A Multiple Case Study of Primary School Teachers' Perceptions of the Factors Influencing the Amount of Physical Education Delivered in Primary Schools in Northern Ireland

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Dedication

I dedicate this thesis to my Mum and Dad. Thank you for sharing your love of learning and blessing me with curiosity, motivation and determination. Completing this doctorate would not have been possible but for the 'roots and wings' you gave me. You will always be my best and favourite teachers.

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Summary

This exploratory study focuses on a problem highlighted in international research, namely that children and young people are insufficiently active. Although the school subject Physical Education (PE) is a prime opportunity to be active, the quantity and quality of PE provision is often inadequate and highly variable between schools. This thesis focuses on schools in Northern Ireland (NI), where a significant shortfall in the nationally recommended two hours of PE per week has been reported. This study aimed to understand the sources of these deficits and variations in NI via a multiple case study design and mixed methods strategy. The two research questions were answered through interviews of twelve primary school teachers from two schools in NI who were asked to identify factors they perceived as influencing the amount of PE and also to explain how. The analytical approach to the three datasets (teacher interviews, observation of PE facilities and equipment, and desk-based research of school documents) incorporated five theoretical propositions. Teachers described the factors they perceived as reducing the amount of PE in general and the five specific activity areas as well as explaining how. Collectively, thirty-eight factors were proposed for PE and the five activities: nineteen of which only applied to PE, fourteen to Athletics, twenty to Dance, nineteen to Games, sixteen to Gymnastics and nine to Swimming. The eleven most influential factors for PE in rank order were competing priorities, timetabling, equipment, facilities, weather, expertise, confidence, time, class size, new ideas and safety. The findings suggested that under-provision is multi-dimensional as various factors were implicated and the number and type may be teacher and activity-specific. Some factors are more influential and most interconnect with at least one other. Whilst they have external and internal origins, factors are mostly external. The recommendations proposed multi-component interventions entailing macro-, meso- and micro-level reform to educational policy and practice. This investigation makes an original contribution to educational research by producing new knowledge to initiate and inform debates on future curriculum design and delivery, initial teacher training and continuing professional development as well as further research.

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Chapter 1

Introduction

1.1 Rationale for the Study

A physically educated person is someone who has 'learned to arrange their lives in such a way that the physical activities they freely engage in make a distinctive contribution to their long-term flourishing.' (MacAllister 2013, p908). Responsibility for helping children achieve this aspiration is allocated to the subject of Physical Education (PE) which is included in most school curricula. In the UK it is defined as 'the planned, progressive learning that takes place in school curriculum timetabled time and which is delivered to all pupils. This involves 'learning to move' … and 'moving to learn' …' (Association for Physical Education 2019, p1). Internationally, PE is regarded as a medium for all children to acquire the knowledge, understanding, values, attitudes and skills for lifelong participation in physical activity (International Council of Sport Science & Physical Education 2010). Notwithstanding PE's contribution to children and young people's holistic development and long-term health, a global decline in its time allocation in the school day was reported (United Nations Educational, Scientific & Cultural Organization (UNESCO) 2013). Nationally, existing research confirms that not all primary-aged children in Northern Ireland (NI) are provided with the recommended two hours of weekly PE (Department of Education for Northern Ireland 2023a). Consequently, many children may not be physically educated when they leave primary school so they are unable to fully avail of the associated benefits. Therefore, the purpose of this exploratory study, as summarised in Appendix 1, is to generate new information derived from the teachers' perspectives that will enrich understanding of why an insufficient amount of PE is delivered in primary schools in NI. Accordingly, it aims to investigate primary school teachers' identification of factors which influence the amount of PE and explanations of how they influence quantitative provision of PE.

1.2 Structure of the Study

To contextualise, rationalise and answer the research questions this thesis is organised under eight chapters. Chapter 2 describes the setting of the study by outlining NI's education system and the positioning of PE within the NI Primary Curriculum. It also identifies recommendations for the amount of primary PE in NI and appraises data on reported provision. Chapter 3 reviews literature pertaining to the known factors which influence the amount of PE that have been advanced globally and nationally in NI. The six

most commonly cited reasons in NI are then examined using numerous theoretical perspectives. The limitations of and gaps in existing research are highlighted to provide a rationale for the study, the development of the research questions and the theoretical structure of this investigation. Chapter 4 details the methodology applied and contextualises the timing of data collection within the timelines for school closures in NI during the COVID-19 pandemic. The results pertaining to Research Questions 1 and 2 are presented in Chapters 5 and 6 respectively. Key findings are discussed and recommendations proposed in Chapter 7. The thesis concludes in Chapter 8 by summarising the research, acknowledging its limitations as well as disclosing reflective insights about the doctoral research journey.

The philosophical orientation of this study is pragmatism as it provided a guiding framework premised on practicality that facilitated a dynamic and multi-faceted comprehension of practice (Kelly & Cordeiro 2020). This disclosure is critical from the outset, as the philosophy underpinning research influences the development of the knowledge it generates, such as what knowledge is produced and how it is obtained (Morgan 2014). How a pragmatist philosophy guided this study is explained further in Chapter 4 when detailing the methodology.

Chapter 2

Education

& Physical Education in

Northern Ireland

2.1 Overview of Northern Ireland

This exploratory study investigated perceived reasons for the under-provision of PE in primary schools in NI which is one of four members of the United Kingdom (UK) alongside Wales, Scotland and England. Devolution in the UK in 1999 granted NI, alongside Wales and Scotland, some economic and political independence. The UK Government allocates NI an annual budget, e.g., £16.4 billion was assigned for 2023-2024 (Department of Finance for NI 2023). The Northern Ireland Act 1998 and Good Friday Agreement (1998) conferred responsibility for devolved matters not reserved by the British government onto the NI Assembly. Their remit includes making laws on devolved issues such as education, and scrutinising government departments and ministers (NI Assembly 2023). The NI Executive exerts executive authority on behalf of the NI Assembly which includes agreeing a Programme for Government that sets the strategic context for the NI Budget (NI Executive 2023). The NI Executive Committee comprises the First Minister, deputy First Minister, two junior ministers and eight other ministers. Each of these eight ministers has a responsibility for one of nine government departments, one of which is the Department of Education for NI (DENI).

2.2 The Education System in Northern Ireland

DENI's primary statutory duty is 'To promote the education of the people of NI and to ensure the effective implementation of education policy.' (DENI 2023b). In discharging its functions, DENI is supported by numerous 'arm's length bodies' including the Council for the Curriculum, Examinations & Assessment (CCEA) and Education & Training Inspectorate (ETI). The former advises DENI what should be taught in schools whereas the latter provides DENI with inspection services and policy advice. Financed by DENI, the administration of NI's education system and provision of education was delegated to the Education Authority for NI (EANI). As the funding authority for schools, EANI stipulates conditions for the Local Management of Schools scheme that confers budgetary authority to schools using a Common Funding scheme (DENI 2023c). The 1121 schools in NI are categorised as nursery (n=94), primary (n=796), post-primary (n=126), grammar (n=66) and/or special (n=39) (DENI 2022). Additionally, they are classified under four management types - controlled, maintained, voluntary and integrated (Appendix 2). The EANI and Council for Catholic

Maintained Schools are the employing authority for controlled and maintained schools respectively but all schools are managed by a Board of Governors. Governors are appointed in a voluntary capacity for four years to set the school's policies, recruit staff and manage budgets (NI Direct 2023a). The principal and management team working alongside the Board have responsibility for their school's ethos, expectations for its pupils, pastoral care, teaching and curricular provision support (DENI 2009).

Children in NI complete 12 years of compulsory education from the ages of 4-16 years (DENI 2023a). They attend primary school for seven years by progressing through three phases: Foundation Stage – Years 1 and 2 when aged 4-6; Key Stage 1 – Years 3 and 4 when aged 6-8; and Key Stage 2 – Years 5, 6 and 7 when aged 8-11. Parents of children in Year 7 apply for their child's post-primary place by nominating at least four schools. Places are not guaranteed as many schools administer academic selection tests (NI Direct 2023b). Compulsory post-primary education contains two phases: Key Stage 3 – Years 8, 9 and 10 for ages 11-14; and Key Stage 4 – Years 11 and 12 for ages 14-16. Key Stage 4 usually entails completing General Certificate of Secondary Education (GCSE) qualifications. They are available in more than 60 subjects and vocational areas, however some schools may offer additional qualifications (NI Direct 2023c). Compulsory GCSE subjects include English and Mathematics then students normally choose their other subjects from those available at the school. Non-compulsory education can be continued for another two years via Years 13 and 14 for ages 16-18. This final stage normally involves completing Advanced (A) or Advanced Subsidiary (AS) level qualifications from a choice of more than 80 subjects (NI Direct 2023d).

2.3 The Northern Ireland Primary Curriculum

Of relevance to this study is the NI Primary Curriculum (NIPC) which was described as a 'broad and balanced curriculum … which ... promotes the spiritual, emotional, moral, cultural, intellectual and physical development of pupils.' (The Education (Curriculum Minimum Content) Order (NI) 2007, schedule 2). The curriculum, which remains unreformed since its introduction in 2009, outlines the minimum content for each key stage. It is organised under six areas of learning: Language & Literacy, Mathematics & Numeracy, The Arts, The World Around Us, Personal Development & Mutual Understanding and Physical

Education (Appendix 3). To fulfil their statutory requirements, schools must provide learning opportunities in all six areas of learning and Religious Education. Curriculum content is distributed throughout the school year which typically operates from early September to late June. Primary and post-primary schools must open for 200 days each year but holiday dates for each school may vary (NI Direct 2023e). Although schools have autonomy to set the duration of the school day and week, children under 8 years' old should be 'under instruction' for no less than three hours a day compared to four and a half hours for those over eight years (DENI 2013b, p3). Primary schools may follow the traditional 9am-3pm day and 5-day week, however the extent to which they do so is unknown as no published data was available.

As per as The Education (NI) Order 1998, all teachers must be qualified and registered with the General Teaching Council for NI (GTCNI)[1]. The Council endorses two university-based teaching qualifications including a 4-year undergraduate Bachelor of Education and 1-year Postgraduate Certificate in Education (GTCNI 2021a). The Council accepts either of these teaching qualifications offered by all four higher education institutions in NI (GTCNI 2021b). Although applicants do not have to complete their teaching qualification in NI to register. Delivery of the primary curriculum is dominated by a centuries old class teacher tradition in primary education (Cooper & Elton-Chalcraft 2018). This approach advocates children of similar age being placed in one class with one teacher responsible for teaching all subjects to this class for the entire school year. The average number of pupils per class (Years 1 -7) in primary schools in NI is 25 (Northern Ireland Statistics & Research Agency 2022). This complies with schools' statutory duty to restrict class sizes in Years 1-4 to 30 pupils (Class Sizes in Primary Schools Regulations (NI) 2000). In contrast, post-primary pupils are assigned teachers according to the teacher's subject specialism and experience various educators during the school year. Post-primary school teachers are considered specialists whilst their primary colleagues are generalists who have ability to instruct in all subject areas (Ardzejewska et al. 2010) even though they may have developed a specialism during initial teacher training and/or continuing professional development. The number of primary

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[1] Although the GTCNI was dissolved in June 2022, it remains operational as governance is provided by officials from the Department of Education for NI (GTCNI 2023)

teachers specialising in PE is unknown but a lack of primary PE specialists is typical in many countries (UNESCO 2013).

2.4 PE in the Northern Ireland Primary Curriculum

The PE provisions of the NIPC confirm 'The purpose of PE … is to provide the opportunity for specific attention to be given to the physical development, health and well-being of children.' (CCEA 2009, p99) (Appendix 4). At Foundation Stage, the relevant area of learning is titled 'Physical Development & Movement' rather than PE as opportunities 'comprise physical play and regular planned sessions of PE.' (CCEA 2009, p44). Children in Foundation Stage should be enabled to develop knowledge, understanding and skills in four activity areas – Athletics, Dance, Games and Gymnastics. Key Stage 1 and 2 pupils should also receive a balanced experience across these four activities but Swimming is introduced as a fifth activity in Key Stage 2[2]. Whilst similarities exist, PE is differentiated from school sport which is the 'structured learning that takes places beyond the curriculum … within the school settings.' (Association for PE 2019, p1), e.g., after-school sport clubs. PE advocates are keen to maintain this distinction to ensure PE is associated with holistic development of the person rather than narrow conceptions of sport which focus on athlete rather than person development (Kirk & Gorely 2000). The Association for PE (2019) and UNESCO (2015) agree that the outcome of PE is physical literacy which is the 'the motivation, confidence, physical competence, knowledge and understanding that enables a person to value and participate in physical activity throughout life.' (Sport Ireland & Sport Northern Ireland 2022)[3]. This definition, which was endorsed by the ETI (2022), acknowledges PE's capacity to develop the whole child as it potentially advances all three learning domains – affective, physical and cognitive.

2.5 Defending PE in School Curricula

Notwithstanding PE's potential contribution to a child's holistic development, its inclusion in school curricula was and continues to be vulnerable to scrutiny due to global misconceptions it is a physical pursuit lacking academic content (Fitzpatrick 2022). The

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[2] PE is also a compulsory area of learning at Key Stages 3 and 4 (CCEA 2009)
[3] The researcher was a co-author of this definition and publication

visibly practical feature of PE prolonged critics' fallacy that 'physical education was not education' (Armour & Jones 1998, p.14). Sustained attacks on PE's legitimacy as a school subject resulted in multiple reasons being advanced by the education, health and sport sectors to rationalise its importance. Regarding its educational value, the enrichment of the whole child is commonly cited to justify its curriculum presence (Burrows 2018). Yet this defence is in itself divisive. When deliberating 'What is the education in physical education?', Whitehead (2013, p22) observed dispute regarding whether PE is educative in its own right as it advances physical development or whether it contributes to wider educational goals such as cognitive and affective enhancement. As movement is integral to PE, this debate's origins are traced to Arnold's (1979) seminal work which considered whether movement could be constituted as a curricular subject as it educates in three overlapping ways, namely *in*, *about* and *through* movement.

Education *in* movement validates PE as movement is inherently rewarding and worthwhile. Movement experiences are of educational merit as they facilitate self-discovery through bodily-oriented experiences. If Arnold's (1979) view of movement as pleasurable is applied to PE, then its subject status could be undermined as being enjoyable is not credible criteria for inclusion in the curriculum. Additionally, the notion PE is gratifying is one-sided as it may not always be a positive experience for all learners. Education *about* movement verifies PE's educational value as it argues movement is a theoretical subject entailing a 'rational form of enquiry' (Arnold 1979, p168) comprising movement knowledge from disciplines including physiology, psychology and philosophy. This reasoning was contested as overambitious (Whitehead 2013) because the expertise required to achieve these learning outcomes may exceed the teachers' and learners' capabilities especially at primary level. Additionally, if movement knowledge is theoretical, it can be accessed via visual and auditory means such as reading and listening, rather than kinaesthetic, i.e., being physically active. PE is redundant as learners can be educated about movement through other subjects and without having to move. Education *through* movement exalts PE's contribution to education's broader aims namely cognitive and affective development, for instance, through problem-solving and teamwork. This argument was criticised for tending to extrinsic goals and departing from PE's core responsibility for physical development as PE 'becomes a means to other ends and not an end to itself' (Whitehead 2013, p27). Exclusive reliance on

this rationale is cautioned because cognitive and affective advancement is expected in other subjects so PE may not be required. Moreover, the possibility of negative affective experiences through PE such as low self-esteem, is overlooked. Notwithstanding the individual limitations of each of Arnold's reasons, when combined they form a compelling defence regarding PE's educational worth. Arnold's claims are also supported by research including Bailey et al.'s (2009) review which concluded PE potentially contributes to young people's physical, cognitive and affective attainment. As PE is not immune from external influences, validation for PE's curricular existence extends beyond educational goals to include wider societal objectives aligned with health and sport agendas.

The current situation of PE being dominated by discourses of health in the UK (Kirk 2018) arose in the 1970s in response to increased cardiovascular disease rates in adult populations but was sustained by rising childhood obesity rates (National Health Service 2021). As sedentary behaviour was implicated, more physical activity in schools was advocated. However, schools' ability and willingness to contribute to solving a global obesity epidemic was questioned (Powell 2018; World Health Organization 2023), as school-based obesity prevention strategies may not result in significantly healthier, more active and less overweight children (Harris et al. 2009). Also, promoting weight management in PE could be deemed morally questionable as it might result in unintended harm, including size discrimination (Rich & Evans 2005), disordered eating and exercising (Tinning & Glasby 2002), and anti-fat bias (Carmona-Marquez et al. 2020). Irrespective of obesity prevention, generally more activity is encouraged as everyone gains physical and mental health benefits from being physically active (Warburton & Bredin 2017). Of relevance is the UK Chief Medical Officer's (2019) guideline that all children and young people (aged 5-18 years) engage in moderate to vigorous intensity physical activity for an average of at least 60 minutes per day across the week. This guidance cites PE as a key opportunity to accumulate this average. Although PE may significantly contribute to these guidelines if delivered to the required intensity (Fairclough & Stratton 2005), a systematic review of international studies concluded overall PE classes do not do so (Pate et al. 2011). Nevertheless, PE is the most common method of increasing activity in schools worldwide, typically because most countries have legal requirements for its provision (Hills et al. 2015). Therefore, for some children it may, albeit theoretically, represent their only entitled opportunity for physical

activity. Securing PE's legitimacy by promising fulfilment of health agendas is problematic as this aspiration is unrealistic and could bring the subject into disrepute. The notion of schools being viable and sustainable settings for health promotion (Chilton et al. 2015) could be questioned especially by the teaching profession as some teachers may not view themselves as health and wellbeing practitioners (Long et al. 2023). Additionally, Powell (2018) warned if the 'cult of health' is not resisted, PE is reduced to calorie-burning exercise and its educative purpose is distorted.

The problem of sport policy dominating PE is a global (Hardman & Marshall 2006) and national phenomenon. Educational institutions alongside organised religion were accredited with the advent and evolution of modern sport in England (Bairner 2013). As this process was replicated in the other three parts of the UK (Bairner 2013), schools in NI were implicated in this movement. Ward (2018) noted that all subjects must earn their place on curricula and for PE, its capital is enabling sports participation and performance. Moreover, as sport has become the subject matter of PE, they are often regarded as the same (Ennis 2014). Defending PE because it produces more sports players and performers is objectionable because conflating PE and sport undermines PE's subject status by propagating the notion PE is a solely physical enterprise. Relegating PE to the curriculum periphery or deleting it from the curriculum is justified as sport agendas could be realised through after-school sport programmes. A sport-focused PE culture could also distort curriculum delivery as it may promote discriminatory performance-focused practices rather than inclusive, child-centred educational experiences. Additionally, Ward (2018) advised sport is inherently exclusionary as it values particular body types and forms of effort. Equality was also queried as sport-oriented PE segregates those excelling in sport and benefitting from PE from those who do not.

2.6. The Amount of PE in Primary Schools in Northern Ireland

Irrespective of which rationale is the most convincing, equal access to PE is vital as it may bestow a range of educational, health and sport benefits. Yet parity is disputed in primary schools in NI due to discrepancies between the recommended and reported amount of time assigned to PE. The NIPC does not specify a time allocation for any area of learning only a

general notification that teachers have 'considerable flexibility' to 'make decisions about how best to interpret and combine the requirements' (CCEA 2009, p2). The PE provisions refer to 'regular and frequent participation' (p99) but do not specify a time. Clarity is located in DENI's (2023a) online overview of the statutory curriculum which states 'The Department recommends that schools provide children and young people with two hours of good curricular PE each week.'. Teachers' awareness of this advice is unknown and doubted as its positioning indicates a low and passive profile as it is not actively promoted to teachers. Cynicism could also be directed towards the 2-hour recommendation's subtle presence on CCEA's (2023) website.

The 2-hour recommendation in NI corresponds with UNESCO (2015) and the other three UK countries all of which derive from different sources (Appendix 5). This compares to findings of a global study (Clark et al. 2012) which reported six countries requiring less than 50 minutes, 69 expecting 50-99 minutes, 40 mandating 100-149 minutes and 8 advocating 150 minutes or more. However, the status of these times, i.e., compulsory or non-compulsory, were not disclosed. Notably, the 2-hour stipulation in all of the four UK home countries is a non-statutory, discretionary recommendation rather than a statutory, compulsory requirement. An explanation of why two hours is recommended could not be located in UNESCO literature or education policy for the four UK countries. This absence questions whether there was an evidence-based rationale for this figure such as links to the UK physical activity guidelines. Notwithstanding world-wide endorsement of the 2-hour recommendation at strategic level, a decrease in curriculum time allocation and corresponding 'implementation gap' between policy and practice was observed internationally (Hardman 2007). Similar concerns were verified locally by five studies (Appendix 6) which investigated the quantitative provision of primary PE in NI.

Despite DENI's advice, four exclusively NI-based and one all-island based investigations highlighted significant under-achievement of this benchmark within Northern Irish primary schools. The first study, conducted by Sport Northern Ireland (2009a)[4] showed how 17% of respondent schools reported timetabling the recommended two hours. The second enquiry,

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[4] The researcher was a co-author of this research

commissioned by DENI (2012) did not explicitly state an overall percentage of schools assigning two hours but it did compute percentages for each primary school year group, e.g., 7% of pupils in Year 1 received 120 minutes. It also revealed a low percentage range of 5% (Years 3 and 4) to 10% (Year 7) across the seven year groups. The third study, jointly coordinated by Sport Ireland and Sport Northern Ireland (2018), considered primary PE in NI but findings were limited. Although an all-island project, the NI results were unrepresentative as 1.1% (n=9) of Northern Irish primary schools were sampled. An overall percentage for primary pupils was not reported, only that 3% of primary pupils received no PE per week and 19% completed 30 minutes or less, so findings were incomplete.

The fourth inquiry, initiated by DENI (2018), did not report an overall percentage of primary schools scheduling two hours of PE. Although it did calculate percentages by key stage – Foundation Stage = 5%, Key Stage 1 = 2.8% and Key Stage 2 = 6.5%. Thus, confirming significant under-provision and decline since Sport Northern Ireland's overall finding of 17% in 2009. The fifth examination was completed by ETI (2022) wherein 74% of participating schools reported an inability to provide children across all key stages with the recommended two hours. Although the report did not explicitly state the remaining 26% did deliver the recommended two hours. If verified, this figure suggests a 9% increase from Sport Northern Ireland's (2009a) 17% but any overall improvement is qualified as the sample only represented 8.5% (n=69) of primary schools. Comparison with the other three UK countries is restricted as the Department for Children, Schools & Families (2009) and Sport Wales (2018) only reported average weekly times for England and Wales respectively. The Office for Standards in Education, Children's Services & Skills (2012, p22) conclusion that 'a very small minority' of primary schools provided less than two hours, is moderated as the exact figure was not published. Comparison with Scottish primary schools was possible as 99% of all primary schools met the 2-hour target (Scottish Government 2022). A considerable shortfall in primary PE provision in NI is further substantiated by the weekly average time allocation.

Neither of DENI's (2012; 2018) surveys or the ETI (2022) evaluation generated weekly average times and the joint Sport Ireland and Sport Northern Ireland (2018) study only reported a weekly average (122 minutes) for post-primary. Conversely, Sport Northern

Ireland's (2009a) investigation calculated an overall weekly mean time of 90 minutes allocated to primary PE. Year group averages were: Year 1 = 91 minutes, Year 2 = 87 minutes, Year 3 = 85 minutes, Year 4 = 87 minutes, Year 5 = 90 minutes, Year 6 = 93 minutes and Year 7 = 95 minutes. A negative correlation between enrolment figure and time was detected. Schools with fewer than 100 pupils scheduled the longest time (=94 minutes) whereas those with more than 700 allocated the shortest time (=59 minutes). Furthermore, schools in rural locations reported more PE (=93 minutes) than those in urban locations (85 minutes). NI's overall mean contrasts with averages of 125 minutes in England (Department for Children, Schools & Families 2009) and 99 minutes in Wales (Sport Wales 2018). Scotland's mean was unreported but estimated to be 120 minutes or more as 99% of primary schools provided at least 120 minutes. NI's 90 minutes is the lowest average in the UK but higher than the Republic of Ireland's 46 minutes although they have a 1-hour recommendation (Woods et al. 2010). In UNESCO's (2013) worldwide PE survey, 13% (n=29) of the 218 participating countries/states reported a 90-minute weekly mean for primary PE (Appendix 7). NI's 90-minute average is 135 minutes shorter than the highest country average of 225 minutes reported by Ethiopia but 60 minutes longer than the lowest country average of 30 minutes registered by Algeria and the Democratic Republic of Congo (Appendix 8). As per Figure 2.1, NI's weekly mean is also lower than the 97-minute global average and regional nation means of 111 minutes for Oceania, 109 minutes for Europe and 107 minutes for North America. NI's 90 minutes is the same as the Latin America/Caribbean average and longer than the 89 minutes for the Middle East, 86 minutes for Africa and 84 minutes for Asia.

