**Constructing Knowledge in Primary Physical Education: A Critical perspective from pre-service teachers**

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Primary physical education is quickly becoming an area of academic interest with a particular focus on new entrants into the profession. This study adopts a Personal Construct methodology to identify how pre-service teachers in England construct their knowledge of primary physical education. Our findings present four themes for knowledge development, taken from four repertory grid interviews: knowledge perspectives, knowledge validation, knowledge context and knowledge application. Participants expressed they had limited provision for physical education when on a school-based placement, which was attributed to subject outsourcing and a lack of teacher and mentor confidence. The study highlights the importance of professional socialisation through initial teacher education programmes, with opportunities for pre-service teachers to engage with ‘knowledgeable others’. In the absence of opportunity for primary PSTs to develop knowledge in physical education, we caution it is unlikely the issue of teacher competence will improve.

Keywords: pre-service teachers, primary physical education, personal construct theory

# Introduction

Quality teaching is acknowledged to be the most important factor for influencing student achievement in schools (Caena, 2014; Hattie, 2003), with the development of new teachers entering the profession playing a crucial role (BERA, 2014; Tsangaridou & Kyriakides, 2017). However, in primary physical education, issues of teacher competence remains an elusive matter (Freak & Miller, 2017; Harris, et al., 2012; Lynch, et., 2017) with a perception that it is a difficult and specialist area of the curriculum to teach (Fletcher & Mandigo, 2012; Harris, et al., 2011). While previous studies have examined the confidence of teachers in primary physical education, and the challenges they face (Garrett & Wrench, 2007), little is known about how pre-service teachers (PSTs) construct their knowledge for future practice (Tsangaridou, 2008, 2012).

 In this paper we draw upon Personal Construct Theory (PCT), from a Critical perspective, to examine primary PSTs’ beliefs about developing knowledge of curriculum physical education. Morgan (2017, p. 42) attests that ‘All educators are influenced to some extent, both consciously and unconsciously, by assumptions that underpin decisions about the ways in which curriculum is constructed, how education is delivered and who is privileged or excluded in the process’. The paper aims to contribute to a growing empirical field of research into primary physical education ITE. It problematises the process of developing teacher knowledge and the implications it has on perceptions of competence. We argue that the development of teachers in primary physical education is an important area of study, and we support a contemporary notion that investment into PST education is critical for the longevity of the subject (Jess, et al., 2020). We hope that being able to understand how teachers construct their knowledge of primary physical education can support future ITE experiences and encourage PSTs to critically reflect upon what they understand physical education to be. The paper concludes by considering how the methods undertaken in this study can help support a communicative methodology in PST research and the experience needed to develop knowledge during the ITE phase.

**A Critical Approach**

 In recent times the knowledge-base and practice of primary physical education has been seen as being an increasing commodity within a neoliberal economy that has been exposed through the public sphere (Evans, 2014; Jess, et al., 2020; Macdonald, 2014). In his own words, Macdonald (2014, p. 496) states:

 It seems that the discourses of markets, opportunity, choice, and competition as paths to excellence are very seductive for all those with an interest in physical education. Further, as school boundaries continue to dissolve and knowledge can be accessed and purchased beyond the school fence, the acquisition of resources, expertise and services locally and globally is likely to proliferate.

Brookfield (2001) further illuminates that in a market economy it is not just products that acquire intrinsic worth but so too can labour, including the intellectual labour of teaching. The transaction of knowledge in primary physical education could therefore be seen as having inherent value. A recent example of this can be taken from the English context, through the Government funded Primary PE and Sport Premium grant. Since 2013, over £1.4 billion has been expended into primary schools for the purpose of improving physical education provision and sport offerings (APPG, 2019; Jones & Green, 2017). Funding was initially intended to train and ‘up-skill’ the teaching workforce, with the view that teachers were lacking in confidence and competence to teach the subject; however, the ‘Premium’ has since been accredited to a prolific rise in physical education outsourcing and the diversification of the subject’s workforce (Jones & Green, 2017) (author removed for peer review). The Critical Theorist Habermas (1987) offers some perspective here by comparing this type of expansion and marketization as an invasion of the ‘lifeworld’; where, in the primary physical education context, teachers’ consciousness has been robbed of the power to synthesise knowledge and practice. For PSTs entering this ‘lifeworld’, what determines the knowledge-base of primary physical education has become influenced by outsiders to the teaching profession (author removed for peer review). The impact of outsourcing on ITE has started to be documented, with evidence that large numbers of PSTs are being excluded from the teaching of physical education altogether (Randall & Griggs, 2020).

