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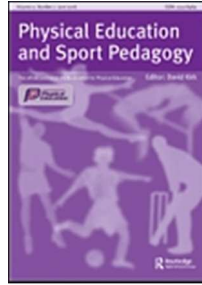
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Transferring primary generalists' positive classroom pedagogy to the physical education setting: A collaborative PE-CPD process

Kevin Morgan^{*1}, Anna S. Bryant¹, Lowri C. Edwards² and Emma Mitchell-Williams¹

School of Sport and Health Sciences, Cardiff Metropolitan University, Cyncoed Campus, Cardiff, UK, CF23 6XD

² School of Sport and Exercise Sciences, Swansea University, Fabian Way, Swansea, UK, SA1 8EN

* = Corresponding Author: Contact – Kmorgan@cardiffmet.ac.uk

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2
3 21 **Abstract**
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6 22 **Background:** The primary school age group (aged 5-11 years) is acknowledged as a critical
7 23 period in the development of physical activity patterns and healthy lifestyle behaviours.
8 24 Furthermore, high quality physical education (PE) is crucial for the development of lifelong
9 25 physical activity behaviours and is highly dependent on the interaction between the teacher
10 26 and the pupil. Despite this, there is a lack of training and confidence of many primary
11 27 generalist teachers to teach PE in the UK. It is argued that effective continuing professional
12 28 development (CPD) to address this issue should be supportive, job embedded,
13 29 instructionally focused, collaborative and ongoing.

16 30 **Purpose:** This study was funded by a national government funded organisation and led by a
17 31 university in collaboration with a secondary PE specialist and two primary teachers. The
18 32 purpose was to develop a replicable PE-CPD process to improve primary generalist teachers'
19 33 PE pedagogy by transferring their positive pedagogy from the classroom to the PE setting.

21 34 **Participants:** The participants were two Year 3 (age 7-8 years) primary classroom teachers
22 35 from the same school and one secondary PE specialist teacher who acted as a mentor.

24 36 **Research Approach:** A Collaborative professional learning (CPL) approach was utilised to
25 37 develop the PE-CPD intervention process. CPL involves teachers and other members of a
26 38 profession working together to improve their own and others' learning on pedagogic issues.
27 39 A six-week needs assessment phase was completed through classroom and PE lesson
28 40 observations to identify key areas for development in the PE-CPD over the duration of a 23
29 41 week intervention.

32 42 **Data Collection and Analysis:** Reflective logs, structured lesson observations and teacher
33 43 interviews were used to collect the data during the PE-CPD intervention. Inductive and
34 44 deductive qualitative thematic analysis was used to analyse and interpret the data.

36 45 **Findings:** A number of key themes were generated during the data analysis including the
37 46 transfer of positive pedagogy from the classroom to the PE setting and the implementation
38 47 of effective pedagogic principles including the setting of clear learning outcomes,
39 48 differentiation and inclusion to enhance the PE pedagogy. A key element to the success of
40 49 the intervention was the trusting relationships built by the secondary PE specialist with the
41 50 primary teachers. Further, the results also revealed the importance of CPL in ensuring
42 51 rigorous, evidence-based PE-CPD and providing the time and support required for
43 52 fundamental sustainable changes in practice, which can endure beyond the life of the
44 53 research project.

47 54 **Conclusion:** The major contribution of this paper is in demonstrating the potential of CPL
48 55 between national organisations, universities, secondary and primary schools to improve the
49 56 PE pedagogy of primary generalist teachers. Future research should build upon the findings
50 57 in this study and replicate this PE-CPD approach with other classes and schools.

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54 59 **Key Words:** Primary PE-CPD, collaborative professional learning (CPL), mentoring.
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60 **Introduction**

61 Research evidence has consistently demonstrated the considerable health benefits of
62 physical activity (Department of Health, 2011; Warburton, Nicol & Bredin, 2006). Developing
63 a disposition towards lifelong physical activity is the main outcome of high quality physical
64 education (PE) provision (Mandigo *et al.* 2009; McLennan & Thompson, 2015) and the
65 primary school age group (aged 5-11 years) is considered a critical period in the
66 development of such healthy lifestyle behaviours (Faulkner & Reeve, 2000). Despite this, it is
67 acknowledged that there is a shortage of Primary PE specialists in Wales (Estyn, 2007),
68 which is problematic as children's experiences at this stage are heavily influenced by the
69 teachers delivering the PE lessons (Humphries & Ashy, 2006; Maude, 2010).

70 Keay and Spence (2012) identified the lack of training and the low levels of
71 confidence and competence of primary generalist teachers to teach PE in the UK. Further,
72 they argued that improving the quality of primary PE is dependent upon the professional
73 development of the teachers to improve their knowledge, experience, confidence,
74 enthusiasm and pedagogical skills in the PE environment. Consistent with this, Sloan (2010)
75 identified that the limited content knowledge of primary generalist teachers in PE impairs
76 their ability to plan lessons effectively, with many omitting to plan PE lessons altogether.
77 This is not surprising given that 40 percent of primary school teachers in the UK were found
78 to receive less than six hours of PE training during their Initial Teacher Education and
79 Training (ITET), resulting in a lack of skills, knowledge and confidence to effectively deliver
80 high quality PE lessons (Blair & Capel, 2008). Moreover, research has identified that the
81 'core' subjects (mathematics, English, Welsh and science) take priority over all other
82 subjects in primary schools, limiting teachers' preparation time to plan for PE (Sloan, 2010;
83 Rainer *et al.*, 2012) which can often lead to teachers providing pupils with 'physical

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3 84 opportunities rather than focusing on physical education learning opportunities' (Keay &
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5 85 Spence, 2012, 179-180). It is also known that PE lessons are cancelled more frequently than
6
7 86 any other subject on the primary school curriculum (Hardman, 2010). Moreover, those
8
9 87 primary teachers who are less confident in their teaching of PE are less likely to deliver high
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12 88 quality PE lessons (Taplin, 2013).
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15 89 Previous research has suggested that one method to address some of these issues is
16
17 90 for PE specialists and researchers to work collaboratively with primary school teachers to
18
19 91 enhance the quality of the learning environment they create (Morgan, Bryant & Diffey,
20
21 92 2013). Indeed, physical education continuing professional development (PE-CPD) can play a
22
23 93 considerable role in upskilling primary school teachers' in areas such as inclusion and
24
25 94 differentiation, and improving their confidence and insecurities with assessment (Harris,
26
27 95 Cale & Musson, 2012). However, many PE-CPD programmes for primary teachers have a
28
29 96 tendency to be brief, one-day workshops that occur off the school site (Jess, McEvilly &
30
31 97 Carse, 2016). According to Hunzicker (2011, 177), these 'one shot', 'sit and get' CPD
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33 98 workshops lack effectiveness and impact, as much of the information is not likely to be
34
35 99 remembered and even less is likely to be applied when teachers return to their daily
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37 100 routine. Hunzicker (2011, 177), suggests that effective CPD should engage teachers in
38
39 101 'learning activities that are supportive, job embedded, instructionally focused, collaborative
40
41 102 and ongoing.' Consistent with this, Duncombe, Cale and Harris (2016) identified primary
42
43 103 school teachers' low confidence and knowledge of teaching PE and proposed informal
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45 104 collaborative professional development and communities of learning to address these
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47 105 issues. Further, Armour et al. (2015) argued that effective CPD in PE is that which focuses on
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3 106 the 'growth' of the teachers and nurtures them as learners, so that they in turn are able to
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5 107 nurture the growth of their pupils.
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8 108 According to Duncombe and Armour (2004), collaborative professional learning (CPL)
9
10 109 involves a teacher working with or talking to another teacher to improve their own learning
11
12 110 or others' understanding of any pedagogical issue. Further, this collaboration can include
13
14 111 members of the profession from other schools and institutions to enhance the impact on
15
16 112 teacher learning (King & Newman, 2001). In 2004, Duncombe and Armour proposed CPL
17
18 113 within a community of practice as a way forward for improving primary generalist's teaching
19
20 114 of PE. To date however, there is still a dearth of research that has adopted this approach.
21
22 115 Collaborative professional learning encompasses a wide range of processes including
23
24 116 mentoring, peer coaching, critical friends, collegiality, sharing of ideas and working
25
26 117 collectively on tasks (Duncombe & Armour, 2004).
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32 118 Mentoring is a key process of CPL and one that has long been recognised in
33
34 119 education as a means of improving practice (Jones, Harris & Miles, 2009). Awaya, *et al.*
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36 120 (2003) describe interactive mentoring as the building of an equal relationship characterised
37
38 121 by the sharing of expertise and moral support. This type of mentoring seeks a relational
39
40 122 parity with the mentee (Awaya *et al.*, 2003), characterised by open conversation on issues
41
42 123 of mutual concern with the mentor acting as a friend, colleague and trusted advisor. Mead,
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44 124 Campbell and Milan (1999) recognise this sort of association as co-operative and see it as
45
46 125 most appropriate for the more experienced practitioner.
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51 126 The aim of this study was to develop a replicable PE-CPD process for improved and
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53 127 sustainable pedagogic practice for primary generalist teachers. In order to achieve this the
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55 128 specific objectives were to:
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3 129 • Build positive, trusting relationships with primary PE generalist teachers to develop
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5 130 collaborative professional learning
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7 131 • Enable the primary generalist teachers to transfer their positive pedagogic practice
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9 132 from the classroom to the PE setting to enhance their PE pedagogy
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12 133 **Method**
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15 134 ***Collaborative professional learning***
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18 135 This study involved a secondary specialist PE teacher mentoring two primary generalist
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20 136 teachers to improve their PE pedagogy. In addition to the collaboration between the
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22 137 secondary PE specialist and the two primary teachers, there was another layer of
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24 138 collaboration in this project, with the University research team who were 'expert advisors'
25
26 139 in the area of PE pedagogy. The group of three university based 'advisors', including the
27
28 140 school-based researcher, met the secondary PE specialist on a weekly basis to ensure rigour
29
30 141 and robustness and to feed further pedagogical information into the collaborative process.
31
32 142 This is consistent with Nicholls' (1997) definition of collaborative partnerships where
33
34 143 institutions agree to work together on a joint project. According to Lieberman and Miller
35
36 144 (1999), this arrangement can be described as a 'growth in practice' model of professional
37
38 145 development where teachers learn together. It is a social constructivist process, where
39
40 146 individuals learn from their experiences and from the interaction with more knowledgeable
41
42 147 others (Vygotski, 1978), within a community of practice (Lave & Wenger, 1991). This
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44 148 approach is also consistent with the recommendations of the Furlong report (2015) in
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46 149 Wales, which recommended a closer working relationship between Higher Education
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48 150 Institutions (HEIs) and schools.
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53 151 ***Context and participants***
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3 152 The context for this Sport Wales funded project was the existing Welsh National
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5 153 Curriculum for PE (NCPE). This recommends all pupils aged 5 – 16 to spend at least two
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7 154 hours a week of timetabled engagement in PE lessons (NCPE, 2008). Though the curriculum
8
9 155 structure in Wales is set to change as a consequence of the Donaldson (2015) review, the
10
11 156 existing primary PE curriculum in Wales at the time of this study is outlined in Table 1. which
12
13 157 highlights aspects of the foundation phase curriculum (3 – 7 year olds) that relate to PE,
14
15 158 namely, physical and creative development, as well as the programme of study within the
16
17 159 NCPE for Key Stage 2 (7 – 11 year olds). This curriculum allows the primary teachers the
18
19 160 flexibility to select activities under each programme of study tailored to the pupils' needs
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21 161 and acts as a framework for teachers to plan their PE lessons within.
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26 162 Insert Table 1 here
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29
30 163 The participants were two Year 3 (aged 7 - 8 years) primary generalist teachers from the
31
32 164 same school and one secondary PE specialist teacher. Both primary generalist teachers did a
33
34 165 three year Bachelor of Education (BEd.) Initial Teacher Education and Training (ITET) course,
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36 166 during which they had four 'face-to-face' hours of PE each year. One of the teachers,
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38 167 Michelle (all names are psuedonyms, see Table 2) led the extra-curricular dance club at the
39
40 168 school once a week and was a keen cricketer and ex-competitive swimmer, whilst the other,
41
42 169 Kirsty, had no competitive sporting background.
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46 170 The secondary teacher, Rebecca, was Head of PE at the local secondary school. As
47
48 171 part of the funded project, Rebecca was seconded two days a week to work in the primary
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50 172 school for one day and to use the other day to collaborate with the research team at the
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52 173 University. She had not previously met Kirsty, Michelle or their pupils. The following profiles
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54 174 in Table 2 provide some background information about the participating teachers.
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3 175 Insert Table 2 here
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5 176 The research assistant from the University was based at the school one day a week
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7 177 with the secondary specialist and was involved in advising the secondary PE specialist on
8
9 178 how to collect the data and facilitate the PE-CPD process with the primary teachers. The
10
11 179 research assistant was experienced in these methods and procedures as a direct
12
13 180 consequence of her own PhD through conducting research in a similar school context
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15 181 (Edwards, 2017). This previous knowledge and experience of the research assistant was an
16
17 182 important contributing factor to the rigour and robustness of the project. Additionally, the
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19 183 secondary specialist and research assistant met with the other two experienced members of
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21 184 the University research team on a weekly basis, as identified in the earlier CPL section, to
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23 185 futher ensure the rigour and robustness of the study.
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29 186 The school had good facilities, including a full size (four badminton courts) sports
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31 187 hall. They also had a large school canteen that they used for gymnastics and a very large
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33 188 playground with a good range of sports equipment. At the time of this study, all teachers
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35 189 taught PE to their own class for one hour a week indoors. They also had a thirty minute
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37 190 timetabled outdoor PE lesson (weather depending). There were no outside providers
38
39 191 delivering PE in the school. The school valued the teachers delivering their own PE lessons
40
41 192 so that they could develop professionally, as they did in any other subject. At the beginning
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43 193 of the study, the primary teachers had no structured schemes of work for PE; they taught
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45 194 what they wanted according to their areas of interests and/or knowledge. Further, they had
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47 195 no structured planning time for PE during their designated planning, performance and
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49 196 assessment time (PPA).
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55 197 ***Research design and ethics***
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3 198 The research design and overall timeline of the project was adapted from a
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5 199 previously validated design as part of a PhD study (Edwards, 2017) and is illustrated in Fig 1.
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7 200 This involved initial planning meetings between the University research team and the
8
9 201 secondary PE specialist to decide on the aims and objectives of the study and the research
10
11 202 design. Meetings between the secondary specialist, the research assistant and the primary
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13 203 school PE coordinator and Headteacher then ensued to discuss the study and decide upon
14
15 204 the most appropriate age group and classroom teachers to work with during the
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17 205 intervention. Initially, the research team had intended to work with Year 6 (aged 10 - 11
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19 206 years) teachers, but following these discussions it was agreed to conduct the study with
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21 207 Year 3 classes (aged 7 – 8 years) instead, in order to impact on physical activity behaviours
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23 208 earlier and to allow more opportunity for the prospect of longitudinal research in future
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25 209 years. Following the initial meetings, a 'needs assessment' observation phase took place,
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27 210 followed by an intervention phase which are both described in more detail in the following
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29 211 sections. The ethics committee of the participating University approved all procedure in the
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31 212 study.