Figure 2.1: Regional Nations' Weekly Average Times for Primary PE Reported in UNESCO (2013) Worldwide Study

| More than 97-minute Global Average | Less than 97-minute Global Average |

North America = 107 mins

Northern Ireland = 90 minutes[5]

Europe = 109 mins

Middle East = 89 mins

Asia = 84 mins

Latin America & Caribbean = 90 mins

Africa = 86 mins

Oceania = 111 mins

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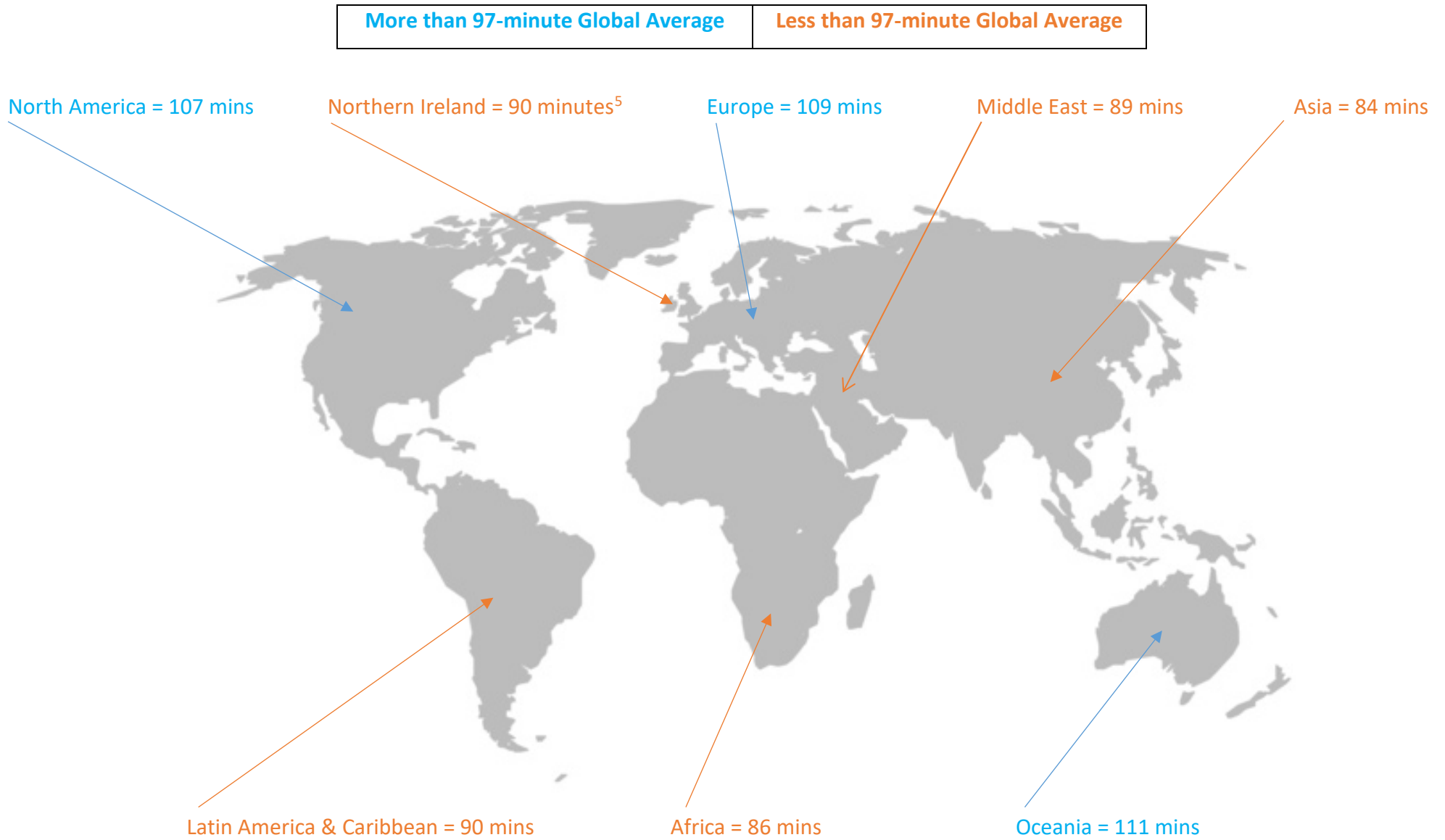
[5] Sport Northern Ireland (2009a)

2.7 Unequal Amounts of PE in Primary Schools in Northern Ireland

The NIPC's Access Statement 'Providing Equality of Opportunity and Access for All' reminds schools of their responsibility to 'provide a broad and balanced curriculum for all children … give every pupil the opportunity to experience success in learning' (CCEA 2009, p3). This ethos is legislated in The Education (Curriculum Minimum Content) Order (NI) 2007, which bestows every child with a legal minimum entitlement to all areas. Additionally, DENI (2023a) policy recommends a minimum two hours of weekly PE. Collectively the statement, legislation and policy should mean every school-aged child participates in two hours of PE each week. Nevertheless, a significant shortfall in the amount offered was verified by Sport Northern Ireland (2009a), DENI (2012; 2018) and ETI (2022). A range of 34-240 minutes reported in Sport Northern Ireland's survey also highlighted disparities between primary schools. The inequitable implications are illustrated by the scenario wherein a child in one class/school receives 240 minutes of PE while a child in another class/school experiences 34 minutes. These findings indicate 'Equality of Opportunity and Access for All' (CCEA 2009, p3) is not assured for all children due to variations in the localised implementation of the PE curriculum. Therefore, an investigation of primary teachers' perceptions of the factors influencing the amount of PE delivered in primary schools in NI was warranted to uncover the sources of these deficits and variations so that inequalities can be addressed. The following literature review chapter confirms no comparable study exists in NI. Therefore, this investigation will make an original contribution to educational research, by producing new knowledge to stimulate and inform debates on future curriculum design and delivery, initial teacher training, continuing professional development and further research.

Chapter 3

Literature Review

3.1. Overview of Chapter 3

This chapter contains a narrative review that comprehensively and critically appraised literature to establish what is known about factors which influence the amount of primary PE delivered in primary schools and how these factors impact quantitative provision. Literature included national and international research studies, scholarly articles, policy documents and theoretical perspectives. Theoretical enquiry when reviewing literature was regarded as essential as it provided the theoretical foundations for the entire study. Theory is integral to all investigations as it enables researchers to identify what they observe, comprehend relationships and rationalise human behaviour (Kivunja 2018). Consideration of concepts and theories arising from published knowledge by experts in the field of study helped identify recurrent themes relating to the under-provision of PE. Consequently, the review's outcome was the creation of a theoretical framework comprising the research questions and a set of theoretical propositions which reflected these themes. This framework directed the methodology, the reporting and discussion of results as well the production of recommendations and conclusions. Thus, all stages of the study incorporated a robust theoretical dimension.

3.2 Factors Influencing the Amount of Primary PE

Curriculum implementation is not a 'simple story' that is 'pre-determined, predictable or standard' as it is laden with interdependent, heterogeneous complexities (De Vincentis 2011, p1). This results in school practices remaining resistant to educational change (Priestley 2011). Enactment of the 2-hours of PE a week recommendation is no exception as numerous investigations (n=10) identified following a systematic search (Appendix 9) exposed how 52 causes were implicated in the insufficient provision of PE globally and nationally. However, many merged primary and post-primary sectors, as well as quantitative and qualitative provision, whilst few procured explanations regarding how reasons influence the amount of PE.

UNESCO's survey (2013) implicated 12 unranked pervasive factors in the 'gap' between policy commitments for and actual implementation of PE across the world. They included: devolvement of curriculum development responsibility and school autonomy; loss of time

allocation to other prioritised subjects; lower importance of PE; non-examinable status; lack of official assessment; financial constraints; diversion of resources elsewhere; lack of or inadequate facilities, equipment and teaching resources; deficiencies in numbers of qualified teaching personnel; non-committed PE teachers; negative attitudes towards PE of other significant individuals including head teachers; and adverse climate/weather. Although this report highlighted the variety of influences, it did not distinguish between primary and secondary schools so the applicability of all elements to primary PE is uncertain. It is unclear how causes were identified, for instance, through conjecture or directly from teachers, so they may be unsubstantiated. The 12 barriers applied to PE generally and did not differentiate between the amount and quality of provision. Also, the list did not explain how they influenced the amount of PE.

Another global study organised influences under a classification system. Penney & Thompson's (2018) analysis of 'influences at play' on primary PE applied Ball et al.'s (2012) framework for policy work in schools and classified 17 'drivers of the enacted curriculum' (p55) for primary PE under four categories. The situational category incorporated demographics, historical practices, cultural ethos and climate. Influences assigned to the professional group included head teachers' attitudes, subject status, teacher values, teacher qualifications and professional development. Time, facilities, equipment, new technologies and teaching resources were assigned to the material category. Numeracy and literacy frameworks and health and sport agendas were labelled external. In accordance with the authors, this approach reinforced how implementation of the primary PE curriculum is swayed by various interpretations and reactions to formal curriculum policy. Similar to UNESCO's report, this article did not disclose sources for all factors, focus on the amount of PE provided or explain how drivers impacted PE time. The authors claimed their examples demonstrated interactivity between causes. Yet their illustrations were based on their speculations and did not derive from primary teachers so they may not reflect teachers' insights.

A classification approach was also used in country-specific investigations. For instance, in Australia, Morgan & Hansen's (2008) literature review identified 15 factors perceived to impact primary PE provision which were then classified as teacher-related (n=7) or

institutional-related (n=8). Subsequently, the nine barriers ranked by Australian primary teachers were categorised. The top five were institutional: lack of time/crowded curriculum, lack of departmental assistance/professional development, lack of money, inadequate facilities/equipment, and class size too big. They were interpreted as external to teachers, outside of their control and unalterable. The remaining four were teacher-related: poor expertise/qualifications, low levels of teaching confidence, poor personal experiences of PE and low levels of personal interest/enthusiasm in PE. They were regarded as internal to teachers, inside their control and changeable. Although discovering whether they were institutional or teacher-related was original as previously unknown, findings are qualified. Teachers could add obstacles to the 9-item instrument but the extent to which they did is unknown as only the nine most influential were reported. Whether these nine comprised teacher-generated barriers was undisclosed. Teachers could allocate an item the lowest score of one on the 6-point Likert Scale which denoted 'no barrier'. However, how many items each teacher classified as a barrier was unspecified so it is unclear if they identified one or multiple factors. Additionally, there was no focus on quantitative provision and how factors influenced the amount of PE. Nevertheless, this enquiry generated primary PE-specific data provided by teachers.

Morgan & Hansen's (2008) binary system was extended to a tripartite model by Friskawati et al. (2020). Their study designated Indonesian primary teachers' list of barriers as institutional-, teacher- and student-related. Of the 13 factors identified, five were institutional: lack of time for PE, lack of departmental assistance, lack of money for PE equipment, inadequate facilities and equipment, and large class size. The four teacher-related obstacles included low levels of confidence or interest in teaching PE; inability to provide safely planned and structured lessons; personal negative PE experiences and lacking training, knowledge and expertise; and PE qualifications. The four student-related challenges were students' unwillingness to participate in PE, dislike of activities, lack of understanding of the benefits of physical activity and declining interest in PE. Although 43% of barriers were institutional, 29% teacher-related and 28% student-related, these findings related to the quality of PE rather than quantity. Nonetheless, the range of known challenges was broadened by introducing the notion of student-related causes.

These global and country-specific studies corroborated factors advanced by UNESCO (2013) and indicated that challenges associated with delivering primary PE are similar in many countries. Commonality was reinforced further in two Canadian studies and their qualitative research methods also helped gain new insights regarding how they influenced provision. Dwyer et al.'s (2003) study of primary teachers generated three categories of barriers to implementing the primary Health & PE curriculum guidelines. The first, lower priority for Health & PE, alluded to an overloaded curriculum, insufficient time, lower priority for PE, insufficient curriculum guidance for PE and difficulty integrating with other subjects. The second, lack of performance measures for physical activity, suggested curriculum guidance was unclear about expectations so it was difficult to measure performance. The third, insufficient infrastructure, mentioned a lack of equipment as well as how facilities were too small, overcrowded, inadequate, unsafe and unavailable so scheduling was unfeasible. Although no novel causes were discovered, its use of focus groups was beneficial as they provided teachers with opportunities to explain how they were problematic. For instance, teachers expounded on how the gym facility was too small to accommodate student numbers. DeCorby et al.'s (2005) research reinforced lack of training and knowledge, safety, logistics of gymnasium sharing and lack of suitable equipment as constraining influences on the quality of primary PE. Additionally, two different variables were introduced - gender and lack of extra-curricular activities. This study's use of interviews permitted teachers to reveal how some of the six issues operated. For instance, a lack of subject knowledge compromised the planning of developmentally appropriate PE lessons. Although not all barriers were rationalised and insights may not be representative and generalisable as only three teachers from two schools participated.

Assumptions PE provision in countries with low-income economies is hindered by different influences were countered by one African and one Asian investigation. In Sofo & Asola's (2016) quantitative study an 11-item and 5-point Likert-Scale questionnaire was administered to primary teachers in Ghana to ascertain challenges to teaching PE. Lack of resources was the most frequent as 63.2% agreed or strongly agreed it was a major barrier. This was followed by lack of time (=59.7%), support from colleagues (=49.5%), adequate training (=48.4%), no head teacher support (=31.5%), PE specialist's responsibility (=22.9%), lack of physical fitness (=15.4%), I will be sweaty and smelly (=11.2%), time for other

subjects (=11.2%), students uninterested (=6.9%) and PE unimportant (=6.2%). Quyen et al.'s (2019) qualitative data generated three themes and eight sub-themes pertaining to PE implementation barriers identified by primary teachers in Vietnam. Theme 1 - Governance & Regulation included monotony of PE programme content, lack of autonomy, monitoring and surveillance, and lack of PE incentives. Theme 2 – Perceptions of PE comprised different levels of support and perceived value of PE. Theme 3 – PE Personnel denoted non-teaching of PE and qualifications. Neither study focused on quantitative provision or explored how obstructions impacted on PE time. Nevertheless, findings aligned with discoveries in countries with high-income economies such as Australia and Canada, thus highlighting the universal nature of these influences.

Some of the common barriers shared by other countries were also reported in NI. The Sport Northern Ireland (2009a), joint Sport Ireland-Sport Northern Ireland (2018), and Department of Education for NI (DENI) (2018c) surveys did not investigate sources for the under-provision of the two-hour recommendation. However, DENI's (2012) earlier study did as it asked primary schools why pupils in NI completed less than two hours of PE each week. Of the six factors reported, a lack of time was the most commonly cited reason for limited PE as advanced by over half (=55%) of participants. This was followed by timetabling issues (=42%), other competing priorities (=36%), lack of facilities (=28%), lack of expertise (=13%) and lack of equipment (=7%). Yet the report does not disclose whether data was derived from individual teacher responses or collated school responses so some reasons may have been unreported. Although providing local insights, it is unclear whether participants were asked an open or closed question with six pre-determined responses. The latter is a possibility as a lower number of challenges were identified compared to other studies. Additionally, none of the six reasons were analysed further by procuring teacher explanations regarding how they reduced PE time. Potential interrelatedness between reasons also remained unexamined. Furthermore, the survey concentrated on the quantitative provision of primary PE in general but did not examine the five activity areas (Athletics, Dance, Games, Gymnastics and Swimming). This is queried as different causes could be operating in each activity and in distinct ways. More recently, the Education & Training Inspectorate (ETI) (2022) for NI revealed how the 74% of primary schools unable to deliver two hours of PE attributed the problem to curricular demands and insufficient

timetabled access to an indoor hall. However, they did not quantify how many schools identified each of these reasons. Whether these were the only two sources and how they operated was not disclosed so others may have been implicated. Knowing what compromises quantitative provision is important but knowing how they do so is also necessary as this information will enrich discussions regarding the most effective intervention strategies. As DENI or ETI did not explore how factors lessened PE time, a detailed examination of several theoretical perspectives to the six reasons was conducted.

3.3 Theoretical Explanations of How a Lack of Time, Timetabling Issues & Other Competing Priorities Might Influence the Amount of Primary PE

A lack of time was the most commonly cited reason for limited PE in DENI's (2012) survey as it was advanced by 55% of respondents. As per DENI speculation, it is possibly related to the second and third most frequent causes, namely timetabling issues (=42%) and other competing priorities (=36%). This was also implied in ETI's (2022) evaluation wherein perceived curricular demands was one of the two causes advanced. This claim was derived by contextualising reports of insufficient PE within a wider complaint in the teaching profession against neoliberal agendas resulting in teachers having inadequate time to discharge duties. Accordingly, links were made to literature depicting a 'crowded curriculum' (Hurst 2015, p2) creating timetabling issues as the school calendar is overloaded with multiple subjects. This engendered a 'curriculum hierarchy' (Bleazby 2015, p671) of competing priorities wherein subjects comprising intellectual knowledge are 'academic' and honoured with higher status and more teaching time. Bleazby (2015) contended the notion of subject status was initiated in an epistemological framework that equated knowledge with certainty and initiated division between intellectual and practical information. Although this assertion is explored, it will first be argued this epistemology originated with ancient existential and phenomenological views advocating a dualistic, tiered separation of the mind and body.

A hierarchical mind-body distinction was conceived by early Greek philosophers favouring existentialist and phenomenological theories on dualism. Plato depicted personhood as an immortal mind – the guardian of a person's rational capabilities that inhabited an evil body

(Stolz 2014). Hence, the body was inferior as a material substance and the mind was superior as an immaterial substance Notwithstanding competing discourses advocating monism which denied any difference between mind and body (Sartre 1957; Merleau-Ponty 1962), and emerging neurobiological research refuting unsubstantiated dualism (Modell 2006), the hierarchical partition prevailed throughout the evolution of Western civilisations. These beliefs were also reflected in early educational philosophy that embraced a dichotomous interpretation of existence by conceiving dualist conceptions of knowledge that dominates today. Critics such as Bleazby (2015) attributed subject status in education to an enduring epistemological belief that knowledge involves certainty. Ancient scholars like Plato (1961 [380BC]) revered propositional knowledge as the only objective means of apprehending irrefutable truths about the real world. As just the superior mind could discover truths, intellectual knowledge or 'knowing what' was exalted. Practical knowledge or 'knowing how' was demoted as it entailed the inferior body irrationally fulfilling purposes in action (Carr 1981). Hence, a tiered dichotomy between theoretical and practical knowledge was enshrined in early educational philosophy and preserved in contemporary education systems. This corresponds with Stolz's (2014) observation that the mind-body and intellectual-practical knowledge order advocated by Ancient Greek theorists was upheld in modern education. Specifically, innovators like Hirst (1968) and Peters (1972) stipulated no experience was educational unless intellectual knowledge was entailed.

Domination of the mind-body and intellectual-practical knowledge hierarchy in Western society and education thwarted PE's curricular aspirations. How the body was perceived resulted in dualist conceptions of PE which determined its status and time allocation. As an emerging subject in the late 19th century, PE evolved from a British school tradition of competitive sports and military-drill physical training (Donovan et al. 2005). It was narrowly viewed as a physical experience entailing practical challenges and benefits but devoid of intellectual content and advancement. Claims PE is bereft of theoretical knowledge were countered by Arnold's (1979) aforementioned debate on education *about* movement. The visibly practical component of PE is misused to demote it as non-intellectual but the physical aspect necessitates comprehension of inter-disciplinary scientific knowledge (Tindall & Enright 2013). Nevertheless, PE was incorrectly labelled as non-academic in an education system that conceptualised schooling as academic (Reid 1996) and was colonised by

teacher-centred philosophies like essentialism and perennialism that imparted intellectual knowledge (Sadker & Sadker 2005). Consequently, PE started its curriculum journey with low subject status which compromised its ability to compete for time with higher ranked subjects in a crowded and hierarchical curriculum.

Evidence of this epistemology in contemporary UK education is retention of an uncontested educational model organising knowledge into subjects categorised and ranked as academic or non-academic according to perceived intellectual content. The outcome is a crowded and hierarchical curriculum wherein academic subjects, such as English and Mathematics, enjoy undisputed supremacy whereas non-academic subjects, like PE, are demoted. Blame for a congested curriculum is directed to early curriculum design compartmentalising knowledge into subjects (Hurst 2015) even though the rationale for doing was never articulated (O'Hear & White 1993). Up until 1989, teachers of 4-14 years old pupils enjoyed considerable autonomy regarding content (Colwill & Gallagher 2007). The UK Government then introduced a 'common' curriculum of 10 subjects in England and Wales, followed by NI in 1992. The subject-based approach was unmanageable as primary teachers struggled to master up to 10 disciplines (Colwill & Gallagher 2007). Although revised in 1996 to reduce content, reductions in NI were insufficient. Prior to the 2009 reforms, the Northern Ireland Primary Curriculum (NIPC) Framework included RE, five Areas of Study and four cross-curricular themes (Council for Curriculum Examinations & Assessment (CCEA) 2001). CCEA's (2009) response to teachers' disapproval of a crowded, single-subject curriculum was a streamlined structure based on broader learning areas. Whether this was achieved is questionable as the revised NIPC comprised RE, six areas of learning, three Cross-Curricular Skills and five Thinking Skills & Personal Capabilities.

An over-loaded curriculum is problematic as primary teachers may have inadequate time for its effective implementation. Therefore, interpretation of their defence of lack of time to provide PE considers what teaching and planning time they have to implement the NIPC as well as to discharge other professional duties. Annually, teachers are contracted to work 1265 hours (DENI 1987) which amounts to 6.5 hours a day over the maximum 190 teaching days permitted by DENI (2103b), or 32.5 hours over a 5-day week. However, primary teachers in NI, similar to those in England and Wales (Department of Education for England

2019), are not obliged to teach more than 25 hours a week (DENI 1987). There is no data confirming how much actual teaching hours primary teachers in NI undertake but primary teachers in England self-reported a weekly average of 23.1 hours (Department of Education for England 2017). As the duration of the school day and week is capped in NI, it is unlikely primary teachers would have the opportunity to surpass the 25-hour limit. Alternatively, insufficient rather than excessive teaching time may be the concern as 25 hours is not enough to implement all of the 'crowded' NIPC so some content may be undelivered.

Inadequate teaching time could be exacerbated by insufficient preparation time. The 7.5-hour difference between the contractual 32.5-hour working week and 25 hours teaching time does not include compulsory daily 30-minute lunch breaks (DENI 1987) so five non-teaching hours remain when deducted. If these five hours are devoted to planning rather than other professional responsibilities, the question is whether one hour a day is enough preparation for five hours daily teaching as this equates to 12 minutes planning for 60 minutes of teaching. Discrepancies between primary teachers' contractual hours and actual hours worked indicate it is not. No research has been conducted quantifying actual working hours of primary teachers in NI but insights are gained from England as primary teachers' mean weekly working hours was 55.5 hours (Department of Education for England 2017). If primary teachers in NI performed similar hours, they would exceed their contractual working week of 32.5 hours by 23 hours (71% increase). The England survey reported 33.2 of the 55.5 hours (=59.8%) was committed to non-teaching and half of this time (=16.6 hours) was devoted to planning lessons and marking. If transferable to NI, the contractual five hours non-teaching time does not cover the time needed to prepare lessons. Teachers may feel compelled to accrue planning hours beyond official working week or opt to deliver un- or under-prepared lessons and/or fewer lessons.

Although planning and teaching are recognisable teacher roles, they only constitute one item on a 12-item list of professional duties in the Terms & Conditions of Employment of a Teacher (DENI 1987). This list highlights their extra responsibilities, e.g., performance reviews (Appendix 10). Additional duties are contextualised by neoliberal influences like performativity and accountability across the public sector requiring 'practitioners to organize themselves as a response to targets, indicators and evaluation' (Ball 2003, p215).

This is evidenced in education as primary teachers assigned half of their non-teaching hours to other professional duties (Department of Education for England 2017). Teachers exceeding contracted hours to perform non-teaching tasks was initially theorised by Larson (1980) and Apple (1986) as a process of 'intensification' characterised by a 'chronic and persistent workload' and a 'lack of time' (Hargreaves 1994, p118-120). This was more recently supported by the Department of Education for England's (2017) survey as 93% of teachers stated workload was problematic and most disagreed workload was acceptable and achievable within contracted hours.

As no comparable research was conducted in NI, workload concern is inferred from two sources. Firstly, the Teachers' Health & Wellbeing Survey (DENI 2003) as 49.7% regarded their job as very or extremely stressful and 74% identified excessive workload as a factor. Secondly, a 3-year period (2017-2020) of industrial action disputing workload and pay, and the revised agreement (DENI 2020) itemising numerous workload adjustments. Therefore, primary teachers in NI may be experiencing excessive workloads surpassing contractual obligations – a predicament reported in many countries notably the UK, Australia and USA (Hurst 2015). Crump (2005, p38) observed how alongside a 'crowded curriculum', teaching is a 'crowded profession'' as teachers are 'time-poor'. Time constraints challenge NI-based primary teachers as contractually they have only five planning hours and 25 teaching hours a week to implement an overloaded NIPC. They also have to perform other roles and so may be confronted with timetabling issues and competing priorities. Consequently, preparation and teaching time allocation is determined by a subject's status within a 'hierarchical curriculum'.

A congested curriculum induces a subject order as multiple single disciplines assert superiority to compete for curriculum time. Hence, its status determines allocated time. Evidence of a hierarchical curriculum in the UK is located in early National Curriculum designs promoting the elevation of three disciplines as 'core'. This resulted in a 'territories of priority' between tested core and non-tested foundation subjects as well as the 'undervaluing of practical knowledge' (Boyle & Bragg 2006, p571). English, Mathematics and Science qualified as 'core' as comprised intellectual knowledge so academic and worthy of higher status. Conversely, subjects entailing practical knowledge, notably PE, were non-

academic and granted lower status. Proof of prioritisation of English and Mathematics at macro-level in NI is obtained from DENI's (2011c) 'Count Read Succeed' strategy which positioned literacy and numeracy as 'core' (p8) to the NIPC. Verification at meso-level is post-primary schools undertaking academic selection of incoming students by administering a Common Entrance Assessment (Association for Quality Education 2023) which exclusively tests primary pupils' literacy and numeracy. Claims of English and Mathematics' primacy at micro-level could be substantiated by primary teachers affording them more curriculum time than other subjects.

In NI, comparable to England and Wales, time allocation for each subject is not prescribed centrally as schools determine times (Education (NI) Order 2006). Enactment of this discretion may prejudice English and Mathematics as they are afforded inflated time. Supporting data is unavailable for NI, Scotland and Wales but subject bias in England was verified. Boyle & Bragg (2005) revealed a primary curriculum positively skewed towards English which enjoyed average percentage teaching times of 28.7% in Key Stage 1 and 26.7% in Key Stage 2. Mathematics also benefitted from percentage times of 21.7% and 21.9% in Key Stage 1 and Key Stage 2 respectively. This indicated approximately half of curriculum time (50.4% in Key Stage 1 and 48.6% in Key Stage 2) was devoted to these two subjects. Results were attributed but not conclusively established to central government pressure to raise literacy and numeracy standards. The 2-hour PE recommendation represents 8% of the 25 hours primary teachers in NI, and indeed England, are required to teach which is slightly higher than the 6-7% European average (Hardman 2007). In England, PE's average percentage teaching times of 6.8% in Key Stage 1 and 7.0% in Key Stage 2 were higher than other non-core subjects but still below 8% (Boyle & Bragg 2005). Conversion of NI's overall weekly average PE time of 90 minutes (Sport Northern Ireland 2009a) equates to 6% of teaching time so it is lower than the recommended 8%. Collectively, results portrayed a biased and distorted primary curriculum rewarding higher status subjects with more teaching time which partially explains an under-provision of PE. This was corroborated by Hardman's (2000; 2006; 2007) and UNESCO's (2015) conclusions that although PE in most countries has similar legal status as other subjects, in practice it is inferior to academic subjects so suffers from serious declines in curriculum time.

3.4 Theoretical Explanations of How a Lack of Facilities Might Influence the Amount of Primary PE

A lack of facilities was the fourth most frequent reason for the non-delivery of two hours of PE as cited by 26% of schools in DENI's (2012) survey but explanations were unexamined in this study. Primary teachers also reported insufficient timetabled access to an indoor hall in ETI's (2022) evaluation. However, it did not contain additional detail as did the few other studies (n=7) researching PE facilities that were identified during a systematic search (Appendix 9). Hill & Hulbert (2007) developed a PE Environmental Survey to determine quantitative and qualitative aspects of facilities in the United States yet how they influenced the amount of PE was unexplored. Orunaboka & Nwachukwu (2012) highlighted the poor maintenance culture of PE facilities in Nigerian secondary schools but not its impact on quantitative provision. Kroupis et al. (2019) discovered Greek post-primary PE teachers working with very satisfactory facilities showed higher job satisfaction and lower burnout levels compared to those with poor facilities. Yet whether PE delivery time was affected was unconsidered. Dewi et al. (2021) examined Indonesian elementary schools' PE facilities but focused on management issues rather than their influence on PE time allocation.

Other investigations categorised PE facilities using qualitative criteria. Rainer et al.'s (2012) study of primary head teachers in England identified facilities as a challenge to high quality PE delivery: 71% classified facilities as 'poor standard', 80% said indoor facility sizes were 'severely restricted' and 50% concluded they 'presented health and safety issues'. Hanggara & Sulaiman (2019) categorised 9.09% of Indonesian elementary schools' PE facilities as 'good', 40.91% as 'enough' and 50% as 'less'. These results corresponded with UNESCO's (2013) finding that globally more countries conveyed dissatisfaction as 44% rated facility quality as 'below average' or 'inadequate' compared to 26% as 'excellent' or 'good'. Similar concerns were expressed at facility quantity as 57% selected 'limited' or 'insufficient' compared to 16% for 'extensive' or 'above average'. Although these studies did not clarify how a facility deficit negatively influenced quantitative provision, they showed how this reason was widened to include qualitative dimensions, i.e., a lack of quality facilities Consequently, it was speculated that the quantitative aspect considers accessibility - where, what type and amount – as well as availability – whether it can be used for PE. Whereas the

qualitative element encompasses suitability and safeness. It was further reasoned that teachers initially contemplate accessibility and availability as PE facilities are usually singular fixtures, unlikely to change and externally pre-selected by DENI, before rating their suitability and safeness for each of the five activity areas.