 The significance of PSTs’ experience at the ITE phase has been argued extensively from a substantial body of literature that suggests early perceptions of practice can be heavily influenced by a teacher’s personal experience (Curtner-Smith, 2001; Lawson, 1983) and school-based learning (Hastie, et., 2005; Lawson, 1986). Lawson (1986, p.107) defines these experiences as a process of ‘occupational socialization’, which are understood to include ‘all kinds of socialization that initially influence persons to enter the field of physical education and later are responsible for their perceptions and actions as teacher educators and teachers’. It is understood that the experiences PSTs have of physical education, from their ITE, can have ‘…a distinct and traceable influence on an individual’s future decisions, practices, and ideologies as a teacher’ (Schempp & Graber, 1992, p.333). Moreover, what they see being taught, who they see teaching and how they see learning being delivered will strongly influence an understanding of what makes high, and poor, quality teaching (Schemp, 1989).

 Placing primary physical education as a commodity in education can also have implications for how knowledge within the subject is legitimised. Despite the historic and collaborative nature of ITE school-university partnerships (Campbell, et al., 2007), the subject is plagued by limited time on generalist primary ITE programmes (Harris, et al., 2012). With no statutory regulation on the amount of time PSTs can expect to receive as part of their initial preparation, subject training experience remains variable across the United Kingdom, with as little as 0-5 hours reported across some institutions (Blair & Capel, 2011; Harris, et al., 2011). The subject’s apparent low status within ITE might well be explained by the status of the subject at a school level (Morgan & Bourke, 2008). Bleazby (2015) argues that traditional curriculum hierarchy influences Western education curriculum structure, where assumptions about the ‘inherent’ value of particular knowledge continue to underpin the subject’s status. For physical education, the emphasis on the body, its practical nature and learning as a concrete experience, has meant its value is deemed ‘lesser’ than other subjects that are primarily theoretical and abstract (Bleazby, 2015). However the political and philosophical discourse on which such arguments are built misunderstands what it means ‘to have’ knowledge (Belas, 2018). Habermas (1975) speaks of a ‘legitimation crisis’, where a decline or loss of confidence can occur within a society. This loss of confidence is markedly visible in England through primary physical education’s aforementioned diverse workforce; where schools are increasingly ‘giving up’ on curriculum teaching (Griggs, 2010) and ‘handing over’ their responsibility to external providers (Jones & Green, 2017). For the PST, disequilibrium is experienced if the norms of the subject that are expected from their ITE programme are at odds with practice in school. The loss of a subject’s legitimacy may be a worthwhile factor when considering why there is a loss of teacher confidence within the profession.

**A Communicative Methodology**

Poutanen & Kovalainen (2010) explain that the conceptual tools common to Critical research relate to a centrality of language. Therefore a methodological focus influenced by a Critical perspective should involve a dialogic and dialectical understanding of truth that arises through an interaction with the subject and the subject’s environment (Guba & Lincoln, 2005). The ‘environment’ in this study is considered to be the ‘lifeworld’ of the PST and the spaces they occupy (e.g. personal context, the ITE course or a school-based practice) (Ongstad, 2010).

