacPhail, 2013). PSTs also recognized structural and cultural advantages of SE in comparison with more conventional teaching approaches (Glotova & Hastie, 2014; Deenihan & MacPhail, 2017). Results suggest that offering a course on the theoretical basis of SE is insufficient to develop in PSTs an accurate understanding of the model. It is only after PSTs undergo appropriate planning and teaching during real-life conditions (e.g., during their school placement) that they fully experienced the pedagogical nature and intricacies of the model. According to the work of Deenihan and MacPhail (2017), the most influential factor the PSTs faced in terms of delivering SE was their CTs.

In fact, this was corroborated by TGfU studies. The PSTs felt they were appropriately supported by the ongoing help provided by their university supervisors (US) in the process of understanding TGfU conceptual features, to facilitate their implementation of the model in schools. The most beneficial support provided to

PSTs was the one focused on developing ‘game modification’, ‘effective use of equipment and space’ and ‘posing appropriate tactical questions’ teaching skills. Conversely, the lack of TGfU-specific pedagogical knowledge of the school CTs was a core impediment to PSTs’ effective implementation of the model. The CTs were unable to help their PSTs beyond ‘general pedagogical issues’ faced by PSTs in relation to ‘classroom routines’, ‘lesson planning’, ‘the organization of class content’, and ‘general classroom management’ (Wang & Ha, 2012b).

Still in TGfU, the PSTs acknowledge the educational benefits of teaching PE to students through this approach and expressed that they were likely to use it in their future teaching practice. Nonetheless, difficulties in understanding the nature and implementation of TGfU were also encountered (Wang & Ha, 2009). Negative attitude towards TGfU related to social norm issues (i.e., resistance of CTs, USs, school teachers and pupils to adhere to non-traditional pedagogies), and perceived inability to cope with behaviour control problems directly related to the TGfU activity organization (i.e., space, class duration, equipment, TGfU conceptual understanding, technical level of pupils and classroom discipline) negatively affected PSTs’ future intentions to adopt TGfU. In some cases, PSTs abandoned the use of TGfU in the course of the school placement in favour of teaching through skill-drills and direct instruction methods (Wang & Ha, 2013).

With regard to the hybrid SE/TGfU implementation, the unique, complementary nature, and perceived increased levels of student engagement in the class were strong attractors to this approach. Although the PSTs feel that they understood the pedagogical principles of this approach, the observations of their teaching practice exposed a superficial understanding of the hybrid model and the lack of knowledge of the pedagogical content necessary to make adjustments and solve emerging teaching problems (e.g., they were unable to efficiently balance the use of student-led activities and keeping a content-development focus on solving game problems) (Stran et al., 2012).

The implementation of APM afforded an opportunity for PSTs to challenge and renegotiated and reshape their own stereotypes and assumptions when facing a dissonance between what they thought they knew (assumptions about what a teacher should do) and what they were experiencing (learning how to teach) in their work with youth (Luguetti & Oliver, 2020). Moreover, a pedagogy of love emerged when the model was implemented across three semesters in a socially vulnerable. The PSTs learned to value the building of positive relationships and mutual respect with young students (Luguetti et al., 2019). Similarly, in TPSR, in ‘grappling’ with the discovery of ways to operationalize social relational concepts (mutual respect, self-determination, caring, etc.) through PE activities, the PSTs developed nurturing behaviours towards their students and became more skilful in adjusting their teaching practice for meeting their students’ needs (e.g., Richards et al., 2020; Shiver et al., 2020). Furthermore, PSTs reported that the TPSR changed their beliefs regarding PE and contributed to values and life skills development (Nieves et al., 2021).

