Becoming a Primary Physical Educator

Previous studies have reported that generalist primary teachers lack the confidence and competence to teach Physical Education (PE). In response, schools have outsourced PE to external providers. This paper examines data from an online survey of 175 pre-service teachers (PSTs) in England and their perceived confidence to teach primary PE. Findings showed PSTs had high levels of confidence across a breadth of knowledge areas, specifically in areas relating to lesson planning, health and fitness and the subject's aims. Conversely, knowledge confidence was lowest in swimming, assessment and working with external providers. This paper argues that to address teacher confidence in PE, teachers must be positioned back as the main curriculum deliverers. An outcome of this research has been the development of a professional knowledge model for primary PE which recognises a breadth of professional knowledge needed to become a primary physical educator.

Keywords: Primary physical education; initial teacher education; teacher knowledge

Introduction

Across educational systems, Physical Education (PE) is recognised as having a valuable contribution within the primary curriculum (Tsangaridou 2016, Bailey 2005, 2018, Ennis 2011, Cloes 2017). Historically, generalist teachers have been the main deliverers of primary PE while also teaching across other curriculum disciplines (Petrie 2010, Freak and Miller 2017, Tsangaridou 2016). Within the English system, this is likely to encompass three core subjects of Mathematics, English and Science, seven further foundation subjects and Religious Education. Despite being encouraged to work flexibly within a curricular framework (DfE 2010, 2013a), teachers are challenged to make sense of PE specific content and pedagogy from limited guidance (Harris, Cale, and Musson 2011, Blair and Capel 2011). Furthermore, a teacher may have received as little as five hour's preparation for PE during their initial teacher education (ITE)

(Griggs 2007, Caldecott, Warburton, and Waring 2006, Harris, Cale, and Musson 2012). Consequently, primary PE ITE has been criticised for not sufficiently preparing new entrants into the profession (Harris, Cale, and Musson 2012, Ofsted 2013, APPG 2016).

In England an explosion of commercial companies, selling a privatised model of PE, has become an increasingly popular choice for curriculum delivery (Bailey 2018, Griggs 2017, Griggs and Randall 2018, Parnell et al. 2017, Ward 2013). Despite a stream of Government funding, aimed to 'upskill' teachers and improve their confidence in PE, the affordability and convenience of an 'outsourcing' agenda may have inadvertently removed the teacher altogether (Griggs and Randall 2018, Griggs 2010, Jones and Green 2017, Blair and Capel 2008, 2011). In October 2002, the Physical Education, School Sport and Club Links (PESSCL) strategy provided the first tier of investment, in excess of £1½ billion to support a national school sport partnership (SSP) infrastructure (DfES/DCMS 2003). This was subsequently replaced by a revised Physical Education and Sport Strategy for Young People (PESSYP) with a further £¾ billion of financial backing (DCSF 2008). Following a change in Government in 2010, and the dismantling of the SSPs (Smith 2015), a new funding stream was announced by way of a Primary PE and Sport Premium (DfE and EfA 2014). To date, the 'Premium' has seen £1.2 billion devolved to state funded primary schools as part of a 'legacy' of the London 2012 Olympic and Paralympic Games (Parnell et al. 2017, Griggs and Ward 2013, APPG 2019),

While the objectives of each of these strategies has invariably reflected the political agenda of the time, they have shared similar ambitions; to increase levels of physical activity, improve the quality of PE provision and increase the uptake of young people in sport (DCMS 2007, DCMS/DfE 2015, DCSF 2008, DfE 2013b, 2014).

Centrally these objectives have shaped, and arguably conflated, what it means to be physically educated in the contemporary curriculum space. The emphasis on physical activity through sport has led to an assumption that 'expertise' in these areas is a necessary addition to the teaching workforce (Griggs 2010). While sport is recognised as a vehicle in which to facilitate PE, and therefore a component of the subject, replacing teachers entirely with a sporting expert may well diminish other forms of knowing in the PE curriculum (Griggs and Ward 2012). With over a decade of investment into primary PE, questions over the longevity of outsourcing are being asked (Griggs and Randall 2018). Scholars have been critical over claims that sports coaches improve outcomes for children, as they lack appropriate teaching qualifications, have poor class management skills and focus on a curriculum that prioritises activities and sporting objectives over educational goals (Griggs 2010, Blair and Capel 2011, Griggs 2007, Griggs and Ward 2012, Zwolinsky et al. 2016, Parnell et al. 2017). Furthermore, a sustained period of outsourcing may have irrevocably removed the responsibility of PE away from the class teacher, resulting in a further deskilling of the profession (Keay and Spence 2012, Griggs and Randall 2018, Kirk 2010).