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38 213 Insert Fig 1 here
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41 214 ***Needs assessment phase:*** Observations were conducted over a period of six weeks
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43 215 from September 27th to November 15th 2016. The primary focus of the observations was to
44
45 216 gather baseline data about the primary teachers' pedagogic practice in both their PE and
46
47 217 classroom lessons to provide information about the situation that was being investigated
48
49 218 prior to the intervention. The reason for the classroom observations in addition to the PE
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51 219 lessons was to identify pedagogic strengths in the classroom environment that could
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53 220 potentially be transferred to the PE setting. The rationale for utilizing this method of
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3 221 observation in both PE and the classroom was based on an identified gap in the previous
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5 222 research around transferring effective classroom pedagogy to the PE setting. Further, this
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7 223 method had recently been successfully applied in a PhD study (Edwards, 2017). Informal
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9 224 discussions with the teachers were also used in this 'needs assessment' phase to ascertain
10
11 225 their pedagogical strengths and areas for development.
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15 226 ***PE-CPD Intervention:*** This was conducted one day a week (both Year 3 PE classes
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17 227 were scheduled on the same day each week) over three separate half-term teaching blocks
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19 228 of 6 - 7 weeks each. A different PE content area was taught for each half term block and
20
21 229 included multi-skills, dance, and striking and fielding. The specific focus of the intervention
22
23 230 was led primarily by the 'needs assessment' phase and by the ongoing collaborative
24
25 231 discussions with the primary teachers about the practical issues they were encountering in
26
27 232 their practice (O'Sullivan, 2002). The initial focus was on transferring their positive pedagogy
28
29 233 from the classroom to the PE setting. This was an important aspect of the intervention
30
31 234 emphasising a strengths based, appreciative focus (Cooperider, Whitney & Stavros, 2003).
32
33 235 The aim of this appreciative approach was to help the primary generalist teachers to realise
34
35 236 that what they were doing well pedagogically in the classroom could also be effective in the
36
37 237 PE setting, thereby developing their confidence in the PE environment. In doing this, the
38
39 238 secondary specialist helped them to plan effectively for their PE lessons to include
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41 239 pedagogical principles such as setting clear learning outcomes, multi-activity tasks,
42
43 240 collaborative grouping and planning for differentiation and inclusion. These principles were
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45 241 introduced when needed over the duration of the intervention phase. All lessons were
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47 242 taught by the primary generalist teachers and observed by the secondary specialist who
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49 243 acted in the role of 'mentor' throughout the intervention phase.
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3 244 Finally, follow up structured observations were conducted to evaluate the
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5 245 sustainability of the changes in the primary teachers' pedagogic practice in PE in the
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7 246 summer term following the intervention, twelve weeks after the end of the intervention
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10 247 phase.

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13 248 ***Data collection methods***

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16 249 ***Observations of the role of the secondary PE specialist:*** The role of the secondary PE
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18 250 specialist within the whole of the primary school setting was crucial to the success of the
19
20 251 project; not only in 'what' she did to mentor and develop the learning of the two primary
21
22 252 teachers, but 'how' she approached and facilitated the whole CPL process within the
23
24 253 primary school context. This aspect of the intervention was captured by the research
25
26 254 assistant as observations in her weekly unstructured 'field notes' and was considered vital
27
28 255 to future replication of the process with other classes, or in other schools. The observations
29
30 256 focused on the secondary specialist's interactions both inside and outside of the PE lessons,
31
32 257 not only with the two primary participants but with other teachers, pupils and senior
33
34 258 management within the school. The observations were participatory as the research
35
36 259 assistant observed events from inside the group and freely interacted with all group
37
38 260 members e.g. secondary PE specialist, primary teachers, pupils and other teachers.

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41 261 ***Reflective logs:*** The reflective log (RL) was carried out after each lesson by the
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43 262 secondary PE specialist and after school on a weekly basis during both the needs analysis
44
45 263 and intervention phases. The focus of the RL was to capture her thoughts and feelings as a
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47 264 way of reflecting on what went well and overcoming barriers with working in a complex
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49 265 school environment. This was a free writing exercise of approximately one side of A4 per
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51 266 week.

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3 267 **Structured lesson observations:** The observations focused on the content of the
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5 268 curriculum, teaching resources, rapport and relationships between teachers and pupils, and
6
7 269 pupils' engagement and behaviour. A mixture of both PE and classroom lessons were
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9 270 observed during the needs assessment phase and only PE during the intervention. This was
10
11 271 done on a weekly basis by the research assistant and the secondary specialist, with
12
13 272 classroom lessons in the morning and PE in the afternoon.
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17 273 **Teacher interviews:** To explore the development of the primary teachers' PE
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19 274 pedagogy, informal reflective discussions were conducted on a weekly basis by the
20
21 275 secondary specialist. The focus of these discussions was based on the lesson observations of
22
23 276 the weekly PE lessons. Further, an individual semi-structured interview was conducted with
24
25 277 both primary teachers by the research assistant at the end of the intervention to explore
26
27 278 their learning over the duration of the intervention phase and their perceptions of the
28
29 279 impact of this learning on their PE pedagogy.
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34 280 **Follow-up observation:** To evaluate the sustainability of the changes in the primary
35
36 281 teachers' pedagogic practice in PE, two follow up structured observations and informal
37
38 282 interviews were conducted by the secondary specialist with the both primary teachers in
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40 283 the summer term following the intervention, during their teaching of athletics, twelve
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42 284 weeks after the end of the intervention phase.
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46 285 **Data analysis**

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49 286 Qualitative data was transcribed and a combination of inductive and deductive content
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51 287 analysis was performed on all sources of data (Patton, 2002). One member of the University
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53 288 research team, experienced in qualitative analysis procedures, took main responsibility for
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3 289 the in-depth analysis of the data, whilst the other members of the research team acted as
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5 290 co-analysts for validation purposes. Categories were grouped under higher order themes
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7 291 and organised into sub-themes. The final stage consisted of splitting the themes into core
8
9 292 categories consistent with the aim and objectives of the study (Elo & Kyngas, 2007).
10
11
12 293 Trustworthiness and triangulation was achieved through combining observations with the
13
14 294 other methodological approaches; reflective logs and interviews to facilitate the validation
15
16 295 of data (Thurmond, 2001). Consensus of analysis and interpretation of the data was reached
17
18 296 by all members of the University research team.

21 22 297 **Results**

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24
25 298 The results begin with the findings of the needs assessment phase which was used to
26
27 299 identify the specific objectives of the intervention.

28 29 30 300 ***Needs assessment phase***

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32
33 301 During the needs assessment phase, the quality of the PE lessons left a lot to be
34
35 302 desired, *'they received a poor gymnastics lesson with no challenge and the learning was*
36
37 303 *disrupted by poor behaviour and pupils being 'off task'*. (Reflective log, 12/10/16). This
38
39 304 contrasted sharply with the quality of classroom teaching by both primary teachers:

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42
43 305 *The difference in PE and classroom setting is vast.... In the classroom, the children are*
44
45 306 *on task, willing to learn, listen to each other and reinforce good things.... the learning*
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47 307 *outcomes are clear and they have a structure to their learning.* (Reflective log,
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49 308 12/10/16).

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3 309 Furthermore, prior to the intervention, the pupils often lacked motivation and engagement
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5 310 in their PE lessons and the learning environment did not encourage differentiation and
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7 311 inclusion:

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10 312 *The teacher struggled with controlling the pupils who were off task, especially the*
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12 313 *boys. When they got to their station they just played with the equipment.....The*
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14 314 *teacher didn't use any of the teaching strategies she had displayed in the classroom.*
15
16 315 *Pupils were given very little guidance.....No differentiation according to ability of*
17
18 316 *pupils. It was very hard for the less able to stay on task, they needed more content*
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20 317 *and clear success criteria they could follow. (Structured lesson observations,*
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22 318 *27/09/17).*

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27 319 In addition to identifying the strengths and needs of the primary generalist teachers,
28
29 320 in both the PE and classroom settings, the needs assessment phase was used by the
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31 321 secondary PE specialist to build positive relationships with the two primary teachers and
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33 322 with the other staff in the school. It was important at this stage for the secondary specialist
34
35 323 to build mutual trust and relational parity (Awaya *et al.*, 2003) with the primary teachers so
36
37 324 that she could act as a friend, colleague and trusted mentor in the intervention phase to
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39 325 follow. This was considered to be an important part of developing a replicable PE-CPD
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41 326 process, which is addressed in the next section and was the overall aim of the study.

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46 327 ***Developing a replicable PE-CPD process for improved and sustainable pedagogic practice***

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49 328 Fundamental to any successful mentoring relationship is mutual trust (Brinson & Kottler
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51 329 1993; Johnson-Bailey & Cervero 2004). With this in mind, the key sub-themes identified in
52
53 330 relation to the role of the secondary specialist in the PE-CPD process included the first

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3 331 objective of *building positive, trusting relationships* and the inductively generated themes of
4
5 332 *resisting the urge to intervene* and *facilitating the primary teachers' learning*.

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8 333 ***Building positive and trusting interactive mentoring relationships:*** For the initial
9
10 334 needs assessment phase of the project, Rebecca had some concerns and anxieties about
11
12 335 first entering the primary school environment: *'Will they be receptive to me, or will they see*
13
14 336 *me as a 'know it all' who wants to make them teach like I do?'* (Reflective log, 27/09/16).
15
16 337 However, these concerns were soon dispelled by the positive reaction of the primary
17
18 338 teachers: *'The teachers are really receptive and engaging and don't seem to mind us*
19
20 339 *(Rebecca and the research assistant) observing them at all'* (Reflective log, 27/09/16). This
21
22 340 reaction and acceptance was a consequence of the building of mutual trust by Rebecca and
23
24 341 her willingness to get involved in classroom activities *'rather than just sitting there and*
25
26 342 *taking notes'* as illustrated in the research assistant's observation:

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32 343 *Rebecca arrived early at school, even before the teachers! She was so eager to help*
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34 344 *them in any way possible she offered to laminate pupils work to put up on the wall*
35
36 345 *display.... this was about building their trust.* (Research assistant field notes,
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38 346 4/10/17).

