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Review of reflective practice in PE and PETE

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Reflective practice in physical education and physical education teacher education. A review
of the literature since 1995

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Abstract

Reflection and reflective practice are key concepts in the educational literature as well as in research on physical education (PE) and physical education teacher education (PETE). The purpose of this article was to review the current empirical knowledge base for reflection and reflective practice in PE and PETE from 1995 to 2011. The review included empirical research published in peer reviewed journals on the topics reflection and reflective practice in the contexts of PE and PETE. There were 33 articles included in the review. Most of the research is conducted in the PETE context, where it was found that pre-service teachers do develop their reflective capabilities. However, the results also indicate the students make little progress on critical reflections. In the PE context, it was found that teachers express a need for reflective communities. Theoretical and methodological challenges with the reviewed literature are discussed, and suggestions for further research proposed.

Keywords: reflection, reflective practice, literature review, physical education, physical education teacher education

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Notions like reflection, reflective practice, reflective teaching, and the reflective practitioner have been part of the educational discourse for quite some time. Indeed, reflection has been described as the “grand idée in teacher education” (Jay & Johnson, 2002, p. 73). This is also the case in physical education (PE) and physical education teacher education (PETE). While agreeing on the usefulness of reflection, authors hold different views on the nature of reflection (Fendler, 2003; Molander, 2008). While Dewey (1910) modeled reflection on scientific thinking, i.e. as a systematic and detached experimentation with hypotheses, Schön’s (1991) notion of reflection-in-action is connected to a form of immediate insight (Molander, 2008). Thus, the concept does not have an unequivocal definition or common understanding. As Fendler (2003) points out:

Today’s discourse of reflection incorporates an array of meanings... Reflective teaching has become a catchall term for competing programs of teacher education reform. It is no wonder that current research and practice relating to reflection tend to embody mixed messages and confusing agendas (p. 20).

Adding to the variability in the meaning of the term reflection, several different models of reflection have been suggested. One well-known way of framing reflective practice was presented by van Manen (1977), who suggested three levels of reflectivity. The first level, technical reflection, is concerned with reflecting on the *means* rather than the *ends* of teaching. That is, reflections attend to the efficiency and effectiveness of the means a practitioner decides to use and how the delivery of these means can be improved. The next level, practical reflection, is concerned with understanding the assumptions underpinning practical actions. As opposed to technical reflection, the practitioner tries to clarify the norms and values of the means, rather than how the means are used. The third level, politico-ethical

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reflection, sometimes referred to as critical reflection, is concerned with reflecting over the ends in light of wider social, political and ethical contexts. Critical reflection “involves a constant critique of domination, of institutions, and of repressive forms of authority” (van Manen, 1997, p. 227).

In the context of PE, Tsangaridou & O’Sullivan (1994) developed a framework called reflective framework for teaching in physical education (RFTPE). The RFTPE is primarily developed from a synthesis of literature on reflective practice. In addition, data from a study of pre-service teachers’ reflective practice was used in the final conceptualization of the framework. The RFTPE consists of two major categories; the *focus* of reflection and the *level* of reflection, which is divided into technical, situational or sensitizing, mirroring van Manen’s (1977) model. The second category in RFTPE is represented by the levels description, justification and critique. These levels can be combined in different ways (e.g. description and justification, description and critique, or description, justification, and critique). As an example, a technical-descriptive reflection involves giving descriptive information about instructional or managerial aspects of teaching. A sensitizing-descriptive, justificatory and critical reflection involves providing descriptive information combined with logical explanations and evaluations of an action from a critical, socio-political perspective.

In a review of the literature on reflective teaching, Tsangaridou & Siedentop (1995) found little empirical research on the topic in the PE and PETE literature. The work they reviewed tended to be prescriptive rather than descriptive. That is, the studies focused on strategies for improving reflection among pre-service teachers rather than describing what reflection is and how it actually takes place in PETE or in the professional work of PE teachers. Furthermore, the authors held that the prescriptions for reflection were “often based on the philosophical and/or political orientation of the scholar” (p. 229). Thus, they argued that the concept of reflection was politicized and infused with ideological presuppositions.

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Tsangaridou & Siedentop (1995) concluded by questioning whether PETE programs can significantly change the reflective capacities of the pre-service teachers, especially over time?

The authors expressed the hope that “a subsequent review... will be able to call upon a sufficient number of studies with a variety of methodologies to assess the value of reflection from a firm evidentiary base” (p. 233). Therefore, the purpose of this article is to review and give an account of the current empirical knowledge base for reflection and reflective practice in PE and PETE, and furthermore, to assess whether there is a firm evidence base for reflective practice in these contexts.

The Review Process

In order to identify the empirical work on reflective practice in PE and PETE, a literature review was undertaken. The databases SportDiscus, ERIC and ISI Web of Science were searched with the key words “physical education” in combination with “reflective practice”, “reflective practitioner”, or “reflective teaching”. The initial search was limited to the years 1995-2011, included only literature published in English, and excluded theses and conference proceedings.

In the initial search, 109 references were identified and imported into Reference Manager for further screening. The title and abstract of the imported references were then scanned by the two researchers independently, and included or excluded based on the following inclusion criteria: (a) reflective practice, reflective practitioner, or reflective teaching as key topic; (b) PE or PETE as context; and (c) empirical research. The result of this process was that 33 articles were included in the review. Not all the included articles have reflective practice as their main topic. In some cases, reflective practice is subsumed under other topics, such as continuous professional development (CPD). Yet, their contribution to the knowledge base was judged to be relevant.