In relation to accessibility issues such as where, type and amount, the NIPC contemplates outdoor and indoor PE but does not itemise the type or number of facilities required for delivery. Regarding outdoor facilities, DENI's (2020b) Primary School Building Handbook stipulates 5-classroom schools should have two 350m² 'outdoor paved spaces' but refers to 'play spaces' (paragraph 4.9) rather than 'PE spaces'. These requirements only apply to post-2011 buildings and DENI (2020c) could not verify how many schools were built since its publication. Sport Northern Ireland's (2016) facilities database, containing 68% of primary schools in NI, excluded 'outdoor paved spaces' as their appropriateness for physical activity was indeterminable. Secondary analysis of this database indicated natural grass turf pitches in 34% of schools but only two (=0.4%) had a Third Generation (3G) synthetic grass pitch[6] and one (0.2%) had a Second Generation (2G) synthetic grass pitch[7]. This suggests only a third had access to an outdoor grass area. Even if a school had access, availability might be constrained by multiple users and adverse weather conditions so teachers may be reliant on indoor facilities to deliver primary PE.

For indoor provision, 4- and 14-classroom schools require a 160m² 'indoor multi-purpose hall' but only 21-classroom schools have a second hall, albeit 110m² (DENI 2020b). Secondary analysis of Sport Northern Ireland's (2016) database showed 87% (n=515) of the 590 primary schools had a 'sports hall' conforming to DENI's dimensions. Whilst suggesting a high percentage could access an indoor facility, its multi-use for assembly, dining and performances (DENI 2020b) compromises availability. If a school day operates 9am-3pm, weekly hall availability is 30 hours but this could be reduced to 25 if one hour is deducted daily for the other three uses. Scheduling two hours a week per class is impossible for some

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[6] 3G pitches have longer pile synthetic surfaces with rubber crumb infill. This is the preferred surface for 'big ball' sports including Gaelic Games, football and rugby (Sport Northern Ireland 2023).
[7] 2G pitches have shorter pile surfaces top dressed with sand. These are considered 'multi-sport' and can accommodate a wider range of sports but only at a recreational level (Sport Northern Ireland 2023),

schools depending on size. A 7-classroom school needing a hall for 14 hours is feasible. However, a 14-classroom school is problematic as 28 hours is required but they only have one hall for 25 hours. A 21-classroom school necessitating 42 hours is attainable as two halls are available for 50 hours but only if the smaller hall is practical for PE. Schools with more than 25 classrooms are unable to schedule two hours as only two halls are available for 50 hours. Calculations only apply to schools constructed post-1992 as DENI (2021a) previously advised all primary schools irrespective of classroom number had one hall. Those built pre-1992 with 13 classes or more are unable to schedule 26 hours of PE. An exact number of schools prevented from timetabling two hours was incalculable as DENI (2019) was unable to provide a breakdown of schools by classroom number. Swimming pool accessibility and availability is especially challenging as no primary school has their own pool (Sport Northern Ireland 2016). Schools avail of external providers but Sport Northern Ireland's (2009b) audit revealed a deficit. Although there are 81 pools in NI, budgetary constraints restrict teachers' options to 41 council-owned pools (Sport Northern Ireland 2016). The high number of primary (n=796) and post-primary (n=192) schools indicates one pool per 24 schools which may result in reduced or no swimming time.

Facility access and availability does not guarantee PE unless teachers rate its quality which entails consideration of suitability and safeness. Teachers may first appraise the facility's quality generally for PE but then assess it specifically for the five activity areas as each activity might have different requirements. The NIPC does not mention facility quality thus compelling teachers to research other guidance. The most authoritative advice is the Association for Physical Education's (A*f*PE) (2020) safe practice guide. Up until mid-2023, DENI's website advised how it distributed copies to every school (DENI 2023a). This notice no longer appears so whether schools continue to receive a copy from DENI is unknown. Nevertheless, this publication may help evaluate suitability and safety but teachers' level of engagement with its 386 pages and capacity to cross-reference with the NIPC's five activity-specific sections is unknown. The proceeding cross-examination between the corresponding sections in the NIPC and A*f*PE's advice for the five activities illustrates the complexities and contradictions encountered by teachers undertaking the same analysis. The prospect of teachers doing so is improbable as this task was complicated, laborious and inconclusive when conducted by the researcher. Teachers with unanswered safety questions may

cautiously condemn facilities as inappropriate and hazardous validating their part or non-teaching of some or all of the five activities.

Athletics

The minimum statutory provisions for Athletics prioritises development of running, throwing and jumping from Foundation Stage to Key Stage 2 (CCEA 2009). The facilities required to attain these skills are unspecified in the NIPC. Primary teachers assessing facility suitability and safety for Athletics may view A*f*PE's (2020) guidance as unhelpful as it does not always provide specifications for or differentiate between indoor and outdoor, and primary and post-primary venues. Running areas should have 'sufficient space' (paragraph 2.8.92), a 'throwing area' is mentioned (paragraph 2.8.82) and jump landing areas must be 'sufficiently large' (paragraph 2.8.83) but measurements are unstated. Primary-specific guidance stipulating jumping should only be considered if there is a sand area (paragraph 2.9.91) is particularly problematic as primary schools may not have one.

Dance

Dance entails body movements at Foundation Stage; exploring space, travelling, jumping and turning at Key Stage 1; and developing effective use of space, levels, directions and speed at Key Stage 2 (CCEA 2009). The NIPC does not indicate facilities needed to acquire these competences, however indoor settings are presumed as music is usually required and audio access is easier inside. A*f*PE (2020) recommends a minimum $3m^2$ per student for primary dance (paragraph 2.8.36). If a school's hall complies with DENI's $160m^2$ requirement and a class does not exceed DENI's (2011b) maximum 30 pupils, this condition is fulfilled as each child has $5m^2$. However, this assumes all space is usable and unobstructed. Additionally, A*f*PE recognises some dance styles require 'significant freedom to move' (paragraph 2.8.36) implying more than $3m^2$ may be required as the NIPC stipulates travelling and jumping.

Games

Games involves skill acquisition through a range of activities in Foundation Stage; developing handling, hitting kicking, running, stopping, jumping and skipping in Key Stage 1; and increasing control in running, stopping and jumping, and improving handling, hitting

and kicking through adopted, mini-games in Key Stage 2 (CCEA 2009). Facilities conducive to achieving these competences are unidentified in the NIPC. A*f*PE (2020) only refers to six games and the quantity and quality of advice varies. Contradiction was evidenced in paragraph 2.8.32 as a basketball court should have a 1.05m perimeter zone but if unavailable, play is approved by 'careful officiating and management of the situation'. Other instruction is vague, e.g., 'sufficient space' (paragraph 2.8.40) for net games and surface 'soft enough' for rugby falls (paragraph 2.8.14). Different safety requirements between games may exceed teachers' knowledge and expectations to obtain this information are unreasonable.

Gymnastics

Gymnastics incorporates body management in Foundation Stage and exploring movement skills including travelling, jumping, landing, rolling, climbing, transferring weight and balancing during Key Stage 1. Refining those skills but also flight, transferring weight on hands, twisting, turning and stretching is expected at Key Stage 2 (CCEA 2009). The NIPC does not discuss which facility accommodates mastery of these skills but indoor locations could be inferred as they involve interaction with the floor and apparatus. A*f*PE (2020) advises sprung or semi-sprung floors are 'most beneficial' (paragraph 2.8.18) to activities like Gymnastics but it is unclear whether this is applicable to primary PE. If so, it is obstructive as it is unlikely a primary school would have a sprung floor. DENI (2020b) specifies a 'sealed hardwood stripped flooring' (p38) in the multi-purpose hall but not absorption capacity. Although 8m² per student is proposed for 'safe movement and the use of apparatus' this relates to a 'class size of 30 in a typical secondary school gymnasium' (paragraph 2.8.37). It is uncertain if this is transferable to and realistic for the primary sector. A class of 30 needs 240m² which exceeds DENI's 160m² hall dimensions which only accommodates a gymnastics class of 20.

Swimming

Swimming, first introduced at Key Stage 2, necessitates basic swimming and personal survival skills (CCEA 2009). Teachers' consideration of a pool's suitability and safety is more complex as they depend on external providers for instruction and facilities. The Education & Authority for Northern Ireland's (EANI) (2018a) guidance envisages partnerships between

teachers and a 'specialist swimming instructor' (S.2.3). Yet the duty of care remains with teachers including in the changing and pool areas. Additionally, teachers should know the pool's standard operating procedures and staff-child ratio policy. This could deviate from EANI (2009) regulations for educational visits, specifically one adult per 15 children. Additionally, A*f*PE's (2020) swimming safety advice imposes more requirements, for instance, a risk assessment. EANI's (2018b) swimming risk assessment form could assist but completion may necessitate considerable time. Gaining this level of knowledge may initially overwhelm and deter teachers.

The foregoing discussion revealed three issues. Firstly, an onerous obligation on primary teachers to source, comprehend and reconcile technical knowledge from multiple resources outside the NIPC to determine whether their facility is acceptable. Secondly, it highlighted a lack of synergy between A*f*PE, DENI and the NIPC specifications. Consequently, some primary school facilities may not enable the effective and safe delivery of PE. DENI (2020b, paragraph 3.1) advocates that a school building and grounds' design should 'extend, not restrict, the choice that teachers are able to make'. Notwithstanding this advice, a scarcity of accessible, available, suitable and safe facilities may obstruct delivery of the five activities thereby reducing PE time overall. Ironically, the facility a school has may determine whether statutory requirements for PE are delivered rather than the statutory provisions dictating the facility a school should have. Lastly, this debate illustrated how facilities influence the five activity areas differently, thus warranting an activity-specific investigation of factors.

3.5 Theoretical Explanations of How a Lack of Equipment Might Influence the Amount of Primary PE

An equipment shortage was the sixth most common reason for offering less than two hours as quoted by 6% of participants in DENI's (2012) survey. Neither this nor any of the four studies located during a systematic search (Appendix 9) elucidated how. Bevans et al. (2010) discovered adequate PE equipment was positively associated with student activity levels in schools in the United States but their influence on quantitative provision was unexamined. Orunaboka & Nwachukwu (2012) claimed a lack of sophisticated PE equipment in Nigerian schools but did not investigate their impact on time allocation. In contrast, in Rainer at al.'s

(2012) study, 86% of primary head teachers in England stated their school had a sufficient supply of equipment. However, head teachers' perspectives may not reflect teachers' assessment of equipment. UNESCO (2013) reported 39% of countries rated equipment quality as 'below average' or 'inadequate' compared to 27% as 'excellent' or 'good'. Additionally, 61% selected 'limited' or 'insufficient' for equipment quantity compared to 18% for 'extensive' or 'above average'. Similar to literature on facilities, these studies did not explain how an equipment deficit influenced PE time but they did imply this cause encompassed quantitative and qualitative aspects, i.e., a lack of quality equipment. Dissimilar to the facilities discussion, it is proposed teachers first consider qualitative issues before progressing to quantitative matters. This is because PE equipment comprises numerous, free-standing, portable items selected internally by the school so they are changeable and obtainable. Accordingly, teachers initially contemplating general PE delivery might ask four questions: firstly, what equipment is suitable for delivering statutory PE; secondly, what are the safety requirements for those items; thirdly, can they be accessed in the school; and lastly, are they available when needed. They may then ask the same questions but specifically for the five activity areas. A*f*PE, DENI and NIPC guidance, which teachers may initially consult to resolve these four queries for PE generally and specifically the five activities, are discussed to demonstrate this process and how a range of similar and different influences operate within each activity.

Teachers may first ponder the qualitative dimensions of equipment including what items are suitable and safe for delivering PE generally. The NIPC states Foundation Stage pupils should be enabled to 'use a range of small equipment to develop skills' (CCEA 2009, p45). During Key Stages 1 and 2, children should advance 'from exploring and using a wide range of large and small equipment to using equipment appropriately' (CCEA 2009, p101). Although provisions envisage equipment, no specific items are listed. DENI's handbook's only reference alludes to 'fixed outdoor apparatus' (2020b, paragraph 4.12) but does not offer examples. A*f*PE's (2020) general safety guidance includes an equipment checklist detailing some items, e.g., goal posts, but only for Gymnastics, Games and Athletics. Moreover, it does not always distinguish between primary and post-primary. This suggests teachers have to undertake the tedious task of ascertaining appropriate equipment. Once equipment is identified, teachers encounter a series of contradictory and ambiguous safety demands.

Inconsistency is exemplified in A*f*PE's stipulation equipment is of 'acceptable quality' (paragraph 2.9.2). A British & European Standards Kitemark provides such assurance but later cautions 'compliance with British Standard does not in itself confer legal immunity' (paragraph 2.9.3). Uncertainty is demonstrated in DENI's (2020b) advice that the site and size of fixed outdoor apparatus 'should be carefully considered in relation to the age range of the pupils' (paragraph 4.12). Yet it does not recommend measurements for specific year groups thus consigning teachers to resolve.

After settling qualitative issues, teachers may consider quantitative matters including accessibility. They could ask whether their school owns the desired items and the quantity needed, they are easily retrieved from wherever they are stored and are available when needed. The question of how many varies as it depends on the item, pupils and activity, as exemplified by uncertainties associated with mats. A*f*PE (2020) does not stipulate the minimum area for a matted surface per child but this is defensible as dimensions depend on age, ability and activity so it is impossible to itemise sizes for all scenarios. Hence, teachers must compute figures but even when calculated they could discover their school does not own enough mats. Conversely, even if the school owns the required number, usage is compromised unless mats are collectable from user-friendly storage without difficulty. Only 4- and 14-classroom schools built after 2011 have a 15m² PE store and a 10m² mat store (DENI 2020b). Schools built pre-2011 may not have designated spaces for PE equipment resulting in items being stored in multiple and inconvenient locations, or have no storage at all. Usage is lessened further if unavailable because other colleagues require items at the same time which is more likely in bigger schools. A 21-classroom school built post-2011 should have two multi-purpose halls (DENI 2020b) and be able to schedule two hours of PE per week for each class if both halls are used concurrently. Although they may not have two sets of equipment to facilitate two simultaneous lessons. A 21-classroom school may have bigger stores, namely a 30m² PE store and 20m² mat store (DENI 2020b), but it is unclear whether these dimensions could accommodate duplicate sets of equipment. Post-reflection of qualitative and quantitative queries about general PE equipment, teachers possibly commence a more focused enquiry regarding the suitability, safety, accessibility and availability of activity-specific equipment.

Athletics

The NIPC's statutory requirements for Athletics refer to throwing a 'variety of equipment' at a 'range of targets' during Key Stages 1 and 2 (CCEA 2009, p102). They do not itemise equipment or mention resources for running and jumping. A*f*PE (2020) lists examples for all three skills such as javelins, but does not differentiate between primary and post-primary sectors. Advising throwing equipment should be in 'good repair' (paragraph 2.11.20) is unhelpful as A*f*PE does not clarify what constitutes 'good'. Primary teachers may not know what specific equipment is suitable to implement the Athletics curriculum. This dilemma is further complicated when determining safeness as A*f*PE's advice is incomplete. For instance, hurdles must conform to UK Athletics Standards (paragraph 2.9.86) but these are not detailed. Consulting additional guidance could be time-consuming and dissuade teachers from following-up queries. Even if teachers identified appropriate and safety-compliant equipment they may be unable to access them if the school has not purchased them and in sufficient quantity or if storage is impractical. Additionally, availability is compromised if resources are used simultaneously by other teachers.

Dance

Dance's statutory provisions mention a 'variety of stimuli' (p44) at Foundation Stage, 'different stimuli and accompaniments' (p103) at Key Stage 1 and 'simple folk dances' (p107) at Key Stage 2. Specific stimuli and accompaniments are not stipulated. A*f*PE's (2020) mentions music and IT equipment but only lists a CD player. Teachers might feel uncertain about what is appropriate equipment for Dance. When ascertaining dance equipment's safeness, A*f*PE guidance is limited to a singular reference that 'all portable electrical appliances, such as … music systems' (paragraph 2.9.76) are subject to Portable Appliance Testing. Readers are then required to access the Health & Safety Executive website for information. Requiring teachers to organise formal testing for common resources such as a music player might be unrealistic although it could be included in a school's annual safety inspection. Similar to Athletics, accessibility and availability of dance equipment is reduced if the school has not acquired the correct amount and user-friendly storage, as well as duplicate sets for concurrent use by multiple classes.

Games

Statutory requirements for Games envisage a 'variety of equipment' (p44) for all key stages but items specifically for 'handling, hitting and kicking' (p104) are required at Key Stages 1 and 2 (CCEA 2009). As the NIPC does not stipulate individual games, exact resources are unlisted. Whilst teachers can consult A*f*PE's (2020) equipment section, the only game mentioned is tennis which requires rackets, balls and nets. Netball is cited in a general checklist for games equipment but only goalposts are mentioned. The absence of prescribed items for other games and their specifications, e.g., size, generate concerns as teachers could be unsure what resources are developmentally appropriate. To illustrate, A*f*PE advises unfixed posts 'are adjustable for different age groups' (p152) but does not provide recommended heights. Other queries ask whether items are required at all compelling teachers to ascertain variations between different games and resolve ambiguities. For instance, A*f*PE states mouth guards are 'highly recommended' (paragraph 4.2.12) for hockey but does not mention other similar games, e.g., hurling. As before, accessibility availability is also lessened unless the school owns the required items and in sufficient quantity for one or more class, and they are conveniently located in workable storage.

Gymnastics

Gymnastics entails 'low apparatus' (CCEA 2009, p105) at Key Stages 1 and 2 but statutory entitlements do not list items or mention equipment for Foundation Stage. A*f*PE's (2020) guidance may assist teachers in identifying suitable resources as some primary-specific examples are provided including climbing frames. Although height, length and weight are not provided so teachers must establish appropriate measurements. These may vary depending on the age and ability of their pupils, and the planned activities. The usefulness of A*f*PE's advice is lessened by its vagueness as evidenced in text insisting beams have 'sufficient pins' and 'trackways are well-maintained' (p151). Teachers may feel ill-equipped to make these assessments. Nor can they assume equipment is safe following the annual inspection conducted by 'external contractors' (paragraph 2.9.46) with a 'known reputation for competent inspection' (paragraph 2.9.61). Teachers are still required to ascertain safeness immediately prior to use as previous checks do 'not guarantee condition and safe use at a later date' (paragraph 2.9.72). Similar to the previous three activities, accessibility

and availability is diminished if a school does not possess items and in the required quantity for contemporaneous use by multiple users, and has orderly and convenient storage.

Swimming

The statutory content for Swimming incorporates 'swimming aids' (NIPC 2020, p110), however types are not disclosed in the curriculum or A*f*PE's (2020) swimming guidance. Teachers can seek advice from external swimming instructors but they cannot delegate decision-making as they have a perpetual duty of care (EANI 2018d). Goggle use may mystify teachers as A*f*PE's advice is contradictory. Goggles are 'not considered to be necessary' for 'short curriculum swimming lessons' (paragraph 2.13.36) because contact 'might result in injury to both the swimmers wearing the goggles and those who are not' (paragraph 2.13.38). Yet A*f*PE approves prescription goggles for 'very short-sighted' (paragraph 2.13.43) learners even though wearing them could still cause damage to the wearer or other swimmers. Worryingly, if a parent has made a written request for their child to wear goggles because of their particular need, the letter 'would not constitute any form of indemnity' (paragraph 2.13.37). Teachers could be liable if injury arose. Accessibility and availability might be taxing as reliant on the co-ordinated efforts of children, parents, school and pool provider to supply items and in sufficient quantity. Although, the user-friendliness of pool provider's storage facilities may not perplex teachers as the instructor accesses any equipment required.

Similar to the deductions advanced after cross-referencing advice on facilities, analysis of guidance on equipment concludes with the same three issues. Firstly, teachers are expected to acquire and merge technical knowledge from numerous sources beyond the NIPC to resolve qualitative and quantitative queries regarding equipment. Secondly, inconsistency between A*f*PE, DENI and the NIPC provisions may mean some queries are irresolvable. Thirdly, an equipment deficit could affect the five activities in similar and different ways. Both cross-examinations of available information on facilities and equipment also uncovered a fourth anomaly regarding how PE presents unique challenges as arguably no other area of learning imposes these difficulties. It is reasonable to assume primary teachers already possess the subject knowledge and skills to teach Language & Literacy as it comprises established and familiar content, e.g., conventions of grammar, which teachers

acquire and apply habitually throughout their personal and professional lives. By contrast, teaching PE necessitates ongoing acquisition of fluctuating and unfamiliar, specialised technical knowledge, e.g., legal specifications for facilities and equipment, which is not used every-day personally or professionally. Moreover, no area of learning other than PE is accompanied by a 386-page safety guide. This highlights how PE is potentially the subject which presents the teacher and children with the greatest possibility of danger as other classroom-based subjects may entail lower risk .

3.6 Theoretical Explanations of How a Lack of Expertise Might Influence the Amount of Primary PE

Although a lack of expertise was the fifth most frequently cited reason advanced for the under-provision of PE (DENI 2012), it was examined after the five other causes as it may be connected to some themes emerging when examining those factors. Before highlighting potential links, insufficient proficiency is contextualised within the wider concept of professionalism. Despite contested definitions for professionalism, the requirement of expertise comprising specialised skills and knowledge was undisputed because of its etymological roots in the Latin for profess which translated as an 'expert in some skill or field of knowledge' (Baggini 2005, p6). This condition impeded teachers' attainment of professional status as teaching was regarded as 'managerially demanding but technically simple' (Hargreaves 2000, p156). Teachers eventually enjoyed professional standing from the 1960s as theorists, notably Peters (1966) and Hirst (1983), verified that teaching necessitated technical knowledge and skills. However, an enduring consequence was evaluation by competence-based models. Although reductive (Hyland 1993), this approach is evidenced in the General Teaching Council for NI's (GTCNI) (2011) 27 professional competences which were separated into two strands – 12 under 'Professional Knowledge & Understanding' and 14 under 'Professional Skills & Application' (Appendix 11). GTCNI's distinction acknowledged expertise involves two aspects. Firstly, knowing and understanding things and secondly, being able to do things usually by applying the former. This division is especially relevant in PE as it is conceptually and practically demanding. Thus, consideration of what primary teachers in NI are expected to know, understand and do to teach all areas of learning but specifically PE is required.

Regarding 'Professional Knowledge & Understanding', GTCNI's Professional Competence 3 expects teachers to possess knowledge and understanding of the subjects which they teach. This entails maintaining up-to-date curricular, pedagogical and subject knowledge but the GTCNI does not expound on these three forms of knowledge. Insights are borrowed from Shulman's (1987) proposition that teachers' knowledge base comprises seven categories which includes these three types. Curricular knowledge involves a 'grasp of the materials and programs that serve as 'tools of the trade' for teachers' (Shulman 1987, p8). It comprises three aspects: curriculum materials for that subject – the subject-specific content; lateral curriculum knowledge – content relating to other subjects; and vertical curriculum knowledge – familiarity with content in the same subject for preceding and subsequent years (Shulman 1986).

Application to PE suggests primary teachers should know the PE statutory provisions for three year groups and the content for the five areas of learning to facilitate connected learning but this is time consuming. Pedagogical knowledge signifies comprehension of broader principles transcending subject matter such as learning theories (Grossman & Richert 1988). When considered within PE, primary teachers are expected to know how wider educational concepts apply to PE which could be conceptually demanding. Subject knowledge entails familiarity of a subject's content. This includes major concepts inside and outside the discipline as well how the subject is arranged, comprehended and responsive to new information (Grossman & Richert 1988). If extended to primary PE, teachers must know facts and theories underpinning PE, how they were substantiated and whether they inter-relate with other propositions within and beyond this discipline.

Primary teachers may challenge expectations to acquire expected levels of curriculum and pedagogical knowledge for all areas of learning. However, subject knowledge is more problematic as its relevance to primary teaching is controversial as it originated in post-primary education. Shulman's (1987) model, which dominated interpretations of subject knowledge, focused on the knowledge bases of subject-specialist post-primary teachers (Poulson 2001). Its validity in and applicability to primary teaching might be contested. The primary sector's class teacher system means one generalist teacher delivers all subjects to

one class. Arguably, it is unfair and unrealistic to expect equal levels of subject knowledge due to variations in demands between teaching one subject compared to six subjects. Contrariwise, the breadth and depth of subject knowledge at primary level is not comparable to that required at post-primary (Eaude 2014). Notwithstanding differences between the sectors, the GTCNI's framework does not distinguish between primary and post-primary. This might imply primary teachers should have the same subject knowledge for six areas of learning as a secondary teacher with a specialism in one.

Consequently, it cannot be assumed primary teachers have the same quantity and quality of subject knowledge for every subject. Concerns were summarised in Brown et al.'s (1998) deficit model of primary teachers' knowledge following studies highlighting poor subject knowledge in Science and Maths (Wragg et al. 1989), Geography (Golby et al. 1995) and Literacy (Medwell et al. 1998). Studies in Science (Heywood 2005), Geography (Catling & Morley 2013) and Art (Hallam et al. 2008) prompted Pope (2019) to conclude that most research indicated primary teachers have limited subject-specific knowledge in different subjects. Numerous investigations reported primary teachers' inadequate subject knowledge in PE (Jones 1996; DeCorby e al. 2005; Hart 2005) and specifically regarding rules, tactics and techniques (Carney & Chedzoy 1998; Xiang et al. 2002; Morgan & Bourke 2008). Notably, Sloan (2010) reported inferior technical knowledge for Gymnastics and Dance amongst PE co-ordinators notwithstanding their PE specialism. Shortcomings during initial teacher training and continuing professional development for primary teachers were implicated in low levels of subject knowledge for PE (Harris et al. 2012; Morgan & Bourke 2004; 2005). Although the question of what subject knowledge primary teachers have and need to have for PE remains unresolved.

The subject knowledge required for primary PE is unknown as it is unexplained in educational policy and guidance, and unanswered in academia. Siedentop's (2002) assertion that PE subject matter was not easily identified and therefore ill-defined was explicable by a wider debate on theoretical and practical knowledge. Whereas the former entails 'knowing-that', the latter requires 'knowing-how' (Ryle 1949). Despite disagreement amongst educational researchers, theorists such as Tinning (2002) insisted subject knowledge for PE included both. Accordingly, it is reasonable to expect primary teachers to 'know that' motor

development theories and studies confirm humans experience a process of physical growth (Pickup & Price 2010) so they provide developmentally appropriate physical challenges during PE. Similarly, it is rational to request they 'know how' specific motor skills are acquired according to motor learning theories so they maximise children's skill acquisition in PE. Obtaining sufficient theoretical and practical subject knowledge for PE may perplex primary teachers as it encompasses multi-disciplinary, scientific propositional and procedural information which is cognitively challenging and time-consuming. Concerns are intensified because the professional skills associated with PE require primary teachers to master, explain and perform movement skills they want learners to develop.