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42 347 In getting involved in these types of classroom tasks, Rebecca was potentially
43
44 348 exposing her lack of knowledge and experience of primary classroom teaching, consistent
45
46 349 with the advice of Busen and Engebretson (1999) who argue that the trust level must be
47
48 350 such that both mentor and mentee can share their professional and personal shortcomings
49
50 351 as well as their successes. Further, Klasen and Clutterbuck (2002) believe that over-
51
52 352 formalising the mentoring relationship can hinder the formation of rapport, affecting the
53
54 353 degree of trust and openness within it, which, in turn, has an effect on the degree of

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3 354 learning and development that is likely to occur. Rebecca's informality was, therefore, a key
4
5 355 strategy in the development of positive, trusting relationships and an effective learning
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7 356 environment with the primary teachers.
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10 357 Rebecca also considered it vital to build positive relationships with other members of
11
12 358 staff in the primary school, particularly the senior teachers, by for example, deciding to '*pop*
13
14 359 *in and say how well the project is going, to break down any barriers with senior teachers and*
15
16 360 *the head teacher.*' (Reflective log, 04/10/16). This resulted in her acceptance within the
17
18 361 whole school environment, not just with the two teachers that she was mentoring.
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23 362 ***Resisting the initial urge to intervene:*** A difficult and emotional challenge
24
25 363 encountered by Rebecca in her observational role within the PE lessons was to refrain from
26
27 364 'stepping in' and assisting with the delivery of the lessons during the needs assessment
28
29 365 phase:
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32 366 *It would have been second nature to step in and help the pupils today but the teacher*
33
34 367 *would have gained nothing from me leading the session. This was tough, as I knew*
35
36 368 *the pupils could be challenged more.....ultimately, I felt I had let the pupils down.*
37
38 369 (Reflective log, 12/10/16).
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42 370 Despite the difficulty in not intervening, it was an essential strategy at this early stage of the
43
44 371 process and on occasions, it was the research assistant who had to remind Rebecca not to
45
46 372 get too involved in the baseline observation phase, thus demonstrating the importance of
47
48 373 her experience and role in the process:
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3 374 *I reminded Rebecca to step back, even though it was so tempting to intervene. We*
4
5 375 *are still in the needs assessment phase so we can't do anything at this stage...it was*
6
7 376 *clearly frustrating for Rebecca. (Research assistant field notes, 01/11/16).*
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9

10 377 The needs assessment phase and initial relationship building was, therefore, crucial to the
11
12 378 success of the intervention and in facilitating the primary teacher's learning that followed.
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16 379 ***Facilitating the primary teachers' learning:*** During the collaborative intervention,
17
18 380 Rebecca's emphasis was on the use of questioning to facilitate the learning of the primary
19
20 381 teachers, to guide them to their own solutions as opposed to telling or showing them what
21
22 382 to do. She avoided demonstrating or teaching parts of the lessons herself as her whole
23
24 383 approach was one of empowering and collaborating with the primary teachers. Rebecca's
25
26 384 reflective log evidences this approach:
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29
30 385 *Enabling these teachers to come to their own solutions through my questioning is*
31
32 386 *key. It would be all too easy for me suggest the tasks, along with the criteria for*
33
34 387 *success. However, for sustainability of behaviours they need to arrive at them on*
35
36 388 *their own. (Reflective log, 16/02/17).*
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39
40 389 This individualised questioning took place immediately after the PE lessons, as a form of
41
42 390 reflection, and fed into the planning for the next lesson. As the intervention progressed, the
43
44 391 need to question and prompt for responses was reduced due to the improving PE pedagogy
45
46 392 of the primary teachers, and their enhanced ability to reflect on their own teaching and to
47
48 393 identify areas for further development themselves.
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52 394 ***Transferring good practice from the classroom to PE***
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3 395 The needs assessment phase established mutual trust and a good rapport with the primary
4
5 396 teachers and showed appreciation of their positive classroom pedagogy. The next focus for
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7 397 the secondary specialist, and the second objective of the study, was to mentor the primary
8
9 398 generalists to transfer their positive pedagogic practice from the classroom to the PE
10
11 399 environment. Specifically, this entailed the identification of the need for the inductively
12
13 400 generated sub-themes of learning outcomes, planning, differentiation for inclusion and
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15 401 pupil engagement.
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20 402 **Learning outcomes:** In the first multi-skills lesson during teaching block 1, Michelle
21
22 403 asked Rebecca what she should do to introduce the activity, to which Rebecca replied:
23
24 404 *'What would you do in the classroom?'* (Reflective log, 09/11/16). This led to a *'light bulb'*
25
26 405 moment for Michelle who reflected on the question and responded: *'In a classroom I would*
27
28 406 *write out the learning outcomes' could I also do that in PE?'* Rebecca was elated by this as, in
29
30 407 her own words: *'I could see Michelle realised that introducing the learning outcomes in PE*
31
32 408 *would benefit her and the pupils.'* (Reflective log, 09/11/16). The introduction of
33
34 409 personalised learning outcomes enabled the teachers and pupils to reflect on their learning
35
36 410 and achievements during and at the end of each PE lesson, something that they had never
37
38 411 done previously. Rebecca saw this as a key learning moment, as from then on: *'The pupils*
39
40 412 *knew what they needed to do to achieve and what they could do to improve for the next*
41
42 413 *lesson. This is something they had not experienced in PE before.'* (Reflective log, 09/11/16).
43
44
45 414 Following their first explicit use of learning outcomes in PE, both teachers reflected: *'This is*
46
47 415 *brilliant, I can't believe it works in PE!'* (Reflective log, 09/11/16).
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3 416 **Planning:** The need to plan effectively for PE lessons was illustrated initially in the
4
5 417 needs assessment phase, along with the difference in perceptions of the importance of
6
7 418 planning in PE in comparison to other subjects.
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10 419 *I think the Year 3 teachers will now build PE into their weekly planning, this is*
11
12 420 *something that they both admit they have never done before, which is invaluable if*
13
14 421 *PE is to have the same status in school as the other subjects on the National*
15
16 422 *Curriculum. (Reflective log, 15/11/16).*
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20 423 The follow up observations, conducted twelve weeks after the end of the intervention,
21
22 424 indicated a sustained change in the perception of the importance of planning for PE with
23
24 425 both teachers identifying that: *'Planning has been the key to HQPE being delivered and they*
25
26 426 *will both ensure it stays as part of their PPA time.'* (Structured follow up observation and
27
28 427 informal discussion, 15 /7/17). The importance of planning in PE was also communicated to
29
30 428 the other teachers in the school during the dissemination of this project to colleagues, as
31
32 429 identified in the 'unexpected successes' sub-section later in the results.
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37 430 **Differentiaton for inclusion:** Throughout the intervention, Rebecca challenged the
38
39 431 primary teachers to think about how they might plan for differentiation on each of the
40
41 432 stations to promote the inclusion of all pupils:
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45 433 *Differentiation should be a priority for next week because each station has only one*
46
47 434 *level of learning. Small changes could be made at first, for example changes to the*
48
49 435 *ball, or size of the target etc. (Reflective log, 15/11/16).*
50
51

52 436 Pupils were also given the autonomy to *'assess their own learning in each station'*
53
54 437 and *'create their own games using the learning outcomes'* (Reflective log, 06/12/16)
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3 438 therefore allowing for further differentiation of the tasks. This enhanced differentiation was
4
5 439 evident from Kirsty's final interview:
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8 440 *There are different activities going on in PE now, so they're never on one activity for*
9
10 441 *too long.....Because of the differentiation now it's just as accessible for the children*
11
12 442 *that struggle as for the more able and talented children in PE. So they can all take*
13
14 443 *part. And they all enjoy it as well, which is really important. (Interview with Kirsty,*
15
16 444 *28/03/17).*
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20 445 This new focus on differentiation demonstrated an improved pedagogical awareness
21
22 446 of both teachers and their growing confidence to 'step back' on occasions and give more
23
24 447 autonomy to the pupils.
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28 448 **Pupil engagement:** One of the classroom strategies that the primary teachers
29
30 449 decided to adopt for greater variety and engagement in their PE lessons involved the use of
31
32 450 a 'carousel' of four different learning activities. This approach immediately engaged the
33
34 451 pupils to a much higher level than previously:
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36

37 452 *The class were all engaged and willing to learn, they were attentive when listening to*
38
39 453 *the learning outcomes (something they had not done before), they absolutely loved*
40
41 454 *the idea they could try something different at each station 'wow it is like the*
42
43 455 *classroom' one pupil said. (Reflective log, 15/11/16).*
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47 456 The combination of clear success criteria for the pupils within a carousel of learning
48
49 457 activities, similar to what the teachers would do in the classroom setting, proved highly
50
51 458 effective for pupils' engagement in a dance lesson:
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3 459 *The pupils had clear success criteria set out. They had four activities in the carousel*
4
5 460 *including the IPADS to observe different HAKA's from different cultures, a creative*
6
7 461 *area to practice the HAKA (on resource cards), a circuit area to keep fit and an*
8
9 462 *'emotion' area where the pupils had to use different emotions in the dance.*
10
11
12 463 *(Reflective log, 03/01/17).*
13
14

15 464 This greater level of engagement also reduced the behavioural problems that were evident
16
17 465 in the needs assessment phase:
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19

20 466 *Before the project started, it wasn't, you know, awful! But maybe there were*
21
22 467 *behaviour issues in PE. They've got much better because all the children are now fully*
23
24 468 *engaged in PE and in what they're doing. (Interview with Kirsty, 28/03/17).*
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28 469 Applying such classroom strategies to the PE setting, therefore, proved highly
29
30 470 successful in engaging the pupils more effectively and provided much greater clarity and
31
32 471 direction to the teachers in their PE lessons.
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36 472 **Enhanced PE pedagogy**

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39 473 The overall aim of this study was to develop improved and sustainable PE pedagogy. The
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41 474 transfer of positive pedagogy from the classroom to the PE environment, under the
42
43 475 mentorship of the secondary PE specialist, proved to be highly successful in achieving this
44
45 476 and in developing confidence and enthusiasm in the primary teachers' PE practice. An entry
46
47 477 from Rebecca's log illustrated this progress along with the professional satisfaction of the
48
49 478 secondary mentor:
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53 479 *Today's lesson was wonderful, again. I was greeted by an enthusiastic Kirsty, she was*
54
55 480 *so excited to tell me about her planning of the four tasks.....I felt wonderful that I*
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3 481 *had enabled her to have a sense of pride and ownership in her teaching of PE – A*
4
5 482 *great start to the day at 8am! (Reflective log, 06/12/16).*
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7

8 483 The teachers' own perceptions of the overall improvement in their PE pedagogy was clearly
9
10 484 evident from their final interviews:

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13 485 *There is a 'buzz' about PE now. They love it! They love Tuesdays! They love the*
14
15 486 *routine we've got and they know what's expected of them and I feel their behaviour*
16
17 487 *has got a lot better and enjoyment, they get so much more enjoyment from it and*
18
19 488 *they're so much more engaged. (Interview with Michelle, 28/03/17).*
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21
22

23 489 This demonstrates the positive progress that the teachers made in their PE pedagogy and
24
25 490 the overall impact of the PE-CPD process on the pupils' engagement and enjoyment of PE.

26
27 491 Further, the sustainability of this improved PE pedagogy was evident in the follow up
28
29 492 observations conducted twelve weeks after the intervention, along with a further
30
31 493 development in pupils' understanding and application of key concepts and success criteria:

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33
34 494 *Some pupils had a better understanding of what they did to achieve the success*
35
36 495 *criteria.....This is significant progress since my last observation as previously they*
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38 496 *had a limited comprehensive as to how they could relate the skill they had performed*
39
40 497 *to the criteria. (Structured follow up observation, 15 /7/17).*
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44 498 Ultimately, it is was the impact of the teachers' learning on their actions and the broader
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46 499 social impact on the pupils' learning that was considered to be of greatest importance in
47
48 500 the PE-CPD process.