Primary PE ITE providers are therefore faced with a challenge on two fronts. Firstly they must ensure that pre-service teachers (PSTs) are confident and competent to teach PE (Freak and Miller 2017, AIESEP 2014, DfE 2011), while at the same time competing with a constantly changing and diversifying workforce (Jones and Green 2017, Petrie 2011, Parnell et al. 2017). A number of studies have started to contribute to a growing body of evidence around teachers' confidence in primary PE (Morgan and Hansen 2008, Morgan and Bourke 2008, Tsangaridou and Polemitou 2015), but there is a paucity of research that focuses specifically on primary teachers at the stage prior to qualification, and what knowledge they require (O'Sullivan and Parker 2018,

Tsangaridou 2012). By focusing efforts on improving the pedagogy of how and what to teach in PE, primary ITE might go some way in starting to grow teacher confidence over time (Blair and Capel 2011, Elliot et al. 2013).

This paper aims to consider what knowledge is needed when becoming a primary physical educator. The article is empirical in nature and focuses on primary PSTs' confidence to teach PE across a breadth of knowledge areas. Finally, as an outcome of this study, I present the Professional Knowledge Model (PKM) for primary PE. In doing so, my objectives are to build upon an existing body of literature around the knowledge-base of teachers, and, after a decade of government investment and outsourcing, promote teachers as valued members of the primary PE workforce.

Developing PSTs in Primary PE

Despite the collaborative nature of school-university partnership, only limited time is allocated to the preparation of practice in primary PE (Morgan and Hansen 2007, Harris, Cale, and Musson 2011, Petrie and lisahunter 2011, Elliot et al. 2013, Blair and Capel 2011). Persistently over time, the literature has signalled primary PE as having low status compared to other curriculum subjects (Morgan and Bourke 2008, Bleazby 2015, Griggs 2007, Bailey 2018) and has raised concern that a significant number of ITE mentors express difficulty in their own teaching of the subject (Morgan and Bourke 2008, Fletcher and Kosnik 2016). With no current regulation on the amount of time dedicated to primary PE ITE, and a generation of mentors lacking in confidence to develop future entrants into the profession, a PST's experience is not only variable, but precarious (Harris, Cale, and Musson 2011, Elliot et al. 2013). Blair and Capel (2011) have reported that some institutions dedicate as little as five hours to PE, while others note that even when in school, many PSTs are unable to teach at all (Darling-Hammond

2006, Haydn-Davies et al. 2010, Adams 2015, Fletcher and Kosnik 2016). Bleazby (2015) states that traditional curriculum hierarchy influences western education curriculum structure, where the inherent value of knowledge underpins the subject's status. For PE, 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 theoretical and abstract (Bleazby 2015, Bailey 2018). The political and philosophical discourse on which such arguments are built fundamentally misunderstands what it means 'to have' knowledge (Belas 2018). Ryle (1949) distinguishes knowledge between 'knowing that'- the knowledge of facts - and 'knowing how' - the varying forms of practical knowledge - arguing that knowing *how* to perform skilfully is not only a matter of being able to reason practically, but also a matter of being able to put practical reasoning into action. Ryle's (1949) presentation of knowledge powerfully rejects 'Cartesian Dualism', the separation of mind and body and the segregation of theoretical understanding from practice. In an era characterised by mounting public concern over child health, both physical and mental (APPG 2017, 2018, DoH 2016, OFSTED 2018), knowledge about the body is becoming increasingly valuable and a necessity for teachers working in the contemporary primary school environment.