Possessing 'Professional Knowledge and Understanding' is only one of two strands in GTCNI's framework as 'Professional Skills and Application' are also necessary. Shulman & Shulman (2004, p262) explain how in 'addition to knowing, he or she must be capable of performing'. Teachers must be knowledgeable and skilful. As per Professional Competence 20, using a range of teaching strategies is one example. Although unspecified in GTCNI's competences, two core strategies are oral explanations and visual demonstrations. Notwithstanding common use in all areas of learning, widespread usage in PE (Tsangaridou 2006) may frustrate primary teachers as they involve technically correct narratives and physical performances. The quality and quantity of both are determined by their application of subject knowledge. Explaining and modelling incorrect technique compromises skill acquisition as learners replicate mistakes (Franks et al. 2001). Thus, teachers must ensure they possess and communicate accurate scientific information relating to the movement's critical components. Roberton & Halverson (1984) affirmed every motor skill has a specific pattern comprising a timed-sequence of multiple micro-movements. This 'components approach' (Haywood 1993) complexity is exemplified by Roberton's (1977) dissection of the overarm throw as 15 descriptors illustrate its components and developmental sequences, e.g., 'pelvis precedes upper spine in initiating forward rotation' (p93). Expecting this detail could strain primary teachers as CCEA (2006a) recommends primary children develop 22 fundamental movement skills by the end of Key Stage 2.

After identifying a skill's critical components, teachers are further tested by memorising and operationalising this information so they can provide a scientifically correct oral explanation.

Rink & Hall (2008) advised that although verbal instructions dominate classrooms, in PE they must be brief and clear to maximise active practice time. Consequently, teachers need to quickly recall and convert components into concisely articulated instructions. Clarity of expression is essential to ensure explanations are comprehensible to young children including those with additional needs. Cues should be child-friendly and contain developmentally appropriate vocabulary (McMorris 2015) but be sufficiently detailed to facilitate accurate replication. Although CCEA's (2006b) guidance converted components of some of the 22 fundamental movement skills into relatable teaching points, only six skills were covered so the advice is incomplete.

Teachers should also provide visual demonstrations modelling the correct movement as an important 'image of the act' (Franks et al. 2001, p33). Primary school teachers demonstrate in other subjects containing physical elements, for instance, modelling letter formation which is a fine motor skill (McMaster 2015). However, those required for PE entail enhanced levels of physical competence as many of the motor skills are more complex and require extra physical exertion and dexterity. They are also less familiar as not in every-day use. Teachers may have acquired theoretical and practical knowledge for a motor skill in anticipation of having to explain it but they have to be skilful at enacting this information by mastering the skill so they can perform it correctly. Knowing and understanding how to do something does not mean the person can do it (Fantl 2008), e.g., a forward roll. This may worry teachers who perceive they have insufficient physical competence. Ironically, teachers may lack physically proficiency because they did not receive the recommended amount of PE as pupils so they were not provided with sufficient instruction and practice. Concerns regarding personal physical ability could be heightened by the public nature of PE venues, e.g., communal hall. This contrasts with their classroom's privacy where they can sing off-key in Music or make rudimentary sketches in Art without an adult audience.

In education, teachers are expected to have knowledge and skills that learners do not but this is challenged in PE as it may be the only subject wherein learners may have more knowledge, skills and experience than the teacher. If primary school teachers feel they do not have the required professional knowledge, understanding and skills to teach PE, they may feel unconfident and minimise delivery time. Various studies indicated primary

teachers' low PE content knowledge produced uncertainty (DeCorby et al. 2005; Hart 2005) and undermined confidence and motivation to teach PE (Faucette et al. 2002; Morgan & Bourke 2004). Other research (Carney & Chedzoy 1998; Morgan & Bourke 2008) highlighted how primary teachers' perceived physical ability inhibited PE teaching confidence. Claims low confidence to teach PE reduces quantitative provision are enlightened by social cognitive theory on self-efficacy which denotes 'beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations' (Bandura 1995, p2). Application to education produced the phrase 'teaching self-efficacy' which refers to a teachers' beliefs about their capabilities to discharge professional tasks (Morris et al. 2016). Associations between amounts of teaching self-efficacy and increased planning (Allinder 1994), innovation (Stein & Wagg 1988), enthusiasm (Guskey 1984) and commitment (Evans & Tribble 1986) generally within teaching were reported. Regarding PE, Breslin et al. (2013) revealed primary teachers in NI with a PE specialism had higher levels of teaching self-efficacy in PE than generalists. Whether teaching self-efficacy influenced teachers' decisions regarding time allocations for subjects is undeterminable as overlooked in all studies. Nevertheless, the common-sense notion teachers 'cannot teach what they do not know' (Bennett 1993, p20) and can do, supports the assertion that teachers without the knowledge and skills to teach PE will lack teaching self-efficacy and so are less likely to teach it.

Consideration of how low expertise reduced PE time indicated potential connections and contradictions between themes raised when exploring the five other reasons. Notably, GTCNI's expectation that teachers have sufficient curricular, pedagogical and subject knowledge of PE as well as skill to provide effective explanations and demonstrations for a range of movement patterns was highlighted. Requirements are extended as examination of the fourth and fifth most frequently cited reasons, namely facilities and equipment shortage, revealed teachers are also obliged to access, understand and collate technical information in DENI's and AfPE's guidance to determine whether their facilities and equipment are appropriate. Collectively, the argumentation advanced for these three factors reinforced why teachers rated the other three - time, timetabling and priorities - as their top three as they have insufficient time to fulfil demanding requirements for PE due to a crowded and hierarchical curriculum which compels them to prioritise other subjects.

Support is gained from Iannucci et al.'s (2020) 3-domain framework on teaching multiple school subjects role conflict which implies teachers responsible for multiple disciplines encounter extra stressors. Status conflict arises if one role is valued more and as it is linked to subject status, less valued subjects are neglected (Iannucci & McPhail 2018). Schedule conflict occurs due to logistical challenges, e.g., time pressures to transition between teaching spaces such as a classroom and hall. The physical and emotional effort to teach multiple subjects manifests in expenditure conflict (Iannuci & McPhail 2019). This may be heightened in PE due to extra physical demands. Accordingly, a primary school teacher contemplating teaching PE may experience all three conflict domains and the outcome is reduced PE. Paradoxes also emerged after exploring all six reasons particularly regarding teachers' epistemic beliefs. Analysis of time, timetabling and priorities suggested PE was allocated less time because of low status as a practical subject devoid of academic content. This was contradicted by teachers' perceptions of low expertise as they implied PE's theoretical substance and intellectual demands. Potential associations and inconsistences between factors reinforced how sources are complex, inter-related and not fully understood.

The limitations of and gaps in existing research highlighted in this chapter are discussed further in the next chapter to show how they provided a rationale for this study, the development of the research questions as well as the theoretical structure of this investigation. Accordingly, these limitations and gaps also informed the methodology.

Chapter 4

Methodology

4.1 Overview of Chapter 4

This chapter describes and justifies the methodological approaches and procedures employed in this study. It commences by explaining how the outcome of the literature review was two research questions and five corresponding theoretical propositions which provided the theoretical framework for the study. It then reasons how using a multiple case study design incorporating methodological and data triangulation (Denzin 1989) was integral to maximising the findings' validity and reliability, and overall completeness of the study. Additionally, it details why and how three datasets comprising quantitative and qualitative information were created to test the five propositions and answer both research questions. The first dataset contained responses from twelve teachers from two primary schools in NI who participated in one individual in-person interview which integrated a card-sorting activity. The second comprised the researcher's observations during an on-site visit of both schools' PE facilities and equipment. The third consisted of statements from both schools' documents extracted by the researcher during desk-based research. This chapter makes extensive reference to Yin's (2018) authoritative guidance on case study research to show how recommended practice was followed throughout all stages to optimise methodological rigour.

4.2 Outcome of the Literature Review

The literature review revealed and scrutinised what was known and unknown internationally and nationally about factors influencing PE time. Thus, the limitations of and gaps in the existing knowledge base specifically regarding Northern Irish primary schools were highlighted. This study aimed to remedy these shortfalls by generating explanatory data pertaining to two research questions grounded in five theoretical propositions that were formulated following the literature review. Vaus (2013) discerned that social science researchers asked two types of questions: descriptive research asks 'What is going on?' whereas explanatory research investigates 'Why is it going on?'. Three NI-based surveys (Sport Northern Ireland 2009a; Department of Education for Northern Ireland (DENI) 2012, 2018) provided descriptive data to answer 'What is going on?', namely insufficient amounts of primary PE. Therefore, this enquiry focused on two explanatory research questions to elucidate why there was an under-provision as this dimension was under-researched:

1. What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in Northern Ireland?

2. How do primary school teachers explain those factors' influence on the amount of PE delivered in primary schools in Northern Ireland?

As 'the theoretical framework is the structure that can hold or support a theory of a research study' (Swanson 2013, p122), five themes identified in the literature review produced five corresponding theoretical propositions. They are summarised in Table 4.1 in a framework format customised to the research questions:

Table 4.1: Theoretical Framework for Investigating Factors Influencing the Amount of PE in Primary Schools in Northern Ireland

Research Questions	Themes	Theoretical Propositions
1. What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in Northern Ireland?	multiple factors	1. Multiple factors influence the amount of PE in general and the five specific activity areas
	PE & activity-specific factors	2. Similar and different factors influence the amount of PE in general and the five specific activity areas
2. How do primary school teachers explain factors' influence on the amount of PE delivered in primary schools in Northern Ireland?	influential factors	3. Some factors are more influential than others on the amount of PE in general and the five specific activity areas
	interconnecting factors	4. Some factors interconnect to influence the amount of PE in general and the five specific activity areas
	external & internal factors	5. Factors operate at external and internal levels to influence the amount of PE in general and the five specific activity areas

Both research questions asked primary school teachers directly to identify and explain factors influencing PE time so the study focused on primary PE and quantitative provision.

DENI's (2012) and the Education & Training Inspectorate's (2022) reporting of six and two reasons influencing PE time indicated multiple possible causes. Yet neither confirmed whether any one teacher nominated one single factor or if more than six were advanced so the extent of the number and type of issues was unknown. Proposition 1 queried whether single or multiple factors affected PE time as teachers in this study could propose an unlimited number and type as responses were not capped or pre-determined by the researcher. How many factors each teacher advanced was also reported. As existing studies related to PE in general, whether particular challenges arose in the five activities was undetermined. Hence, Proposition 2 inquired if similar and different factors impacted PE and each activity area to ascertain commonality and variations between activities. Proposition 3 contemplated whether some factors were more influential than others by asking the teachers to rank their answers rather than the researcher quantifying influence by aggregating frequently cited responses from a sample of teachers as in the DENI (2012) study. Proposition 4 considered whether some factors were inter-connected by inviting the teachers to advise whether they thought their factors were related and why as this aspect was never researched. Proposition 5 envisaged factors operated at external and internal levels so it explored a matter previously unexamined in NI research. These new insights informed this study's recommendations and conclusions which may help address inequalities in primary PE in NI.

As the initial orientation was deductive, a theory testing approach was adopted so the propositions were embedded in the research design and they guided the criteria for answering the research questions. Consequently, the propositions directed data collection, presentation and analysis. However, because they were reviewed and subject to modification, rejection and replacement at analysis stage, there was also an inductive and theory construction element to this study. Despite the study's strong theoretical foundations, Vaughan's (1992, p195) caution 'the paradox of theory is that at the same time it tells us where to look, it can keep us from seeing' was heeded by retaining flexibility to report and analyse discoveries unaligned to the propositions.

4.3 The Influence of Pragmatism on the Methodology

A research philosophy comprises three concepts which can direct an enquiry's focus and methodology namely axiology, ontology and epistemology (Biddle & Schafft 2015). Therefore, the researcher acknowledges and illustrates how their affiliation with pragmatist axiology, ontology and epistemology influenced their study.

Pragmatist axiology advocates social justice and so promotes ethics-based and action-oriented research that addresses social problems (Kaushik & Walsh 2019). The researcher's pre-existing commitment to these values manifested in their selection of a research problem namely insufficient and inconsistent amounts of PE. This highlighted an inequality in the educational experiences of children and young people which could adversely impact their health and wellbeing. The researcher regarded their investigation as a problem-solving endeavour from conception to completion as recommendations to solve this problem were also proposed in the discussion chapter. Pragmatism also embraces the processes of participatory democracy in enquiry (Kaushik & Walsh 2019). This ideology was embedded into two features of the research. Firstly, in the research title and questions as they explicitly prioritised the teachers' perceptions of the factors they identified as influencing PE time. This conveyed how their insights were integral to the study as they were previously overlooked in existing literature. The centrality of the teachers' perspectives was reinforced in the results chapters wherein the maximum number of quotes were published within the permitted word count of the thesis. This meant more teachers' voices could be heard rather than remain silent in a data archive. Secondly, in the research methods as a card-sorting activity was integrated into the teacher interviews. This data collection technique was participant-led so associated with autonomy and empowerment (Conrad & Tucker 2019).

Pragmatist ontology removes the hierarchy between objectivist and subjectivist notions of reality as it welcomes both (Shannon-Baker 2016). Whilst the former assumes a mind-independent reality, the latter presumes multiple, socially constructed realities (Shan 2021). This distinction is unproblematic as pragmatist research is 'intersubjective' (Maarouf 2019). It accepts the existence of one objective reality but also recognises numerous subjective realities as individuals have several interpretations of this objective reality. This ideology

was reflected in the study's research methods which incorporated data triangulation from three sources. As the teachers' interviews would contain personal explanations of how factors they identified impacted PE time, the researcher collected data from two other sources, namely PE facilities and equipment, and school documents. They could support or qualify teachers' accounts as there may be discrepancies between the teachers' perceptions and researcher's observations as well as differences amongst teachers. However, they would not invalidate them and vice versa. To illustrate, objectivism would consider the researcher's categorisation of one set of fixed wall bars in a school hall as PE equipment as an irrefutable fact of an objective reality. In contrast, subjectivism would contemplate how some teachers may not view the same item as PE equipment as they rate it as unsuitable for PE. The subjectivist researcher would understand how there are no fixed wall bars according to the teachers' subjective reality. This study accepted the co-existence of single and multiple realities and did not prioritise objective and subjective versions of reality over the other.

Correspondingly, pragmatist epistemology encompasses both positivist and constructivist conceptions of knowledge as pragmatism is premised on the notion 'what works' (Kelly & Cordeiro 2020). Hence, research should be devised and directed in the best way to produce practical knowledge that answers the research questions. As knowledge is rated on its practical value, the pragmatic researcher can avail of objective and deductively derived knowledge as well as subjective and inductively derived knowledge. Pragmatism rejects the historic separation of these viewpoints and accepts the valuable contribution of both whilst also recognising their fallibility (Johnson & Onwuegbuzie 2004). This ideology is signified in this study's research design and strategy, as well as the analytical approach. A multiple case study design was selected for its philosophical versatility as it can be oriented from a constructivist or positivist perspective (Harrison et al. 2017). This design facilitated an in-depth discovery of teachers' subjective interpretations of experiences in real world contexts (Stake 2006) alongside the application of replication logic to those interpretations to enhance the study's methodological rigour (Yin 2014). As pragmatism regards quantitative and qualitative paradigms as two cohesive rather than opposing views (Maarouf 2019), a mixed research strategy was used. Combining quantitative and qualitative disciplines aligned with pragmatism as a mixed approach should increase the validity, depth and

breadth of findings thus resulting in a better understanding of the research questions. The philosophical flexibility of pragmatist epistemology also enabled the researcher to avail of deductive and inductive techniques when undertaking theory testing and building during the analysis stage.

4.4 Research Design

The research design, described as the structure of an enquiry (Vaus 2013), was case study. This study aimed to explain one aspect of teachers' behaviour, namely how much PE is delivered. Therefore, this design was preferable as 'the essence of a case study … is that it tries to illuminate a decision or set of decisions; why they were taken, how they were implemented' (Schramm 1971, p6). As teachers' decision-making process is multi-faceted, dynamic and unique, its examination was facilitated by a case study design as it entails the 'study of the particularity and complexity of a single case' (Stake 1995, p. xi). The cases, defined as the 'object' of study and unit of analysis (Vaus 2013), within this case study were 12 primary school teachers. These 12 cases were the 'object' of the research questions and their perspectives required examination.

All research activity should contain theory as it provides an intellectual base for analysing, comprehending and solving problems (Kivunja 2018). However, its presence in case study design is essential otherwise it is of minimal value for broader generalisation (Yin 2018). Consequently, theory testing is regarded as the heart of a case study (Yin 1989). Given the centrality of theoretical content and testing to all research and specifically research design, the five propositions provided a theoretical structure that was entrenched into the research design so they could be tested and help resolve the research questions. To increase robustness, a multiple case study design was selected as obtaining supporting or refuting evidence from more than one case would be more compelling. This claim was based on replication logic which reasons that a finding from a single experiment is strengthened if replicated in a second experiment. Although it is normally associated with multiple experiments, it is transferable to case study design (Yin 2018).

A strength of this case study design was it facilitated discovery of intricate factors which may fluctuate and interplay in different contexts but its limitations were acknowledged and minimised. Vaus (2013) observed how all research designs should be internally and externally valid, and generate reliable and replicable results. Yet case study design is regarded as deficient in all of these aspects. Cynicism was countered by applying four logical tests common to social science research and implementing tactics recommended specifically in relation to case study research (Yin 2018). The four tests, tactics and phases that were implemented are summarised in Table 4.2:

Table 4.2: Tests & Tactics to Improve Validity & Reliability in Case Study Design

Test	Case Study Tactic	Phase of Case Study in which the Tactic was Implemented
1. Construct Validity	Multiple sources of evidence	Data collection
2. Internal Validity	Pattern-matching	Data analysis
3. External Validity	Multiple cases Replication logic	Research design
4. Reliability	Case study protocol Case study database Chain of evidence	Data collection

Firstly, construct validity concerns the correct selection of operational measures for concepts being examined to refute claims of the researcher's subjective selection (Ruddin 2006). This was maximised by using multiple sources of evidence during data collection. Although this mitigation measure may not preclude selection bias when deciding sources to be used. Secondly, internal validity which strives to ascertain a causal relationship. This is problematic in case study design because causation is commonly associated with deterministic causality which reasons that X causes Y so whenever X occurs, Y occurs (Yin & Sun 2011). This was addressed at the analytic stage by using a pattern-matching technique premised on probabilistic causation which reasons X may increase the likelihood of Y but it is not certain. Thirdly, external validity, which considers the generalisability of findings. This is a common criticism of case study design due to typically small samples (Zainal 2007). Applying this logic to case study design was questionable as this interpretation favoured

statistical generalisation but overlooked theoretical generalisation. The former, wherein an inference about a population derived from data gathered from a sample, applies statistical probability to generalise finding to the population. However, case studies do not seek this type of external validity (Vaus 2013). Alternatively, they are aligned to theoretical generalisation which involves generalising from a study to a theory. Cases are not samples (Yin 2018) so the researcher investigates what the case study suggests about a theory rather than the wider population (Vaus 2013). Consequently, foundations for obtaining theoretical generalisations based on the five propositions were arranged at the research design phase by selecting a multiple case study design and using replication logic. Lastly, reliability which verifies whether another researcher's repetition of procedures would yield the same results (Vaus 2013). This was enhanced by creating a case study protocol (Appendix 12), database and chain of evidence during data collection which documented all procedures. Although implementation by another researcher with the same cases would not guarantee identical results. For instance, interview data might be swayed by the rapport between interviewer and interviewee.

4.5 Research Strategy

The research strategy which indicates the general orientation to undertaking research, was mixed methods as this aligned with the pragmatist epistemology of the study. Methodological triangulation was warranted as combining quantitative and qualitative theoretical perspectives (deductive and inductive), ontologies (objectivism and subjectivism) and epistemologies (positivism and constructivism) would stringently test the propositions and comprehensively answer the research questions. As Cohen et al. (2018) explain, a qualitative or a quantitative hat is not suddenly worn when observing phenomenon as humans naturally integrate rather than separate - 'it is not an either/or world, but a mixed world' (p31). Merging approaches provided a more robust testing and complete answer than a single strategy. Completeness was increased according to 'complementarity' which asserts gaps left by one approach are filled by another. Mixing approaches should entail 'complementary strengths and non-overlapping weaknesses' (Johnson & Onwuegbuzie 2004, p18). This contrasts with 'supplementarity' which advocates mixed methods because it offers more information (Bergman 2011). Although mixed methods provides further data,

this is insufficient justification as any extra information, qualitative or quantitative, provides additional perspectives. Therefore, it was envisaged that precise, accurate measurements blended with rich, deep narratives would complement each other by addressing the limitations of each method.

Quantitative research aims to elucidate phenomenon via numerical data analysed by mathematically-based techniques (Yilmaz 2013). A quantitative dimension was warranted to generate numerical evidence to support or challenge the propositions. One example is how the number of factors proposed by each teacher substantiated or contradicted Proposition 1 which asserted that multiple factors influenced PE. The trustworthiness of the quantitative data was strengthened by increasing measurement reliability and validity. Reliability – a measure's consistency (Barry et al. 2014) - improved by considering the stability of measures over time. For instance, Proposition 4 entailed a test-retest method when computing facility dimensions to verify connections made by the teachers. Although not all quantities were re-tested, e.g., the teachers' ranking of factors, so reliability may have been compromised elsewhere. Measurement validity, also known as construct validity, queries whether a measure really assesses the intended concept (Tavakol & Wetzel 2020). This was addressed by establishing face validity, that is, whether a measure apparently reflects the aspect being examined. This is exemplified through Proposition 3 as teachers assigned ordinal numbers to factors so the resulting rank order logically indicated influence levels. Incorporating a quantitative strategy enhanced credibility by producing objectively obtained data regarded as reliable and valid (Easton et al. 2000). Notwithstanding the rigour associated with quantitative research, limitations were recognised. Notably, measurement may be too abstract and not reflect the intricacy and obscurity of the phenomenon under examination (Johnson & Onwuegbuzie 2004). This is particularly relevant to Propositions 3 and 4 as teachers' numerical ranking of individual factors would identify those regarded as influential but would not explain why and indicate how some factors could be related.

Qualitative research entails words to generate descriptive terms that reveal meanings people assign to their experiences of the world (Yilmaz 2013). A qualitative dimension was necessary to fully answer both research questions as they related to primary teachers' identification and explanation of influential factors which is inherently subjective. Numbers

alone could not reveal factors or how they influence PE time but words alone could. Qualitative research's amenability to encapsulating complexities is illustrated in Proposition 4. Insights regarding whether and how factors interconnect was best ascertained via written and oral expression of words. Vocabulary enabled complete, richer and authentic explanations reflecting the contextual uniqueness of the teachers' experiences. Although measurement is de-prioritised in qualitative research, reliability and validity were considered. Inter-rater reliability queries whether another researcher displays a similar recall of the phenomenon (Marques & McCall 2005). This concept informed the decision to photograph the teachers' written answers and audio record their oral replies. Nevertheless, lapses in reliability could arise elsewhere. For instance, another researcher may have detected and interpreted different information when analysing school documents. Validity denotes whether 'you are observing, identifying, or 'measuring' what you say you are' (Mason 1996, p24). This was improved through exact questions, e.g., for Proposition 2, teachers were initially asked to propose factors for PE in general and then specifically for the five activities. Conversely, validity was compromised on other occasions, for instance, when testing Proposition 3, as the researcher classified influence levels rather than teachers.

To maximise integration, a mixed-model combining quantitative and qualitative approaches within and across the stages of the research process (Johnson & Onwuegbuzie 2004) was used. A 'within' approach was demonstrated during data collection as quantitative and qualitative components were incorporated into all three data collection techniques. Although the three techniques were administered on separate occasions, the quantitative and qualitative dimensions of each technique were investigated concurrently. An 'across' approach was conveyed by both paradigms maintaining equal status within each dataset during the collection and analysis stage. Overall, by combining quantitative and qualitative research, completeness was enhanced as more personalised, nuanced accounts exposing complexities and diversity were procured than a mono-strategy. Consequently, a wider and deeper understanding of the research problem was obtained.

4.6 Research Methods

A strength of case study design is its facilitation of data and methodological triangulation. Another justification for an additional triangulation strategy stemmed from the reason for selecting a case study design in the first place, namely to conduct an in-depth investigation of phenomenon in its real-world context (Yin 2018). This study's intensive and situational dimensions necessitated multiple data sources, collection techniques and types. Obtaining information directly from teachers was essential to answer both research questions. Yet exclusive reliance on their explanations may have caused bias so two other sources were identified – school facilities and equipment, and school policies. This resulted in three datasets each entailing distinct data collection techniques and types as illustrated in Table 4.3:

Table 4.3: Data Source, Collection Technique & Type

	Dataset (1)	Dataset (2)	Dataset (3)
Data Source	Primary School Teachers (participants)	School PE Facilities & Equipment (physical artefacts)	School Policies (documents)
Data Collection Technique	Interview	Observation	Desk-Based Research
Data Type	Quantitative & Qualitative	Quantitative & Qualitative	Quantitative & Qualitative

4.6.1 Dataset (1) Teacher Interviews

Teachers from two primary schools were invited to a 60-minute, one-to-one, in-person, semi-structured interview combining a conventional question and answer format with a card-sorting activity. Teacher participation was vital because the study's purpose was to generate new knowledge derived from primary school teachers' position and the research

questions pertained to their identification and explanation of influential factors. An interview was the most effective way to explore their perceptions. This technique facilitated detailed exploration as it entailed conversation which is viewed as a natural and familiar means of communicating (Hochschild 2009). To minimise irrelevant digressions, a semi-structured format was selected to ensure focus on the research questions. Additionally, this provided flexibility for the interviewees to engage without constraint and the researcher to ask follow-up questions (Kallio et al. 2016). An interview guide (Appendix 13) was designed which reflected a systematic but adaptable approach and also how interviews enabled multi-sensory interaction, specifically verbal and non-verbal. Consequently, the interview comprised four sections yielding oral, written and diagrammatic responses (Appendix 14).

Establishing rapport with the interviewees was prioritised in the introductory Section A as the start of an interview was regarded as an apprehension phase characterised by interviewee mistrust due to the strangeness of the context (DiCicco-Bloom & Crabtree 2006). Trust was gained by consistently adhering to ethical standards, e.g., teachers were reminded their identity was coded to maximise anonymity. Affinity continued in Section B which acquired background information regarding their experience and how much PE was normally provided. The word 'normally' was accompanied by an explicit reminder that the amount they reported should relate to what was provided before the COVID-19 pandemic. This reinforcement was necessary to ensure that any temporary disruptions to PE delivery due to COVID-19 would not distort the figures they cited. Section C focused on the research questions and propositions by asking teachers to identify, rank and explain influential factors for PE in general and the five activities but it did so via a card-sorting activity. When teachers were asked to identify factors, they could write their responses on blank cards or select from ten pre-formatted cards as illustrated in Figure 4.1. The pre-formatted cards (Appendix 15) displayed 10 factors commonly cited in existing research (Appendix 9 – Table 9.2).