Insert figure 1 here

Understanding Reflective Practice

Wackerhausen's (2008) "anatomical structure of reflection" has been utilized to support the analysis and discussion of the retrieved literature. Wackerhausen points out that across the various definitions of reflection there is a common configuration, which he calls an anatomical structure. More specifically, Wackerhausen proposes that when we reflect, we always reflect *on* something. There is always an object of reflection. Next, when we reflect on this object, we always reflect *with* certain concepts, assumptions and knowledge. Importantly, what we reflect with operates on two levels: The foregrounded concepts are those that we actively employ and that are explicitly present in our reflections. These foreground concepts operate on a tacit background of taken for granted assumptions and knowledge, but the background assumptions implicitly delimit the conceptual boundaries within which the foreground concepts can be unfolded in our reflections. For instance, theoretical concepts that are explicitly used for reflection are always conditioned on some taken for granted assumptions, such as ontological and epistemological ones.

Furthermore, Wackerhausen suggests that when we reflect, we always do so *from* certain interests, motivations, and value orientations. Both the object and concepts of reflections are guided from specific motivations, such as improving one's practice as a PE teacher. Finally, Wackerhausen points out that reflection always takes place *within* a given context. That is, the reflection we make about our practice as researchers will be different if we perform the reflection in the context of an official meeting as compared to a late night evening in the pub with our colleagues.

In sum then, this framework for reflection highlights that when we reflect *on* something, we always do so *with* certain concepts, assumptions and knowledge, *from* given interests and *within* a specific context. The merit of bringing in this theory of reflection is that it provides a very useful approach in order to analyze the content of reflection.

Results

In the following section a general overview of the reviewed studies will be provided. Then the different studies are given a brief presentation. Following Wackerhausen (2008), this presentation is organized by the contexts within which the studies have taken place, i.e. the difference between the educational context of PETE or the professional context where PE teachers work, since the context within which reflections takes place both enable and constrain the reflection process and outcome. After that, a discussion of three key topics arising from the literature is provided. Finally, the evidence-base for reflective practice is discussed and some implications for future research are outlined.

General Overview

The table in the appendix gives a summary of the reviewed studies. The majority of the studies, 19 out of 33, investigated reflective practice with some form of qualitative methodology. Whereas four studies incorporated a quantitative approach, 10 used a combination of qualitative and quantitative approaches. There were 22 studies researching reflective practice in PETE. For the most part, these articles examined teaching methods courses in combination with practicum placements influenced the reflective capabilities of the pre-service teachers. The exceptions from this were one study investigating reflective practice across different contexts within PETE (Ovens & Tinning, 2009), one study looking at reflective practice in the activity of dance (McCormack, 2001) and one investigating the use of reflective logs in an outdoor education unit (O'Connell & Dymont, 2011).

The review identified 11 studies that took place in the context of PE, investigating either experienced or novice teachers and their development and use of reflective practice. No longitudinal studies examined the changes in reflective practice in the development from novice to experienced teachers. Also, it was not found any longitudinal studies that follow cohorts of pre-service teachers from PETE into professional work as PE teachers.

Reflective Practice in PE

Karl Attard (Attard, 2007; Attard, 2008; Attard & Armour, 2005; Attard & Armour, 2006) published four articles concerning the development, outcomes, and importance of reflection for himself as a novice teacher. Based on his auto-ethnographic research, Attard argues that critical reflections on his own experiences enabled learning, and that reflection is best understood by engaging in reflection (Attard & Armour, 2006). More specifically, Attard (2007) states that “examining past experiences to understand and change present and future practices is a stronghold of reflective practice, but this is hard work... as it goes against the natural tendency of creating routines” (p. 155).

The review identified three studies investigating teachers’ participation in various forms of CPD-programs. All highlight the benefits of discussing matters related to PE with other teachers (Deglau, Ward, O’Sullivan, & Bush, 2006; Macdonald, Mitchell, & Mayer, 2006; Sutliff, Brown, & Elliot, 1999). More specifically, these studies report that participants found it valuable to discuss everyday issues such as assessment, liability and state standards for teaching with other teachers. Blair & Capel (2011) investigated sport coaches teaching primary PE, who participated in a PE CDP program. The authors found that the coaches developed their reflective practice throughout their participation in this program.

Tsangaridou & O’Sullivan (1997) aimed to understand teachers’ reflection from a descriptive rather than prescriptive perspective (i.e. what reflection is, rather than what it ought to be). The authors distinguished between micro- and macro-reflection, with the former being “reflection that gives meaning to... day-to-day practice” (p. 7) and the latter being reflection in professional development over time. Teachers in the study reflected on pedagogical content and the social and ethical dimensions of teaching. The purpose of their reflections was to give the pre-service teachers more meaningful opportunities for learning.

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Keay (2005; 2006) investigated subject departments as a site for professional development. She concluded that school-based CPD could take place within PE departments on the conditions that it is intentional and based on critical reflection (Keay, 2005). In addition, Keay (2006) also found that although newly qualified teachers (NQTs) were educated to become reflective practitioners, more experienced colleagues who were unfamiliar with reflective practice actually influenced some of the participants to become less reflective.

Reflective Practice in PETE

In the PETE context, most studies investigated pre-service teachers' progression in reflective practice as a result of enrollment in teaching methods courses in combination with practicum experiences. The content and implementation of these courses vary greatly as they take place in different countries (e.g. USA, Canada, Cyprus, or Finland) and thus influenced by different contexts for PETE. In addition, the researcher is often the responsible teacher educator for participants.