***Sample***

A sample of four PSTs took part in the study (pseudonyms: Amy, Ben, Charles and Daisy), who responded to a general call of interest to four ITE providers. The sample was small for two reasons. The first was due to access of participants. Ten participants initially agreed to take part in the study, with four confirming a convenient date and time to be interviewed. Secondly, PCT interviews are a time consuming and lengthy process (averaging in this study 1 hour and 11 minutes per participant) and provide detailed and contextualised data for analysis. Time for completion of the research restricted the number of participants that could be interviewed. This has been acknowledged as a limitation of the study. Although the findings cannot be generalised against the entire primary PST population in England, they offer rich insight into individual experience from three different higher education institutions. Each participant was contacted via email, and was provided with an information sheet and written consent form (BERA, 2018). Participants were in the final year of their ITE programme, leading to the recommendation for the award of qualified teacher status (QTS). All participants were registered on a postgraduate programme and were mature students (over 25 years of age). Three participants were registered on a full-time programme of study and one was on a part-time programme. Ethical approval was sought before making contact with the participants and their respective institutions. This was granted from the lead author’s affiliated institution in accordance with BERA (2018) guidelines.

***Personal Construct Methodology***

In research that uncovers beliefs, Pajares (1992) highlights that appropriate methods should be chosen, as distinguishing knowledge from beliefs is a daunting undertaking. Kelly’s (1955) Repertory Grid Technique (RGT) was used as a means to structure the interviews. Kelly’s fundamental postulate states that ‘a person’s processes are psychologically channeled by the way in which he [she] anticipates events’ and recognises that all theories are temporary constructs until another theory leads to a better prediction of those events (Fransella, 2005, p.6). Taking a Critical approach means subjectivity is a key epistemological component, focusing on the person(s) involved as they see things and truth telling (Kemmis, 2006). Facilitating a PST to develop a personal theory can help break down barriers and structures in their thinking, which can be seen as political, social or historical (Collins, 2003). Developing personal theories can also help experience to be communicated and used to predict future orientation of practice (Pope & Denicolo, 2001; Wrench, 2017). Each participant took part in an individual repertory grid interview that lasted no more than 1.5 hours. The interview was designed from PCT to elicit constructs about the PST’s beliefs about their knowledge development in primary physical education. Participants and the content of their ITE course were not previously known to the interviewer.

***Repertory Grid Technique***

Bannister and Mair (1968, p.136) define a repertory grid as ‘any form of sorting task which allows for the assessment of relationships between constructs and which yields these primary data in matrix form’. This broad definition, allows for highly flexible techniques to be adopted with variable application (Pope & Denicolo, 2001). It has therefore been used across many social science fields and research contexts (Caldwell & Coshall, 2002; Chaparro & Hinkle, 2009; Zuber-Skerritt, 1987), but with limited application within the field of education, and ITE specifically (Pajares, 1992; Pope & Denicolo, 2001). However, due its feedback and feedforward nature it is also believed to be effective in supporting the reflective process of becoming a teacher (Adams-Webber & Mancuso, 1983). Key authors in the field of PCT were drawn upon to support the methodological design of this research (Fransella, 2005; Fransella, et al., 2004; Jankowicz, 2004) and to give careful consideration for its adoption with primary PSTs. The RGT provided a structured design for in-depth interviews; characterised by a one-to-one process where the participant could explore the development of their professional knowledge through the elicitation of personal constructs. All four interviews were conducted during the summer months following the completion of the participants’ ITE programme, but before the commencement of their first teaching post, to ensure the entirety of their ITE experience could be reflected upon.

 A repertory grid typically has four components (see Figure 1): the topic, the elements, the constructs and construct ratings (Jankowicz, 2004). The topic for the purpose of this research was ‘primary physical education’. The elements, defined by Kelly (1955), are things or events which are abstracted by a construct. Jankowicz (2004) explains that an element is an example, or instance of, sampling of, or occurrence within a particular topic. The elicitation of elements for a grid may well depend on the initial purpose and model of application (Pope & Denicolo, 2001), but elements must retain meaning and represent individual life experiences (Kelly, 1955). Elements can either be elicited by the participant, or the researcher in advance of the interview

Insert Figure 1 here: Example of a completed repertory grid [Ben] showing elicited constructs and rankings

The elements for the repertory grid in this study were first drawn from the ITE literature and then subject to peer comment from teacher educators who were members of the national Physical Education Expert Subject Advisory Group, and took the form of ‘knowledge sources’ (i.e. where PSTs might source their knowledge of primary physical education). Knowledge sources were categorised for the PSTs as: prior experiences (including personal interests and prior employment), forms of communication (e.g. media and literature), ‘speech acts’ (e.g. forms of professional discussion) and the formal activities involved in their ITE programme (e.g. school experience, university input, module assignments and external national governing body (NGB) courses).