Professional Knowledge of Primary Educators

A specialist body of knowledge is common to any definition of a professional, which requires individuals to work in unpredictable contexts and execute high levels of judgement (Furlong et al. 2000, Schon 1983). The uniqueness of teaching, and the relationship with its knowledge-base, makes it a highly complex and expert activity (Hegarty 2000b, Amade-Escot and O'Sullivan 2007). Education reform can change what knowledge is valued, as teachers' work is affected by prescriptive policy

initiatives, a reduction in autonomy and a diminished sense of agency (Gilroy and Day 1993, Ball 2009).

Deciding upon what knowledge should be covered during ITE is a complicated and sophisticated endeavour (Ennis 1994), but careful planning can help inform programme design (O'Sullivan and Parker 2018). Various ways of organising teachers' knowledge have previously been undertaken (Turner-Bisset 1999, Eraut 1992, Hegarty 2000a, Shulman 1987), establishing what it is that teachers must be able to know, understand and do (Darling-Hammond 2006). Hegarty (2000a) argues that what sets education apart from other professional contexts is that knowledge for teaching must be geared towards learning and knowledge creation. Although no single model exists to frame the knowledge base of PE, these broader conceptual models have helped refine our understanding of the different forms of knowledge that teachers require (Tsangaridou 2006, Tsangaridou 2002).

In his seminal work on teacher knowledge, Shulman (1987: 4) argues 'there exists a "knowledge base for teaching" - a codified or codifiable aggregation of knowledge, skill, understanding, and technology, of ethics and disposition, of collective responsibility'. He conceptualises knowledge through seven distinct categories: (1) content knowledge (CK), (2) general pedagogical knowledge, (3) curriculum knowledge, (4) pedagogical content knowledge (PCK), (5) knowledge of learners and their characteristics, (6) knowledge of education contexts and (7) knowledge of educational ends (Shulman, 1987). While Shulman (1986, 1987) highlights the importance of a well-rounded knowledge base for teachers, it is PCK that most interests him. In his own words:

> Pedagogical Content Knowledge represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are

> organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction. (Shulman 1987:8)

He considers PCK to be distinctly different to CK, which is defined as 'the specific subject matter knowledge, understanding and skills that are to be learnt by school children' (Shulman, 1987:8), as PCK is a special amalgam that is uniquely the provenance of the teacher. It is this point that makes a case for questioning the place of non-qualified teachers, e.g. sports coaches, over teachers as 'Pedagogical content knowledge is the category most likely to distinguish the understanding of the content specialist from that of the pedagogue' (1987: 8). With an overriding focus on CK, outsourced specialists may hold the knowledge of the activity that is to be taught (Blair and Capel 2011), but not the broader knowledge of curriculum, learners and pedagogy that is required to educate young people physically (Ennis 1994, 2011).

Methodology

In this section of the paper I discuss the development of a model for primary PE that is later used as a method to collate data via an online survey. The development of the PKM was done in congruence with the PE Expert Subject Advisory Group (ESAG)[1] in England. A central concern of the group was how primary PE ITE would meet its aim of preparing PSTs to deliver a new National Curriculum, within only a limited number of hours. At the same time as ESAGs were established, a report into the role of research

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[1] The PE ESAG was one of 17 Expert Subject Advisory Groups initially established and funded by the Department for Education. The groups were formed to provide guidance and practical support to teachers, schools and teacher educators to implement the new National Curriculum.

into ITE highlighted that an important function within this field of study, is to ask questions that will seek to improve the quality of teaching and learning that informs the content, design and structure of ITE programmes (BERA 2014). As a member of the PE ESAG, and with the responsibility for primary PE ITE, I wanted to gain an insight into the confidence of primary PSTs to teach PE and, in doing so, help develop an understanding of what a teachers' knowledge base for the subject might look like. The process of establishing knowledge areas that reflected the breadth of the subject took a period of 18 months (February 2012 - August 2013), drawing upon themes from a systematic review of the literature and discussions with the PE ESAG. The process culminated in the production of the PKM for primary PE (see Figure 1), made up of knowledge statements, organised progressively from emerging to aspirational levels.