Several studies reported that pre-service teachers develop their reflective capabilities only to a limited degree (Ballard & McBride, 2010; Placek & Smyth, 1995). Whereas some studies found that pre-service teachers were mainly concerned with technical aspects of their teaching (Calandra, Gurvitch, & Lund, 2008; Napper-Owen & McCallister, 2005; Sebren, 1995; Zhu, 2011), others (Byra, 1996; Melnychuk, 2001; Tsangaridou, 2005) reported that pre-service teachers also attain the level of practical reflections as described by van Manen (1977).

For instance, Tsangaridou (2005) found that the two pre-service teachers in her study considered reflection necessary for their development as teachers, but reflection was experienced as a difficult process. She also reported that the reflections transcended a narrow focus on technical and managerial aspects to include pedagogical and social issues as well. Using the same sample, Tsangaridou (2008) investigated the pre-service teachers' beliefs and

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practices, and reported that the participants were “critical of the way [PE] is often conducted... [They] believed that there are social misconceptions regarding appropriate sports for boys and girls” (p. 147). Although reflective practice was not a specific topic in this article, the findings are relevant, because the pre-service teachers’ beliefs must be seen as developed in conjunction with their reflective thinking, since this was an important approach in the methods course (Tsangaridou, 2005). Likewise, Crawford and co-workers (2011) used the RFTPE in assessing pre-service teachers’ reflections during a course in physical activity and disability. They claimed that as a result of using the RFTPE framework for the course, pre-service teachers developed more analytical responses to their own teaching, and a greater emphasis was placed on sensitizing reflections.

On a more negative note, Curtner-Smith & Sofu (2004) made an effort to teach their pre-service teachers a critical pedagogical approach to teaching PE. They found, however, that pre-service teachers’ reflections concerned the technical issues of teaching as opposed to a critical focus on how one’s own teaching contributes to society. Later, the study was replicated (Curtner-Smith, 2007), although this time with participants who were pre-service classroom teachers enrolled in PE teaching methods course. The findings in this study were more or less the same. The pre-service teachers were concerned with technical rather than critical reflections, and the researcher reported to have “mainly failed in my attempt to get [the pre-service teachers] to adopt a socially critical perspective” (p. 51). Garrett & Wrench (2008), on the other hand, found that through a similar theoretical approach (i.e. critical pedagogy) some of the participants engaged in critical reflections, whereas others were unmoved by the researchers’ efforts.

Journal writing is a common strategy used in almost all the studies, but only O’Connell & Dymont (2011) looked into the effectiveness of journal writing. Their results show that journaling can be an appropriate medium for encouraging reflections. They also note,

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however, that some pre-service teachers do not enjoy or benefit from journaling. McCormack (2001) investigated one of the practical activities that make up PETE, namely dance. As with other studies reported above, the results in relation to reflective thinking were mixed: Some pre-service teachers did not progress much beyond technical reflection over the course of the one term project. The author also noted that reflective journaling may not be an appropriate tool for all pre-service teachers, especially those who experience lack of writing skills.

Senne & Rikard (2002; 2004) compared different approaches to the use of portfolios in combination with practicum experiences. Their results suggest that in the course of one short term, development in reflective thinking is sparse. When seen over a period longer than one semester, however, the portfolio was found to be a useful tool to assist pre-service teachers' reflectivity. It was also reported that the use of video recordings of pre-service teachers' own lessons can be a useful tool in developing teachers as reflective researchers (Palomaki & Heikinaro-Johansson, 2005). On the other hand, Calandra et al. (2008) found that their pre-service teachers mainly reflected on their own behaviors in the videos as opposed to seeing the pre-service teachers' behavior. Whereas Hopper (2000) used a theoretical model from personal construct psychology to assist pre-service teachers' reflections, Carlson (2001) employed metaphors and similes to develop reflective thinking among the pre-service teachers. Both these studies report positive results in terms of developing pre-service teachers' reflection.

While the above mentioned studies concern teaching methods courses and practicum experiences in PETE specifically, Ovens & Tinning (2009) investigated reflective practice across the various elements of a PETE program. By using the concept "discursive community", the authors sought to investigate how pre-service teachers enact reflection in various settings of the PETE program, and found that there were clear differences in the pre-service teachers' reflections within the contexts of lectures, assignments, and practicum.

Discussion

In presenting the results from the literature review, an initial distinction between the contexts of PE and PETE was made. Following Wackerhausen (2008) this was done because the context *within* which reflection takes place both enable and constrain how reflection is enacted. Based on the interpretations of the reviewed studies three topics emerging from the material will now be discussed. These are pre-service teachers' inability to reflect critically, PE teachers' need for reflective communities, and the media used to elicit reflections.

Pre-service teachers do not learn to reflect critically

Tsangaridou & Siedentop (1995) asked whether PETE can enhance the reflective capabilities of the pre-service teachers. The findings from the studies reviewed here are mixed: while some report that it is difficult to move pre-service teachers beyond the technical level of reflection (e.g. Curtner-Smith, 2007; Placek & Smyth, 1995), others (e.g. Tsangaridou, 2005) report that pre-service teachers attain the situational level of reflection. It is also reported that pre-service teachers at the very least leave a no-teaching perspective on PE (i.e. just "rolling out the ball") in favor of a technical reflective approach to teaching PE (Curtner-smith & Sofo, 2004). Attaining the level of critical reflection among all but a few pre-service teachers seems to be very difficult.