 Personal constructs are considered to have a bi-polar dimension, which a person has created and formed into a system through which they interpret their experiences (Fransella, et al., 2004). Jankowicz (2004) suggests that the RGT method can offer a stable framework for a researcher when eliciting an individual’s construction of a lived experience. He explains that developing a narrative with the participant can provide meaning behind the constructs and an understanding of how the participant has construed the elements (sources of knowledge) they are working with, through a rating against their own bi-polar constructs (Jankowicz, 2004). In keeping with ‘Kellyian’ tradition, the elicitation of constructs in this study were undertaken through a triadic process, where three stimuli (elements) are presented at the same time to the participant who must then identify two stimuli that share something in common (construct) and explain why the third is different (contrast) (Chaparro & Hinkle, 2009); for example comparing prior experiences, literature and school-based contexts. The response from the participant then describes how two of the elements are considered to be ‘alike’ (placing them in the emergent pole), and the element they considered to be ‘different’, which is then placed in the implicit pole (Jankowicz, 2004). On occasion throughout the interview a process of ‘laddering’ was adopted, whereby questions of why, how and in what way were presented by the interviewer as a means to gain constructs of a higher abstraction (Fransella et al., 2004). This approach was also used when participants found it difficult to articulate the criteria they needed to inform their decisions. Donaghue (2003) explains that the difficulty in eliciting beliefs lies in the fact that personal theories may be subconscious and teachers may be unable to present them fully and in a complete way. Care was taken that only constructs elicited from the participants were recorded, and not the thoughts of the interviewer. Participants were asked to review the completed repertory gird to either agree their responses, or to revise them.

 The final stage of the interview required each participant to rank the elements against their elicited constructs. This allowed the participants to further indicate, to a comparative degree, how their constructs of the topic stand in relation to the original elements (Jankowicz, 2004). A simple rating scale was adopted to rank each element, where 1 formed the construct pole and 7 the contrast pole. According to Jankowicz (2004), the purpose of providing an odd number of ratings is to allow a neutral response to be given (for example the number 4 in the 7-point scale). The ranking scale was there to provide an opportunity for participants to review and reflect upon their constructs allowing them to decide if they agreed with them or if they wanted them removed completely.

**Findings**

In order to become an informed and reflective practitioner, Cale (2010) states that aspiring physical education teachers must understand their values, beliefs and philosophies. This paper has so far outlined a methodology which has enabled PSTs to first understand themselves through reflection from an in-depth construction of their beliefs; the purpose of this has been for them to gain the autonomy that is required to make judgements and decisions about their future professional development.

 In total 16 constructs were generated by the interviewees and recorded on the repertory grids. These constructs were personal to the individual who elicited them, their experiences and their unique belief systems. Constructs were agreed with the PST from a review of the elements during their interview. Although results from the interviews cannot be generalised across the entire PST population, they can offer insight into how the PSTs came to value what they know about primary physical education and how their knowledge was developed. Figure 2 presents the elicited constructs from each interviewed participant repertory grid.

Insert Figure 2 here: Elicited polar constructs from individual repertory grid interviews

***Knowledge Themes***

The 16 elicited constructs were collectively examined to see if overarching themes could be generated, that provided insight into how the participants constructed their knowledge of primary physical education (see Figure 3).

Insert Figure 3 here: Constructs rearranged under knowledge themes

The elicitation of constructs generated much discussion from the interviews, about who validates the knowledge that should be known, how knowledge should be applied, in what context and from whose perspective? The four themes are discussed in more detail below with supporting extracts from the interview transcripts.