Figure 1: Professional Knowledge Model for Primary PE

Written communication was received from the PE ESAG (see Figure 2) when an agreement had been reached on what knowledge the PKM should include, and at what stage on the PKM knowledge should be placed at.

Figure 2 Email extract from the PE ESAG (9th May 2013)

Presenting knowledge in this way may be considered positivistic, as it appears to frame a knowledge-base for the subject as a set of objective truths. However, questions surrounding the nature and content of knowledge in PE have been a matter of debate

between academics for years (Green 2010, Siedentop 2002, Ennis 1994). The PKM does not make claim to conclude these debates, but continue them further. While critics of positivism would argue that such truths about epistemology in teaching rarely exist, there is general consensus that teachers need specific knowledge of the subject in order to plan, teach and assess competently (Green 2008, Pickup and Price 2007).

Next I outline the three professional knowledge stages on the PKM guided by the academic literature. The PKM is divided into four domains of professional knowledge, designed to capture the key principles outlined by Shulman (1987), but streamlined to support PSTs working within a subject specific lens and minimal amount of time. The four knowledge domains of the PKM are: (1) Content Knowledge (CK), which refers to the nature of knowing in the field of study and knowledge relating to the curriculum and learners; (2) Subject Pedagogy (SP) which refers to general aspects of how to teach and related instructional strategies ; (3) Reflective and Academic Engagement (RAE), draws upon the theoretical, political, historical, philosophical and personal relationships within PE and (4) Case Knowledge (CaK), which captures Shulman's (1987) broader thinking of knowledge relating to educational contexts, recognising that learning propositionally, and out of context, is difficult for teachers to achieve (Shulman 1986).

The Emerging Stage

The centre of the PKM proposes an emerging knowledge-base for primary educators learning to teach PE from an initial starting point. The PKM acknowledges that the emerging practitioner brings with them existing beliefs about PE and how the subject contributes to the primary curriculum (Elliot et al. 2013, Capel and Blair 2007). At this stage, perceived levels of confidence and competence may already have been identified,

but development, reflection and application across a breadth of professional knowledge is needed in order to address 'teacher concerns'. Macdonald, Hunter, and Carlson (2002) believe that ITE should reflect educational change through philosophical curricular and structural changes in policy and practice, therefore the domain of RAE is argued to be an important sub-section of a teachers' professional understanding.

The socialisation of primary physical educators is further believed to be influenced from a broad understanding of prior experiences (Elliot et al. 2013, Garrett and Wrench 2008, Curtner-Smith 1998, Lawson 1986, McMahon and MacPhail 2007). PSTs bring with them beliefs about play, exercise, sport and activity that have developed from inside and outside the school context (Sidwell and Walls 2014, Petrie 2008). Elliot et al. (2013) found that the professional socialisation of primary teachers from prior experiences became a more powerful determinant of confidence than any formal training they had received.

A final feature of the 'emerging stage' is a foundational understanding of *what* to teach. Knowledge of movement skill development and knowledge of the developing child is placed on the PKM ahead of knowledge of activity areas; as in order to develop competent performers, motor development must first be secured (Griggs 2007). With the most significant periods of development in children taking place within primary years (Gallahue and Cleland-Donnelly 2007, Gallahue and Ozmun 2011), educators working in this age phase must know how to support children in moving though a 'proficiency barrier' so they can achieve fundamental movement competencies (Griggs 2007, Graham, Holt/Hale, and Parker 2012, Gallahue and Ozmun 2011).

The Secure Stage

At the secure stage, the practitioner grows in confidence and competence to teach primary PE. This stage is characterised from a shift in general teacher concerns to

specific needs of children, which, dependent upon experience and context, can take many years to achieve and will vary from teacher to teacher. The secure stage is associated with exploring complex issues surrounding teaching and learning and the contexts in which primary PE is experienced (Jess, Keay, and Carse 2014, Atencio et al. 2014). Jess, Atencio, and Thorburn (2011: 183) value that within the learning of PE, 'uncertainty and diversity can underpin curriculum practices that provide for self-organisation, adaption and creativity'. Therefore, teachers must understand what influences the unique experiences of their learners. The PKM emphasises that knowledge at this stage, is in part, formulated by an understanding of learning tasks (activity areas), approaches to teaching and learning, safe practice, inclusion, statutory frameworks, beyond the curriculum learning and the wider-workforce. With an emphasis on the secure stage being about children's learning in ever changing contexts, PSTs will need to consider these knowledge areas with every new school, environment and child they encounter.