Some studies (Garrett & Wrench, 2008; Ovens & Tinning, 2009; Crawford et al., 2011) report more positive findings with regards to critical reflections. Garrett & Wrench (2008) found that as a result of their intervention, "some" pre-service teachers were able to take up a critical reflective approach. Yet, they also found that "a number of" the pre-service teachers continued to reflect on their teaching in technical terms. Similarly, Ovens & Tinning (2009) concluded that "reflection appears to be mediated by the discursive context the individual is situated in" (p. 1130). In particular, they noted that while the lecture context enabled critical reflections, the practicum context was characterized by technical reflections on managerial

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aspects of teaching PE. This is precisely Wackerhausen's (2008) point as well: The context within which reflection takes place constrains the possibilities for reflections.

Drawing further on Wackerhausen's framework, one can suggest that *teaching physical education* is the main object of reflection in most of the studies from the PETE context. Two factors that differentiate technical and critical reflections are the concepts and knowledge available to reflect *with*, and the interests and motivations that pre-service teachers reflect *from*. The *with*-dimension in technical reflection concerns concepts and knowledge derived from for instance didactics (e.g. how to teach). On the other hand, critical reflection would work with concepts and knowledge from critical pedagogy (e.g. concepts like social justice, power and hegemony). The *from*-dimension also differentiates the two forms of reflection in the sense that while technical reflection works from an interest in improving the delivery of one's teaching, critical reflection is interested in changing the conditions for what PETE pre-service teachers' conceive of as good PE. The review thus suggests that as long as the object of reflection is the pre-service teachers' own experiences with teaching PE, they have difficulties reflecting with concepts and knowledge from critical pedagogy.

PE teachers need reflective communities

Perhaps the strongest finding across the studies in the PE context is the importance of a community in which to reflect. From the perspective of a novice teacher trying to develop his reflective practice, Attard (e.g. Attard & Armour, 2005) reports that he felt isolated and wished he "were part of a community where we could share writings about teaching experience" (p. 199).

The design of some studies provided these kinds of communities for reflection. For instance, in both Macdonald et al. (2008) and Tsangaridou & O'Sullivan (1997) teachers welcomed the opportunity to discuss common, work related challenges. More specifically, teachers reflected on the pedagogical content and the social and ethical dimensions of

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teaching with the purpose of providing the pre-service teachers more meaningful opportunities for learning (Tsangaridou & O'Sullivan, 1997). Others report that when given the opportunity to take part in a reflective community, the objects of the PE teachers' reflections were issues such as assessment and liability, as well as the low status of their subject and parental pressure put on them (Deglau et al., 2006).

Interestingly, Tsangaridou & O'Sullivan (1997) found that the teachers' "ideas, beliefs, professional theories, and values about teaching" (p. 21) were modified or reframed over time. That is to say that the concepts and knowledge the teachers reflect *with* underwent a change as they gained experience. In relation to the previous theme, this is relevant, because it appears that with experience, the concepts practitioners reflect with and the interest they reflect from are developed and go beyond the technical and practical levels found among pre-service teachers. It must be noted, however, that there is only one study showing these results, and that also PE teachers are concerned with the technicalities of teaching.

Some challenges with reflective communities were noted in the literature. According to Deglau et al. (2006), "merely putting teachers together will not result in... substantive actions to improve their teaching context" (p. 427). They point out that it takes time to build trust in reflective communities, and therefore interventions with for instance discussion groups need to be longitudinal in nature. A different concern is voiced by Keay (2005; 2006) who found that NQTs became less reflective due to the influence from veteran colleagues who were unfamiliar with reflective practice. This raises the question of whether reflective communities should be moderated by outsiders. According to Deglau et al. (2006) more research is needed on this question.

Media of reflection

Another issue related to the context of reflection concerns the media used to promote reflection, including the various sources used to elicit reflections in the studies, for instance

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log books, reflective journals, discussion groups and video recordings. The point here is that one could think that writing enables and constrains the object of reflection differently than do the use of video. For instance; what appears as important to reflect on for the pre-service teachers is different when the media of reflection is writing as opposed to seeing oneself teach. Similarly reflecting alone may produce different kinds of reflection than reflecting in for instance a peer-group. Furthermore, the degree to which these kinds of reflective processes are led by a course instructor surely influence the concept used to reflect with and the interest one reflects from (Wackerhausen, 2008).

Writing as a medium of reflection is a strategy incorporated into almost all the research included in this review, and as such, it seems to be automatically assumed that writing is a useful means for improving pre-service teachers' abilities to reflect on their teaching. This might be problematic, since only one study (O'Connell & Dymont, 2011) has investigated the effectiveness of journal writing in PE / PETE contexts. The results from that study indicated that journaling can be an appropriate medium for encouraging reflection in PETE. Despite this, O'Connell & Dymont (2011) also report that some pre-service teachers might experience being "journalled to death" (p. 136). Similarly, McCormack (2001) found that some of the pre-service teachers in her investigation were not comfortable with expressing their thoughts in writing; this was especially the case for those who experience lack of writing skills.

Others have used video feedback to elicit reflections. It is reported that using video recordings of pre-service teachers' own lessons can be a useful tool in developing PE teachers' reflective practice (Calandra, Gurvitch, & Lund, 2008; Palomaki & Heikinaro-Johansson, 2005). Using this technology, perhaps in combination with group discussions, might be a promising way to circumvent those problems reported with journal writing. Yet, this suggestion merits further research.

Moreover, journal entries are in a majority of the studies used to interpret pre-service teachers' abilities to reflect. That is, it is simply taken for granted that written materials from pre-service teachers are valid expressions of their reflective capabilities. Given that much of the research aims to detect a change in pre-service teachers' reflective level, it would be valuable to problematize whether, and to which extent, log-books or reflective journals are useful for this purpose. Phrased differently; precisely what can researchers infer from written material of pre-service teachers?