*Knowledge Perspectives*

Habermasian epistemology explains that the structures of human knowledge are determined by interests that are deep-rooted in the social existence of humans and their lifeworld (Habermas, 1972). It is believed that when teachers construct their knowledge they do so from a cognitive understanding of it (Rovegno, 1993). All four interviewees made reference to sport, physical activity, health and fitness through recalling their personal interests, prior experiences and school-based contexts (Lawson, 1983, 1986), thus perpetuating existing ideologies of the subject (Coulter & Ní Chróinín, 2013; Lynch & Soukup, 2017). All four participants had perceived high levels of confidence across sport, physical activity and health domains and referred to this when describing their understanding of what physical education was; often using these terms interchangeably.

I think that is where a lot of it can come through personal interests…my opinions, my beliefs and my viewpoints about a particular aspect of PE... (Charles)

I think the fact that I have a lot of prior experience of physical activity and physical education because I have also participated in sport and always been interested in it. (Daisy)

The theme of knowledge perspectives therefore refers to the discussion around constructs about how PSTs’ beliefs were challenged, reinforced, broadened or closed down. At the time of this research, all participants had finished their ITE programme and were indicating that changing perspectives were starting to emerge. Although specific reference to physical education, as an educational area of the curriculum was not explicitly made, there was a growing awareness that children’s needs should be considered ahead of the activity or ‘sport’. In practice however, the activity often drove the lesson, which became apparent in the interviews from discussions about planning and teaching. Charles talked about planning for gymnastics and outdoor activities, Amy about athletics, Ben about basketball and dance and Daisy about sport in general.

...so I was fortunate enough that the teacher said you can lead this. This is the medium term planner. We want to cover athletics and in athletics we want to do discus throwing, sprint, vortex, and relay. (Amy)

Now I do quite a bit of running. I have done a number of triathlons which I really enjoy … have started playing netball again which I am loving. And rounders as well. (Daisy)

Amy and Charles referred to how their ITE experience had challenged their previously held views. In her interview, Amy illustrated the many positive experiences of sport she had as a child and how this was reinforced on school experience, but the university offered something different, a more inclusive understanding of movement. By this, Amy alluded to movement not being bound by specific sporting rules and competition, but with more of a focus on a child’s physical development. Ben commented that the debates that had arisen with his peers and tutors on his university course had helped move his understanding on. This was in particular reference to difference between coaching and teaching children.

I had really enjoyed [tutor’s name] lectures as they really got you from the coach mind-set to the teacher mind-set. How do you teach someone to throw? Well everyone can throw? But no, not everyone can throw, especially if they’re, you know, 4 and 5 years old! (Ben)

This way of thinking has been described by Mezirow (2000) as transformative, where previous taken-for-granted frames of reference (the practice of sports coaching as physical education) are changed to ensure beliefs become more justified (e.g. the practice of teaching as more inclusive), thus altering the PST’s perspective. Being able to reflect on personal biographies and seeking agreement of these experiences with ‘knowledgeable’ others is considered to be a key process in transformative learning (Mezirow, 2000). In this study it enabled the PSTs to not only reflect, but start to question if their previous experiences were relevant in their new role as educators.

*Knowledge Validation*

The theme of knowledge validation refers to the people and processes that have been central in determining what knowledge should be known in the teaching of primary physical education, during an ITE programme. An objective of this research was to place the PST at the centre of the professional learning process so they could identify their individual learning needs and be valid contributors to their lifeworld (Ongstad, 2010). Habermas (1982) proffers a commitment to consider all individuals in this way as participants of discourse where potential, autonomy and rationality is achieved. The findings from this research have indicated that the PSTs did not conceptualise themselves as someone who could validate what knowledge they should know, but welcomed a communicative process with another person about their learning.

When you are qualified you are there and you can make those decisions...But when you are a placement student the last thing you want to do is go in and try and ruffle feathers. And that is the nature of the course. If you don’t tick the boxes and your mentor doesn’t see you do the right things then you are not going to get qualified. (Charles)

It’s about expert opinion. People who are in the know. People in the field, so you have got different literature that you read, sometimes written by people at the university sometimes written by people external international and national research. (Ben)

This was a conflicted area for Ben and Charles in particular, as they highlighted that for most of their time in school they were considered more knowledgeable than their colleagues and mentors, therefore had missed out on mentoring as part of their learning.