The Aspirational Stage

The peripheral aspects of knowledge on the PKM characterise an aspirational level of subject knowing. While much of this this stage is still concerned with the individual's own continuing professional development, a final shift is made to the advancement of others' understanding. This stage of knowledge development is more likely, but not exclusively, aimed at individuals who are or aim to be, involved with subject leadership or advocacy. It assumes that those considered to be a 'specialist' in primary PE are defined by having an aspirational knowledge base first and foremost.

Method

The research questions that framed the study were:

1. What breadth of professional knowledge do PSTs have in primary PE?
2. What areas of professional knowledge do PSTs have most/least confidence in primary PE?

Participants

Participants were purposively sampled as they were in the final year of a primary ITE programme in England, leading to the recommendation for the award of Qualified Teacher Status. Data was collected at the end of the assessed elements of the PSTs' ITE programme and before the commencement of their first teaching post (April – July 2014). This was to ensure that the research did not interfere with any part of the statutory and assessed elements of the programme and to allow PSTs to draw upon the entitrety of their experience when giving a response. Due to the large number of commitments that a PST juggles during an ITE programme, a low response rate was expected, and has therefore been recognised as a limitation of this study.

In total 175 PSTs out of a potential response of 1115[2] (15.6%) took part; 120 (68%) of which came from postgraduate university-based routes, 41 (23%) from undergraduate routes and 14 (8%) from school centered initial teacher training (SCITT). Having a sample that ranged across institutions and programme routes has supported the generalisability of the data to build a picture of PST confidence in primary PE across the sector. The vast majority of PSTs identified themselves as generalist primary educators (n=150, 85%) with a smaller group specifying that they were on a subject PE specialism pathway (n=24, 13%). The sample derived from 12 ITE providers across London, the Midlands and the south of England.

[2]Figures were guided by the participating institution who stated the number if PSTs on each programme that was involved in the study.

Initial contact was made with an identified 'gatekeeper' through the researcher's existing professional networks and the PE ESAG. The gatekeeper, who was either the programme leader or subject coordinator for PE at the participating institution, made decisions about when to disseminate the survey, based upon their individual programme pattern. Participation was voluntary and anonymous and no direct contact was made by the researcher to any of the participants throughout the data collection period. The study was approved by an institutional Ethics Board, adhering to the British Education Research Association (BERA) (2011) guidelines. Further consent was obtained from each participant after a detailed explanation about the project had been shared.

The Online Survey Tool

Quantitative data and consent were obtained electronically via the Bristol Online Survey tool (BOS); a tool that Bryman (2012) considers to be useful when working with a population who has time pressures placed upon them. The online survey was devised of 34 questions. The first two questions sought to identify the PST's programme route and specialism/generalist pathway and the remaining 32 questions were devised as knowledge statements taken from the PKM. Participants were asked to respond to each of the 32 knowledge statements using an 11 point Likert Scale, assessing their perceived confidence within each area of knowledge. The decision to use an 11 point scale, over a more popular 5-point scale, was firstly to capture the range of intensity amongst the sample population and secondly to determine to what extent a greater range of variation existed (Newby 2010). Within this scale, zero was used to indicate no confidence and 10 was used to indicate a perceived high confidence.

Findings

Data presented in this section provides an overview of participants' perceived confidence from across the professional knowledge statements of the PKM. Data were analysed using a descriptive statistical approach, or more specifically central tendency measures, to index where participant responses had been grouped (Drew, Hardman, and Hosp 2008).

Emerging Professional Confidence

Table 1 presents the participant responses to the knowledge statements that are ranked from high to low confidence of mode in the first instance. This method was adopted in order to describe the data and identify the most frequently occurring value across the sample (Hempel 2007).