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51 501 **Problems encountered:** Despite the overall improvements in the PE pedagogy of the
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53 502 primary teachers, it is important to note that this was not a simplistic, linear process.
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3 503 Indeed, there were some significant points of regression in pedagogic performance along
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5 504 the way, often linked to the confidence and lack of specific PE content knowledge of the
6
7 505 primary teachers. This was best exemplified during block 3, the striking and fielding
8
9 506 activities. Michelle had played competitive cricket to a good level and had taken on the task
10
11 507 of planning the unit of work for both teachers. Interestingly, her high level of content
12
13 508 knowledge in one area of striking and fielding resulted in a number of difficulties for both
14
15 509 herself and Kirsty. Michelle's problem was that she had set the technical difficulty of the
16
17 510 tasks too high for the pupils. When it was Kirsty's turn to deliver the 'forward drive'
18
19 511 Rebecca's reflective log revealed that:

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23
24 512 *'She neither knew what it was nor had the skills to deliver it in front of the group..... I*
25
26 513 *asked her after the lesson if she was ok, to which she replied "out of my depth", I was*
27
28 514 *so saddened by this as I felt her confidence as a PE practitioner had gone backwards.*
29
30
31 515 (Reflective log, 07/03/17).

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33
34 516 The two primary teachers had different pedagogic strengths and needs in the PE
35
36 517 setting, requiring different mentoring approaches, as evidenced by Rebecca's reflective log
37
38 518 entry on the 23/01/17: *'Kirsty's confidence at delivering dance skills is not as evident as*
39
40 519 *Michelle's. She has alluded to the fact that she lacks the dance content knowledge, however,*
41
42 520 *is working to improve the demonstration aspect.'* This highlights that it is the 'what' as well
43
44 521 as the 'how' that needs to be addressed in primary PE-CPD.

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48 522 These issues and others like them were resolved through ongoing discussions and
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50 523 interactive mentoring with Rebecca, requiring a trusting and open professional relationship,
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52 524 as identified in the introduction and the first section of these results.
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3 525 **Unexpected success:** An unexpected success of the intervention was that the
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5 526 primary teachers took it upon themselves to plan and deliver a whole-school in service
6
7 527 training education and training (INSET) workshop on PE pedagogy because they wanted to
8
9 528 share what they had learned over the duration of the project. Their primary motivation for
10
11 529 this was to enable *'all of the pupils in the school to experience PE the way Year 3 do'*.
12
13 530 (Reflective notes, 16/02/17). The INSET was very well received by the other staff and
14
15 531 delivered in such an inclusive way that it resulted in highly positive reactions and feedback
16
17 532 from the other teachers. According to Michelle's final interview:

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22 533 *They were saying 'Why aren't we doing it like this? Why haven't we done this*
23
24 534 *before?' and 'We're doing carousels in class; why aren't we doing it in the sports*
25
26 535 *hall?' and they were saying that now they'd have to do PE lessons like that, so it*
27
28 536 *was great to hear.....and there was nobody going 'Oh my gosh! This is so different!*
29
30 537 *or 'No way can we do this!' It was all 'we'll try this next week.' It was really positive*
31
32 538 *and achievable. (Interview with Michelle, 28/03/17).*

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36 539 This fits well with Hunzicker's (2011, 177) vision of effective CPD as that which engages
37
38 540 teachers in 'learning activities that are supportive, job embedded, instructionally focused,
39
40 541 collaborative and ongoing.' Furthermore, following the positive response from the whole
41
42 542 school INSET, the participating teachers successfully delivered a conference workshop at the
43
44 543 host University's annual PE conference for primary and secondary teachers, and repeated
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46 544 the school INSET in September 2017 for new staff, thus successfully disseminating the
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48 545 findings and sharing their practice with fellow practitioners and the project funders.
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53 546 **Discussion**
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3 547 The major contribution of this paper is in demonstrating the potential of collaborative
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5 548 professional learning (CPL) between national government organisations, universities,
6
7 549 secondary and primary schools (King & Newman, 2001) to improve the PE-CPD of primary
8
9 550 generalist teachers. Consistent with Oja and Smulyan's (1989) recommendations, the results
10
11 551 revealed the importance of this collaboration in ensuring rigorous, evidence based practice
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13
14 552 and providing the time and support required for fundamental sustainable changes in PE
15
16 553 pedagogic practice, which can endure beyond the life of the research project. Such change
17
18 554 was clearly evident in the primary teachers' improved and sustained PE pedagogy as
19
20 555 evidenced in the findings. Furthermore, this CPL approach with a secondary PE specialist and
21
22 556 university based researchers, aligns with Hunzicker's (2011), vision of effective CPD criteria
23
24 557 as job embedded, supportive, collaborative and ongoing.
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29 558 The findings clearly reveal the crucial mentoring role of the secondary school PE
30
31 559 specialist in the PE-CPD process and the importance of embedding herself into the primary
32
33 560 school to build trust, rapport and effective relationships with the class teachers and senior
34
35 561 staff. This is consistent with Duncombe and Armour's (2004) identification of the processes
36
37 562 required for effective CPL which included mentoring, peer coaching, being a critical friend,
38
39 563 collegiality, sharing of ideas and working collectively on tasks. These skills were evident in
40
41 564 the findings of this study and an important recommendation, therefore, is to carefully
42
43 565 consider the skills, values and interpersonal qualities of the PE specialist to be effective in
44
45 566 the CPL role. This is consistent with Jones, Harris and Miles's (2009) assertion that
46
47 567 mentoring appears to have as much to do with the person mentoring as it has with the role
48
49 568 occupied. Although mentoring has been largely presented in a positive light within
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51 569 education there is also evidence to the contrary, with a mentor's influence on a mentee
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3 570 being potentially very conservative (Beck & Kosnik 2002) or sometimes even harmful
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5 571 (Maguire 2001). Indeed, according to Klasen and Clutterbuck (2002, 118), 'each and every
6
7 572 mentor–mentee pairing is unique'. When this pairing is successful, in addition to enhancing
8
9 573 the educational practice of the mentee, the mentors express both personal and professional
10
11 574 satisfaction for making a significant contribution to the profession (Wright & Smith 2000),
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13 575 which was clearly evident in the results of this study.
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17 576 The use of questioning by the secondary PE mentor to facilitate the primary teachers'
18
19 577 learning , as opposed to simply showing them 'what to do', or 'how to do it' was found to be
20
21 578 crucial to the success of the intervention. As the results reveal, at times, particularly in the
22
23 579 needs assessment phase and the early part of the intervention, it was difficult for Rebecca
24
25 580 not to step in and provide an optimum model for imitation, which Geen (2002) identifies as
26
27 581 the 'Apprenticeship Model' of mentoring. This model, however, pre-supposes that the PE
28
29 582 specialist is infallible and that the mentees should become clones of the mentor,
30
31 583 consequently limiting creative thought (Geen, 2002). Further, Rebecca was relatively
32
33 584 inexperienced in the primary school setting and therefore had to collaborate with the
34
35 585 primary teachers to get the most out of the learning environment for the pupils, thereby
36
37 586 demonstrating relational parity and the sharing of expertise and moral support (Awaya, *et*
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39 587 *al.*, 2003).
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45 588 In addition to considering the skills of the mentor, it is also important to consider the
46
47 589 'mind-set', motivation and reflective abilities of the primary generalists. In this study, both
48
49 590 primary teachers were committed professionals with inclusive educational values and a
50
51 591 strong desire to learn and improve their PE pedagogy. Weekly reflective discussions with
52
53 592 Rebecca, in which she asked critical questions to facilitate their learning, encouraged and
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3 593 further developed their reflective skills. This was a crucial aspect in the success of the PE-
4
5 594 CPD and in its transformational and sustainable impact. Such an approach is compatible with
6
7 595 the 'Reflective Practitioner Model' of mentoring which is founded on self-analysis and
8
9 596 reflection; practices that encourage professionals to question their own actions and reasons
10
11 597 for doing things (Geen, 2002). In practice, however, things are not so straightforward, as
12
13 598 mentees more-than-often want mentors to offer opinions on their teaching and solutions to
14
15 599 their pedagogic problems rather than to ask them questions that encourage self-reflection
16
17 600 on it (Tann 1994).

21
22 601 The needs assessment period undertaken at the start of the project was also key to
23
24 602 its success, enabling the observers (the secondary PE specialist and the research assistant)
25
26 603 to identify the individual primary teachers' pedagogic strengths and needs in both the PE
27
28 604 and classroom settings. Indeed, a key recommendation from this project is that PE
29
30 605 specialists should aim to observe primary teachers in their classroom as well as in the PE
31
32 606 environment to celebrate and transfer primary teachers' good practice from the classroom
33
34 607 to the PE setting. Such an initial appreciation of strengths rather than problems, has a close
35
36 608 connection with an 'appreciative inquiry' approach to interventions (Cooperider, Whitney &
37
38 609 Stavros, 2003). Such an appreciative approach is more likely to gain the 'buy in' of
39
40 610 participants rather than developing initial resistance to 'outsider' practitioners and
41
42 611 researchers by beginning with the problems, and is worthy of further consideration and
43
44 612 application in future research of this nature.

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50 613 Although it is acknowledged that content knowledge is important for the confident
51
52 614 delivery of PE across a range of different activities (Keay & Spence, 2012; Sloan, 2010; Blair
53
54 615 & Capel, 2008), the findings of this study suggest that there should be a strong focus on the

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2
3 616 'how' (PE pedagogy) rather than just the 'what' (PE content) in PE-CPD programmes of this
4
5 617 nature. By focusing on the pedagogic principles of clear learning outcomes, success criteria
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7 618 and differentiation in the primary PE lessons, there was evidence of improved quality in the
8
9 619 delivery of PE. Such principles were evident in the classroom but not initially in PE lessons,
10
11 620 which the teachers saw as an opportunity for 'physical activities' but not for 'physical
12
13 621 learning opportunities' (Keay & Spence, 2012).
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17 622 There was also evidence of sustained improvement in the primary teachers PE
18
19 623 pedagogy in the follow-up observations, and effective dissemination of this through the
20
21 624 delivery of two whole school practical INSETs and a practical workshop at the host
22
23 625 University's annual PE conference by the two primary teachers. This clearly demonstrated
24
25 626 their improved confidence to share their learning and a newly developed advocacy role for
26
27 627 the promotion of PE pedagogy. Both the INSET and the conference workshop were designed
28
29 628 entirely by the primary teachers based on the practical ideas and activities they had
30
31 629 developed with their pupils over the duration of the intervention, thereby demonstrating
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33 630 the sustainability of their learning.
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39 631 One issue of interest and some concern in relation to the delivery of high quality PE
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41 632 in primary schools is the implied lack of status of PE in comparison to other areas of the
42
43 633 curriculum. This was implied in the data which revealed that the primary teachers had not
44
45 634 previously considered the importance of learning outcomes and success criteria in PE
46
47 635 lessons, despite having to do this in the classroom. Their initial level of planning for PE
48
49 636 lessons was also, by their own admission, inferior to their other classroom lessons.
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51 637 Furthermore, consistent with previous research (Hardman, 2010), a number of PE lessons
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53 638 were cancelled over the duration of the study due to other 'more important' school
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3 639 commitments such as school productions or science, technology, engineering and
4
5 640 mathematics (STEM) activities. If the new Welsh curriculum is going to achieve its aim of
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7 641 developing healthy, confident individuals and improve the health and wellbeing of the
8
9 642 nation (Donaldson, 2015), then the status of healthy lifestyle behaviours, particularly at the
10
11 643 primary age (Faulkner & Reeve, 2000), must be significantly raised to the same level of
12
13
14 644 importance as literacy, numeracy and digital competence
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16