Educational impact of PSTs implementation of SCMs

The educational impact of PSTs’ implementation of SCMs was reported in 5 studies in SE. Exploratory, case study, action-research and experimental were the research designs used to fulfil the studies’ purposes. Results on SE reported that, the reinforcement of hegemonic masculinity occurred with middle school pupils due to the PSTs’ orientations to teaching/coaching, interpretation of SE and teaching inexperience (Parker & Curtner-Smith, 2012). Contrarily, in Chen and Curtner-Smith (2015), results showed that masculine bias and sexism were largely combatted and rejected during the SE seasons and that the PSTs provided a relatively equitable experience to their students. Key reasons for the PSTs’ success included their liberal views about sport, their willingness to ‘fighting’ negative sporting culture, and the fact that they were ‘dealing’ with very young, elementary-aged children (Chen & Curtner-Smith, 2015). PSTs were also capable of prompting their students to critically question unfair situations occurring in PE lessons and to engage in positive sport culture behaviours (Schwamberger & Curtner-Smith, 2017). The participation in SE also prompted students’ basic psychological need satisfaction achievement, their effort and engagement in PE (autonomy, competence and relatedness) (Burgueño et al., 2018; Perlman, 2012).

What is missing in current research and what should be the future research and educational considerations for PETE programs

In making general considerations on the results found in what regards future research, it is suggested that the PETE community could push beyond linear ways of studying practice and instead encourage more complex conceptualizations of teaching. Following the encouragement of Strom (2015) regarding teacher education in general, authors advocate for an ontological turn (Lather & St. Pierre, 2013) in PETE research that focuses on the process(es) from teaching to learning rather than the outcomes alone. By focusing on the different stage of PST’s development on PETE programs (e.g., learning, implementation and educational impact of implementation), it is possible to examine the non-linear nature of the process through more holistic and integrated conceptual and methodologic frameworks (Hordvik et al., 2019b). Hence, this information would support PETE scholars with valuable resources, to inform the different stage of development of PSTs towards future effective SCMs implementation. The study by Wahl-Alexander and Curtner-Smith (2015) was exemplary in that it uncovered potential mechanisms through which PETE programs might provide effective support to

PSTs' implementation of SCM (e.g., allowed PSTs to employ a variety of curricular models, fostered a focus on the patterns of negotiation taking place within each model, and called PSTs to reflect on the amount, degree, nature and consequences of their negotiations with pupils).

With respect to what is missing in SE research, there is a need for additional studies examining different approaches to teaching the model in PETE. Here, knowledge on the strategies that could best prepare PSTs for the field teaching, so that PSTs have some understanding of what to expect, are currently missing. Additional research within the SE context is needed to examine the effectiveness of a community of learners and understand how PSTs and TEs can work together, learning from, and with, each other (Lugueti et al., 2019b). Regarding TGfU, the analysed studies acknowledge the importance of improving the ability of PSTs to clarify tactics and to manage class time efficiently and effectively in order to support their implementation (Wang and Ha, 2013a). Moreover, author suggested that a TGfU professional community among PSTs, CT, and US is needed to promote open communication among these groups, to facilitate the implementation of this approach (Wang and Ha, 2013b).

In respect to the CL model, it is suggested that future studies should expand the number of physical challenges in relation to each of the planned instructional approaches (structured, semi-structured, and non-structured), to carry out longitudinal studies that would allow to understand how the development of individual professional identities evolves. Hence, additional exploration is needed in PETE integrating different physical activities to better identify the conditions under which a scaffolding integrated into a CL environment would favour the instructional improvement of PSTs (Cañabate et al., 2019).

In TPSR more in-depth research could be conducted to address racial issues and the systemic racism occurring based on normalizing White culture since this is an essential component to socio-political consciousness (Shiver et al., 2020). In addition, research on APM suggested that PETE programs could support relationships with the dynamic communities that surround them by engaging PSTs in taking actions that contribute to the community's development. This type of experiences could contribute for PSTs' acknowledgment of other stakeholders that are essential in their teaching and learning experiences (Lugueti & Oliver, 2020).