It was a small school and they didn’t have any particular staff there at the time who were really into it [PE]. And none of them were that bothered about it. I went in knowing I had not much experience teaching [PE] but felt confident in it. I don’t know if that confidence was because of a lack of confidence felt in the school. (Charles)

I didn’t feel there were many opportunities where I could observe many teachers teaching PE. I saw a lot of what not to do. Watching queues of ten kids standing in lines with only one kid doing anything and all this kind of stuff. (Ben)

An imposed system of learning was further viewed positively by the participants. It was considered to be an important and welcomed component of their ITE programme as they felt it gave validity to their qualification. In particular, Charles felt there was always choice, even when something was imposed; choice through assignments, choice in how he taught and ultimately it was his choice to be a teacher. Daws (1999) states that it is this intricate balance of wider public control and self-determination that knowledge is best understood. At this stage of their learning, PSTs relied upon institutional systems, such as the school and university, to ensure that what they knew and understood about physical education had credence (Hastie, et al., 2005).

 Across the sample, the sourcing of knowledge to develop confidence was personal to the individual. The four participants suggested that knowledge was validated through both the formal undertaking of qualifications as well as personal experience; although one was not considered to be more valuable than the other. Knowledge validation was also constructed as something that could be ‘authoritative’, or left up to the individual through ‘choice’. Imposed knowledge was conceptualised through the curriculum, school-based planning and aspects of academic work.

So they didn’t say to me when I went in, right you can do whatever you like. I would love to have, from my own interests more than anything. I would like to have seen what the children could do. Can they run? Can they catch? Can they jump? But obviously I was teaching football for that term, or hockey. You could argue that I could construct the lesson so I could do that, but essentially if they asked me to teach that, then that’s what I had to do. (Charles)

The interview data presented a number of barriers to knowledge development. Firstly, participants experienced knowledge in school that was different to the university and it was often the school that determined what was taught (Amy, Ben and Charles). Secondly, all four PSTs mentioned that class teachers and mentors reported low levels of confidence to teach physical education (Coulter & Woods, 2012; Harris, et al., 2012; Morgan & Bourke, 2008), leading to minimal opportunities for discussion, feedback or observation of practice. Although some experiences were available for developing knowledge, they were at best not joined up, and at worst contradictory. Habermas (1984) explains that it is productive knowledge that steers social processes. If contradictions or difference arise between the knowledge learnt from the university and the school, Habermas (1984) indicates that it will be the productive knowledge (i.e. school-based knowledge) that will be most powerful and therefore perpetuating. If transformation is considered to be an important outcome of a PSTs development, ITE must therefore strive to move beyond reflective practitioners (Mezirow, 2000), to critical thinkers, who have the confidence and skill to validate their own knowledge.

*Knowledge Context*

Knowledge context refers to where the PSTs developed their understanding of physical education. Throughout a university course a PST may receive as little as five hours of input for primary physical education (Blair and Capel, 2011), with an expectation that they will access other knowledge sources to supplement their understanding.

Unless I did the specialism I don’t think I wouldn’t have got enough from it [the PE taught sessions]. Because there was only about 30 who did PE out of 120. And for everyone else they are more likely going to be the ones who are not interested in PE. They had a three hour session split with music. It was basically a whistle stop tour. (Charles)

Despite prior experiences being viewed in the literature as a main determinant of teacher confidence and knowledge in primary physical education (Garrett & Wrench, 2008), Amy, Ben and Charles commented that for them it may have given them confidence to teach, but it did not provide them with knowledge competence. The ITE programme therefore becomes an important factor for developing PSTs knowledge in primary physical education, thus challenging a widely held view that professional socialisation is generally considered to be the weakest form of socialisation experienced by teachers (Hastie, et al., 2005; Lawson, 1986).