17 645 This study has developed a replicable CPD process for improved and sustainable PE
18
19 646 pedagogy with generalist primary teachers in collaboration with a secondary PE specialist
20
21
22 647 and university based researchers. The logical next step in this line of research is to
23
24 648 disseminate the PE-CPD programme to other teachers in the same school to establish
25
26 649 whether it has similar outcomes. Further, this form of personalised CPD should be explored
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28
29 650 in other primary schools to explore it's transferability and generalisability.
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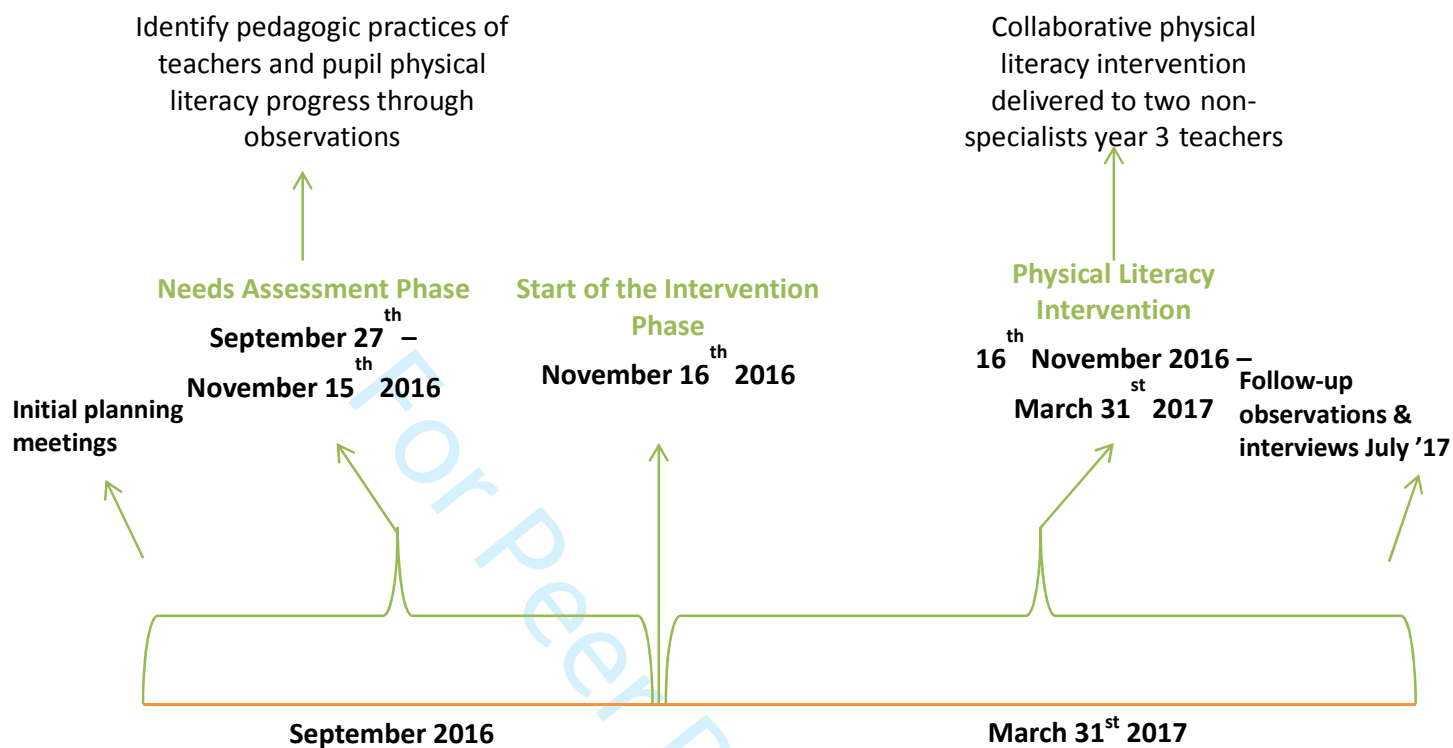


Fig. 1. Research design timeline of the PLPS project (adapted from Edwards, 2017).

Table 1. Primary Physical Education in Wales (NCPE, 2008).

Year Group	Age (years old)	Key Stage	Programmes of Study
Nursery	3-4	Foundation phase	Physical Development and Creative Development
Reception	4-5		
1	5-6	2	Health Fitness and Well-being; Creative; Adventurous and Competitive
2	6-7		
3	7-8		
4	8-9		
5	9-10		
6	10-11		

Table 2. Background information on teachers participating in the study.

Teacher's name	Primary/ Secondary teacher	Teaching experience (years)	PE specialist/ non-specialist	Specialist subject
Michelle	Primary (class 1)	3	Non-specialist	Art/DT
Kirsty	Primary (class 2)	1	Non-specialist	Music/Drama
Rebecca	Secondary	15	Specialist	PE

For Peer Review Only

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Transferring primary generalists' positive classroom pedagogy to the physical education setting: A collaborative PE-CPD process

For Peer Review Only

21 Introduction

22 Research evidence has consistently demonstrated the considerable health benefits of
23 physical activity (Department of Health, 2011; Warburton, Nicol & Bredin, 2006). Developing
24 a disposition towards lifelong physical activity is the main outcome of high quality physical
25 education (PE) provision (Mandigo *et al.* 2009; McLennan & Thompson, 2015) and the
26 primary school age group (aged 5-11 years) is considered a critical period in the
27 development of such healthy lifestyle behaviours (Faulkner & Reeve, 2000). Despite this, it is
28 acknowledged that there is a shortage of Primary PE specialists in Wales (Estyn, 2007),
29 which is problematic as children's experiences at this stage are heavily influenced by the
30 teachers delivering the PE lessons (Humphries & Ashy, 2006; Maude, 2010).

31 Keay and Spence (2012) identified the lack of training and the low levels of
32 confidence and competence of primary generalist teachers to teach PE in the UK. Further,
33 they argued that improving the quality of primary PE is dependent upon the professional
34 development of the teachers to improve their knowledge, experience, confidence,
35 enthusiasm and pedagogical skills in the PE environment. Consistent with this, Sloan (2010)
36 identified that the limited content knowledge of primary generalist teachers in PE impairs
37 their ability to plan lessons effectively, with many omitting to plan PE lessons altogether.
38 This is not surprising given that 40 percent of primary school teachers in the UK were found
39 to receive less than six hours of PE training during their Initial Teacher Education and
40 Training (ITET), resulting in a lack of skills, knowledge and confidence to effectively deliver
41 high quality PE lessons (Blair & Capel, 2008). Moreover, research has identified that the
42 'core' subjects (mathematics, English, Welsh and science) take priority over all other
43 subjects in primary schools, limiting teachers' preparation time to plan for PE (Sloan, 2010;
44 Rainer *et al.*, 2012) which can often lead to teachers providing pupils with 'physical

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3 45 opportunities rather than focusing on physical education learning opportunities' (Keay &
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5 46 Spence, 2012, 179-180). It is also known that PE lessons are cancelled more frequently than
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7 47 any other subject on the primary school curriculum (Hardman, 2010). Moreover, those
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9 48 primary teachers who are less confident in their teaching of PE are less likely to deliver high
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12 49 quality PE lessons (Taplin, 2013).
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15 50 Previous research has suggested that one method to address some of these issues is
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17 51 for PE specialists and researchers to work collaboratively with primary school teachers to
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19 52 enhance the quality of the learning environment they create (Morgan, Bryant & Diffey,
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21 53 2013). Indeed, physical education continuing professional development (PE-CPD) can play a
22
23 54 considerable role in upskilling primary school teachers' in areas such as inclusion and
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25 55 differentiation, and improving their confidence and insecurities with assessment (Harris,
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27 56 Cale & Musson, 2012). However, many PE-CPD programmes for primary teachers have a
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29 57 tendency to be brief, one-day workshops that occur off the school site (Jess, McEvilly &
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31 58 Carse, 2016). According to Hunzicker (2011, 177), these 'one shot', 'sit and get' CPD
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33 59 workshops lack effectiveness and impact, as much of the information is not likely to be
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35 60 remembered and even less is likely to be applied when teachers return to their daily
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37 61 routine. Hunzicker (2011, 177), suggests that effective CPD should engage teachers in
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39 62 'learning activities that are supportive, job embedded, instructionally focused, collaborative
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41 63 and ongoing.' Consistent with this, Duncombe, Cale and Harris (2016) identified primary
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43 64 school teachers' low confidence and knowledge of teaching PE and proposed informal
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45 65 collaborative professional development and communities of learning to address these
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47 66 issues. Further, Armour et al. (2015) argued that effective CPD in PE is that which focuses on
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3 67 the 'growth' of the teachers and nurtures them as learners, so that they in turn are able to
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5 68 nurture the growth of their pupils.
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8 69 According to Duncombe and Armour (2004), collaborative professional learning (CPL)
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10 70 involves a teacher working with or talking to another teacher to improve their own learning
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12 71 or others' understanding of any pedagogical issue. Further, this collaboration can include
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14 72 members of the profession from other schools and institutions to enhance the impact on
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16 73 teacher learning (King & Newman, 2001). In 2004, Duncombe and Armour proposed CPL
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18 74 within a community of practice as a way forward for improving primary generalist's teaching
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20 75 of PE. To date however, there is still a dearth of research that has adopted this approach.
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22 76 Collaborative professional learning encompasses a wide range of processes including
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24 77 mentoring, peer coaching, critical friends, collegiality, sharing of ideas and working
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26 78 collectively on tasks (Duncombe & Armour, 2004).
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32 79 Mentoring is a key process of CPL and one that has long been recognised in
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34 80 education as a means of improving practice (Jones, Harris & Miles, 2009). Awaya, *et al.*
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36 81 (2003) describe interactive mentoring as the building of an equal relationship characterised
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38 82 by the sharing of expertise and moral support. This type of mentoring seeks a relational
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40 83 parity with the mentee (Awaya *et al.*, 2003), characterised by open conversation on issues
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42 84 of mutual concern with the mentor acting as a friend, colleague and trusted advisor. Mead,
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44 85 Campbell and Milan (1999) recognise this sort of association as co-operative and see it as
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46 86 most appropriate for the more experienced practitioner.
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51 87 The aim of this study was to develop a replicable PE-CPD process for improved and
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53 88 sustainable pedagogic practice for primary generalist teachers. In order to achieve this the
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55 89 specific objectives were to:
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3 90 • Build positive, trusting relationships with primary PE generalist teachers to develop
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5 91 collaborative professional learning
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7 92 • Enable the primary generalist teachers to transfer their positive pedagogic practice
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10 93 from the classroom to the PE setting to enhance their PE pedagogy
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12 94 **Method**
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15 95 ***Collaborative professional learning***
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18 96 This study involved a secondary specialist PE teacher mentoring two primary generalist
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20 97 teachers to improve their PE pedagogy. In addition to the collaboration between the
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22 98 secondary PE specialist and the two primary teachers, there was another layer of
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24 99 collaboration in this project, with the University research team who were 'expert advisors'
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26
27 100 in the area of PE pedagogy. The group of three university based 'advisors', including the
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29 101 school-based researcher, met the secondary PE specialist on a weekly basis to ensure rigour
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31 102 and robustness and to feed further pedagogical information into the collaborative process.
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34 103 This is consistent with Nicholls' (1997) definition of collaborative partnerships where
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36 104 institutions agree to work together on a joint project. According to Lieberman and Miller
37
38 105 (1999), this arrangement can be described as a 'growth in practice' model of professional
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40 106 development where teachers learn together. It is a social constructivist process, where
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42 107 individuals learn from their experiences and from the interaction with more knowledgeable
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44 108 others (Vygotski, 1978), within a community of practice (Lave & Wenger, 1991). This
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46 109 approach is also consistent with the recommendations of the Furlong report (2015) in
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48 110 Wales, which recommended a closer working relationship between Higher Education
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50 111 Institutions (HEIs) and schools.
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56 112 ***Context and participants***
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3 113 The context for this Sport Wales funded project was the existing Welsh National
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5 114 Curriculum for PE (NCPE). This recommends all pupils aged 5 – 16 to spend at least two
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7 115 hours a week of timetabled engagement in PE lessons (NCPE, 2008). Though the curriculum
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9 116 structure in Wales is set to change as a consequence of the Donaldson (2015) review, the
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11 117 existing primary PE curriculum in Wales at the time of this study is outlined in Table 1. which
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13 118 highlights aspects of the foundation phase curriculum (3 – 7 year olds) that relate to PE,
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15 119 namely, physical and creative development, as well as the programme of study within the
16
17 120 NCPE for Key Stage 2 (7 – 11 year olds). This curriculum allows the primary teachers the
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19 121 flexibility to select activities under each programme of study tailored to the pupils' needs
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21 122 and acts as a framework for teachers to plan their PE lessons within.
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27 123 Insert Table 1 here
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30 124 The participants were two Year 3 (aged 7 - 8 years) primary generalist teachers from the
31
32 125 same school and one secondary PE specialist teacher. Both primary generalist teachers did a
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34 126 three year Bachelor of Education (BEd.) Initial Teacher Education and Training (ITET) course,
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36 127 during which they had four 'face-to-face' hours of PE each year. One of the teachers,
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38 128 Michelle (all names are psuedonyms, see Table 2) led the extra-curricular dance club at the
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40 129 school once a week and was a keen cricketer and ex-competitive swimmer, whilst the other,
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42 130 Kirsty, had no competitive sporting background.
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47 131 The secondary teacher, Rebecca, was Head of PE at the local secondary school. As
48
49 132 part of the funded project, Rebecca was seconded two days a week to work in the primary
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51 133 school for one day and to use the other day to collaborate with the research team at the
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53 134 University. She had not previously met Kirsty, Michelle or their pupils. The following profiles
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55 135 in Table 2 provide some background information about the participating teachers.
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3 136 Insert Table 2 here
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5 137 The research assistant from the University was based at the school one day a week
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7 138 with the secondary specialist and was involved in advising the secondary PE specialist on
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10 139 how to collect the data and facilitate the PE-CPD process with the primary teachers. The
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12 140 research assistant was experienced in these methods and procedures as a direct
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14 141 consequence of her own PhD through conducting research in a similar school context
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16 142 (Edwards, 2017). This previous knowledge and experience of the research assistant was an
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18 143 important contributing factor to the rigour and robustness of the project. Additionally, the
19
20 144 secondary specialist and research assistant met with the other two experienced members of
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22 145 the University research team on a weekly basis, as identified in the earlier CPL section, to
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24 146 futher ensure the rigour and robustness of the study.
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29 147 The school had good facilities, including a full size (four badminton courts) sports
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31 148 hall. They also had a large school canteen that they used for gymnastics and a very large
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33 149 playground with a good range of sports equipment. At the time of this study, all teachers
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35 150 taught PE to their own class for one hour a week indoors. They also had a thirty minute
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37 151 timetabled outdoor PE lesson (weather depending). There were no outside providers
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39 152 delivering PE in the school. The school valued the teachers delivering their own PE lessons
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41 153 so that they could develop professionally, as they did in any other subject. At the beginning
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43 154 of the study, the primary teachers had no structured schemes of work for PE; they taught
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45 155 what they wanted according to their areas of interests and/or knowledge. Further, they had
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47 156 no structured planning time for PE during their designated planning, performance and
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49 157 assessment time (PPA).
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55 158 ***Research design and ethics***
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3 159 The research design and overall timeline of the project was adapted from a
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5 160 previously validated design as part of a PhD study (Edwards, 2017) and is illustrated in Fig 1.
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7 161 This involved initial planning meetings between the University research team and the
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9 162 secondary PE specialist to decide on the aims and objectives of the study and the research
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11 163 design. Meetings between the secondary specialist, the research assistant and the primary
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13 164 school PE coordinator and Headteacher then ensued to discuss the study and decide upon
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15 165 the most appropriate age group and classroom teachers to work with during the
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17 166 intervention. Initially, the research team had intended to work with Year 6 (aged 10 - 11
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19 167 years) teachers, but following these discussions it was agreed to conduct the study with
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21 168 Year 3 classes (aged 7 – 8 years) instead, in order to impact on physical activity behaviours
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23 169 earlier and to allow more opportunity for the prospect of longitudinal research in future
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25 170 years. Following the initial meetings, a ‘needs assessment’ observation phase took place,
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27 171 followed by an intervention phase which are both described in more detail in the following
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29 172 sections. The ethics committee of the participating University approved all procedure in the
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31 173 study.
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41 175 ***Needs assessment phase:*** Observations were conducted over a period of six weeks
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43 176 from September 27th to November 15th 2016. The primary focus of the observations was to
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45 177 gather baseline data about the primary teachers’ pedagogic practice in both their PE and
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47 178 classroom lessons to provide information about the situation that was being investigated
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49 179 prior to the intervention. The reason for the classroom observations in addition to the PE
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51 180 lessons was to identify pedagogic strengths in the classroom environment that could
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53 181 potentially be transferred to the PE setting. The rationale for utilizing this method of
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3 182 observation in both PE and the classroom was based on an identified gap in the previous
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5 183 research around transferring effective classroom pedagogy to the PE setting. Further, this
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7 184 method had recently been successfully applied in a PhD study (Edwards, 2017). Informal
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9 185 discussions with the teachers were also used in this 'needs assessment' phase to ascertain
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12 186 their pedagogical strengths and areas for development.