In sum then, there is little research that investigates the usefulness and effectiveness of the various forms of media, and there is no research that compares the impact of different media, for instance written reflections versus the use of video recordings for the purpose of enhancing pre-service teachers' reflective capacities in PETE.

An evidence-base for reflective practice?

In the original review, Tsangaridou & Siedentop (1995) expressed a hope that in the future, a new review would be able to assess the value of reflection from what they called a firm evidentiary base¹ (p. 233). Based on the studies included in this review the conclusion is that there is a rather strong evidence-base for claiming that pre-service teachers become better at doing technical and practical reflections, such as reflecting over issues like class management and delivery of their teaching. To some extent they also acquire the ability to reflect over their pupils' learning outcomes as well as the norms and values of the means they employ in their teaching.

On the negative side, it must be concluded that the reviewed literature show that PETE pre-service teachers' only to a very limited degree develop their capacities for critical reflection (see e.g. Calandra et al., 2008; Garrett & Wrench, 2008; Napper-Owen & McCallister, 2005) . A quote from Curtner-Smith & Sofu (2004) summarizes this finding:

¹ We will not go into the debate about evidence-based practice in educational settings here. One of us has expressed his views on this elsewhere (Standal, 2008).

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[the pre-service teachers'] theories-in-action and theories-of-action were not concerned with greater social justice and equality as we had hoped they would be. Instead technical skills appeared, at this stage of their training [i.e. a secondary methods course], to be viewed as ends in themselves and the purpose of schooling in general, and physical education in particular, were taken for granted rather than viewed as problematic. (p. 134)

If this is the case, then what implications should this have for PETE? One possible suggestion is that perhaps time in PETE is better spent on assisting pre-service teachers in becoming really good and creative in doing technical and practical reflections. That is, if it is the case that efforts aiming at enabling critical reflections among pre-service teachers do not work, then why spend time on it? A counter-argument to this is that the evidence suggesting that efforts aiming at instilling critical reflection do not work is inconclusive. More research on this topic is needed, but the studies included in this review do not call for much optimism. In addition, the notion "critical" in critical reflection and critical pedagogy has the discursive effect of saying that other forms of reflection and pedagogy are non-critical. It is therefore important to realize that pre-service teachers can and should become critical thinkers also with regards to the technical and practical aspects of their work.

Since it appears that interactions to develop critical pedagogy to a large degree have failed it might be wise to reconsider what kind of concepts, theories, knowledge and interests that would be most helpful for pre-service teachers in reflecting on their work as PE teachers. Of course, this is not to suggest questions regarding ethics and socio-cultural critique of PE should be abandoned in favor of merely descriptive and technical reflections. It is clearly an obligation for any professional education to educate pre-service teachers in the ethics of that profession. But it does raise questions as to which theories, concepts and knowledge interests pre-service teachers are asked to reflect with and from, in order to promote ethical and critical thinking.

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Bridging the theory-practice divide appears to be a crucial challenge for PETE: How could it be that in the lecture context of the PETE program the pre-service teachers were able to reflect critically, but when they entered their practicum, they mainly enacted technical reflections (Ovens & Tinning, 2009)? One reason often mentioned in the literature is that this is a survival strategy for PETE students (e.g. Garrett & Wrench, 2008). In order to achieve the goals they have set for their lesson, the pre-service teachers' primary concern becomes class management and sorting out pupils' behavior. An alternative or supplementary explanation is that the object of reflection is different in the two contexts: While in the practicum context the object of reflection is *teaching PE in the concrete*, the object of reflection in the lecture context is *teaching PE in the abstract* (that is, without pre-service teachers having direct and concrete experiences with teaching PE)².

It is, however, beyond the scope of this review to suggest ways of handling the theory-practice and concrete-abstract dichotomies, but it does appear to be obvious that a better integration of pre-service teachers' experiences from practicum and the teaching they are engaged in on campus is needed. Therefore, further research into what actually happens in practicum, how pre-service teachers and course instructors understand the nature and purpose of practicum, as well as the relations between these contexts is needed. Research that investigates the nature of interactions between mentor teachers and pre-service teachers during practicum and how these interactions facilitate and constrain the reflective is also of importance. Moreover, it appears that a major purpose for practicum in the reviewed studies is to bring theory into practice. Perhaps this relationship should be turned up-side down by

² Bourdieu (1990) would lend support to the view that the two contexts are different in terms of the learning they facilitates. According to Bourdieu, the hallmark of schooling (understood in the original Greek sense of the word as a time and space free from the urgencies and necessities of life) represents a withdrawal that allows for different forms of reflections as compared to practice. That is, the lecture context is sheltered from pressure ways that the practicum setting is not.

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giving more focus to bringing practice into theory as it is taught in pedagogy and method courses of PETE .

Future research into reflective practice in PE and PETE

There are some methodological issues in the reviewed studies that are relevant for future research into reflective practice in PE and PETE. First, much of the research is carried out with quite small samples and qualitative research methodologies. Though good qualitative case-studies indeed will give valuable research evidence, it is difficult to disagree with Tsangaridou & Siedentop (1995) who held that the value of reflection should be assessed “with a variety of methodologies”. In particular, there is a need for studies that have an experimental or quasi-experimental design. Second, the reviewed research is to a large extent idiosyncratic in the sense that even though the interventions are described in detail, they are also heavily influenced by the researcher in the sense that s/he also served as the teacher in the program. Also, the interventions are dependent on local curriculum and/or state requirements. Comparative studies across different national and international settings would therefore be beneficial