Figure 4.1: Open & Fixed Card Labels

Card Label	
Blank: Open (participant-defined)	**Pre-Formatted: Fixed (researcher-defined)**

The teacher then placed their cards on a display board under one fixed category as illustrated in Figure 4.2:

Figure 4.2: Fixed Card Category

Card Category (fixed/researcher-defined)
Influential Factor(s) (PE in General)
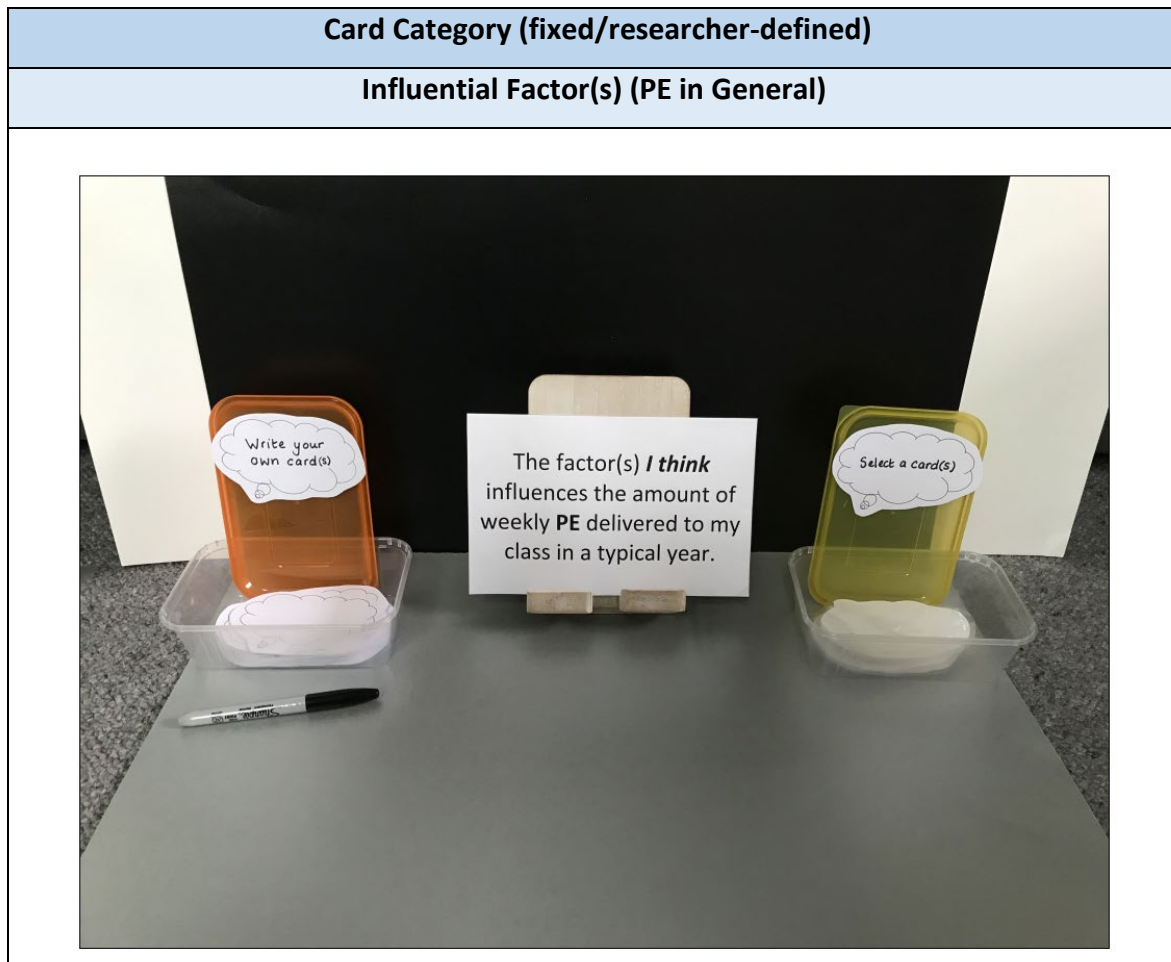
Next, they were asked whether they could select the five most influential factors. If they said yes, they sorted cards on the display board under one fixed category and five fixed sub-categories as per Figure 4.3:

Figure 4.3: Fixed Card Category & Sub-Categories

Card Category & Sub-Categories (Fixed)
5 Most Influential Factor(s) (PE in General) & 1st, 2nd, 3rd, 4th & 5th
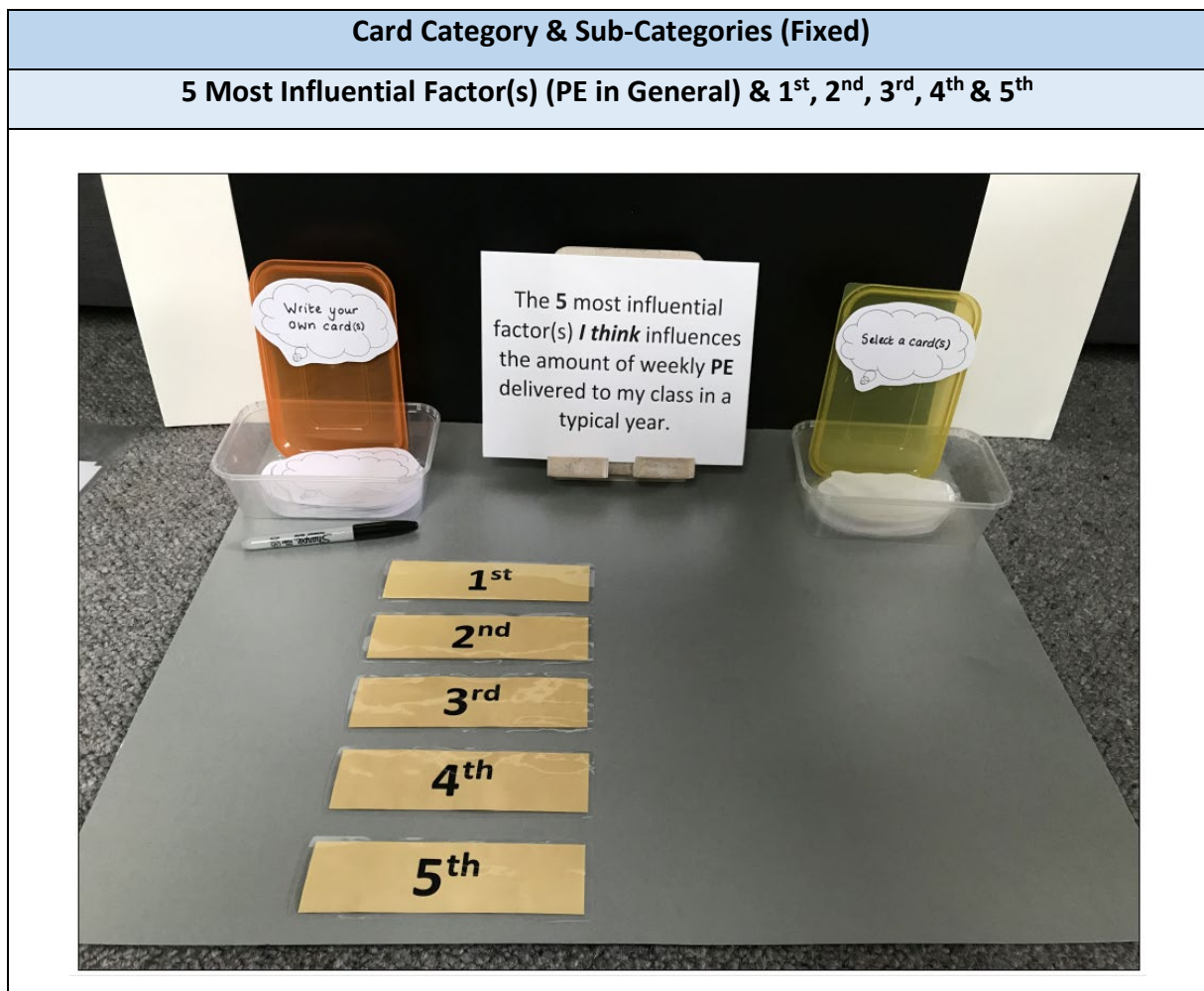
The teacher then explained how each ranked factor influenced PE time using oral descriptions alongside the cards as props when required. Lastly, they nominated factors they thought were related and verbally described how. This procedure was repeated for each of the five activities except teachers were asked to name the five most influential from the outset as insufficient time was available to identify all factors first and then to rank five. Repetition may have caused familiarity that relaxed or alternatively bored and/or fatigued the teacher. The interview concluded in Section D by thanking them and providing an opportunity to change responses, make additional comments and/or ask questions.

Card-sorting was deployed to improve response quality and quantity. The interview could be the first time teachers have ever been asked to internally reflect on these issues and externally explain their thoughts. Card-sorting eased this process by increasing their

conscious awareness of factors as it is associated with deeper metacognitive reflections, de-construction of abstract and complex concepts, and illumination of personal, contextualised experiences (Conrad & Tucker 2019). As this technique is object-based, it equipped the narrator with 'props to think with and through' (Goodman et al. 2012, p179). These artefacts invited physical interactions and provided visual aids which may have improved teachers' recall as well as their willingness and ability to articulate ideas. It also helped maintain a positive ambience as reduced discomfort when discussing sensitive topics (Saunders & Thornhill 2011) by offering playful interjections reminiscent of a board game (Conrad & Tucker 2019).

A hybrid card-sort combining open and fixed labels with fixed categories was selected to engage interviewees in the co-development of concepts and conceptual models (Conrad & Tucker 2019). Aligned to the researcher's pragmatist axiology and commitment to capture the teacher's voice, they could craft and place unique labels so they defined the scope of relevant information. This increased participants' sense of ownership, autonomy and empowerment as they could create their own cards and always determine their positioning on the display board which they could change at any point at their own pace. Conversely, some participants could feel daunted and uninspired by blank cards (Conrad & Tucker 2019), so they could also select from 10 researcher-defined labels. To minimise researcher bias, the researcher-defined labels were derived by objectively selecting those commonly cited in the reviewed literature.

Although the interview guide (Appendix 13) indicates considerable structure, a semi-structured format was achieved in practice as the interviews regularly featured participant and researcher-initiated questions not included in the guide. For instance, if a teacher implicated low confidence, the researcher asked them if they could explicate further. However, variations in the frequency of follow-up questions arose as some teachers required more time to identify, rank and explain factors. Closed and open questions appeared as planned questions in the interview guide and unplanned during the interview. Closed questions generated quantitative data and were only asked if there was a pre-defined answer, e.g., interviewees selected one of seven options for their specialism as there are only seven subjects in the Northern Ireland Primary Curriculum. Open questions

usually followed closed questions. They were essential to gain honest, personal and comprehensive explanations especially those clarifying how a factor influenced PE time. Although interviews are associated with qualitative data, the mixed-method manifested in questions. One example was teachers being asked to approximate the percentage of PE time allocated to the five activities but also asked to rationalise whether this amount was sufficient.

The draft interview guide was piloted with two consenting teachers from a primary school which would not be one of the two participating schools. The purpose was to expose substantive and methodological problems (Yin 2018), and make appropriate modifications. A potential problem was teachers' ability to internally make sense of how factors influenced the amount of PE and then externally articulate explanations as they may not have done so before. Yet both teachers did not appear to find this difficult. The pilot also resolved multiple methodological dilemmas including the impact of audio recording the interview as this could cause discomfort (Rutakumwa et al. 2019). However, both teachers expressed appreciation of the rationale for doing so, namely to improve accuracy and permit repeated examination of answers (Johnson et al. 2020), as well as improve interviewer engagement (Stuckey et al. 2014). Other instances involved the removal of irrelevant questions, e.g., the teacher's age, as they would not be examined during the analysis phase. Additionally, the researcher was reminded to be an active listener with patience and restraint who knew 'when to listen and when to question' (Simons 2009, p47). This was especially pertinent when a teacher did not know the 2-hour recommendation and the researcher felt obliged to inform them but refrained from doing so.

4.6.2 Dataset (2) Observation of PE Facilities & Equipment

Once interviews were completed, data about each schools' PE facilities and equipment was gained through observation during an on-site visit. Inspection was necessary because a lack of facilities and equipment were commonly cited in existing research so they were anticipated to be implicated in the low PE provision. Direct surveillance would contextualise interviews by providing a 'comprehensive 'picture' of the site, a 'sense of the setting' which cannot be obtained solely by speaking with people' (Simons 2009, p55). Furthermore, impartial information gathering of facilities and equipment could corroborate or contradict

teachers' accounts. However, in accordance with the pragmatist ontology of the study, they would not invalidate them. Availability and selectivity are renowned limitations of physical artefact research (Yin 2018). The former was overcome by scheduling data collection on school development days so the researcher had private, unrestricted access. Selection bias was minimised as all known and accessible facilities and equipment on the school campus were included. However, any off-site facilities used by the school, e.g., swimming pool, were excluded, and equipment stored in less obvious and accessible locations, such as classrooms, was omitted. Due to minimal scholarly guidance regarding physical artefact research (Yanow 2004), concerns techniques are typically unsystematic were countered by following a researcher-designed PE facilities record form (Appendix 16) and PE equipment record form (Appendix 17). This standardised approach aimed to improve construct validity and reliability.

The facilities form documented quantitative and qualitative data. All measurements, e.g., surface area, were taken twice to maximise accuracy. Word-based notes were also recorded so numerical values could be situated and qualified. For instance, surface area was mediated by its quality as not all space was usable. Hand-drawn diagrams denoting facility positioning and layout were annotated with different quantitative and qualitative information, such as the size, placement and condition of radiators. An on-site audit of equipment was necessary as neither school had an inventory. Even if one existed, it could be incomplete and/or inaccurate, and may not verify quality. The equipment form also collated quantitative and qualitative information, and measurements, e.g., the number of items, were repeated twice. Text-based statements conveyed the unmeasurable. One example was accessibility as it could be inconvenient and/or prevented as in a locked area. An inventory of all visible equipment was compiled displaying quantitative and qualitative data including number, size, condition, availability and accessibility. Information was organised under six categories comprising PE in general and the five activities to highlight surplus and deficits in any one activity. Annotated hand-drawings usefully facilitated correct recall of some issues. This could have been improved by photographs but permission to do so was not requested in the consent form.

4.6.3 Dataset (3) Desk-Based Research of School & PE Documents

After observing facilities and equipment, data was obtained through desk-based research of documentation pertaining to the school in general and specifically PE. Similar to the rationale for examining physical artefacts, examination was justified to support or qualify information in the other datasets. Whilst facility and equipment observation primarily provided insights into each schools' physical environment, documentation helped illuminate their psychosocial environments. This was important because making sense of what does and does not occur in classrooms is linked to school culture and written documents can contain clues (Simons 2009). Document analysis also revealed external influences as searches uncovered school-created policies integrating requirements and guidance from outside sources. This related to Proposition 5's assertion that factors operate internally and externally. Validity was maximised by increasing completeness via a comprehensive and systematic search. Breadth was achieved by defining 'document' widely to include formal and informal written records (Yin 2018). Formal documents comprised internal texts authored by a school employee, e.g., the school development plan, as well as external from non-employees such as Education & Training Inspectorate reports. Informal documents encompassed any printed information about the school and PE used internally, such as an indoor hall timetable, and externally, for instance, information on the school's website. To protect privacy rights, only publicly available texts were consulted so confidential information, e.g., personnel records, were excluded. Although many could be accessed independently online, direct requests were made to the principals. This provided more transparency, an opportunity for them to query why a document was required and a reminder they reserved the right to withhold information. A logical disposition was evidenced in the researcher-designed school policy record form (Appendix 18) and PE policy record form (Appendix 19). Both reduced selection bias by applying a standardised approach across schools. Notwithstanding this extensive and methodical approach, validity could be compromised by inaccuracies within documents and reporting bias by authors (Yin 2018).

4.7 Case & Context Selection Criteria

As replication rather than sampling logic applies in multiple case study design, each case is carefully chosen so individual cases support or challenge the theory being tested (Yin 2018). As the study investigated primary school teachers' perceptions, case selection criteria was any Year 1-7 teacher. Although there is no standardised number of cases (Vaus 2013), it was reasoned data from at least ten cases (teachers) would provide more compelling support. It was further rationalised teachers would be from two contexts (primary schools). This additional requirement related to the context selection criteria which was informed by the literature review as a facility deficit was a commonly cited factor. Examination of this reason uncovered the unfeasibility of scheduling the recommended two hours in schools with a certain number of classrooms that relied on an indoor hall as it may only be available for 25 hours a week. Application of DENI's (2020b) specifications indicated a school with four or 21 classrooms can timetable each class for two hours in the hall but a school with 14 classrooms cannot as per Table 4.4:

Table 4.4: Summary of 4-, 14- & 21-Classrooms & Scheduling of 2 hours of PE a Week in an Indoor Hall

	School Size Categories (DENI 2020b)		
	4-classroom	**14-classroom**	**21-classroom**
Specification for Number & Size of Hall (DENI 2020b)	1 x 160m² indoor multi-purpose hall	1 x 160m² indoor multi-purpose hall	1 x160m² & 1 x 110m² indoor multi-purpose hall
Estimated Hall Availability per Week	25 hours	25 hours	50 hours
Number of Classrooms X 2 hours of PE a Week	4 classrooms x 2 hours of PE a week = 8 hours	14 classrooms x 2 hours of PE a week = 28 hours	21 classrooms x 2 hours of PE a week = 42 hours
2 Hours Per Class Can or Cannot be Scheduled in Hall	Yes	No	Yes

Furthermore, schools with up to and including 12 or between 21-25 classrooms can schedule each class for two hours in the hall but schools with between 13-20 or 26 or more classrooms cannot. These inferences defined the context selection criteria and justified the decision to use two schools – one that could and one that could not timetable two hours of PE in an indoor hall - as Proposition 1 asserted multiple factors influenced PE time. A teacher in a school that could not schedule two hours because the indoor hall was unavailable might identify only one influential factor, specifically facilities. This outcome would contradict Proposition 1 and uncover a 'plausible rival hypothesis' (Yin 2018, xiii) thus improving internal validity. Therefore, the selection criteria for School A was the presence of between 13-20 or 26 or more classrooms as unable to allocate each class two hours of hall time for PE. Although teachers in School A could implicate multiple factors including or excluding facilities, hence indicating a limited indoor venue was not a deciding factor, this was not pre-determined. Thus, it was deduced that a second school should be recruited. The selection criteria for School B was existence of up to and including 12 or between 21-25 classrooms as this would facilitate designation of two hours in the hall per class. Data from School B would clarify whether there were other factors besides facilities. Investigating a second context also allowed analysis within and across settings (Baxter & Shaw 2008).

Screening was conducted using DENI's (2022) enrolment figures to identify schools which fulfilled the first part of the context selection criteria, namely the number of classes, for School A and B (Appendix 20). As schools are classified by management type (DENI 2022), a second criterion was applied to enable cross-case analysis. Thus, only schools from the controlled category were selected as potential contexts (Appendix 2). These schools were then ranked according to geographical proximity to the researcher's workplace as this would facilitate access. The principal of the first school which met the School A selection criteria and was closest to the researcher's workplace was contacted. They accepted the invitation to participate in the research on the same day. This school had 14 classrooms. Eight principals of schools which fulfilled the School B selection criteria were contacted in order of their proximity to the researcher's workplace. The first seven did not reply or declined the invitation to participate. This low interest could be attributable to other commitments including the implementation of COVID-19 recovery plans and/or ongoing industrial action from the teaching unions. Nevertheless, the eighth principal contacted also

accepted on the same day they were invited. This school had seven classrooms. A total of 12 teachers were recruited – five from School A and seven from School B (Appendix 21). The five of the 14 teachers from School A that consented were responsible for Year 1, 2 and 4-6 classes. The seven of the eight teachers from School B that participated were assigned to all year groups 1-7 except Year 5. Consequently, all seven year groups were represented across the 12 cases.

4.8 Ethics

Institutional ethical approval was obtained from Cardiff University's School of Social Sciences Research Ethics Committee in June 2021 (Ref: SREC/4250). All stages of the project from planning to reporting complied with the British Educational Research Association's (BERA) (2018) ethical guidelines to ensure the responsibility to treat participants 'fairly, sensitively and with dignity and freedom from prejudice' (p6) was honoured. Thus, three main principles for social research namely consent, privacy and harm (Hammersley 2015) were upheld. Informed voluntary consent was respected when obtaining the gatekeepers' and participants' permission. Principals were contacted as gatekeepers and informed about the study through three documents: cover letter (Appendix 22), information sheet (Appendix 23) and consent form (Appendix 24). To minimise duress, all three stressed participation was voluntary. Once the principal consented, an information session with all teachers was scheduled. Each teacher was sent three documents - cover letter (Appendix 25), information sheet (Appendix 26) and consent form (Appendix 27) - seven days beforehand to enable them to process the content. This documentation and an information session reinforced their freedom to participate, how they are unobligated to do so because their principal consented and also that the researcher would not disclose to the principal or other teachers who participated. The information sheets and consent forms reassured principals and teachers they could withdraw consent at any point for any or no reason without prejudice and explanation (BERA 2018). Teachers were reminded of this at start of their interview. To show appreciation, schools were offered a free 1-day training event which was illustrated in an indicative staff development day agenda (Appendix 28). To prevent any sense of coercion, the information sheet and session emphasised all teachers could avail of the training irrespective of whether they were involved in the study.

A right to privacy was protected as the information sheet explained how the school, principal and teacher names would not be published as they were allocated a unique reference number to maximise anonymity. Although it also cautioned there was a risk the school, principal and teachers could be identifiable by members of the participating school. This complied with BERA's (2018) guidelines which acknowledged complete anonymity may be impossible and participants could waive whole or part of their right to anonymity by assuming all or some risk. The information sheet explicitly disclosed how interviews would be audio-recorded and card-sorting responses photographed but that the participants' image would not be visually recorded. Teachers were assured no one other than the researcher could access the data so it would remain confidential. Additionally, all information would be stored, used and destroyed in accordance with the Data Protection Act 2018. Non-maleficence, i.e., the obligation to do no harm, including physical, emotional and financial harm (Social Research Association 2021) was a guiding principle throughout. One example was mitigating potential COVID-19 related harm. Firstly, a cover letter confirmed the study was subject to an ongoing, government-compliant COVID-19 risk assessment. Secondly, each consenting teacher was emailed to confirm the researcher was triple-vaccinated and would administer a lateral flow test the evening before the interview.

4.9 Data Collection Schedule & Storage

Table 4.5 illustrates how data were collected over a 2-month period at each school during the 2021-2022 academic year. It also contextualises the timing of data collection within the timelines for school closures in NI during the COVID-19 pandemic. As per Table 4.5, data collection commenced in School A in October 2021 which was one month after all schools in NI were opened and regarded as 'functioning as normal' (Children & Young People's Strategic Partnership 2022, p3. Data collection for School B began in May 2022, which was eight months after all schools remained open and continued to be viewed as functioning normally. To ensure that any temporary changes to how PE was delivered mid- and post-pandemic would not distort the times and explanations provided, teachers were reminded at the start of and during the interview that all of their answers should relate to what they delivered in a typical academic year prior to the COVID-19 pandemic, specifically before January 2020.

Table 4.5: Data Collection Schedule & Timelines of School Closures in Northern Ireland due to COVID-19[8]

Academic Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Sep 2019 – Aug 2020							18 Mar 2020 all schools closed 23 Mar 2020 first UK lockdown commences[9]					24 Aug 2020 all schools reopen
Sep 2020 – Aug 2021		19 Oct 2020 all schools closed for 2-week extended mid-term break	2 Nov 2020 all schools reopen		1 Jan 2021 all schools closed for extended Christmas break		8 Mar 2021 primary schools (P1-P3) reopen 22 Mar 2021 primary (P4-7) reopen 1 Apr 2021 all post-primary schools reopen					
Sep 2021 – Aug 2022	1 Sep 2021 all schools open & functioning as normal	**Data Collection School A** Data Set (1) Interview Teachers	**Data Collection School A** Data Set (2) Observe PE Facilities & Equipment Data Set (3) Desk-Based Research of Documents						**Data Collection School B** Data Set (1) Interview Teachers	**Data Collection School B** Data Set (2) Observe PE Facilities & Equipment Data Set (3) Desk-Based Research of Documents		

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[8] Children & Young People's Strategic Partnership (2022)
[9] Institute for Government (2022)

All data were stored on a secure OneDrive for Business network provided by the researcher's employer which is a university college. Saved data could only be accessed by the researcher and with 2-factor authentication. A case study database was created to improve reliability as it enabled the researcher to readily organise and retrieve all information (Baxter & Jack 2008). Although no one else was permitted access, the researcher regarded the database as if it was subject to independent inspection and replication so a thorough audit trail was maintained to maximise reliability.

4.10 Analytical Approach

In accordance with recommended practice for case study analysis (Yin 2018; Vaus 2013), the analytical approach incorporated a strategy premised on five theoretical propositions and two techniques that culminated in the production of theoretical generalisations. The first analytical technique was pattern-matching which involved theory testing of each of the theoretical propositions according to a predicted pattern displayed in Table 4.6. The second technique was explanation-building which entailed theory building based on the level of consistency in the rationale provided in the teachers' explanations relating to Propositions 3 and 4. The most relevant analytical strategy from a choice of four (Yin 2018), was reliance on the theoretical propositions being tested whilst retaining the option for new propositions to be generated via theory building. This strategy determined analytical priorities and the organisation of the entire analysis as illustrated in Table 4.6:

Table 4.6: Summary of the Analytical Approach & Compositional Format of Chapters 5 & 6

Compositional Format		Analytical Approach				
		Analytical Strategy - Reliance on Theoretical Propositions (Yin 2018)	Analytical Technique 1 – Pattern-Matching (Theory Testing)		Analytical Technique 2 – Explanation-Building (Theory Building)	
Chapter	Research Question	Theoretical Proposition	Predicted Pattern	Data Source	Consistency Level	Data Source
5	1. What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in Northern Ireland?	1. Multiple factors influence the amount of PE in general and the five specific activity areas	Each teacher's six response sets for PE and five activity areas identifies more than one factor.	Data Set (1) Teacher Interviews	n/a	n/a
		2. Similar and different factors influence the amount of PE in general and the five specific activity areas	Each teacher's PE set contains some factors similar to and different from those in the five activity sets collectively, and each of their five activity sets comprises some similar and different factors to those in some of the other activity sets.	Data Set (1) Teacher Interviews	n/a	n/a
6	2. How do primary school teachers explain factors' influence on the amount of PE delivered in primary schools in Northern Ireland?	3. Some factors are more influential than others on the amount of PE in general and the five specific activity areas	Each teacher able to rank the factors in each of their six response sets according to perceived influence on quantitative provision of PE in general and the five activity areas.	Data Set (1) Teacher Interviews	Consistent rationale within and across PE and the five activity areas	Data Set (1) Teacher Interviews Data Set (2) PE Facilities & Equipment Data Set (3) School & PE Documents
		4. Some factors interconnect to influence the amount of PE in general and the five specific activity areas	Each teacher's six response sets contains at least one example of two or more factors being connected.	Data Set (1) Teacher Interviews	Consistent rationale within and across PE and the five activity areas	Data Set (1) Teacher Interviews
		5. Factors operate at external and internal levels to influence the amount of PE in general and the five specific activity areas	Each teacher's six response sets holds a combination of external and internal factors.	Data Set (1) Teacher Interviews	n/a	n/a

Theory testing and building were conducted over four stages. The first involved verbatim transcription of 12 teacher interviews in Dataset (1). This was recognised as a form of analysis as it involved the conversion of raw oral data into written text (Stuckey 2014). Transcription was conducted by the researcher listening to and manually typing audio-recorded content rather than voice recognition technology. This software is usually designed for single users and prone to error, e.g., misinterpretation of common homonyms (Maclean et al. 2004). Bias in cross-case conclusions was minimised by formatting all transcriptions in a single case report template which emulated the interview guide (Appendix 13) to ensure consistency and neutrality. Additionally, each report was regarded equally (Yin 2018)[10]. The second stage entailed extracting data directly relevant to the propositions, specifically from each teacher's six response sets which identified and ranked factors they regarded as influencing the amount of PE in general and the five activities. Information was then tabulated into individual teacher profiles (Appendix 29). The next stage aggregated and tabulated content from individual teacher profiles according to teachers in each school and/or across both schools where applicable. The first three stages concluded with the implementation of two analytical techniques, namely pattern-matching and explanation-building. Deductive and inductive techniques were chosen to allow propositions to be tested but also revised and new ones to be created. This combined rigour with flexibility and discipline with imagination (Bounchken et al. 2021).