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15 187 ***PE-CPD Intervention:*** This was conducted one day a week (both Year 3 PE classes
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17 188 were scheduled on the same day each week) over three separate half-term teaching blocks
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19 189 of 6 - 7 weeks each. A different PE content area was taught for each half term block and
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21
22 190 included multi-skills, dance, and striking and fielding. The specific focus of the intervention
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24 191 was led primarily by the 'needs assessment' phase and by the ongoing collaborative
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26 192 discussions with the primary teachers about the practical issues they were encountering in
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28 193 their practice (O'Sullivan, 2002). The initial focus was on transferring their positive pedagogy
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31 194 from the classroom to the PE setting. This was an important aspect of the intervention
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33 195 emphasising a strengths based, appreciative focus (Cooperider, Whitney & Stavros, 2003).
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35 196 The aim of this appreciative approach was to help the primary generalist teachers to realise
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37 197 that what they were doing well pedagogically in the classroom could also be effective in the
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39 198 PE setting, thereby developing their confidence in the PE environment. In doing this, the
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42 199 secondary specialist helped them to plan effectively for their PE lessons to include
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44 200 pedagogical principles such as setting clear learning outcomes, multi-activity tasks,
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46 201 collaborative grouping and planning for differentiation and inclusion. These principles were
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48 202 introduced when needed over the duration of the intervention phase. All lessons were
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50 203 taught by the primary generalist teachers and observed by the secondary specialist who
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53 204 acted in the role of 'mentor' throughout the intervention phase.

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3 205 Finally, follow up structured observations were conducted to evaluate the
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5 206 sustainability of the changes in the primary teachers' pedagogic practice in PE in the
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7 207 summer term following the intervention, twelve weeks after the end of the intervention
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13 209 ***Data collection methods***

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16 210 ***Observations of the role of the secondary PE specialist:*** The role of the secondary PE
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18 211 specialist within the whole of the primary school setting was crucial to the success of the
19
20 212 project; not only in 'what' she did to mentor and develop the learning of the two primary
21
22 213 teachers, but 'how' she approached and facilitated the whole CPL process within the
23
24 214 primary school context. This aspect of the intervention was captured by the research
25
26 215 assistant as observations in her weekly unstructured 'field notes' and was considered vital
27
28 216 to future replication of the process with other classes, or in other schools. The observations
29
30 217 focused on the secondary specialist's interactions both inside and outside of the PE lessons,
31
32 218 not only with the two primary participants but with other teachers, pupils and senior
33
34 219 management within the school. The observations were participatory as the research
35
36 220 assistant observed events from inside the group and freely interacted with all group
37
38 221 members e.g. secondary PE specialist, primary teachers, pupils and other teachers.

39
40
41 222 ***Reflective logs:*** The reflective log (RL) was carried out after each lesson by the
42
43 223 secondary PE specialist and after school on a weekly basis during both the needs analysis
44
45 224 and intervention phases. The focus of the RL was to capture her thoughts and feelings as a
46
47 225 way of reflecting on what went well and overcoming barriers with working in a complex
48
49 226 school environment. This was a free writing exercise of approximately one side of A4 per
50
51 227 week.

1
2
3 228 **Structured lesson observations:** The observations focused on the content of the
4
5 229 curriculum, teaching resources, rapport and relationships between teachers and pupils, and
6
7 230 pupils' engagement and behaviour. A mixture of both PE and classroom lessons were
8
9 231 observed during the needs assessment phase and only PE during the intervention. This was
10
11 232 done on a weekly basis by the research assistant and the secondary specialist, with
12
13 233 classroom lessons in the morning and PE in the afternoon.

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16
17 234 **Teacher interviews:** To explore the development of the primary teachers' PE
18
19 235 pedagogy, informal reflective discussions were conducted on a weekly basis by the
20
21 236 secondary specialist. The focus of these discussions was based on the lesson observations of
22
23 237 the weekly PE lessons. Further, an individual semi-structured interview was conducted with
24
25 238 both primary teachers by the research assistant at the end of the intervention to explore
26
27 239 their learning over the duration of the intervention phase and their perceptions of the
28
29 240 impact of this learning on their PE pedagogy.
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34 241 **Follow-up observation:** To evaluate the sustainability of the changes in the primary
35
36 242 teachers' pedagogic practice in PE, two follow up structured observations and informal
37
38 243 interviews were conducted by the secondary specialist with the both primary teachers in
39
40 244 the summer term following the intervention, during their teaching of athletics, twelve
41
42 245 weeks after the end of the intervention phase.
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45

46 246 **Data analysis**

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48
49 247 Qualitative data was transcribed and a combination of inductive and deductive content
50
51 248 analysis was performed on all sources of data (Patton, 2002). One member of the University
52
53 249 research team, experienced in qualitative analysis procedures, took main responsibility for
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1
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3 250 the in-depth analysis of the data, whilst the other members of the research team acted as
4
5 251 co-analysts for validation purposes. Categories were grouped under higher order themes
6
7 252 and organised into sub-themes. The final stage consisted of splitting the themes into core
8
9 253 categories consistent with the aim and objectives of the study (Elo & Kyngas, 2007).
10
11
12 254 Trustworthiness and triangulation was achieved through combining observations with the
13
14 255 other methodological approaches; reflective logs and interviews to facilitate the validation
15
16 256 of data (Thurmond, 2001). Consensus of analysis and interpretation of the data was reached
17
18
19 257 by all members of the University research team.

22 258 **Results**

23
24
25 259 The results begin with the findings of the needs assessment phase which was used to
26
27 260 identify the specific objectives of the intervention.

30 261 ***Needs assessment phase***

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33 262 During the needs assessment phase, the quality of the PE lessons left a lot to be
34
35 263 desired, *'they received a poor gymnastics lesson with no challenge and the learning was*
36
37 264 *disrupted by poor behaviour and pupils being 'off task'*. (Reflective log, 12/10/16). This
38
39
40 265 contrasted sharply with the quality of classroom teaching by both primary teachers:

41
42
43 266 *The difference in PE and classroom setting is vast.... In the classroom, the children are*
44
45 267 *on task, willing to learn, listen to each other and reinforce good things.... the learning*
46
47 268 *outcomes are clear and they have a structure to their learning.* (Reflective log,
48
49
50 269 12/10/16).

1
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3 270 Furthermore, prior to the intervention, the pupils often lacked motivation and engagement
4
5 271 in their PE lessons and the learning environment did not encourage differentiation and
6
7 272 inclusion:

8
9
10 273 *The teacher struggled with controlling the pupils who were off task, especially the*
11
12 274 *boys. When they got to their station they just played with the equipment.....The*
13
14 275 *teacher didn't use any of the teaching strategies she had displayed in the classroom.*
15
16 276 *Pupils were given very little guidance.....No differentiation according to ability of*
17
18 277 *pupils. It was very hard for the less able to stay on task, they needed more content*
19
20 278 *and clear success criteria they could follow. (Structured lesson observations,*
21
22 279 *27/09/17).*

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26
27 280 In addition to identifying the strengths and needs of the primary generalist teachers,
28
29 281 in both the PE and classroom settings, the needs assessment phase was used by the
30
31 282 secondary PE specialist to build positive relationships with the two primary teachers and
32
33 283 with the other staff in the school. It was important at this stage for the secondary specialist
34
35 284 to build mutual trust and relational parity (Awaya *et al.*, 2003) with the primary teachers so
36
37 285 that she could act as a friend, colleague and trusted mentor in the intervention phase to
38
39 286 follow. This was considered to be an important part of developing a replicable PE-CPD
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41 287 process, which is addressed in the next section and was the overall aim of the study.

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46 288 ***Developing a replicable PE-CPD process for improved and sustainable pedagogic practice***

47
48
49 289 Fundamental to any successful mentoring relationship is mutual trust (Brinson & Kottler
50
51 290 1993; Johnson-Bailey & Cervero 2004). With this in mind, the key sub-themes identified in
52
53 291 relation to the role of the secondary specialist in the PE-CPD process included the first

1
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3 292 objective of *building positive, trusting relationships* and the inductively generated themes of
4
5 293 *resisting the urge to intervene* and *facilitating the primary teachers' learning*.

6
7
8 294 ***Building positive and trusting interactive mentoring relationships:*** For the initial
9
10 295 needs assessment phase of the project, Rebecca had some concerns and anxieties about
11
12 296 first entering the primary school environment: *'Will they be receptive to me, or will they see*
13
14 297 *me as a 'know it all' who wants to make them teach like I do?'* (Reflective log, 27/09/16).
15
16 298 However, these concerns were soon dispelled by the positive reaction of the primary
17
18 299 teachers: *'The teachers are really receptive and engaging and don't seem to mind us*
20
21 300 *(Rebecca and the research assistant) observing them at all'* (Reflective log, 27/09/16). This
22
23 301 reaction and acceptance was a consequence of the building of mutual trust by Rebecca and
24
25 302 her willingness to get involved in classroom activities *'rather than just sitting there and*
26
27 303 *taking notes'* as illustrated in the research assistant's observation:

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30
31
32 304 *Rebecca arrived early at school, even before the teachers! She was so eager to help*
33
34 305 *them in any way possible she offered to laminate pupils work to put up on the wall*
35
36 306 *display.... this was about building their trust.* (Research assistant field notes,
37
38 307 4/10/17).