Table 1: Survey responses organised from high to low confidence by mode and median

The mode response of PSTs shows that confidence was placed at the high end of the Likert Scale, with 19 out of the 32 questions achieving a mode of ≥8 out of 10 (see Table 2); however this only represented a maximum of 30% of the overall sample. Participants used the full range of the scale (from 0-10), resulting in no overall consensus of confidence for any one statement of knowledge.

Table 2 shows the distribution of mode across the four knowledge domains, highlighting that SP presented the highest level of clustered confidence; RAE the lowest clustered level of confidence; CaK the most polarised levels of confidence and CK the most collective level of shared confidence.

Table 2 here: Distribution of modes

The median response was also considered as it provided an additional central tendency measure for analysis from what was an uneven data set. Kwork (2008a) explains that the median value can be useful in descriptive statistics, as it is not influenced by the outlying values. In 4 out of the 32 occasions, the median and mode response produced the same value on the scale (this was for the statements: 'I can describe and explain the characteristics of a physically educated child', 'I am able to teach athletic activities', 'I set challenging targets for myself in PE and 'I have an understanding of health, fitness and well-being'). Typically the remaining median response was placed close to the mode, creating a clustered average response from the sample (Bakker and Derry 2011). A pattern of high confidence was reinforced with the median value, although this data presents a perceived lower confidence, with 23 out of the 32 knowledge statements showing the median below the mode value.

The PKM was further used to support the analysis of the data by identifying patterns in participant responses against the progression of knowledge detailed on the model. The PKM distinguishes knowledge that is central to the development of an emerging practitioner, such as an understanding of the aims of primary PE (Green 2008, Capel and Whitehead 2012), knowledge of fundamental movement skills (Gallahue and Ozmun 2011, Gallahue and Cleland-Donnelly 2007) and planning for learning (Pickup and Price 2007), from knowledge that is more secure or aspirational (see Figure 1).

Table 3 presents the top five areas of knowledge from across the survey where participants demonstrated most and least confidence.

Table 3: Most and least confident areas of professional knowledge

The top two responses for most confidence relate to the domain of SP, with ‘lesson planning’ being placed at the emerging stage of knowledge on the PKM, and ‘receiving feedback to improve practice’ at the secure stage. It is unclear from the data if responses given by the PSTs relate to their actual experience in PE, or if it was based more generally on a perception. The higher confidence levels in SP could be a result of knowledge developed in association with other subjects, e.g. professional studies. Areas of the survey that identified further levels of high confidence coincided with popular dominant discourses of PE relating to health, wellbeing and sport (Griggs and Ward 2012, Green 2010, Morgan and Hansen 2007) and the broader aims of PE (DfE 2013a, Green 2008). This would indicate that, regardless of a PST’s earlier experiences of PE (Morgan and Bourke 2008, Curtner-Smith 1998), there was a high confidence amongst the sample in being able to communicate the subject’s aims and the value it has in the primary curriculum.

The PKM places all activity areas at the same ‘secure stage’, valuing the knowledge of each as the same; however, PSTs presented varied mode responses for each activity area. A higher level of confidence was demonstrated in games, with a mode of 8/10, with swimming presenting a mode confidence level of 0/10. Griggs (2009) and Ward (2013) observes that within primary PE there is often an unbalanced curriculum that is dominated by games, usually at the expense of other activity areas and not always taught well. PSTs reported that they were less confident in their knowledge of fundamental movement skills, than they were in the areas of activity that they underpin. This was also the case for knowledge of the stages of movement learning, which was given a mode of 6/10, despite being considered a central component of CK for primary physical educators (Graham, Holt/Hale, and Parker 2012, Pickup and Price 2007).

Swimming provided the lowest level of confidence across the survey as a whole, receiving the highest incidence of zero, and the most uniform response across the sample. While it could be argued that swimming is currently the only area of the primary PE National Curriculum in England where children *must* meet a statutory target (DfE 2013a), and therefore should be an area of teacher confidence, this response was expected as is swimming typically delivered by outside swimming coaches and away from the school grounds (Bas and Hardy 1997).