Third, much of the research consists of analyses of pre-service teachers’ written material, and there exists an assumption that pre-service teachers’ reflective capabilities can be deduced from their written performances. Whether pre-service teachers’ written reflections are valid expressions of their reflective capabilities remains a question. Seen in the light of findings suggesting that pre-service teachers’ may have difficulties and negative experiences with writing their reflections (McCormack, 2001; O’Connell & Dymont, 2011), there is a need to understand more about what pre-service teachers’ actually express through such media, and how – and the extent to which – this contributes to developing them as reflective practitioners. Triangulating written student material with other data sources, such as interviews and observations, is therefore recommended (see for instance Tsangaridou, 2005)

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In addition, further research is needed to compare different reflection media (e.g. video versus log books) and their respective contribution to pre-service teachers' learning in PETE. Finally, there are no studies that trace the development of reflection and reflective practice from the PETE to PE contexts, nor are there studies of teachers' development from novice to experienced teacher. Such investigations could look into both the nature and purpose of reflective practice, and how reflections develop over years of teaching.

A limitation with the present study is that the concept of reflection is itself unclear. For instance, throughout this article, the terms reflection and reflective practice have been used interchangeably and quite unsystematically. This is a weakness, because while reflection is a manner of thinking that does not necessarily involve action, reflective practice clearly involves acting. This unclear use of the concepts is, however, a representation of the way these concepts are used both in PE and PETE research, as well as in the wider educational literature (Fendler, 2003; Molander, 2008). This has led to a methodological limitation with the present study. It has been difficult to evaluate whether studies should be included or not. This means that relevant studies may have been left out, and that other researchers possibly would have excluded some of the studies that we have included, or vice versa.

Not only are reflection and reflective practice unwieldy concepts, but in the literature we have reviewed there is also a challenge of connecting specific theories of reflection and reflective practice with the empirical material developed in the studies. A recent example of the confusing and unstructured way of linking theories with empirical data can be found in Zhu (2011), who used Schön's distinction between reflection *in* action and *on* action. He concluded that pre-service teachers were able to perform plenty of reflection on action, but little reflection in action. Zhu (2011) follows Schön in defining reflection in action as "the making of decisions guided by tacit knowledge... in the midst of acting" (p. 764). But, when Zhu later explains that "during the interviews, I also probed student teachers' thinking about

their reflection during the activities (i.e. reflection in action)” (p. 770), the problem becomes apparent. For one thing, in an interview situation participants are not in a position to reflect *in* action, simply because they are no longer in an action situation. Rather, they are contemplating their own actions from both a temporal and spatial distance, and can thus at best be said to be *reflecting on reflections in action*. In addition, given that reflection in action is (at least partly) guided by tacit knowledge, it should not come as a surprise that the pre-service teachers’ are not able to verbalize much reflection in action. Thus, the conclusion drawn does not validly follow from the empirical material. The point here is not that this is a particularly poor piece of research, because other examples can be taken from the reviewed studies. But, it does illustrate the problems and pitfalls of researching reflection and reflective practice.

Thus, future empirical research on reflection and reflective practice in PE and PETE should take care to clarify what is meant by these terms in the specific studies. It is, for instance, not enough to simply cite Dewey’s (1910) definition of reflection given on page 9 of *How we think*, and then ignore the specific manner he elaborated for developing reflective thinking in the rest of the book. As a consequence, it is important to rigorously follow a theoretical framework such as the work by John Dewey, Donald Schön, Max van Manen, or the RFTPE developed by Tsangardiou & O’Sullivan (1995).

Closing

The purpose of this article has been to review the current empirical knowledge base for reflection and reflective practice in PE and PETE. The number of studies included in this review is higher than in the previous review (Tsangaridou & Siedentop, 1995), so it is fairly safe to say that quantitatively, the knowledge-base has increased. Although it is difficult for pre-service teachers to reach the level of critical reflection, a clear finding in the review is that

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PETE pre-service teachers and professional PE teachers do in fact improve their reflective capabilities.

Some methodological weaknesses with the reviewed studies, as well as suggestions for future research have been pointed out. In particular, longitudinal and quasi-experimental designs do not appear in the current knowledge base. Furthermore, a stronger theoretical rigor is recommended. Even though the purpose of the review was not to give recommendations for practitioners, some suggestions for PETE have been pointed out in the text. The most essential point made here concerns the relation and integration of theory and practice: Which theories are used, and for what purposes are they used? And how can pre-service teachers' experiences from practicum be used more actively and productively in the lecture context? These are questions that should have bearing on the practice of PETE (i.e. they concern the reflective practice of PETE professionals – itself a neglected research area), but they are also empirical questions that call for further inquiry.

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Figure 1: The review process