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41
42 308 In getting involved in these types of classroom tasks, Rebecca was potentially
43
44 309 exposing her lack of knowledge and experience of primary classroom teaching, consistent
45
46 310 with the advice of Busen and Engebretson (1999) who argue that the trust level must be
47
48 311 such that both mentor and mentee can share their professional and personal shortcomings
49
50 312 as well as their successes. Further, Klasen and Clutterbuck (2002) believe that over-
51
52 313 formalising the mentoring relationship can hinder the formation of rapport, affecting the
53
54 314 degree of trust and openness within it, which, in turn, has an effect on the degree of

1
2
3 315 learning and development that is likely to occur. Rebecca's informality was, therefore, a key
4
5 316 strategy in the development of positive, trusting relationships and an effective learning
6
7 317 environment with the primary teachers.
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10 318 Rebecca also considered it vital to build positive relationships with other members of
11
12 319 staff in the primary school, particularly the senior teachers, by for example, deciding to '*pop*
13
14 320 *in and say how well the project is going, to break down any barriers with senior teachers and*
15
16 321 *the head teacher.*' (Reflective log, 04/10/16). This resulted in her acceptance within the
17
18 322 whole school environment, not just with the two teachers that she was mentoring.
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22

23 323 ***Resisting the initial urge to intervene:*** A difficult and emotional challenge
24
25 324 encountered by Rebecca in her observational role within the PE lessons was to refrain from
26
27 325 'stepping in' and assisting with the delivery of the lessons during the needs assessment
28
29 326 phase:
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31

32 327 *It would have been second nature to step in and help the pupils today but the teacher*
33
34 328 *would have gained nothing from me leading the session. This was tough, as I knew*
35
36 329 *the pupils could be challenged more.....ultimately, I felt I had let the pupils down.*
37
38 330 (Reflective log, 12/10/16).
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41

42 331 Despite the difficulty in not intervening, it was an essential strategy at this early stage of the
43
44 332 process and on occasions, it was the research assistant who had to remind Rebecca not to
45
46 333 get too involved in the baseline observation phase, thus demonstrating the importance of
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48 334 her experience and role in the process:
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3 335 *I reminded Rebecca to step back, even though it was so tempting to intervene. We*
4
5 336 *are still in the needs assessment phase so we can't do anything at this stage...it was*
6
7 337 *clearly frustrating for Rebecca. (Research assistant field notes, 01/11/16).*
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9

10 338 The needs assessment phase and initial relationship building was, therefore, crucial to the
11
12 339 success of the intervention and in facilitating the primary teacher's learning that followed.
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16 340 ***Facilitating the primary teachers' learning:*** During the collaborative intervention,
17
18 341 Rebecca's emphasis was on the use of questioning to facilitate the learning of the primary
19
20 342 teachers, to guide them to their own solutions as opposed to telling or showing them what
21
22 343 to do. She avoided demonstrating or teaching parts of the lessons herself as her whole
23
24 344 approach was one of empowering and collaborating with the primary teachers. Rebecca's
25
26 345 reflective log evidences this approach:
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29

30 346 *Enabling these teachers to come to their own solutions through my questioning is*
31
32 347 *key. It would be all too easy for me suggest the tasks, along with the criteria for*
33
34 348 *success. However, for sustainability of behaviours they need to arrive at them on*
35
36 349 *their own. (Reflective log, 16/02/17).*
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40 350 This individualised questioning took place immediately after the PE lessons, as a form of
41
42 351 reflection, and fed into the planning for the next lesson. As the intervention progressed, the
43
44 352 need to question and prompt for responses was reduced due to the improving PE pedagogy
45
46 353 of the primary teachers, and their enhanced ability to reflect on their own teaching and to
47
48 354 identify areas for further development themselves.
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52 355 ***Transferring good practice from the classroom to PE***
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3 356 The needs assessment phase established mutual trust and a good rapport with the primary
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5 357 teachers and showed appreciation of their positive classroom pedagogy. The next focus for
6
7 358 the secondary specialist, and the second objective of the study, was to mentor the primary
8
9 359 generalists to transfer their positive pedagogic practice from the classroom to the PE
10
11 360 environment. Specifically, this entailed the identification of the need for the inductively
12
13 361 generated sub-themes of learning outcomes, planning, differentiation for inclusion and
14
15 362 pupil engagement.
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19
20 363 **Learning outcomes:** In the first multi-skills lesson during teaching block 1, Michelle
21
22 364 asked Rebecca what she should do to introduce the activity, to which Rebecca replied:
23
24 365 *'What would you do in the classroom?'* (Reflective log, 09/11/16). This led to a *'light bulb'*
25
26 366 moment for Michelle who reflected on the question and responded: *'In a classroom I would*
27
28 367 *write out the learning outcomes' could I also do that in PE?'* Rebecca was elated by this as, in
29
30 368 her own words: *'I could see Michelle realised that introducing the learning outcomes in PE*
31
32 369 *would benefit her and the pupils.'* (Reflective log, 09/11/16). The introduction of
33
34 370 personalised learning outcomes enabled the teachers and pupils to reflect on their learning
35
36 371 and achievements during and at the end of each PE lesson, something that they had never
37
38 372 done previously. Rebecca saw this as a key learning moment, as from then on: *'The pupils*
39
40 373 *knew what they needed to do to achieve and what they could do to improve for the next*
41
42 374 *lesson. This is something they had not experienced in PE before.'* (Reflective log, 09/11/16).
43
44
45 375 Following their first explicit use of learning outcomes in PE, both teachers reflected: *'This is*
46
47 376 *brilliant, I can't believe it works in PE!'* (Reflective log, 09/11/16).
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3 377 **Planning:** The need to plan effectively for PE lessons was illustrated initially in the
4
5 378 needs assessment phase, along with the difference in perceptions of the importance of
6
7 379 planning in PE in comparison to other subjects.
8
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10 380 *I think the Year 3 teachers will now build PE into their weekly planning, this is*
11
12 381 *something that they both admit they have never done before, which is invaluable if*
13
14 382 *PE is to have the same status in school as the other subjects on the National*
15
16 383 *Curriculum. (Reflective log, 15/11/16).*
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18
19

20 384 The follow up observations, conducted twelve weeks after the end of the intervention,
21
22 385 indicated a sustained change in the perception of the importance of planning for PE with
23
24 386 both teachers identifying that: *'Planning has been the key to HQPE being delivered and they*
25
26 387 *will both ensure it stays as part of their PPA time.'* (Structured follow up observation and
27
28 388 informal discussion, 15 /7/17). The importance of planning in PE was also communicated to
29
30 389 the other teachers in the school during the dissemination of this project to colleagues, as
31
32 390 identified in the 'unexpected successes' sub-section later in the results.
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37 391 **Differentiaton for inclusion:** Throughout the intervention, Rebecca challenged the
38
39 392 primary teachers to think about how they might plan for differentiation on each of the
40
41 393 stations to promote the inclusion of all pupils:
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44

45 394 *Differentiation should be a priority for next week because each station has only one*
46
47 395 *level of learning. Small changes could be made at first, for example changes to the*
48
49 396 *ball, or size of the target etc. (Reflective log, 15/11/16).*
50
51

52 397 Pupils were also given the autonomy to *'assess their own learning in each station'*
53
54 398 and *'create their own games using the learning outcomes'* (Reflective log, 06/12/16)
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2
3 399 therefore allowing for further differentiation of the tasks. This enhanced differentiation was
4
5 400 evident from Kirsty's final interview:

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7
8 401 *There are different activities going on in PE now, so they're never on one activity for*
9
10 402 *too long.....Because of the differentiation now it's just as accessible for the children*
11
12 403 *that struggle as for the more able and talented children in PE. So they can all take*
13
14 404 *part. And they all enjoy it as well, which is really important. (Interview with Kirsty,*
15
16
17 405 *28/03/17).*

18
19
20 406 This new focus on differentiation demonstrated an improved pedagogical awareness
21
22 407 of both teachers and their growing confidence to 'step back' on occasions and give more
23
24 408 autonomy to the pupils.

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28 409 **Pupil engagement:** One of the classroom strategies that the primary teachers
29
30 410 decided to adopt for greater variety and engagement in their PE lessons involved the use of
31
32 411 a 'carousel' of four different learning activities. This approach immediately engaged the
33
34 412 pupils to a much higher level than previously:

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36
37 413 *The class were all engaged and willing to learn, they were attentive when listening to*
38
39 414 *the learning outcomes (something they had not done before), they absolutely loved*
40
41 415 *the idea they could try something different at each station 'wow it is like the*
42
43 416 *classroom' one pupil said. (Reflective log, 15/11/16).*

44
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46
47 417 The combination of clear success criteria for the pupils within a carousel of learning
48
49 418 activities, similar to what the teachers would do in the classroom setting, proved highly
50
51 419 effective for pupils' engagement in a dance lesson:

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2
3 420 *The pupils had clear success criteria set out. They had four activities in the carousel*
4
5 421 *including the IPADS to observe different HAKA's from different cultures, a creative*
6
7 422 *area to practice the HAKA (on resource cards), a circuit area to keep fit and an*
8
9 423 *'emotion' area where the pupils had to use different emotions in the dance.*
10
11
12 424 *(Reflective log, 03/01/17).*
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14

15 425 This greater level of engagement also reduced the behavioural problems that were evident
16
17 426 in the needs assessment phase:
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19

20 427 *Before the project started, it wasn't, you know, awful! But maybe there were*
21
22 428 *behaviour issues in PE. They've got much better because all the children are now fully*
23
24 429 *engaged in PE and in what they're doing. (Interview with Kirsty, 28/03/17).*
25
26
27

28 430 Applying such classroom strategies to the PE setting, therefore, proved highly
29
30 431 successful in engaging the pupils more effectively and provided much greater clarity and
31
32 432 direction to the teachers in their PE lessons.
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35 433 **Enhanced PE pedagogy**

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39 434 The overall aim of this study was to develop improved and sustainable PE pedagogy. The
40
41 435 transfer of positive pedagogy from the classroom to the PE environment, under the
42
43 436 mentorship of the secondary PE specialist, proved to be highly successful in achieving this
44
45 437 and in developing confidence and enthusiasm in the primary teachers' PE practice. An entry
46
47 438 from Rebecca's log illustrated this progress along with the professional satisfaction of the
48
49 439 secondary mentor:
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52

53 440 *Today's lesson was wonderful, again. I was greeted by an enthusiastic Kirsty, she was*
54
55 441 *so excited to tell me about her planning of the four tasks.....I felt wonderful that I*
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2
3 442 *had enabled her to have a sense of pride and ownership in her teaching of PE – A*
4
5 443 *great start to the day at 8am! (Reflective log, 06/12/16).*
6
7

8 444 The teachers' own perceptions of the overall improvement in their PE pedagogy was clearly
9
10 445 evident from their final interviews:
11
12

13 446 *There is a 'buzz' about PE now. They love it! They love Tuesdays! They love the*
14
15 447 *routine we've got and they know what's expected of them and I feel their behaviour*
16
17 448 *has got a lot better and enjoyment, they get so much more enjoyment from it and*
18
19 449 *they're so much more engaged. (Interview with Michelle, 28/03/17).*
20
21
22

23 450 This demonstrates the positive progress that the teachers made in their PE pedagogy and
24
25 451 the overall impact of the PE-CPD process on the pupils' engagement and enjoyment of PE.
26
27 452 Further, the sustainability of this improved PE pedagogy was evident in the follow up
28
29 453 observations conducted twelve weeks after the intervention, along with a further
30
31 454 development in pupils' understanding and application of key concepts and success criteria:
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33

34 455 *Some pupils had a better understanding of what they did to achieve the success*
35
36 456 *criteria.....This is significant progress since my last observation as previously they*
37
38 457 *had a limited comprehensive as to how they could relate the skill they had performed*
39
40 458 *to the criteria. (Structured follow up observation, 15 /7/17).*
41
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44 459 Ultimately, it is was the impact of the teachers' learning on their actions and the broader
45
46 460 social impact on the pupils' learning that was considered to be of greatest importance in
47
48 461 the PE-CPD process.
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52 462 **Problems encountered:** Despite the overall improvements in the PE pedagogy of the
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54 463 primary teachers, it is important to note that this was not a simplistic, linear process.
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3 464 Indeed, there were some significant points of regression in pedagogic performance along
4
5 465 the way, often linked to the confidence and lack of specific PE content knowledge of the
6
7 466 primary teachers. This was best exemplified during block 3, the striking and fielding
8
9 467 activities. Michelle had played competitive cricket to a good level and had taken on the task
10
11 468 of planning the unit of work for both teachers. Interestingly, her high level of content
12
13 469 knowledge in one area of striking and fielding resulted in a number of difficulties for both
14
15 470 herself and Kirsty. Michelle's problem was that she had set the technical difficulty of the
16
17 471 tasks too high for the pupils. When it was Kirsty's turn to deliver the 'forward drive'
18
19 472 Rebecca's reflective log revealed that:

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23
24 473 *'She neither knew what it was nor had the skills to deliver it in front of the group..... I*
25
26 474 *asked her after the lesson if she was ok, to which she replied "out of my depth", I was*
27
28 475 *so saddened by this as I felt her confidence as a PE practitioner had gone backwards.*
29
30
31 476 (Reflective log, 07/03/17).