Knowledge about working with the wider workforce and investigating PE practice also produced a mode of zero confidence. The changing landscape of who delivers primary PE indicates that external providers are likely to be working with children in primary schools over the coming years (DfE and EfA 2014, Griggs 2010). However, the low confidence exhibited by the sample indicates that new teachers entering the profession may feel ill-equipped in their understanding of their role within school, or how to develop wider opportunities for children beyond the curriculum (Haydn-Davies and Kaitell 2010). Further research is needed to identify if the presence of a wider workforce might also be a factor in perpetuating low PST confidence in some areas of professional knowledge and lead to a more permanent removal of the teacher if the trend of outsourcing continues - as found in the teaching of swimming.

The data presented has shown that despite a previously held view that primary teachers' lack confidence to teach PE (Harris, Cale, and Musson 2012), PSTs demonstrated an overall high level of confidence to teach across the breadth of professional knowledge areas. Confidence was highest in knowledge relating to the subject's aims, knowledge of health/fitness and lesson planning and low levels of confidence were identified in areas relating to swimming, the National Curriculum, assessment and working with a wider workforce. Out of these areas, and of most

immediate concern, are the low levels of confidence expressed from PSTs regarding their knowledge of the wider workforce, despite their prominent place in primary schools for over a decade (Griggs 2007, 2008, APPG 2019). Further research is now required to identify if this data is indicative of something more serious for ITE, and if the presence of a wider 'outsourced' workforce has created a barrier for PST to access PE altogether.

Conclusion

For years ITE has been criticised for failing to produce primary teachers who have the confidence and competence to teach PE effectively (Harris, Cale, and Musson 2012, Ofsted 2013, APPG 2016, Talbot 2007). With only a few hours dedicated to PE on primary ITE programmes (Harris, Cale, and Musson 2012), teacher educators are tasked with prioritising knowledge they think PSTs most need. A solution to the teacher competency problem has been to outsource PE through Government funding or existing staffing budgets (Griggs 2007, 2008, 2010). The academic community has raised concern about the sustainability of such an approach, not least in regard to the impact it will have on pupil outcomes, but also the practicality of what will happen when funding streams come to an end (Griggs and Randall 2018, APPG 2019).

The aim of this paper has been to critically consider the knowledge base needed to become a primary physical educator and examine PSTs' confidence to teach. I have argued for teachers to be reinstated as the main subject deliverers of primary PE where they are recognised for the breadth of professional knowledge they have. In the curriculum space, external providers should be considered exactly that, external; enhancing the professional CK of a teacher, but not replacing them entirely. At a Government level, any future funding should consider the learning needs of teachers at every stage of the profession. Professional development must go beyond that of a

narrow discourse of sporting activities and acknowledge the brevity of knowing that is required to effectively meet learner needs. This level of professional development requires a career long commitment, starting at the ITE phase. Carrying out this research has led to the development of a PKM for primary PE (see Figure 1), which I propose can be used to encourage greater agency at every stage of a teacher's professional learning. Although not intended to present knowledge as a set of facts, the PKM offers a normative starting point for discussions about knowledge. As an outcome of this research I recommend that all ITE programmes consider the breadth of teacher knowledge they offer and aim to progress PSTs to a 'secure' level before entering the profession. This might be achieved through an increase in allocated time to PE, making links to broader pedagogical principles and stronger partnerships with schools and PE professional bodies. For in-service teachers, the PKM could be used as an ongoing professional learning tool to audit the breadth of professional knowledge and identify training needs. Some suggestions for the PKM are as follows:

- an overview of professional knowledge required for preparing PSTs in primary PE
- a reflective tool/audit to identify teachers' areas of strength and areas of further professional development
- a curricular framework for ITE
- a process for institutions to review professional programmes, ensuring a breadth of knowledge is offered

In presenting a PKM for primary PE, I have argued that the development of teachers' knowledge is a complex and on-going process. Ensuring a sustainable and competent workforce will depend upon teachers' reclaiming back their place in the curriculum

space and critically analysing their learning needs against the breadth of what the subject has to offer.

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