I have been unbelievably impressed with the university in everything they have done throughout the whole course. Not just with PE, but the whole programme. I think although at the time you think this is hard but looking back and reflect you can the reasons for every single aspect. (Ben)

The construct data also showed that the ITE phase can start to challenge previously held beliefs, provide new forms of knowledge and increase confidence. The participants suggested that learning was not about a location or object, but whether the context for developing knowledge was ‘theoretical’ or ‘practical’, ‘experienced’ or ‘abstract’.

*Knowledge Application*

The theme of knowledge application relates to the type of opportunities experienced by the participants. Participants elicited constructs that considered this to be about ‘learning by doing’, ‘learning passively’, ‘making mistakes’ and ‘copying practice’ (see Figure 3). Constructs were not viewed as negative or positive, but a range of experiences were needed for professional learning to occur.

Having done a lesson once, I feel much better about it and can tweak it ten times better. (Ben)

The participants highlighted that although they had some opportunity to teach, their teachers and mentors expressed a limited confidence, or lessons were delivered by external providers.

If you look at the class teacher mentor that I was with in my second placement they were very un-confident when it came to PE. Not a sporty fellow, but an amazing teacher. (Ben)

Yes and obviously when the sports coaches are in they will have done the lesson plans so there isn’t an option for me to get involved. (Amy)

The impact of the Primary PE and School Sport Premium over the last seven years has contributed to the outsourcing of physical education in English primary schools (APPG, 2019; Jones & Green, 2017); however the impact this has had on teachers’ confidence and competence to teach physical education has yet to be researched. The question of who teaches primary physical education may also have implications for what and how the subject is taught at the ITE phase.

**Conclusion**

This study has provided qualitative evidence from four repertory grid interviews on PSTs’ beliefs about the development of knowledge in primary physical education. 16 constructs were elicited, which we have placed under four themes to frame knowledge development in ITE. These were: knowledge context, knowledge validity, knowledge application and knowledge perspectives. Adopting a communicative methodology from PCT allowed participants to provide a narrative of experience. The findings showed that the elicited polar constructs were considered as neither good nor bad by the PSTs’, just different. In particular, knowledge that was imposed through the curriculum was considered by the PSTs as necessary. It was felt that the validation of knowledge, however, should still come from the ‘expert’ and not them.

 The study identified several key moments from the ITE experience that PSTs felt supported their knowledge development. These were: 1) to be provided with the opportunity to actively critique embedded beliefs and taken for granted references about physical education 2) an opportunity to create, teach and reflect upon lessons and 3) have access to a range of resources. In addition, two key issues arose around the constructs. Firstly, while having opportunity to apply knowledge in school was deemed essential; such opportunities were seldom enabled, or supported by quality feedback from confident and knowledgeable practitioners. Instances of curriculum outsourcing had been viewed negatively as impacting upon their opportunity to do so. Secondly, in the absence of opportunity to teach, or receive mentoring, PSTs relied upon their prior experience of physical education and personal interests from sport and physical activity, to make sense of what to do in practice. Participants deemed that while earlier experiences had given them the confidence to teach, this alone would not develop them into competent teachers.

 While we acknowledge that a small study can only provide contextualized insights, we have been able to illustrate that minimal time and opportunity still persists in primary physical education ITE. Furthermore, the adoption of a RGT methodology to examine PST experiences has offered a critical reflection that can help conceptualise the nature of experience. We believe further studies adopting a RGT approach would be beneficial to see if a pattern of construct elicitation emerges; specifically under the four themed headings presented in this paper. Although this research has begun to give a preliminary examination of PST knowledge construction in primary physical education, the findings heed an importance of quality professional opportunities for PSTs. Specifically, where the PST is able to engage as an active participant in teaching physical education and, in dialogue with, a ‘knowledgeable’ teacher mentor. In the absence of the teacher, this could include critical dialogue with an outsourced ‘other’. Where no opportunity is offered, we project that PSTs will lack sufficient knowledge to develop future teaching competence and may rely on taken for granted perceptions of physical education. Our concern is that such experience is likely to dominate future practice, suppressing the teacher voice in an understanding about what knowledge is in primary physical education, and will do little to address any ongoing concerns over teacher competency.

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