32
33
34 477 The two primary teachers had different pedagogic strengths and needs in the PE
35
36 478 setting, requiring different mentoring approaches, as evidenced by Rebecca's reflective log
37
38 479 entry on the 23/01/17: *'Kirsty's confidence at delivering dance skills is not as evident as*
39
40 480 *Michelle's. She has alluded to the fact that she lacks the dance content knowledge, however,*
41
42 481 *is working to improve the demonstration aspect.'* This highlights that it is the 'what' as well
43
44 482 as the 'how' that needs to be addressed in primary PE-CPD.

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49 483 These issues and others like them were resolved through ongoing discussions and
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51 484 interactive mentoring with Rebecca, requiring a trusting and open professional relationship,
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53 485 as identified in the introduction and the first section of these results.

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3 486 **Unexpected success:** An unexpected success of the intervention was that the
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5 487 primary teachers took it upon themselves to plan and deliver a whole-school in service
6
7 488 training education and training (INSET) workshop on PE pedagogy because they wanted to
8
9 489 share what they had learned over the duration of the project. Their primary motivation for
10
11 490 this was to enable *'all of the pupils in the school to experience PE the way Year 3 do'*.
12
13 491 (Reflective notes, 16/02/17). The INSET was very well received by the other staff and
14
15 492 delivered in such an inclusive way that it resulted in highly positive reactions and feedback
16
17 493 from the other teachers. According to Michelle's final interview:

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22 494 *They were saying 'Why aren't we doing it like this? Why haven't we done this*
23
24 495 *before?' and 'We're doing carousels in class; why aren't we doing it in the sports*
25
26 496 *hall?' and they were saying that now they'd have to do PE lessons like that, so it*
27
28 497 *was great to hear.....and there was nobody going 'Oh my gosh! This is so different!*
29
30 498 *or 'No way can we do this!' It was all 'we'll try this next week.' It was really positive*
31
32 499 *and achievable. (Interview with Michelle, 28/03/17).*

33
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36 500 This fits well with Hunzicker's (2011, 177) vision of effective CPD as that which engages
37
38 501 teachers in 'learning activities that are supportive, job embedded, instructionally focused,
39
40 502 collaborative and ongoing.' Furthermore, following the positive response from the whole
41
42 503 school INSET, the participating teachers successfully delivered a conference workshop at the
43
44 504 host University's annual PE conference for primary and secondary teachers, and repeated
45
46 505 the school INSET in September 2017 for new staff, thus successfully disseminating the
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48 506 findings and sharing their practice with fellow practitioners and the project funders.
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53 507 **Discussion**
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3 508 The major contribution of this paper is in demonstrating the potential of collaborative
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5 509 professional learning (CPL) between national government organisations, universities,
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7 510 secondary and primary schools (King & Newman, 2001) to improve the PE-CPD of primary
8
9 511 generalist teachers. Consistent with Oja and Smulyan's (1989) recommendations, the results
10
11 512 revealed the importance of this collaboration in ensuring rigorous, evidence based practice
12
13 513 and providing the time and support required for fundamental sustainable changes in PE
14
15 514 pedagogic practice, which can endure beyond the life of the research project. Such change
16
17 515 was clearly evident in the primary teachers' improved and sustained PE pedagogy as
18
19 516 evidenced in the findings. Furthermore, this CPL approach with a secondary PE specialist and
20
21 517 university based researchers, aligns with Hunzicker's (2011), vision of effective CPD criteria
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23 518 as job embedded, supportive, collaborative and ongoing.
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29 519 The findings clearly reveal the crucial mentoring role of the secondary school PE
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31 520 specialist in the PE-CPD process and the importance of embedding herself into the primary
32
33 521 school to build trust, rapport and effective relationships with the class teachers and senior
34
35 522 staff. This is consistent with Duncombe and Armour's (2004) identification of the processes
36
37 523 required for effective CPL which included mentoring, peer coaching, being a critical friend,
38
39 524 collegiality, sharing of ideas and working collectively on tasks. These skills were evident in
40
41 525 the findings of this study and an important recommendation, therefore, is to carefully
42
43 526 consider the skills, values and interpersonal qualities of the PE specialist to be effective in
44
45 527 the CPL role. This is consistent with Jones, Harris and Miles's (2009) assertion that
46
47 528 mentoring appears to have as much to do with the person mentoring as it has with the role
48
49 529 occupied. Although mentoring has been largely presented in a positive light within
50
51 530 education there is also evidence to the contrary, with a mentor's influence on a mentee
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3 531 being potentially very conservative (Beck & Kosnik 2002) or sometimes even harmful
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5 532 (Maguire 2001). Indeed, according to Klasen and Clutterbuck (2002, 118), 'each and every
6
7 533 mentor–mentee pairing is unique'. When this pairing is successful, in addition to enhancing
8
9 534 the educational practice of the mentee, the mentors express both personal and professional
10
11 535 satisfaction for making a significant contribution to the profession (Wright & Smith 2000),
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13
14 536 which was clearly evident in the results of this study.

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17 537 The use of questioning by the secondary PE mentor to facilitate the primary teachers'
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19 538 learning, as opposed to simply showing them 'what to do', or 'how to do it' was found to be
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21 539 crucial to the success of the intervention. As the results reveal, at times, particularly in the
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23 540 needs assessment phase and the early part of the intervention, it was difficult for Rebecca
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25 541 not to step in and provide an optimum model for imitation, which Geen (2002) identifies as
26
27 542 the 'Apprenticeship Model' of mentoring. This model, however, pre-supposes that the PE
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29 543 specialist is infallible and that the mentees should become clones of the mentor,
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31 544 consequently limiting creative thought (Geen, 2002). Further, Rebecca was relatively
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33 545 inexperienced in the primary school setting and therefore had to collaborate with the
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35 546 primary teachers to get the most out of the learning environment for the pupils, thereby
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37 547 demonstrating relational parity and the sharing of expertise and moral support (Awaya, *et*
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39 548 *al.*, 2003).

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45 549 In addition to considering the skills of the mentor, it is also important to consider the
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47 550 'mind-set', motivation and reflective abilities of the primary generalists. In this study, both
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49 551 primary teachers were committed professionals with inclusive educational values and a
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51 552 strong desire to learn and improve their PE pedagogy. Weekly reflective discussions with
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53 553 Rebecca, in which she asked critical questions to facilitate their learning, encouraged and
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3 554 further developed their reflective skills. This was a crucial aspect in the success of the PE-
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5 555 CPD and in its transformational and sustainable impact. Such an approach is compatible with
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7 556 the 'Reflective Practitioner Model' of mentoring which is founded on self-analysis and
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9 557 reflection; practices that encourage professionals to question their own actions and reasons
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11 558 for doing things (Geen, 2002). In practice, however, things are not so straightforward, as
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13 559 mentees more-than-often want mentors to offer opinions on their teaching and solutions to
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15 560 their pedagogic problems rather than to ask them questions that encourage self-reflection
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17 561 on it (Tann 1994).
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22 562 The needs assessment period undertaken at the start of the project was also key to
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24 563 its success, enabling the observers (the secondary PE specialist and the research assistant)
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26 564 to identify the individual primary teachers' pedagogic strengths and needs in both the PE
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28 565 and classroom settings. Indeed, a key recommendation from this project is that PE
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30 566 specialists should aim to observe primary teachers in their classroom as well as in the PE
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32 567 environment to celebrate and transfer primary teachers' good practice from the classroom
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34 568 to the PE setting. Such an initial appreciation of strengths rather than problems, has a close
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36 569 connection with an 'appreciative inquiry' approach to interventions (Cooperider, Whitney &
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38 570 Stavros, 2003). Such an appreciative approach is more likely to gain the 'buy in' of
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40 571 participants rather than developing initial resistance to 'outsider' practitioners and
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42 572 researchers by beginning with the problems, and is worthy of further consideration and
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44 573 application in future research of this nature.
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50 574 Although it is acknowledged that content knowledge is important for the confident
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52 575 delivery of PE across a range of different activities (Keay & Spence, 2012; Sloan, 2010; Blair
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54 576 & Capel, 2008), the findings of this study suggest that there should be a strong focus on the
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3 577 'how' (PE pedagogy) rather than just the 'what' (PE content) in PE-CPD programmes of this
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5 578 nature. By focusing on the pedagogic principles of clear learning outcomes, success criteria
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7 579 and differentiation in the primary PE lessons, there was evidence of improved quality in the
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9 580 delivery of PE. Such principles were evident in the classroom but not initially in PE lessons,
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11 581 which the teachers saw as an opportunity for 'physical activities' but not for 'physical
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13 582 learning opportunities' (Keay & Spence, 2012).
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17 583 There was also evidence of sustained improvement in the primary teachers PE
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19 584 pedagogy in the follow-up observations, and effective dissemination of this through the
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21 585 delivery of two whole school practical INSETs and a practical workshop at the host
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23 586 University's annual PE conference by the two primary teachers. This clearly demonstrated
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25 587 their improved confidence to share their learning and a newly developed advocacy role for
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27 588 the promotion of PE pedagogy. Both the INSET and the conference workshop were designed
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29 589 entirely by the primary teachers based on the practical ideas and activities they had
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31 590 developed with their pupils over the duration of the intervention, thereby demonstrating
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33 591 the sustainability of their learning.
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39 592 One issue of interest and some concern in relation to the delivery of high quality PE
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41 593 in primary schools is the implied lack of status of PE in comparison to other areas of the
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43 594 curriculum. This was implied in the data which revealed that the primary teachers had not
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45 595 previously considered the importance of learning outcomes and success criteria in PE
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47 596 lessons, despite having to do this in the classroom. Their initial level of planning for PE
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49 597 lessons was also, by their own admission, inferior to their other classroom lessons.
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51 598 Furthermore, consistent with previous research (Hardman, 2010), a number of PE lessons
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53 599 were cancelled over the duration of the study due to other 'more important' school
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3 600 commitments such as school productions or science, technology, engineering and
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5 601 mathematics (STEM) activities. If the new Welsh curriculum is going to achieve its aim of
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7 602 developing healthy, confident individuals and improve the health and wellbeing of the
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9 603 nation (Donaldson, 2015), then the status of healthy lifestyle behaviours, particularly at the
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11 604 primary age (Faulkner & Reeve, 2000), must be significantly raised to the same level of
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14 605 importance as literacy, numeracy and digital competence
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17 606 This study has developed a replicable CPD process for improved and sustainable PE
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19 607 pedagogy with generalist primary teachers in collaboration with a secondary PE specialist
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22 608 and university based researchers. The logical next step in this line of research is to
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24 609 disseminate the PE-CPD programme to other teachers in the same school to establish
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26 610 whether it has similar outcomes. Further, this form of personalised CPD should be explored
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29 611 in other primary schools to explore it's transferability and generalisability.
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Appendix 1. Structured Lesson Observation Template

<p>Curriculum</p> <p>What is taught? (Content)</p>	<p>Curriculum</p> <p>How is it taught? (Teaching strategies / resources)</p>	<p>Physical Aspect of the classroom</p>
<p>Rapport & relationships between teacher and student</p>	<p>Other personnel: support staff /parent helpers</p>	<p>Other</p>
<p>Teacher behaviour</p>	<p>Student engagement and behaviour</p>	<p>Other</p>