The first analytical technique was pattern-matching and it was applied to each of the five propositions. Pattern-matching necessitated rigorous comparison between a predicted theoretical pattern for each proposition and an observed empirical pattern for every case (Hak & Dul 2009; Sinkovics 2018). This form of theory testing was preferred as it linked the data to the propositions and research questions (Alumutairi et al. 2014). As per Table 4.6, the relevant data was contained in Data Set (1) Teacher Interviews which compromised 12 single case reports for each of the 12 teacher interviews. Aligned with this study's mixed methods research strategy, this data set was subjected to quantitative and qualitative

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[10] This is evidenced in the reporting of each teacher's unique reference number alongside any corresponding published quotes in Chapter 6 - Results. The number of published quotes from any one teacher and/or school was monitored when drafting this chapter to check the quotes from any one teacher and/or school was not being over- or under-reported.

analysis when applying the pattern-matching technique. Enactment specifically involved 34%finding information from a single case report to determine if and to what extent that case followed or contravened the predicted pattern for a particular proposition. The remaining 11 cases were then analysed to ascertain whether they produced similar predicted results, i.e., literal replication, as this would provide more convincing support for the proposition. The extent of replication of the predicted pattern across the 12 cases determined the degree of support for the proposition. Although designating an acceptable number of replications is regarded as discretionary rather than formulaic in case study research, six or more replications is associated with higher levels of certainty (Yin 2018). Accordingly, a threshold of six replications was set which represented 50% of the 12 cases. Precision during information selection and pattern detection was prioritised to minimise interpretive bias and counter concerns that conclusions were leniently and/or carelessly derived.

To fully answer Research Question 2, another analytical technique termed explanation-building, which is a special form of pattern matching (Yin 2018), was employed for Propositions 3 and 4 only. This was done so alongside the pattern-matching technique to elucidate how factors operated to reduce delivery time, why some were more influential than others and how some were connected. Explanation-building in case studies is more complex but less precise as explanations derive from narratives which are inherently subjective and inexact (Yin 2018). Therefore, this technique differed slightly from the deductive theory testing approach applied to the five propositions entailing conventional pattern-matching and replication logic. Instead, it engaged an inductive theory building style wherein the explanation-building process comprised a series of iterations aiming to identify what the cases' explanations had in common or where they differed (Vaus 2013). Accordingly, replication logic was moderated as the quantitative threshold applied to the pattern-matching technique for the propositions was replaced by reasonable levels of consistency in the rationale provided by the teachers for each factor within and across PE and five activities.

As per Table 4.6, the application of the explanation-building technique to Proposition 3 entailed quantitative and qualitative analysis of all three data sets. This was conducted to

ascertain whether any primary school teachers regarded some factors to be more influential than others as well as obtaining their explanations of how the more influential factors reduced PE delivery time. To illustrate, when applying this analytical technique to discover why a lack of equipment was regarded as a highly influential factor, the explanations contained in Data Set (1) Teacher Interviews were first analysed for commonality and differences. This entailed quantitative analysis, e.g., of the number of items of equipment a teacher reported, alongside qualitative analysis, e.g., of their word-based descriptions of how this amount of equipment influenced the amount of PE they provided. This was followed by analysis of the quantitative and qualitative data in Data Set (2) PE Facilities & Equipment such as information pertaining to the quantity and quality of an item that was recorded by the researcher during their onsite observations. Similarly, Data Set (3) School & PE Documents was subjected to quantitative and qualitative analysis, for instance, details relating to the number and age-appropriateness of items detected by the researcher via desk-based research of both schools' PE policies. Table 4.6 also shows how the administration of the explanation-building technique to Proposition 4 involved quantitative and qualitative analysis of Data Set (1) Teacher Interviews. This was undertaken to determine whether any teachers believed that some factors interconnected as well as obtaining their accounts of how they interplayed to influence the amount of PE they delivered.

Aligned with established procedure (Yin 2018), cases were not regarded as a sample and instead the case study was viewed as an opportunity to enlighten theoretical concepts, i.e., the propositions, by creating generalisable findings extending beyond specific cases and their settings. Therefore, theoretical generalisations (Vaus 2013) were derived comprising those pertaining to the five original propositions which were supported and/or modified via pattern-matching as well as new concepts arising from the application of the explanation-building technique. The resulting generalisations are presented and discussed in Chapter 7.

4.11 Reflexivity

Reflexivity, described as 'thoughtful, conscious self-awareness' (Finlay 2002, p23), necessitates critical contemplation of knowledge and its production (Guillemin & Gillam

2004). As this study's purpose was to generate new knowledge, reflexivity was essential to demonstrate the researcher's understanding of how they were implicated in constructing this knowledge rather than simply extracting and transmitting information (Patnaik 2013). Whilst important throughout, this requirement was intensified during the data collection and analysis as both stages were potentially more vulnerable to the researcher's subjectivity. The following three examples illustrate how reflexivity was implemented before and/or during both phases.

Reflection was evidenced by considering how an investigation's trustworthiness is reduced if it is conducted in a familiar setting as it could be tainted by the investigator's preconceptions. All scholars examining known territory invite bias as they are exploring a 'self-contained world of common understanding' (Mannay 2010, p1). However, educational researchers may be especially vulnerable to the 'familiarity problem' (Delamont et al. 2010, p3) because they will have experienced many years of compulsory and subsequent education (Russell & Korthagen 2006). This problem was amplified as the researcher was a former primary school teacher and is currently a lecturer in initial teacher training with five- and 12-years' service respectively. Thus, collecting data on schools and teachers entailed engagement with a well-known setting and workforce. To 'fight familiarity' (Delamont 2010, p3) and 'make the familiar strange' (Morris 2016, p526), the researcher obtained minimal information about the schools and teachers prior to data collection. Only the schools' type, enrolment figures and teacher numbers were ascertained to comply with the context selection criteria[11]. Observation of facilities and equipment, and desk-based research of school documents was conducted after the interviews to prevent the formation of presumptions which could have tainted the interviews.

Reflexivity continued when collecting participant data as pre-consultation of literature on interviews enabled the researcher to classify their perception of interviews as a pure information transfer as positivist (Pinsky 2015). This belief shifted after learning that an interview is an 'inter-view' entailing an interchange of interpretations between two or more

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[11] The school's geographical proximity to the researcher's workplace was also ascertained as this would facilitate the scheduling of interviews and access

people and that knowledge is constructed during this interaction (Kvale &Brinkmann 2014). Consequently, the researcher recognised interviews as a 'social, interpersonal encounter, not merely a data collection service' (Cohen et al. 2018, p506). Regarding interviews as social encounters heightened awareness of interaction bias caused by the interviewer's and interviewees' characteristics and the importance of the researcher considering their personal interaction style (Roulston & Shelton 2015). A challenge was to establish rapport with interviewees so they felt relaxed and trusting, and more willing to volunteer honest and detailed replies but with minimal reactivity bias. This was addressed by expressing commonality and empathy as the researcher disclosed they were a former primary school teacher. Nevertheless, the interviewees knew the researcher was currently employed in teacher training. Returning socially desirable answers to please the interviewer was likely as teachers may have felt more obliged to show conformity to a teacher educator. This was countered by conveying a non-judgemental disposition and orally reassuring teachers that the interview was not a test so there were no right and wrong answers.

Reflection was also essential when transcribing interviews to minimise transcriptionist bias (Maclean 2004). Initially, the researcher reduced transcription to two core skills, specifically listening and typing. Consequently, they viewed the process as a neutral, utilitarian technical procedure. This changed after learning transcription was a researcher-constructed process steeped in subjectivity as the transcriber makes numerous potentially prejudiced decisions (Shelton & Flint 2020). The researcher considered how interview content was raw data 'given to us from outside … unmediated by us' (Hammersley 2010, p554). This increased awareness of how the purpose of transcribing, namely to preserve raw data, is compromised if the transcript re-constructed rather than reproduced the interviewee's talk (Hammersley 2010). Therefore, to maximise objectivity, a transcription template and transcription protocol were devised which focused on completeness, detail and accuracy (Clark et al. 2017). Complete transcripts were produced as every second was transcribed with no omissions. Judgements about what was included or excluded were avoided and selection bias reduced. Detail was conserved as every word was typed verbatim including silences and pauses (Johnson et al. 2020). Inflections and non-verbal actions recorded in handwritten notes during interviews, were noted in transcripts as they were regarded as integral to reliability (Widodo 2014). Accuracy was improved by inserting photographs of

the card-sort responses into transcripts as they objectively verified the typed text. Spot-checking of transcripts against audio files for common errors like incomplete sentences was also undertaken (Easton et al. 2000).

4.12 Compositional Format for the Results

The compositional format for reporting results and their analysis followed one of four categories (Yin 2018), specifically multiple case study format. Accordingly, cross-case material formed the bulk of the main text whereas individual case information was mostly filed in appendices. To maximise readability, results were separated in two chapters. As per Table 4.6, Chapter 5 pertains to Research Question 1 and Propositions 1 and 2, whereas Chapter 6 relates to Research Question 2 and Propositions 3-5.

Chapter 5

Results for Research

Question 1

What Factors do Primary School Teachers Identify which Influence the Amount of PE Delivered in Primary Schools in Northern Ireland?

5.1 Overview of Chapter 5

This chapter presents and analyses results that answer Research Question 1 as it reveals factors which primary school teachers perceived to influence the amount of PE delivered as well as the five activities. This involved testing Propositions 1 and 2 by establishing whether multiple factors affected the time allocated to PE and the five activity areas, and if similar and different factors for PE and the five activities were implicated. For confidentiality reasons, each teacher was assigned a unique reference number, e.g., AT1 refers to a teacher in School A. Teacher-reported weekly PE times confirmed an under-provision relative to the current 2-hour recommendation as 11 of the 12 teachers (=92%) did not provide two hours. Variations between all 12 teachers (range = 30-120 minutes) produced an overall mean of 67 minutes. Insufficient and inconsistent PE time was evident in each school as School A's range was 30-60 minutes and mean 48 minutes. School B's range was 60-120 minutes and mean 86 minutes.

5.2 Proposition 1: Multiple Factors Influence the Amount of PE in General and the Five Specific Activity Areas

5.2.1 Pattern-Matching

The predicted pattern for Proposition 1 was each teacher's six response sets for PE and the five activity areas would identify more than one factor which influenced the amount of PE and the five activity areas. As per Table 5.1, which collates data in the individual teacher profiles (Appendix 29), the observed patterns for the 12 cases each matched the predicted pattern. All teachers produced six sets each containing multiple factors and no teacher created a set containing a single factor. Consequently, complete replication across the 12 cases for PE and five activity areas substantiated Proposition 1.

Table 5.1: Number of Influential Factors for PE & 5 Activity Areas In Schools A & B

School & Teacher	No. of Influential Factors for PE (General)[12]	No. of Influential Factors for 5 Activity Areas[13]					Mean No. of Factors for 5 Activity Areas	Mean No. of Factors for PE & 5 Activity Areas
		Athletics	Dance	Games	Gymnastics	Swimming		
School A								
AT1[14]	10	5	5	5	5	n/a	5	6
AT2	13	5	5	5	5	n/a	5	7
AT3	6	5	5	5	5	n/a	5	5
AT4	6	5	5	5	5	4	5	5
AT5	5	5	5	5	5	4	5	5
School Mean	8	5	5	5	5	4	5	
School Mode	6	5	5	5	5	4	5	
School B								
BT1	2	3	4	2	4	2	3	3
BT2	4	5	5	5	5	n/a	5	5
BT3	5	5	5	5	5	n/a	5	5
BT4	6	3	3	4	5	n/a	4	4
BT5	3	4	2	2	5	n/a	3	3
BT6	5	5	5	5	5	4	5	5
BT7	6	3	2	4	4	2	3	4
School Mean	4	4	4	4	5	3	4	
School Mode	= 5 & 6	= 3 & 5	5	5	5	2	= 3 & 5	
School A & B Overall Mean	6	5	5	5	5	4	5	

= denotes joint mode

n/a denotes not applicable as the NI Primary Curriculum (2009) states Swimming is required at KS2 only

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[12] Teachers could identify an unlimited number of factors for PE

[13] Teachers could identify a limited number of 5 factors for each of the 5 activity areas

[14] For confidentiality reasons, each teacher was assigned a unique reference number, e.g., AT1 refers to a teacher in School A.

5.2.2 Number of Factors by Teacher, School, PE & Activity Area

Extra insights were gained by analysing the number of factors to ascertain if there were variations between teachers, schools, PE and the five activity areas.

By Teacher

Although all teachers proposed more than one factor in all of their six sets, the number for PE and the five activity areas varied between teachers. The overall range (2-13) indicated some perceived more or less factors than others. This was further supported by comparing AT2 who had the biggest range (5-13) and highest mean number of factors (n=7) across their six sets with BT1 who had the lowest range (2-4) and mean (n=3).

By School

For PE, School A had a wider range of factors (=5-13) and higher mean (n=8) compared to School B's range (=2-6) and mean (n=4). All school A teachers provided the maximum number of five factors for all activity areas except Swimming as only four factors were advanced. Ranges for the five activities in School B showed more variation as they were 3-5 for Athletics, 2-5 for Dance, 2-5 for Games, 4-5 for Gymnastics and 2-4 for Swimming. This suggested more factors were perceived in School A. Although they do not reliably support the inference that the number of factors depends on the school as they may comprise teacher-related and school-related factors as per Proposition 5.

By PE & Activity Area

Teachers identified between 2-13 factors for PE compared to 3-5 for Athletics, 2-5 for Dance, 2-5 for Games, 4-5 for Gymnastics and 2-4 for Swimming. Although ranges implied more factors for PE, comparison is misleading as the number for the activities was capped at five so there could have been more. The cap also precluded an irrefutable claim that there are more or less problematic activities. However, analysis of lower values indicated Gymnastics attracted more challenges as all teachers identified at least four factors for Gymnastics compared to at least three for Athletics and two for Dance and Games. Additionally, the cap did not restrain identification of factors for Swimming as no teacher nominated more than four which suggested it was affected by fewer factors.

5.3 Proposition 2: Similar and Different Factors Influence the Amount of PE In General and the Five Specific Activity Areas

5.3.1 Pattern-Matching

The predicted pattern for Proposition 2 was each teacher's PE set of factors would contain some factors similar to and different from those in the five activity sets collectively. Additionally, each of their five activity sets would comprise some similar and different factors to those in some of the other activity sets. The observed patterns for six of the 12 cases fully matched the predicted pattern and those for the other six mostly corresponded with the predicted pattern. Subsequently, there was sufficient replication across the 12 cases to corroborate Proposition 2.

Table 5.2 contains the 6-part criteria for the predicted pattern and summarises data in individual teacher profiles (Appendix 29). It provides replication evidence for Proposition 2 as six cases fulfilled all of the 6-part criteria and the other six cases satisfied five parts except for Criterion 2. All 12 cases produced a PE set fulfilling Criterion 1 as each included at least one factor impacting PE provision which was the same as one of the factors listed in the five activity sets. Moreover, six teachers[15] cited at least one factor for PE that was repeated across all activities. Criterion 2 which anticipated each teacher's PE set had at least one factor different to those in any one of the five activity sets, was discerned in half of the cases. Criterion 3 which projected at least one of the five activity sets contained at least one factor different to any factors in the PE set was observed in all 12 cases. Similarities and differences between the five activities were also detected. Replication was achieved by all 12 cases for Criteria 4 and 5. Each teacher produced at least one activity set holding at least one factor the same as one of the factors in at least one of the other four activity sets, as well as one factor that was different and therefore unique to that activity. Full replication of Criterion 6 across all cases provided more indications of commonality and divergence between PE and the five activities collectively as well as between the five activities. Every

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[15] AT1 (time), AT2 (class size), AT3 (expertise, facilities & equipment), BT2 (timetabling), BT3 (expertise & equipment) and BT5 (new ideas)

teacher produced six sets comprising a different combination of factors to those in the other sets, i.e., no teacher repeated the same combination of factors in another set.

Table 5.2: Criteria for Similar & Different Influential Factors Between PE & 5 Activity Areas and Within 5 Activity Areas in Schools A & B

School & Teacher	6-Part Criteria for Predicted Pattern					
	Similar & Different Influential Factors Between PE & 5 Activity Areas			Similar & Different Influential Factors Within 5 Activity Areas		Similar & Different Influential Factors Between PE & 5 Activity Areas and Within 5 Activity Areas
	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
	The PE set contains at least 1 factor that is the same as 1 of the factors included in at least 1 of the 5 activity sets Yes (Y) or No (N)	The PE set contains at least 1 factor that is different to any of the factors cited in any 1 of the 5 activity sets Yes (Y) or No (N)	At least 1 of the 5 activity sets contains at least 1 factor different to any of the factors included in the PE set Yes (Y) or No (N)	At least 1 of the 5 activity sets contains at least 1 factor that is the same as 1 of the factors cited in at least 1 of the other 4 activity sets Yes (Y) or No (N)	At least 1 of the 5 activity sets contains at least 1 factor different to any other factor cited for the other 4 activity sets Yes (Y) or No (N)	All 6 sets comprise a different combination of factors Yes (Y) or No (N)
School A						
AT1	Y (8 factors)	Y (2 factors)	Y (1 set)	Y (4 sets)	Y (1 set)	Y
AT2	Y (6 factors)	Y (7 factors)	Y (3 sets)	Y (4 sets)	Y (3 sets)	Y
AT3	Y (4 factors)	Y (2 factors)	Y (4 sets)	Y (4 sets)	Y (3 sets)	Y
AT4	Y (5 factors)	Y (1 factor)	Y (4 sets)	Y (4 sets)	Y (2 sets)	Y
AT5	Y (5 factors)	N (0 factors)	Y (4 sets)	Y (2 sets)	Y (1 set)	Y
School B						
BT1	Y (2 factors)	N (0 factors)	Y (4 sets)	Y (3 sets)	Y (2 sets)	Y
BT2	Y (3 factors)	Y (1 factor)	Y (4 sets)	Y (4 sets)	Y (1 set)	Y
BT3	Y (5 factors)	N (0 factors)	Y (4 sets)	Y (3 sets)	Y (3 sets)	Y
BT4	Y (6 factors)	N (0 factors)	Y (3 sets)	Y (4 sets)	Y (2 sets)	Y
BT5	Y (3 factors)	N (0 factors)	Y (3 sets)	Y (4 sets)	Y (3 sets)	Y
BT6	Y (3 factors)	N (0 factors)	Y (5 sets)	Y (4 sets)	Y (4 sets)	Y
BT7	Y (5 factors)	Y (1 factor)	Y (2 sets)	Y (5 sets)	Y (1 set)	Y

5.3.2 Different Types, Newly Discovered & Unique Factors

Additional verification of similarities and differences between PE and the five activity areas as a group and between the five activities as well as other insights were also extracted. Tables 5.3 and 5.4 disclose the factors and highlights how they comprise those generated via researcher- and teacher-defined labels.

Different Types of Factors

Although Table 5.4 shows that 50 participant-defined card labels were created (School A = 19 and School B = 31), a total of 28 was calculated when 22 duplicate answers were discounted. Consequently, 38 different factors (researcher-defined = 10 and participant-defined = 28) were implicated in compromising the quantitative provision of PE and the five activities. Yet there could be more as teachers could only nominate a maximum of five for each activity area. Nineteen of the 38 applied to PE and comprised all 10 of the researcher-defined labels: time, timetabling, priorities, facilities, expertise, equipment, safety, class size, confidence and weather. The other nine were proposed by teachers: resources, behaviour, PE kit not in, planning time, carol service, storage, burn out, teaching assistance, new ideas. Of the 14 pertaining to Athletics, 10 were those on the researcher-defined labels and the other four were teaching assistance, new ideas, children's size and age, and Special Educational Needs (SEN). Dance generated the highest number (n=20) which included nine researcher-defined labels as weather was not advanced. The 11 created by the teachers were resources, teacher enjoyment, boys' lack of enjoyment, types of dance, children's enjoyment, guidance, technology, new ideas, teacher interest, children's confidence and children's age and size. Nineteen of the 38 factors applied to Games including all ten researcher-defined labels. The other nine teacher-generated factors were knowing rules, children's enjoyment, teaching assistance, new ideas, teacher interest, children's attitude, SEN, children's confidence and training. Gymnastics was influenced by 16 including nine researcher-defined labels as weather was not chosen. The other seven factors were cost to parents, training, teaching assistance, new ideas, children's ability, children's interest and children's confidence. Swimming attracted the lowest number (n=9) as only five of the researcher-defined labels were selected: time, timetabling, priorities, safety and class size. The four others created by teachers were number of classes, cost to school, children's enjoyment and less time for other PE areas.

Newly Discovered Factors

Table 5.4 also reveals previously unreported factors. The 28 teacher-defined labels were cross-referenced with the collated list of reasons identified in the literature review (Appendix 9 – Table 9.2). This process indicated 20 were undetected in existing research meaning new factors were discovered in this study. They included: behaviour, PE kit not in, planning time, carol service, storage, burn out, teaching assistance, new ideas, children's age and size, SEN, teacher enjoyment, boys' lack of engagement, types of dance, children's enjoyment, children's confidence, knowing rules, children's attitude, cost to parents, number of classes and less time for other PE areas.

Unique Factors by Teacher

Analysis of teacher-defined labels showed how some factors may be unique to a teacher but they are not necessarily exclusive to PE or an activity area. Whilst teachers nominated factors common to other teachers, Table 5.3 shows how seven teachers (denoted by a teacher reference number) created one or more factors which were exclusive to them. However, the same teacher proposed it more than once across their six response sets.

Table 5.3: Researcher- & Participant-Defined Card Labels Identifying Influential Factors for PE & 5 Activity Areas Across Schools A & B

No.	PE (General)		Athletics		Dance		Games		Gymnastics		Swimming	
	Researcher-Defined Card Label	Participant-Defined Card Label	Researcher-Defined Card Label	Participant-Defined Card Label	Researcher-Defined Card Label	Participant-Defined Card Label	Researcher-Defined Card Label	Participant-Defined Card Label	Researcher-Defined Card Label	Participant-Defined Card Label	Researcher-Defined Card Label	Participant-Defined Card Label
1	Time	Resources	Time	Teaching assistance	Time	Resources[16]	Time	**Knowing rules** AT3	Time	**Cost to parents** AT2	Time	**Number of classes** AT4
2	Timetabling	*Behaviour AT1	Timetabling	New ideas BT5	Timetabling	**Teacher enjoyment** AT2	Timetabling	Children's enjoyment	Timetabling	Training BT2	Timetabling	**Cost to school**[17]
3	Priorities	*PE kit not in AT2	Priorities	**Child-ren's size & age** BT6	Priorities	**Boys' lack of engagement** AT2	Priorities	Teaching assistance	Priorities	Teaching assistance[18]	Priorities	Children's enjoyment
4	Facilities	*Planning time AT2	Facilities	**SEN** BT6	Facilities	**Types of dance** AT3	Facilities	New ideas BT5	Facilities	New ideas BT5	Safety	**Less time for other PE areas** BT6
5	Expertise	*Carol service AT2	Expertise		Expertise	**Children's enjoyment**	Expertise	Teacher interest BT6	Expertise	**Children's ability** BT6	Class Size	
6	Equipment	*Storage AT2	Equipment		Equipment	**Guidance** BT2	Equipment	**Child-ren's attitude** BT6	Equipment	**Children's interest** BT6		
7	Safety	*Burn out AT2	Safety		Safety	**Tech-nology** BT2	Safety	SEN BT6	Safety	Children's confidence BT6		
8	Class size	Teaching assistance	Class Size		Class size	New ideas BT5	Class size	Children's confidence BT6	Class Size			

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[16] Resources cited x 2 in school A and x 1 in School B

[17] Cost to school cited x 1 in School A and x 2 in School B

[18] Teaching assistance cited x 1 in School B and x 2 in School B

9	Confidence	New ideas BT5	Confidence		Confidence	**Teacher interest BT6**	Confidence	**Training BT2**	Confidence			
10	Weather		Weather			**Children's confidence BT6**	Weather					
11						Children's age & size BT6						
Sub-Totals	10	9	10	4	9	11	10	9	9	7	5	4
Total	19		14		20		19		16		9	

*denotes 6 factors unique to PE as not cited for any of the 5 activity areas

** denotes 19 factors unique to the 5 activity areas collectively as not cited for PE

Underline denotes 13 of the 19 factors exclusive to 1 of the 5 individual activity areas

Table 5.4: Participant-Defined Card Labels Identifying Influential Factors for PE & 5 Activity Areas In Schools A & B

School	PE (General)	Athletics	Dance	Games	Gymnastics	Swimming	Total No. per School
School A	Resources	*Teaching assistance	*Resources[19]	Knowing rules	Cost to parents	Number of classes	19 (15 original 4 duplicate)
	Behaviour		Teacher enjoyment		*Teaching assistance[20]	Cost to school[21]	
	PE kit not in		Boys' lack of engagement				
	Planning time		*Resources				
	Carol service		Types of dance				
	Storage		Children's enjoyment				
	Burn out						
School A Total	= 7	= 1	= 6	= 1	= 2	= 2	
School B	Teaching assistance	*New ideas	Guidance	*Children's enjoyment	*Training	*Cost to school	31 (13 original 18 duplicate)
	New ideas	Children's age & size	Technology	*Teaching assistance	*Teaching assistance[22]	*Children's enjoyment	
		SEN	*New ideas	*New ideas	*New ideas	Less time for other PE areas	
			Teacher interest	*Teacher interest	Children's ability	*Cost to school	

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[19] Resources cited x 2 in school A and x 1 in School B

[20] Teaching assistance cited x 1 in school B and x 2 in School B

[21] Cost to school cited x 1 in School A and x 2 in School B

[22] Teaching assistance cited x 1 in School B and x 2 in School B

			Children's confidence	Children's attitude	Children's interest		
			*Children's age & size	*SEN	*Children's confidence		
			*Resources	*Children's confidence	*Teaching assistance		
				Training			
School B Total	2	3	7	8	7	4	
School A & B Individual Totals for PE & 5 Activity Areas	9	4	13	9	9	6	
School A & B Combined Totals for PE & 5 Activity Areas	50						50

*Denotes 22 duplicate answers

Underline denotes 20 newly discovered factors as not detected in existing research (Appendix 9 – Table 9.2)

Unique Factors by Activity

More indications of variations between PE in general and the five activity areas collectively and between the five activities was provided by Table 5.3. It reveals teacher-defined factors exclusive to PE or the five activity areas collectively as well as individually. Six factors were advanced for PE but not for the five activity areas whereas 19 were proposed across all five activity areas but not PE. Analysis also showed how 13 of the 19 factors were exclusive to one particular activity area except for Athletics. This activity had no unique factors as all four were cited for PE, Dance, Games and/or Gymnastics. For Dance, six of the 11 factors were named for PE, Athletics, Games, Gymnastics or Swimming. However, five were unique to Dance (teacher enjoyment, boy's lack of engagement, types of dance, guidance and technology) as they were not mentioned elsewhere. Only two of the nine factors (knowing rules and children's attitude) forwarded for Games were exclusive to Games as the other seven were supplied for PE, Athletics, Dance, and/or Gymnastics. For Gymnastics, four of its seven factors were nominated in PE, Athletics, Dance and/or Games. Although three (cost to parents, staffing and children's interest) were unique to Gymnastics. Three of the four factors (number of classes, cost to school and less time for other PE areas) forwarded in Swimming were exclusive as the remaining one was forwarded for Dance. Moreover, these numbers may not reflect the extent of unique factors for each activity as teachers could only nominate five for each so there might be more.