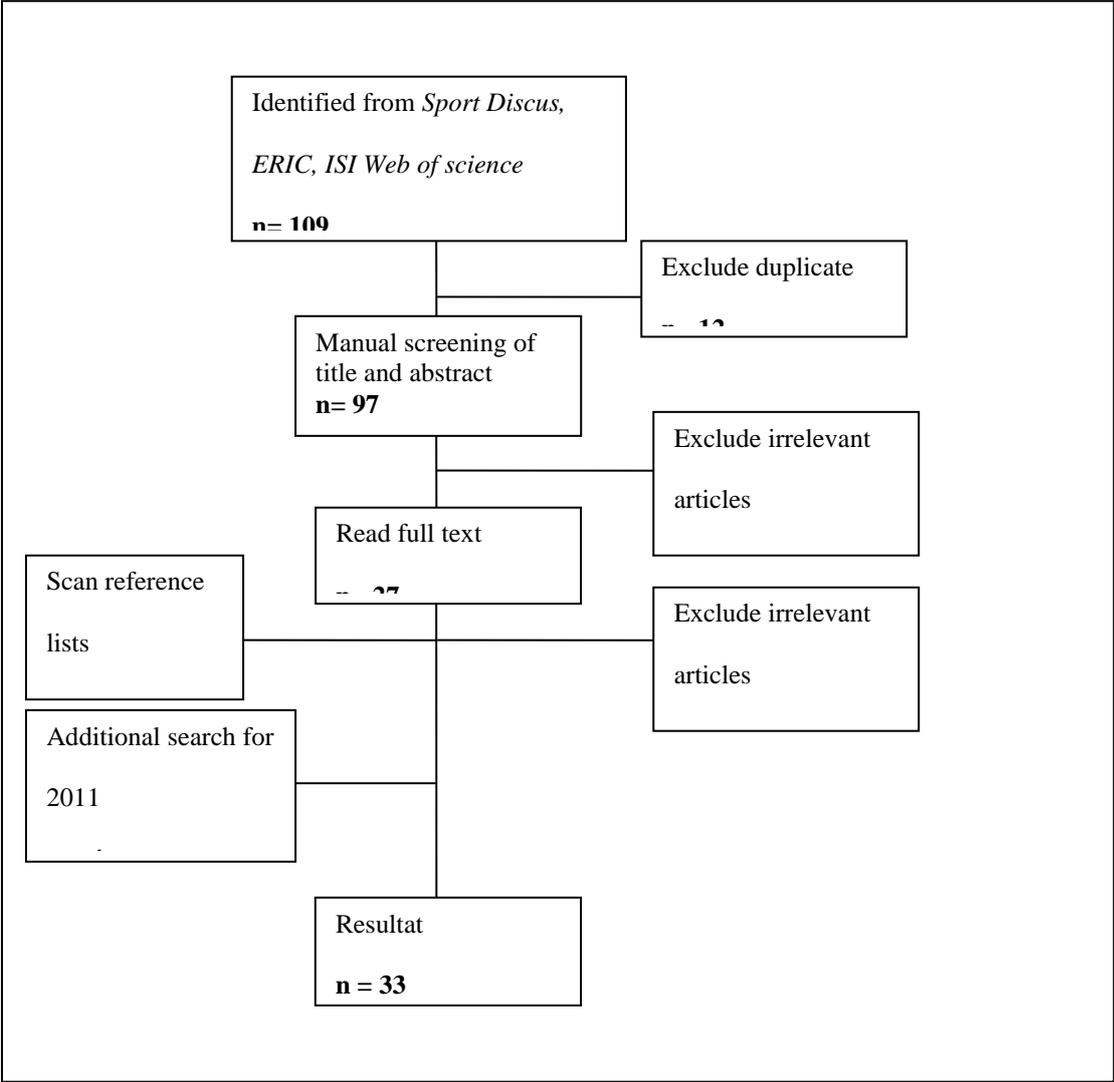


Table A1: Overview of the studies included in the review

Authors	Year	Journal	Context of study	Method	Main findings
Attard	2007	International Studies in Sociology of Education	PE	Auto-ethnographic case study lasting 30 months	Teachers' experiences must be reflected over in order to lead to changed practice. Reflective practice made him a better decision-maker.
Attard	2008	Reflective Practice	PE	Auto-ethnographic case study lasting 30 months	Reflects on the necessity of dealing with uncertainty in order to improve practice
Attard & Armour	2005	European Journal of Teacher Education	PE	Auto-ethnographic case study lasting 30 months	Reflective practice improved the researcher's job satisfaction, but was experienced as complex and hard work
Attard & Armour	2006	Physical Education and Sport Pedagogy	PE	Auto-ethnographic case study lasting 30 months	Describes the process of developing reflective practice. Reflective practice was experienced as both meaningful and difficult. Found also that it did not necessarily lead to change in practice
Ballard & McBride	2010	Physical Educator	PETE	Quantitative analysis of 5 students' written assignments and interviews	Over the course of a semester, there was little evidence in progression in the students' reflections.
Blair & Capel	2011	Sport, Education and Society	PE	Combination of survey data, qualitative interviews, observations and document analysis. 21 participants	Investigated continuous professional development (CPD) for coaches working as primary PE teachers. Results indicate that the CDP-program developed the coaches' reflective practice
Byra	1996	Journal of Teaching in Physical Education	PETE	Comparison of 2 post-lesson conference strategies. Two tasks were analyzed in relation to the RFTPE framework.	A collaborative approach was more beneficial for enabling sensitizing and situational reflections among the students.

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Calandra et al.	2008	Journal of Technology and Teacher Education	PETE	Qualitative and quantitative analyses of written responses to personal video-vignettes of students' own lessons	Students' focused mostly on their own behaviors rather than pupils' learning, and they reflected mainly on a technical level.
Carlson	2001	Journal of Physical Education Recreation & Dance	PETE	Students were asked to develop a metaphor for the teacher they wanted to be. Analysis of this written material and subsequent interviews	Using metaphors helped some of the participants to reflect differently on their beliefs about teaching. Some found the writing process an obstacle.
Crawford et al.	2011	Reflective Practice	PETE	Six PETE students in sport, physical activity, and disability module participated. Combination of qualitative and quantitative analysis of interviews, logs, videos and observations	Using the RFTPE framework as a guide, students developed more analytical responses to their own teaching, and put greater emphasis on sensitizing reflections.
Curtner-Smith	2007	Journal of Teaching in Physical Education	PETE	17 students participated. Data collected using critical incident technique and reflective questionnaire. Combination of qualitative and quantitative analysis.	Replication of Curtner-Smith & Sofo (2004), but with general teacher students taking a PE course. The results showed that the students' reflections concerned technical, rather than critical aspects of their teaching.
Curtner-Smith & Sofo	2004	Sport, Education & Society	PETE	Curtner-Smith (2007).	The students mainly reflected on a technical level, and despite the efforts of the researcher to promote critical