Overall, research is required to uncover the collaboration work culture taking place between PSTs, their fellow in-service teachers, the CTs and the USs. Likewise, the contextual constraints within each school context and the specific scaffolding and mediation processes employed by CTs and USs to support PSTs' delivery of SCM should be further studied (Sinclair & Thornton, 2018). Likewise, it would be useful to further investigate on the best PETE mechanism to reshape PSTs' (an in-service teachers) coaching-based orientations (predominant use of authoritarian styles and direct instruction methods) toward self-determined and embodied adherence to SCM-based teaching practices (Schwamberger & Curtner-Smith, 2017). It is also suggested that training programs should be provided for in-service teachers to develop their knowledge to support PSTs first experiences. In addition, an examination of the effect of the collaborative mentoring model between pre- and in-service teachers and among PSTs, CT and USs on the professional development of these groups of teachers is needed as this approach is known to provide PSTs and mentors with mutually beneficial opportunities to gain deeper understanding of the SCM and improve its implementation (Wang and Ha, 2012b).

Moreover, additional studies might conduct longitudinal follow-up research, including, in the same study, an integrated analysis of PSTs' experiences of learning about the SCMs and their following implementation in the school placement and the subsequent impact these experiences have on their PE teaching practice (Perlman, 2012). In addition, longitudinal research is needed to determine if social cohesion fostered during single learning course units persists over time, since the model presents specific features that allow social development opportunities (e.g., team affiliations forged through the membership of persisting small groups). This would be particularly valuable in those PETE programs in which PSTs are placed in the same school to develop their practice as a community of practice (Ferraz et al., 2020). Notwithstanding action research being considered a powerful framework to help PSTs connect their practice with theory (Eikeland, 2012), there is a need to provide PSTs with preparation, understanding, support and extended the research cycles (from the beginning of PETE and not a single project at the very end of the programme) (Eriksson et al., 2017).

Conclusions

Our findings suggest that offering a theoretical basis is insufficient to development PSTs' understanding of SCMs. PSTs construct their professional development by experiencing the SCMs in first hand, which seems to contribute to their pedagogical and content knowledge development. For that reason, PETE programs should be able to engage PSTs in planning, designing and implementing a variety of SCMs. Furthermore, the ability to teach SCM does not seem to require high levels of content knowledge development, instead, occupational socialization and specific context circumstances appear to be main influences in their approach to SCM implementation. Hence, there is still a scarcity of knowledge about specific mentoring processes employed by CTs and USs than can support PSTs' delivery of SCMs. Teacher education training such as mentoring programs interventions (e.g., setting PSTs to learn as a community of learners) that seek to apply social learning theory in practice and course units that promote experiences with the SCM curriculum in the role of learners (i.e., learning how to do) are key strategies for facilitating PSTs' professional development (Byrd-Blake & Hundley, 2012;

Collinson, 2012). In addition, most research has consistently neglected the integrated analysis of the different stages of PSTs' professional development during their PETE programs, by studying either course units' development or PSTs' school placement teaching practice in isolation. Future research should examine PSTs' development across all stages of their PETE training in an integrated manner. This could bridge the gap between university course work learning and peer teaching experiences and the unpredictable future school implementation as a future professional (learning, implementing, educational impact of implementation, mentoring processes, etc.) (Moy et al., 2021). By employing longitudinal protocols that could have the potential to both capture, and prompt transformatory professional development across extended periods of time. Special interest should be placed on uncovering, mapping, and understanding the impact of particular contextual constraints mediation processes employed by TEs, USs and CTs to support the PSTs from learning to implementation of SCMs. Namely, by adhering to in-depth phenomenological, longitudinal and follow-up analysis with a high range of designs, studies could conduct an integrated analysis of PSTs' experiences of learning about SCMs, their following implementation in school placements and the subsequent impact that these experiences have on their PE teaching practice. Importantly, considering those who should benefit the most from any pedagogical interchange, voice should be given to children who participate in SCM-PE lessons as implemented by PSTs, as this has been a topic consistently neglected by research.

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