5.4 Conclusion

This chapter answered Research Question 1 as it described what factors primary school teachers identified as influencing the amount of PE and the five activity areas. Collectively 38 factors were proposed for PE and the five activities - 19 of which applied to PE, 14 to Athletics, 20 to Dance, 19 to Games, 16 to Gymnastics and 9 to Swimming. Proposition 1 was substantiated as all teachers advanced multiple factors. As was Proposition 2 as similar and different factors for PE and the five activities were nominated. Knowing the number and types of factors is essential but so is comprehending how they operate especially from the teachers' perspectives. Therefore, knowledge of these 38 factors was enriched by ascertaining teachers' insights regarding how these factors influenced PE and activity-specific time. These findings were the focus of the next chapter.

Chapter 6
Results for Research Question 2

How Do Primary School Teachers Explain Factors' Influence on the Amount of PE Delivered in Primary Schools in Northern Ireland?

6.1 Overview of Chapter 6

This chapter displays and scrutinises results that address Research Question 2 as it describes primary teachers' explanations of how factors influenced the amount of PE and the five activities. This entailed testing Propositions 3-5 to ascertain whether some factors were perceived as more influential than others, interconnected and operative at external and internal levels. The first analytical technique namely pattern-matching was applied to all five propositions. However, to fully answer Research Question 2, another technique termed explanation-building was employed for Propositions 3 and 4 after pattern-matching was used. The replication logic required for pattern-matching was replaced in the explanation-building technique by reasonable levels of consistency in the rationale provided by the teachers for each factor within and across PE and five activities. Explanation-building involved an inductive theory building style which aimed to identify commonality and differences in the teachers' explanations. Theory building was conducted to generate new theoretical generalisations that would convey additional insights regarding how factors functioned.

6.2 Proposition 3: Some Factors are More Influential than Others on the Amount of PE in General and the Five Specific Activity Areas

6.2.1 Pattern-Matching

The predicted pattern for Proposition 3 was each teacher would be able to rank factors in each of their six response sets according to their perceived influence on quantitative provision of PE in general and the five activity areas. The observed patterns for the 12 cases followed the predicted pattern so complete replication corroborated Proposition 3. Table 6.1 proves replication as it shows how all teachers ranked factors they identified as influencing the amount of PE and five activities on a 5-point ordinal scale. There were 23 occurrences involving 48 factors derived from seven teachers wherein two or more factors were jointly ranked: five in PE, four for Athletics, two in Dance, six for Games, five in Gymnastics and one for Swimming. However, this equated to 17% of the total number of factors proposed (n=285) so a significant majority of them were regarded as more or less influential rather than equally influential.

Table 6.1: Ranked Influential Factors for PE & 5 Activity Areas In Schools A & B

Activity	Rank	School A					School B						
		AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
PE (General)	1st	Time-tabling	Equipment	Expertise	Equipment	Time	Weather	Confidence	Priorities	*Priorities	Equipment	Priorities	*Time-tabling Priorities
	2nd	Priorities	Facilities	Facilities	Facilities	Priorities	Facilities	Facilities	Expertise	Time-tabling	New Ideas	Equipment	
	3rd	Equipment	*Priorities	Equipment	Time-tabling	Time-tabling		*Time-tabling Priorities	Confidence	Expertise	Class Size	Weather	Weather
	4th	Safety	Time-tabling	Time-tabling	*Priorities Time	Weather			Equipment	Confidence		Time-tabling	Equipment
	5th	Expertise	Time	Weather		Class Size			Safety	Class Size		Safety	Time
Athletics	1st	Facilities	Facilities	Expertise	Equipment	Weather	Facilities	Confidence	Expertise	Priorities	Equipment	Weather	*Equipment Weather Expertise
	2nd	Equipment	Equipment	Facilities	Facilities	Equipment	Equipment	Class Size	Confidence	Expertise	Class Size	Children's Size & Age	
	3rd	Time	Teaching Assistance	Equipment	*Weather Safety	Time	Weather	Equipment	Equipment	Weather	New Ideas	SEN	
	4th	Priorities	*Class Size Safety	Safety		Priorities		*Time-tabling Priorities	Safety		Weather	Equipment	
	5th	Weather	Safety	Weather	Priorities	Safety			Weather			Safety	
Dance	1st	Time-tabling	Resources	Expertise	Class Size	Confidence	Expertise	Guidance	Equipment	Priorities	Expertise	Expertise	*Equipment Expertise
	2nd	Time	Equipment	Resources	Safety	Equipment	Equipment	Expertise	Facilities	Time-tabling	New Ideas	*Teacher Interest Pupil Confidence	
	3rd	Priorities	Teacher Enjoyment	Types of Dance	Children's Enjoyment	Time	Confidence	Technology	Priorities	Confidence			
	4th	Expertise	Boys' Lack of Engagement	Facilities	Priorities	Priorities	Class Size	Confidence	Time			Children's Size & Age	

	5th	Confidence	Class Size	Equipment	Time	Time-tabling		Time-tabling	Expertise			Resources	
Games	1st	Time	*Facilities Time-tabling	Expertise	*Equipment Facilities	Time-tabling	Time	Confidence	Expertise	Time	New Ideas	Equipment	*Time-tabling Facilities Weather
	2nd	Priorities		Knowing Rules	Facilities	Weather	Pupil Enjoyment	*Expertise Training	Confidence	Expertise	Equipment	*Teacher Interest Children's Attitude	
	3rd	Equipment	Equipment	Facilities	Class Size	Equipment			Equipment	Safety			
	4th	Safety	Class Size	Equipment	Safety	Time		*Time-tabling Priorities	Time	Teaching Assistance		SEN	Equipment
	5th	Time-tabling	Safety	Safety	Priorities	Priorities			Class Size			Children's Confidence	
Gymnastics	1st	Equipment	Cost to Parents	Expertise	Safety	Safety	Expertise	*Expertise Training	Safety	Safety	*Safety Equipment Facilities	*Safety Expertise	Teaching Assistance
	2nd	Facilities	Time-tabling	Safety	Class Size	Equipment	Confidence		Expertise	Teaching Assistance			Facilities
	3rd	Safety	Priorities	Confidence	*Equipment Facilities	Expertise	Equipment	Safety	Confidence	Class Size		*Children's Ability Children's Interest	Expertise
	4th	Time	Teaching Assistance	Equipment		Class Size	Safety	Equipment	Time	Time-tabling	Class Size		Safety
	5th	Expertise	Class Size	Facilities	Confidence	Time-tabling		Time-tabling	Equipment	Expertise	New Ideas	Children's Confidence	
Swimming	1st	n/a	n/a	n/a	Number of Classes	Cost to School	Cost to School	n/a	n/a	n/a	n/a	Children's Enjoyment	*Time-tabling Priorities
	2nd				Class Size	Time-tabling	Timetabling					Time-tabling	
	3rd				Safety	Time						Less Time for Other PE Areas	
	4th				Priorities	Class Size						Cost to School	
	5th												

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Individual Teacher Total No. of Factors for PE & 5 Activity Areas	25	25	25	29	29	17	25	25	20	16	29	20
Combined Teacher Total no. of Factors for PE & 5 Activity Areas	285											
Individual Teacher Total No. of Factors Ranked Singularly	25	19	25	21	29	17	17	25	18	13	21	8
Individual Teacher % of Factors Ranked Singularly	100%	76%	100%	72%	100%	100%	68%	100%	90%	81%	72%	40%
Individual Teacher Total No. of Factors Ranked Jointly	0	6	0	8	0	0	8	0	2	3	8	12
Individual Teacher % of Factors Jointly	0%	24%	0%	28%	0%	0%	32%	0%	10%	19%	28%	60%

* Denotes 23 occurrences of 2 or more factors being jointly ranked

6.2.2 Most Influential Factors

Extra information was gained by calculating an influence score for each ranked factor for PE and the five activities (Appendices 30-35) which reflected its frequency and intensity. Five points were allocated every time a factor was ranked first, four points for second, three points for third, two points for fourth and one point for fifth. Tables 6.2 and 6.3 collate the influence scores across and within Schools A and B.

Different Number & Types of Ranked Influential Factors for PE & Five Activity Areas Across Schools

Table 6.2 shows how a different number of ranked influential factors were generated for PE and the five activity areas. Responses produced 11 ranked influential factors for PE. Competing priorities achieved the top influence score followed by timetabling, equipment, facilities, weather, expertise, confidence, time, class size, new ideas and safety. Additionally, 14 ranked influential factors were identified for Athletics, 20 for Dance, 19 for Games, 17 for Gymnastics and nine for Swimming. Table 6.2 also conveys how some factors are more or less influential depending on the activity area. Results confirm that although competing priorities obtained the highest score for PE it did not do so for any of the five activities. Equipment obtained the highest for Athletics and Games, lack of expertise for Dance, safety issues for Gymnastics and timetabling for Swimming. Additionally, equipment emerged in the top three for PE and all activity areas except Swimming.

Table 6.2: Influence Scores for Ranked Influential Factors for PE & 5 Activity Areas Across Schools A & B

Order	PE (General)		Athletics		Dance		Games		Gymnastics		Swimming	
	Factor	Influence Score	Factor	Influence Score	Factor	Influence Score	Factor	Influence Score	Factor	Influence Score	Factor	Influence Score
1st	Priorities	36	Equipment	42	Expertise	32	Equipment	30	Safety	44	Timetabling	17
2nd	Timetabling	31	Weather	29	Equipment	23	Time	19	Expertise	32	Cost to School	12
3rd	Equipment	29	Facilities	23	Priorities	15	Timetabling	18	Equipment	24	Priorities	7
4th	Facilities	20	Expertise	19	Confidence	14	Facilities	18	Facilities	16	Class Size	6
5th	Weather	14	Priorities	12	Timetabling	11	Expertise	18	Class Size	12	Number of Classes	5
6th	Expertise	13	Safety	11	Time	10	Confidence	9	Confidence	11	Children's Enjoyment	5
7th	Confidence	10	Class Size	10	Resources	10	Safety	9	Teaching Assistance	9	Safety	3
8th	Time	9	Confidence	9	Class Size	8	Weather	9	Timetabling	8	Time	3
9th	Class Size	5	Time	6	Facilities	6	Priorities	8	Training	5	Less Time for Other PE Areas	3
10th	New Ideas	4	Children's Size & Age	4	Guidance	5	Class Size	6	Cost to Parent	5		
11th	Safety	4	Teaching Assistance	3	Safety	4	New Ideas	5	Time	4		
12th			New Ideas	3	New Ideas	4	Training	4	Children's Ability	3		
13th			SEN	3	Teacher Interest	4	Knowing Rules	4	Children's Interest	3		
14th			Timetabling	2	Children's Confidence	4	Children's Enjoyment	4	Priorities	3		

15th					Teacher Enjoyment	3	Teacher's Interest	4	Staffing	2		
16th					Types of Dance	3	Children's Attitude	4	New Ideas	1		
17th					Children's Enjoyment	3	Teaching Assistance	2	Children's Confidence	1		
18th					Technology	3	SEN	2				
19th					Children's Size & Age	2	Children's Confidence	1				
20th					Boys' Lack of Engagement	2						

Different & Similar Ranked Influential Factors for PE & Five Activity Areas Within and Between Schools

Within-school analysis of Table 6.3 also detected different and similar ranked influential factors for PE and the five activity areas within each school. In School A, timetabling obtained the highest influence score for PE but it did not for any of the five activities. Equipment obtained the highest influence score for Athletics and Games compared to resources for Dance, safety for Gymnastics and class size for Swimming. In School B, competing priorities acquired the highest influence score for PE but not for any of the five activities. Equipment obtained the highest score for Athletics and Games whereas it was safety for Gymnastics, expertise for Dance and timetabling for Swimming. Between-school analysis highlighted commonality and variations between schools. For instance, the same three factors - timetabling, equipment and competing priorities - emerged in the top three for PE in Schools A and B. Additionally, a different set of three factors - safety, equipment and expertise – attained first, second and third order for Gymnastics in both schools. Other examples included: lack of equipment was placed in the top three for PE and all activity areas except Swimming in both Schools A and B; safety achieved the highest order for Gymnastics in both schools; and weather was influential in Schools A and B for Athletics and Games. Conversely, facilities was positioned in the top five for PE, Athletics, Games and Gymnastics in School A but was ordered between fourth and 17th place in School B. Thus, indicating a facilities deficit was more influential in School A which is logical as it had more teachers to schedule for the indoor hall. Another example was confidence obtaining fifth position for PE and fourth for Athletics and Gymnastics in School B. Yet it was not placed at all for PE, Athletics and Gymnastics in School A.

Table 6.3: Influence Scores for Ranked Influential Factors for PE & 5 Activity Areas In Schools A & B

Order	PE (General) School A Factor & Influence Score	PE (General) School B Factor & Influence Score	Athletics School A Factor & Influence Score	Athletics School B Factor & Influence Score	Dance School A Factor & Influence Score	Dance School B Factor & Influence Score	Games School A Factor & Influence Score	Games School B Factor & Influence Score	Gymnastics School A Factor & Influence Score	Gymnastics School B Factor & Influence Score	Swimming School A Factor & Influence Score	Swimming School B Factor & Influence Score
1st	Timetabling = 16	Priorities = 23	Equipment = 20	Equipment = 22	Resources = 9	Expertise = 25	Equipment = 16	Equipment = 14	Safety = 17	Safety = 27	Class Size = 6	Timetabling = 13
2nd	Equipment = 16	Timetabling = 15	Facilities = 18	Weather = 19	Equipment = 9	Equipment = 14	Facilities = 13	Expertise = 13	Equipment = 14	Expertise = 23	Number of Classes = 5	Cost to School = 7
3rd	Priorities = 13	Equipment = 13	Weather = 10	Expertise = 14	Time = 8	Priorities = 8	Timetabling = 11	Time = 12	Expertise = 9	Equipment = 10	Cost to School = 5	Priorities = 5
4th	Facilities = 12	Weather = 11	Safety = 8	Confidence = 9	Priorities = 7	Confidence = 8	Time = 7	Confidence = 9	Facilities = 8	Teaching Assistance = 9	Timetabling = 4	Children's Enjoyment = 5
5th	Time = 8	Confidence = 10	Time = 6	Class Size = 8	Expertise = 7	Timetabling = 5	Priorities = 6	Timetabling = 7	Class Size = 7	Facilities = 8	Safety = 3	Less Time for Other PE Areas = 3
6th	Expertise = 6	Expertise = 7	Priorities = 5	Priorities = 7	Confidence = 6	Guidance = 5	Safety = 6	Facilities = 5	Cost to Parent = 5	Confidence = 7	Time = 3	
7th	Weather = 3	Facilities = 8	Expertise = 5	Facilities = 5	Timetabling = 6	New Ideas = 4	Class Size = 5	Weather = 5	Timetabling = 5	Class Size = 5	Priorities = 2	
8th	Safety = 2	New Ideas = 4	Teaching Assistance = 3	Children's Size & Age = 4	Class Size = 6	Teacher Interest = 4	Expertise = 5	New Ideas = 5	Confidence = 4	Training = 5		

9th		Class Size = 4	Class Size = 2	New Ideas = 3	Safety = 4	Children's Confidence = 4	Knowing Rules = 4	Children's Enjoyment = 4	Priorities = 3	Children's Ability = 3		
10th		Safety = 2		SEN = 3	Teacher Enjoyment 3	Facilities = 4	Weather = 4	Teacher Interest = 4	Time = 2	Timetabling = 3		
11th		Time = 1		Safety = 3	Types of Dance = 3	Technology = 3		Children's Attitude = 4	Teaching Assistance = 2	Children's Interest = 3		
12th				Timetabling = 2	Children's Enjoyment = 3	Class Size = 2		Safety = 3		Time = 2		
13th					Boy's Lack of Engage-ment = 2	Time = 2		SEN = 2		New Ideas = 1		
14th					Facilities = 2	Children's Size & Age = 2		Priorities = 2		Children's Confidence = 1		
15th						Resources = 1		Teaching Assistance = 2				
16th								Class Size = 1				
17th								Children's Confidence = 1				

6.2.3 Explanation-Building for the 11 Ranked Influential Factors for PE

As previously noted, analysis of Proposition 3 incorporated a second analytical technique called explanation-building. This entailed examination of each teachers' rationale for each of the top 11 influential factors for PE in general to establish whether common logic was proposed when they explained how an individual factor affected PE time. Subsequently, their accounts of how the same factor impacted the other five activity areas were scrutinised to determine whether similar or different reasoning applied to the five specific activities. Notwithstanding the inter-relatedness of many factors and repetition of common themes that emerged, application of the explanation-building technique for Proposition 3 required that each factor was first analysed in isolation from the others. To illustrate, analysis of how competing priorities reduced time initially involved establishing whether common logic was advanced by each of the 12 teachers in relation to PE only. This procedure was then repeated for each of the five activity areas to ascertain whether similar or different reasoning was proposed for these activities compared to that advanced for PE. Although for Proposition 3 each factor was first analysed individually and separately from other factors, any indications of connections with other factors expressed by teachers were briefly acknowledged during the reporting of results for each factor. Potential inter-relatedness between factors was then analysed in more detail when testing Proposition 4 as it explicitly asserted factors were interconnected. Application of the explanation-building technique reinforced the benefits of using a mixed-research strategy as methodological triangulation facilitated a more accurate and complete understanding of the research question. The quantitative data for Proposition 3 generated a finding of 11 influential factors for PE. Yet the qualitative data obtained via the teachers' explanations revealed how they influenced the amount of PE. This process also highlighted the advantages of data triangulation as the teacher narratives in Dataset (1) Teacher Interviews was challenged by identifying content from Dataset (2) Observation of PE Facilities & Equipment and Dataset (3) Desk-Based Research of School & PE Documents which aligned with or contradicted teacher testimonies.

6.2.3.1 Competing Priorities

Overall, competing priorities attained the highest influence score (n=36) for PE and fifth for Athletics, third for Dance, ninth for Games, 14th for Gymnastics and third for Swimming.

Notably, no teacher in School B identified competing priorities as a factor that reduced Games or Gymnastics and only one teacher (AT2) in School A nominated it for Gymnastics. Teachers' explanations of how it lessened PE time related to a crowded, hierarchical curriculum that prioritised English and Mathematics and included links to two other factors – timetabling issues and lack of time. Their rationale was consistent within and across PE and the five activity areas.

<u>Explanation-Building in PE</u>
Dataset (1) Teacher Interviews

Teachers described the volume of curricular content to be delivered as there was *'A lot to cover in our curriculum for the year.'* (BT6) as well as the challenges entailed because it was *'So time consuming … so difficult.'* (AT5). Although no teacher explicitly referred to academic and practical subjects, or subject status, this was inferred from links to prioritisation, for example *'The list is endless so it is about priorities and prioritising what it is I need to do.'* (AT1). Literacy and numeracy were cited as priority subjects by four teachers, for instance '*Progress in Maths and English – what I need to cover in order for the children to do their best for the standardised score … they have targets to meet*.' (BT4). Preparation for the literacy and numeracy-based test administered by grammar schools to determine selection of incoming pupils (Association for Quality Education 2021) was identified by two teachers[23] as a priority. Only two teachers mentioned the need to *'Make sure they are getting enough of other areas - Art and PE.'* (AT5) and '*World Around Us, play and outdoor play.'* (AT2). A consequence of subject prioritisation was '*If you have started a lesson - rolling over time - you realise only 15 minutes left for PE - no point by the time you get down and organised – slot is over … other lessons overrun and take priority.'* (AT4). The school nativity play was implicated by one teacher who commented *'That takes over your life.'* (BT2) suggesting other school activities might be given precedence. Conversely, one teacher remarked '*I tend to not drop PE if I am dropping anything because I know how much the class get from PE … the majority love PE and are so well-behaved during PE and get so much out of it.'* (BT7). A different teacher acknowledged PE's importance but arguably for non-educational purposes

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[23] Quotes and teacher reference numbers are not disclosed to prevent traceability and protect the anonymity of the two teachers

'The kids are getting out and doing something - out of the classroom - helps them channel their energies – let off a bit of energy and steam.' (BT6). Another teacher described PE as *'Almost like Golden Time … a reward after they have done their work.'* (BT3).

Dataset (3) Desk-Based Research of School & PE Documents

Discoveries in school documents substantiated some of the teachers' perspectives. No document was located in either school explicitly mentioning a crowded, hierarchical curriculum or subject status. Yet an overt aspiration to maximise academic success and subtle suggestions of an academic and practical distinction were detected in School B's prospectus[24]. Similar comments were not found in School A's documents. The terms 'prioritisation' or 'priority' were not in either school's documents but were inferred from multiple references in various sources to the dominance of English and Mathematics. School A's prospectus promoted a higher importance on teaching both subjects as it disclosed how internal, continuous assessments were for literacy and numeracy only. Consistency was observed in the 3-year school development plan as improving literacy and numeracy was one of the six outcomes. No other area of learning was mentioned, only another cross-curricular skill, specifically ICT. A predisposition towards English and Mathematics was further evidenced in their most recent Education & Training Inspectorate report[25] which focused on literacy and numeracy. Other areas of learning were unconsidered although this may have denoted the Inspectorate's focus rather than the school's priority. Comparable comments appeared in School B's documents. Their prospectus emphasised three core areas - literacy, numeracy and ICT. This view was reflected in their school development plan which identified a monitoring system to raise standards but for these three subjects only. Another area of learning, namely World Around Us[26], was mentioned but received less exposure as it was allocated five targets compared to nine for literacy and eight for numeracy. This school's current Inspectorate report also reiterated English and Mathematics' primacy.

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[24] Quotes are not disclosed to prevent traceability and protect the anonymity of the two schools
[25] Dates are not disclosed to prevent traceability and protect the anonymity of the two schools
[26] The World Around Us is one of six statutory areas of learning in the NI Primary Curriculum

Explanation-Building in the 5 Activity Areas

Dataset (1) Teacher Interviews

Overall, teachers' explanations for the five activity areas did not differ from those advanced for PE, namely, a busy curriculum and prioritisation of academic subjects especially English and Mathematics. For Athletics, AT5 explained how *'You try to make sure they are getting enough of others areas – Art and PE – but it is just so difficult.'* and BT4 conceded '*Progress in Maths and English are the priority*.'. In Dance, AT1 acknowledged the '*Difficulty of getting everything done in the Curriculum – sometimes it doesn't get done.*' and BT3 admitted '*Sometimes Dance is not done because of nativity play*'. Although they did not suggest this outcome was particular to Dance so the time for any of the four activity areas could be forfeited if scheduled for the same time as the play. Regarding Games, AT4 commented *'It is really about deciding what subjects they need to be doing more of – usually literacy and numeracy.'*. Similarly in Gymnastics, AT2 remarked '*We will have priorities and other subjects come first*.'. For Swimming, AT4 reasoned '*It does take time out from other subjects which must be covered.*' and BT7 concluded '*I don't think you could have any more time as need to get everything else done first.'*. The extra time associated with Swimming was acknowledged as it consumes *'Over 2 hours out of your day.'* (AT4) and '*Takes up all of the afternoon so no teaching then.'* (BT7). This reinforced how the teaching time allocated to Swimming was uniquely affected by the additional time involved due to transport and changing.

6.2.3.2 Timetabling Issues

Timetabling issues achieved the second highest influence score (n=31) for PE and 14th place in Athletics, fifth for Dance, third in Games, eighth for Gymnastics and first in Swimming. No teacher in School A and only one teacher (BT2) in School B nominated timetabling as a factor for Athletics. Teachers' descriptions of how it decreased PE time reflected those articulated for competing priorities as they alluded to a congested curriculum dominated by literacy and numeracy. Their argumentation was consistent within and across PE and the five activities.

<u>Explanation-Building in PE</u>

Dataset (1) Teacher Interviews

Teachers commented on the amount of curricular content as there was *'So much stuff to fit into the day and it doesn't always fit.'* (AT1); the difficulties entailed because *'It's hard to do everything that you have to get covered.'* (BT7); and the inevitability that delivery was diluted as '*You can't get everything done.'* (BT6). Consequently, prioritisation arose as '*I have to prioritise and decide what has to get done and what can wait.'* (BT2) and *'Literacy and numeracy always comes first for timetabling.'* (AT5). In contrast '*PE is a low-down priority.'* (AT3) and *'It will only get done if they get their work done.'* (AT4). The idea that PE was regarded as non-academic was evidenced in remarks it was *'Great for letting off steam but would unsettle them if they had to do work after.'* (AT5) and *'Time-out from the classroom.'* (BT2). Another teacher suggested *'It would be better if PE was in the afternoon when their minds are more energetic … they produce their best school work in the morning so don't want to miss out this time by doing PE.'* (AT2).

Dataset (3) Desk-Based Research of School & PE Documents

Findings in school documents relating to the school day and week verified the difficulty of implementing a busy curriculum in the teaching time available. School A's prospectus stated the school day commenced at 8.55am for all pupils but finished at 2pm for Years 1-3 and 3pm for Years 4-7. This equated to 5 hours and 5 minutes teaching time per day and a weekly total of 25 hours and 25 minutes for Years 1-3, and 6 hours and 5 minutes per day and 30 hours and 25 minutes a week for Years 4-7. Yet there were deductions. A 15-minute morning break and 50-minute lunch break was scheduled every day for everyone. Each class also had 2 x 40-minute assemblies per week. These deductions totalled 6 hours and 45 minutes per week. Therefore, the maximum weekly teaching time was 18 hours and 40 minutes for Years 1-3 and 23 hours and 40 minutes for Years 4-7. School B's prospectus affirmed all pupils' day started at 9am but ended at 2pm for Years 1-3 and 3pm for Years 4-7. Although this equated to 5 hours daily teaching time and 25 hours every week for Years 1-3, and 6 hours each day and 30 hours every week for Years 4-7, these figures were reduced. Daily 15-minute morning breaks and 45-minute lunch breaks combined with 2 x 45-minute assemblies totalled 6 hours and 30 minutes. When subtracted, the weekly teaching time was 18 hours and 30 minutes for Years 1-3 and 23 hours and 30 minutes for Years 4-7. These

calculations signified challenges as the maximum weekly teaching times in both schools were smaller than the legal maximum 25 hours a week (DENI 1987) teachers are expected to teach. They had less time than they could have had for curriculum delivery. They also highlighted how teachers of Years 1-3 had five fewer hours a week to deliver all curriculum content.