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					reflections, the students rarely reflected on that level.
Deglau <i>et al.</i>	2006	Journal of Teaching in Physical Education	PE	“PEP-talk”: 17 experienced teachers participating in a series of moderated discussion groups	Teachers reflected on practical issues such as assessment, liability and behavioral management. Little evidence of critical discussion. Teachers emphasized the importance of reflecting together with others.
Garrett & Wrench	2008	Sport, Education & Society	PETE	Combination of qualitative and quantitative.	Exposed the students to a range of PE lived experiences in combination with lab-school teaching. Mixed results, since only some students attained a critical reflective level.
Hopper	2000	AVANTE	PETE	Case study of one student participating in a methods course with practicum experiences	Used a repertory grid from personal construct psychology to assist the development of reflective practice. Findings suggested that this theoretical approach facilitated the students’ reflective process.
Keay	2005	Physical Education and Sport Pedagogy	PE	Combination of survey and ethnographic case study. Mainly reports from case study with 8 participants	The subject department could be a site for CPD on the condition that it is intentional and based on critical reflectivity.
Keay	2006	Physical Education and Sport Pedagogy	PE	Combination of survey and ethnographic case study. Mainly reports from case study with 8 participants	Newly qualified teachers can become less reflective in their introductory years of teaching due to the influence of more experienced teachers who are no familiar with reflective practice.
Macdonald <i>et al.</i>	2006	Physical Education and Sport Pedagogy	PE	Case study of one experienced teacher	The teacher experienced that the state standards for teaching was a useful tool to reflect on his practice together with

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					other teachers
McCormack	2001	European Journal of Physical Education	PETE	Combination of qualitative and quantitative data from students participating in dance program for PETE teachers	Mixed results: Some students did not progress beyond technical reflections, whereas others changed their attitude towards teaching dance.
Melnychuck	2001	Alberta Journal of Educational Research	PETE	Case study of 10 students in practicum	Evaluates a practicum cohort model for PETE students. Students reflected mainly on technical and practical levels.
Napper-Owen & McCallister	2005	Physical Educator	PETE	Quantitative analysis of students' responses to videos of their teaching in early field experience	Students reflected more on their own behavior than the pupils' learning.
O'Connell & Dymont	2011	European Physical Education Review	PETE	Quantitative: 32 PETE students completed a survey evaluating their perceptions of journaling	Students, enrolled in an outdoor education program, reported that journaling was an effective medium for encouraging reflections. However, some also expressed negative attitudes.
Ovens & Tinning	2009	Teaching and Teacher Education	PETE	Qualitative analysis of 'memory-work': students' written, guided narratives	Different context in PETE enacts different forms of reflection: Whereas the students could do critical forms of reflections in the lecture context, the practicum context mostly enacted technical reflections.
Palomaki et al.	2005	International Journal of Physical Education	PETE	Qualitative and quantitative analyses of videos of students' lessons and stimulated recall	Students' reflective thinking improved through a one semester course called "teacher as researcher".
Placek & Smyth	1995	Physical Educator	PETE	Quantitative analysis of a series of essays	Students' reflective thinking was moderately low and didn't increase

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				written over the course of a semester	much during the semester.
Sebren	1996	Journal of Teaching in Physical Education	PETE	Qualitative analysis of reflection sessions, observations and interviews. 7 students participated	The students' developed their technical reflections, but did not develop the ability to respond to pupils' needs in actual teaching situations.
Senne & Rikard	2002	Journal of Teaching in Physical Education	PETE	Combination of quantitative and qualitative methods	Two different portfolio-interventions were compared. Some differences in reflective practice were noted between the two interventions. The students valued the process, but showed little progress in moral reasoning.
Senne & Rikard	2004	Journal of Teaching in Physical Education	PETE	Combination of quantitative and qualitative methods	Follow-up of Senne & Rikard (2002), but with a longer intervention period. Significant changes in students' professional development.
Sutliff et al.	1999	Physical Educator	PE	Quantitative, survey of participants in a CPD program	Positive results on reflective practice after the program. However, this research is more an evaluation of a CPD program than research into reflective practice.
Tsangaridou	2005	Journal of Teaching in Physical Education	PETE	2 students participated. Qualitative analysis of interviews, observations and journals	Reflection was found to be necessary for students' development, but also difficult. They became able to reflect above the technical level.
Tsangaridou	2008	Physical Education and Sport Pedagogy	PETE	2 students participated. Qualitative analysis of interviews, observations and journals	Not about reflection <i>per se</i> , but it highlights how the participants adopted critical beliefs about PE. This can be understood in light of reflective practice as reported in Tsangaridou (2005).
Tsangaridou &	1997	Journal of Teaching	PE	4 experienced teachers.	Micro-reflections addressed

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O'Sullivan		in Physical Education		Qualitative data from various sources such as interviews and journals	pedagogical, content, ethical and social issue, whereas macro-reflection influenced change in practice and development over time.
Zhu	2011	Reflective Practice	PETE	One instructor and 12 students participated. Qualitative data analysis of interviews, observation notes and student artifacts (e.g. professional portfolio)	Different task / components from the practicum resulted in different forms of reflections. However, most of the reflections were technical. The students didn't engage much in reflection <i>in action</i> (Schön, 1983).