With the exception of PE, no other subject-specific policy in either school indicated any time allocation for their subject. School A's PE Policy did not mention the 2-hour recommendation or any weekly PE time but did refer to how classes were timetabled for 2 x 30-minute sessions in the gym. Although this may not reflect the total amount of scheduled PE as it did not include outdoor delivery. This contrasted with School B's PE policy which stated all classes were timetabled for two hours of PE a week. Notwithstanding time stipulations, evidence of low levels of PE was provided by teachers' estimations of how much was normally delivered to their class over a typical week. Table 6.4 shows average weekly times of 48 and 86 minutes for Schools A and B respectively. Scheduling the 2-hour recommendation would only expend 10.8% of the available teaching time for Years 1-3 and 8.5 % Years 4-7 in both schools. However, conversion of average weekly times revealed only one teacher (BT6) allocated 8.5% of teaching time to PE as they recounted two hours. This compared to another teacher (AT1) who assigned 2.7% as they delivered 30 minutes per week.

Table 6.4: Teacher-Reported Weekly Amounts of PE Normally Delivered Over a Typical Week & Average Percentage of PE Time Allocated to 5 Activity Areas Over School Year In Schools A & B

School & Teacher	Teacher-Reported PE Time			Percentage of Available Teaching Time Allocated to PE (%)	Teacher-Reported Average Percentage of PE Time Allocated to 5 Activity Areas (%)				
	PE Lesson Frequency	PE Lesson Duration (mins)	Total Amount of PE Per Week (mins)		Athletics	Dance	Games	Gymnastics	Swimming (KS2 only)
School A									
AT1	1	30	30	2.7	20	20	40	20	n/a[27]
AT2	1	60	60	5.4	20	0	60	20	n/a
AT3	1	45	45	3.2	20	40	40	0	n/a
AT4	1	45	45	3.2	20	5	50	15	10
AT5	1	60	60	4.2	25	5	30	20	20
School Mean	1	48	48	3.7	21	14	44	15	20
School B									
BT1	2	50	100	7.1	15	0	40	15	30
BT2	2	45	90	8.1	40	10	40	10	n/a
BT3	2	30	60	5.4	18	16	60	16	n/a
BT4	2	45	90	6.4	20	10	20	50	n/a
BT5	2	30	60	5.4	25	25	25	25	n/a
BT6	2	60	120	8.5	10	5	50	10	25
BT7	1	50	80	5.7	15	10	30	15	30
	1	30							
School Mean	2	49	86	6.7	20.5	11	38	20	28
School A & B Overall Mean		48.5	67	5.2	20.75	12.5	41	17.5	24

Dataset (1) Teacher Interviews

These themes continued when teachers rationalised how timetabling reduced amounts of the other five activities. In Athletics, BT2 reinforced that *'Trying to get everything else done first is always going to be the priority.'* For Dance, AT5 recalled '*Making sure all the academic work is completed before anything else.'.* In Games, *'It takes so much time to plan and set it up.'* (AT2) but *'You have to get the more important stuff done first.'* (BT7). No insights suggested Games received more or less priority afforded to PE in general when prioritising what subjects to teach. However, Table 6.4 shows that Games obtained the highest percentage (41%) of teaching time allocated to PE thus indicating its primacy amongst the five activities. Gymnastics was reduced because '*We have other priorities'* (AT2). For Swimming, '*You can only squeeze in a 30-minute swim because of travelling time otherwise you wouldn't get everything else done.'* (AT5) and '*Have to make sure there is time to get Maths and English done … couldn't do anymore Swimming*.' (BT6). Notwithstanding these additional time pressures, Table 6.4 highlights how Swimming alongside Athletics and Games, received at least the 20% equal allocation of PE teaching time. Moreover, Swimming achieved the second highest percentage of 24%.

6.2.3.3 Lack of Equipment

A lack of equipment obtained the third highest influence score (n=29) for PE and first position for Athletics, second in Dance, first for Games and third in Gymnastics. It was not implicated in reduced Swimming. Teachers' accounts of how it lessened PE time pertained to quantitative features, notably accessibility and availability, as well as qualitative aspects such as suitability and safety. Their reasoning was consistent within and across PE and the five activity areas.

Dataset (1) Teacher Interviews

An initial quantitative challenge was accessibility as neither school may have the desired items as *'We don't have that much equipment here.'* (AT1) and there '*Maybe isn't the right equipment for it.'* (BT6). Teachers attributed this to budgetary constraints because there is '*No money … PE equipment is down the list.'* (AT3) and *'Not enough money in school to buy*

things.' (BT5). Even if the school had the required items, accessibility was compromised by insufficient amounts and storage issues. Teacher frustrations included *'5 balls for a class of 30 … no good.'* (AT2) and the consequences were *'You either don't do your lesson because you know there isn't enough stuff or it's cut short.'* (BT3). Conversely, a different teacher remarked how *'Lack of equipment can be an issue … but we tend to just work around it … put them into groups and share.'* (BT7). Yet others associated sharing with behavioural issues as *'Children get bored waiting … puts me off big time because you've lost crowd control.'* (AT2) and *'They don't really like sharing … naughty behaviour creeps in.'* (BT5). Finding equipment was testing in both schools due to poor storage because *'Store a mess! All planned … but can find nothing.'* (AT2) and *'Store is a bit of a shambles – doesn't matter how many times it is cleaned, tidied and gutted … equipment gets lost or not put back in correct place.'* (BT6). For one teacher the outcome was *'You kind of give up … I was fed up having to go down and look for things.'* (AT3). Unavailability due to simultaneous use was problematic as *'Sometimes another class was outside using what we needed so we had nothing to use.'* (AT1). Doubts about quality, specifically suitability and safety, were also raised as *'Most equipment is really old so possibly unsafe – can't be used.'* (AT4). Accordingly, *'If not safe - no or less PE as can't do longer lessons without it.'* (BT6).

Dataset (2) Observation of PE Facilities & Equipment

Observation of both schools' PE equipment and storage corroborated teachers' explanations as overall there were shortcomings as evidenced via the quantity and quality of generic PE items. Insufficient quantity was discerned from various examples of no or limited accessibility and/or availability. For instance, there was no access to several common items such as skipping ropes as neither school had any skipping ropes. Additionally, reduced access to quoits was deduced. School A had five for classes ranging from 20-26 children and School B had eight for classes with 16-30 pupils (Table 6.7) so there were insufficient amounts for one per child. Even if the schools possessed the requested items and correct amount, retrieval could be obstructed by poor storage. As per the Department of Education for Northern Ireland's (DENI) (2020) guidance, both schools had one PE store of at least 15m² as school A's store was 15.54m² and School B's was 15.75m²[28]. Although neither

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[28] School A's store was 4.2m x 3.7m = 15.54m² and School B's store was 3.5m x 4.5m = 15.75m²

school had the DENI-recommended 10m² mat store. Visual inspection of both stores indicated congestion and disorganisation. Crowding was evidenced in School A's store as it accommodated a large portable mat trolley[29] located in a corner and a plastic chair both of which obstructed access to other PE equipment. School B's store also contained a mat trolley with identical dimensions which part-blocked the entrance. Additionally, it held other non-PE items, specifically four dining tables, which interrupted open access to fixed wall-shelving holding PE equipment. Most of the floor space in both stores was occupied by other PE items including storage containers, kit bags and goal posts. They reduced free movement and could make the collection and return of some articles unsafe. Disordered storage was visible in both schools due to numerous examples. Multiple sets of coloured bibs (six in School A and three in School B) were mixed up in both schools so a teacher wanting one set of bibs of one colour would have to sort them first. Components of sets were in different locations. For instance, the net stands and netting in School A were at opposite sides of the store, and in School B, six traffic cones were located in three different areas. Multiple storage containers carried mixed contents. In School A, one container enclosed three different sized balls, one damaged bat, three bean bags and six water bottles. One of School B's storage boxes carried one bib, five dome cones, 34 shuttlecocks and nine batons. The availability of some items could also be compromised by concurrent use, e.g., both schools had 30 beanbags which is not enough for all children in another class if they are needed at the same time. Inappropriate quality was demonstrated in some objects' suitability and safety. One example was 13 of the 31 non-sport specific balls in School A and 20 of the 35 in School B were deflated. Although this problem is resolvable with a pump, one was not found in either school.

Dataset (3) Desk-Based Research of School & PE Documents
Examination of school documents, specifically their PE policy, validated and disputed some teachers' concerns but only in School A as limited information was available in School B. School A's PE policy listed 23 categories of equipment but more were observed. Articles associated with three (commercial gym apparatus set, skittles and plastic canes) of the 23 categories were not located. Yet seven types of equipment not listed in the policy were

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[29] School A and B's portable mat trolley = 1.8m x 1.2m x 1.5m

discovered (combat fitness stand, springboard, hurdles, golf kit bag, running sacks, Lacrosse sticks and space hoppers). Equipment suitability and safety featured in the policy but was confined to one sentence advising damaged items should not be used and must be reported to the PE coordinator. The presence of broken items alongside their undamaged counterparts queried whether this advice was implemented. By comparison, School B's PE policy did not list any equipment categories as these were recorded in a separate PE resources audit document. As this audit had not yet been developed, shortages in items as well as discrepancies between reported and actual amounts were undiscoverable.

Explanation-Building in Four Activity Areas

Similar reasoning was advanced when the teachers articulated how equipment shortages compromised time for four of the five activities.

Athletics

Dataset (1) Teacher Interviews

In Athletics there were insufficient amounts of equipment as *'not enough for everybody'* (AT1) or items could not be located in the store as '*unsure if it is there or elsewhere*' (BT3). Teachers acknowledged how Athletics equipment was *'more specialised'* (AT2) as it required items such as hurdles (AT3, AT4 & BT5), batons (AT3), javelins (AT4, AT5 & BT1), discus (BT1 & BT6), shot put (BT6) and cones (BT3). In the absence of these items '*you can only do the basics'* (BT5), specifically running but this meant '*more repetition'* (AT4) and a *'lack of variety'* (BT5).

Dataset (2) Observation of PE Facilities & Equipment

Some of these claims were part-verified by Dataset (2). Only School A had javelins but only five were counted so six children would have to share one in a class of 30. Neither school had shot puts or discuses. School B had nine batons but school A had six which may be sufficient for 7-8 x 4-person relay teams. School A had 12 mid-level hurdles which may be enough for team hurdle races but their height could restrict use to Key Stages 1 and 2. School B had three low-level hurdles which is insufficient even for team races and their lower height may not challenge Key Stage 1 and 2 pupils. Jumping-specific equipment included one agility ladder in School A to be shared by up to 30 children. School B had 16

jumping sacks and although one could be shared between two, their dimensions might confine use to Foundation Stage and Key Stage 1.

Dance

Dataset (1) Teacher Interviews

For Dance, teachers mentioned the importance of playing music and reliance on a *'good sound system'* (BT1) which both schools lacked as '*We just don't have one.'* (AT2) and *'Ours is unreliable.'* (BT3).

Dataset (2) Observation of PE Facilities & Equipment

These doubts were verified by Dataset (2). School A had no sound system and although School B had a wall-fixed sound system it was broken so unusable. Other specified items included costumes (AT3 & BT1) and props (AT5) both of which were not detected. Although they could be located somewhere other than the PE store, e.g., teacher/drama co-ordinator's classroom store. None of these requirements were mentioned for any other activity area so were exclusive to Dance.

Games

Dataset (1) Teacher Interviews

In Games, teachers commented how '*There were not enough items for each child.'* (BT5). Only one teacher reported access issues due to poor storage and because '*You can't find them anywhere because the store is a mess.'* (AT2). Having no equipment for *'specific games'* (AT4) or *'specific sports'* (BT6) was reported although particular games and sports were not cited. Five teachers (AT2, AT3, BT5, BT6 & BT7) expressed a dependency on equipment and queried '*Whether Games was possible without equipmen*t?' (BT5).

Dataset (2) Observation of PE Facilities & Equipment

Dataset (2) partially corroborated complaints of insufficient Games-specific equipment in both schools. School A's store contained complete sets of equipment for one class of 30 for

four games - cricket, football, rugby and netball[30]. Yet there were incomplete sets for three games – badminton, volleyball and basketball[31]. A breakdown of these seven games by type categorised was four invasion (football, rugby, netball, basketball); two net/wall (badminton, volleyball); and one striking/fielding (cricket). This indicated a potentially biased delivery of invasion games but omission of target games, e.g., bowling. School B's store accommodated complete sets for two games – badminton and cricket[32]. Although there were incomplete sets for four games – Lacrosse, tennis, football and golf[33]. Classification of these six games was two invasion (Lacrosse, football); two net/wall (badminton, tennis); one striking/fielding (cricket); and one target (golf). This suggested a more representative selection of specific games.

Gymnastics

Dataset (1) Teacher Interviews

Gymnastics equipment was deficient as *'Nothing to teach gymnastics … if you have no equipment, you cannot teach it.'* (AT3) and its condition could be *'old and monotonous … everything is old and not exciting'* (BT2). The quantity and quality of mats was raised again in both schools (AT3, BT4, BT1 & BT5) as was set up because *'By the time you get all the equipment and get it all set out that then restricts the time you have to use it.'* (AT4). This problem was intensified depending on the age and size of pupils as *'They can't always lift stuff as too heavy … like the mats.'* (BT3).

Dataset (2) Observation of PE Facilities & Equipment

Reservations were also authenticated by Dataset (2). Both schools had mat trolleys - School A's held nine mats and School B's contained 10. Consequently, there were insufficient amounts for one mat per child if doing individual mat work as well as enough for providing a

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[30] School A's PE equipment inventory: cricket bat, stump set and ball x 1; football posts x 2 and balls x 20; rugby balls x 15; and netball x 2 posts and 16 balls

[31] School A's PE equipment inventory: badminton posts and nets x 2, and racquets x 12; volleyball net x 0 and balls x 12; and basketball nets x 0 and balls x 13

[32] School B's PE equipment inventory: Badminton rackets x 25 and shuttlecocks x 34; and cricket bat, stump set and ball x 1

[33] School B's PE equipment inventory: Lacrosse sticks x 3 and balls x 0; tennis net x 1, balls x 24 and racquets x 0; football posts x 2 and balls x 9; golf sticks x 19 and balls x 19

safe landing area around fixed and portable apparatus. School A had no fixed apparatus and portable items other than mats were restricted to six low level benches. School B's fixed apparatus comprised one set of wall bars and one rope stand in the hall. Their portable items were two pyramid climbing frames and one movement table in the store as well as four low benches in the hall.

6.2.3.4 Lack of Facilities

A lack of facilities acquired the fourth highest influence score (n=20) for PE and was ordered third in Athletics, ninth for Dance and fourth in Games and Gymnastics. It was not nominated as an influential factor for Swimming. Teachers' interpretations of how it compromised quantitative provision focused on quantitative aspects relating to accessibility and availability, but not on qualitative features such as suitability and safety. The rationale for quantitative issues was consistent within and across PE and the activities but qualitative features were introduced when discussing the four activity areas.

Explanation-Building in PE

Dataset (1) Teacher Interviews

Whilst teachers acknowledged they could theoretically access at least two outdoor spaces, availability was diminished as both were unusable due to adverse weather. Consequently, they were reliant on indoor delivery because '*If it is a really wet day outside, we are dependent on the hall and the hall timetable'* (AT2). Notwithstanding favourable weather, another teacher reasoned that outdoor teaching was unworkable as *'Certain lessons do not gear up for being outside.'* (AT2) or alternatively *'Parents are always using the playground at different times to get to the classes … so you can't do PE out there.'* (AT3). Non-use of outdoor spaces was problematic in both schools as indoor options were restricted to one indoor hall. Its availability was moderated by two reasons – other PE lessons or non-PE activities. One teacher referred to clashes with other PE lessons as *'Dance is scheduled in the hall on Friday so can't use hall then if raining.'* (BT1). Others noted multi-uses including *'rehearsals and special assembly'* (AT4); *'special occasions and speakers'* (AT3); *'carol service … visitor or assembly'* (AT2); *'Nativity … concerts'* (BT2); and *'special events, plays, choir'* (BT1). The result was *'If you can't get outside or do it inside, you just don't do your lesson.'* (BT2). All three teachers from School A who ranked this factor attributed scheduling

challenges to the number of classes because *'We have quite a lot of classes and not enough slots.'* (AT4). None from School B did which may be explained by them having seven classes compared to School A having 14.

Dataset (2) Observation of PE Facilities & Equipment

Teacher complaints of one hall were corroborated by Dataset (2). It confirmed that although School A had two outdoor spaces[34] and School B had three[35], there was only one indoor multi-use hall.

Dataset (3) Desk-Based Research of School & PE Documents

Findings in school documents, specifically the PE hall timetable and PE policy, queried claims of limited accessibility and availability. School A had only one multi-purpose hall. Thus, all 14 classes could not be scheduled for two hours a week of indoor PE if the hall was available for the estimated 25 hours per week as 28 hours would be required. Inspection of a hard copy of the PE hall timetable confirmed this because the facility was more restricted than predicted. It reported availability from 9am-3pm except between 10.20-10.45am and 12-1pm each day for breaks, and 9-9.40am on three days for assemblies. The maximum time available was 20 hours and 30 minutes which is 7 hours and 30 minutes short of the 28 hours needed. This problem may have been pre-empted by the PE Policy's author as it stated each class was timetabled in the gym for 2 x 30-minute PE sessions per week as this only required 14 hours. The existence of a PE timetable supported teachers' explanations regarding scheduling procedures, namely that an online PE timetable was posted on the school's intranet before the new term started and they choose their preferred slots. The timetable displayed 22 slots[36] over the week but highlighted variations in the duration of the maximum five daily slots - 1 x 40 minutes, 1 x 35 minutes, 1 x 75 minutes and 2 x 60 minutes. Scrutiny of this timetable confirmed 13 of the 14 classes reserved at least one of the 22 available slots. Whilst one class was not scheduled for any slots, two teachers chose

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[34] School A had outdoor space (1) 40m x 29m = 1160m² and outdoor space (2) 17m x 42m = 714m²
[35] School B had outdoor space (1) 53m x 32m = 1696m², outdoor space (2) 40m x 15m = 600m² and outdoor space (3) 48m x 102m = 4896m²
[36] School A's PE slots: five on the two non-assembly days = 10 and four on the three assembly days = 12; 10 & 12 = 22 slots

two sessions and one teacher selected three. Notably, the remaining five slots[37] were unallocated suggesting other opportunities totalling 4 hours and 5 minutes to deliver PE indoors were available but not utilised. Table 6.5 shows a mean average time of 48 minutes of PE per week but this could be increased if teachers booked the unallocated slots. This queried all three teachers' citation of scheduling challenges due to class numbers as extra hall timetable appeared available but was unused. Alternatively, whilst these five slots appeared vacant as they were not designated for PE, they could have been reserved for other activities not disclosed in the PE Timetable as only assembly times were displayed. Table 6.5 also illustrates differences between teacher-reported time and hall timetable-displayed time as four of the five teachers were not maximising their allocated hall time. Additionally, figures reveal some non-conformity with their PE policy's stipulation that each class would have 2 x 30-minute sessions a week in the hall as only one teacher (AT3) was allocated this on the PE hall timetable. Although this was not fully utilised as they reported a 45-minute delivery time.

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[37] 1 x 40 minutes, 2 x 35 minutes, 1 x 75 minutes and 1 x 60 minutes = 4 hours and 5 minutes

Table 6.5: Weekly PE Times Reported by Teachers & PE Hall Timetable In Schools A & B

School & Teacher	Reported by Teachers			Reported in PE Hall Timetable		
	PE Lesson Frequency	PE Lesson Duration (mins)	Total Amount of PE per Week (mins)	Allocated Slot Frequency for PE	Allocated Duration for PE (mins)	Total Amount of PE per Week (mins)
School A						
AT1	1	30	30	1	75	*75
AT2	1	60	60	1	35	35
AT3	1	45	45	2	30	*60
AT4	1	45	45	1	60	*60
AT5	1	60	60	1	60	*135
				1	75	
Mean			48			
School B						
BT1	2	50	100	2	60	*120
BT2	2	45	90	1	30	30
BT3	2	30	60	1	30	*90
				1	60	
BT4	2	45	90	2	45	90
BT5	2	30	60	2	30	*150
				2	45	
BT6	2	60	120	2	60	120
BT7	1	50	80	2	60	*120
	1	30				
Mean			86			

*Denotes teachers not maximising their allocated hall time

In contrast with School A, all of School B's seven classes could be scheduled for two hours a week if their one hall was available for the estimated 25 hours per week as only 14 hours were required. Surprisingly, facilities emerged as a highly ranked factor. Content in the PE policy and PE hall timetable only partially substantiated teachers' justifications but did not fully elucidate this irregularity. Examination of the PE hall timetable confirmed it was more limited than expected. It itemised availability from 9am-3pm except between 10.30-11am and 12.15-1pm each day for breaks, and 9-9.40am on four days for assemblies. Although reducing the maximum time to 20 hours and 45 minutes, this still provided 6 hours and 45 minutes more than the 14 hours required to schedule 2 hours of indoor PE to each of the seven classes. This might have been the aspiration of the PE policy's author as it declared all classes were timetabled for two hours of PE a week but was qualified as it did not specify this time was reserved in the hall. The presence of a PE hall timetable authenticated teachers' descriptions of scheduling procedures entailing the circulation of a hard copy before the new term and teacher selection of slots. The timetable displayed 31 slots[38] over the week but highlighted variations in the duration of the maximum seven daily slots - 1 x 30 minutes, 3 x 45 minutes and 3 x 60 minutes. Analysis confirmed six of the seven classes reserved at least two slots, one teacher was allocated one, another teacher booked three and one selected four – a total of 16 scheduled PE slots. Another six were earmarked for non-PE activities – one for nursery and five for after-school clubs from 2-3pm. Although this validated teachers' reports of multi-use, nine unallocated slots totalling 7 hours and 30 minutes remained unscheduled. This signified additional opportunities for indoor PE which were not realised that could have increased the average time of 86 minutes of PE per week. Discrepancies also emerged between teacher-reported time and hall timetable-displayed time as four of the seven teachers did not optimise their assigned hall time. Similar to School A, some non-compliance with the 2-hour time stipulation in their PE policy was detected. Only one teacher (BT6) reported the recommended amount whereas others reported providing less time.

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[38] School B's PE slots: 7 on the 2 non-assembly days = 14; 6 on 2 of the 3 assembly days = 12; and 5 on the 3rd assembly day as 2 assemblies = 5; 14 + 12 + 5 = 31 slots

The phenomenon of no teacher implicating the quality of their indoor facility conflicted with on-site observations and subsequent calculations. As per DENI's (2020) specification, the multi-use hall should be 160m². Yet both schools' halls did not comply with these dimensions and not all of the space was usable for safety reasons. School A's hall was 144m²[39] and usable movement space, denoted by court markings, was reduced to 78m², presumably to allow for a run-off distance around the perimeter. The Association for Physical Education's (AfPE) (2020) advice was unclear. It stated running areas should have 'sufficient space to allow for run-off' (p130) but did not specify measurements so it was unclear whether the 1.5m run-off area qualifies as sufficient. Even if the dimensions did, safety was compromised in this area as it was congested with six benches, one projector trolley and one piano. School B's hall was 117m²[40]. Court markings were not detected but the usable activity space would be reduced to 60m² if a 1.5m run-off area applied. The perimeter was also obstructed with four benches, one music trolley and one piano. Applying the maximum class permitted in NI of 30 pupils, this equates to 2.6m² and 2m² per learner in Schools A and B respectively. This may be inadequate and unsafe depending on the activity.

Explanation-Building in Four Activity Areas

Comparable logic was detected when teachers expounded how insufficient facilities lowered allocated time for the other four activities. New insights were also gained as qualitative features relating to suitability and safety of facilities were raised.

Athletics

Dataset (1) Teacher Interviews

Assumptions that Athletics would be outdoors were expressed so links were made to adverse weather and related safety issues. Children could slip on the grass and *'really hurt themselves and others'* (BT1) and/or fall on *'hard tarmac and get very badly cut'* (AT2).

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[39] School A's indoor hall is 9 x 16m = 144m²m but is reduced to 6 x 13m = 78m²m by court markings/run-off area
[40] School B's indoor hall is 9 x 13m = 117m² but is reduced to 6 x 10 = 60m² when a 1.5m run-off area is applied

Dataset (2) Observation of PE Facilities & Equipment

These concerns were corroborated by examination of the schools' outdoor facilities as one of School A's two spaces was a grass area and the other a tarmacked space. Similarly, one of School B's three outdoor facilities was a grass area and the other two were tarmacked. Both schools' grass spaces were partially inclined downwards and poor drainage resulting in water deposits rendering them unsafe.

Dance

Dataset (1) Teacher Interviews

In Dance, teachers expressed reliance on and the restraints of one indoor hall as '*We've only got the hall to dance in'* (AT3) and they *'Have to do Dance inside but if the hall isn't available – no dancing.'* (BT3). One teacher (AT3) also queried the hall's suitability as '*When you are doing dance you would like to light up the whole hall and create an atmosphere instead of just being an empty hall.'*

Games

Dataset (1) Teacher Interviews

For Games, outdoor delivery was contemplated but compromised by multiple use because '*You want to use the top playground but someone else using it'* (AT2); weather because *'If the weather isn't great, you can't go outside.'* (BT7); and safety of the surface as *'Tarmac puts me off as in Games it is more likely that someone will be falling over or tripping.'* (AT3). The indoor option was unreliable due to availability as *'The hall is always being used.'* (BT7) and suitability because *'There isn't enough room to play the game with the whole class.'* (AT4).

Gymnastics

Dataset (1) Teacher Interviews

In Gymnastics, teachers queried the general suitability of the hall because '*I just don't think it is really geared up for Gymnastics.'* (AT1) as well as specific aspects such as size as '*We don't have enough space for everyone – they need more room in Gymnastics.'* (BT5). Accessing the hall prior to delivery to set up was also challenging as '*You have to set up beforehand but can't get in if being used.'* (AT4). Even if it was available sometime

beforehand *'You can't just leave the apparatus out until your lesson in case other people need to use the hall.'* (BT7).

6.2.3.5 Adverse Weather

Adverse weather obtained the fifth highest influence score (n=14) for PE. Although ordered second in Athletics and eight in Games, no teacher identified it as an influential factor for Dance, Gymnastics or Swimming. This is logical as all three activities are associated with indoor delivery. Teachers' explanations of how it reduced delivery time related to facilities and reinforced how unfavourable weather precluded use of outdoor spaces but indoor hall availability and accessibility was not guaranteed. The rationale provided was consistent within and across PE and the two activity areas except for one minor variation in Athletics as an expectation it was always delivered outdoors was revealed.

Explanation-Building in PE

Dataset (1) Teacher Interviews

Teachers disclosed how wet and cold conditions prevented outdoor PE as *'If it is very rainy – very wet and slippy.'* (AT5) and it '*Could be icy so unsafe or too cold for the children'* (BT6). Both were more problematic in the winter as *'Colder and wetter.'* (AT5) and the *'Winter months are longer so you might not get out at all.'* (BT1). They commented on their reliance on the indoor hall as '*You have to do PE inside if you can't get out.'* (AT3). Inside delivery was *'The only option.'* (BT7) but acknowledged restricted hall availability. Teachers raised its multi-uses for assemblies (AT5 & BT7), choir (AT3 & AT5) and drama (AT3, BT1 & BT6). A new issue was identified in School B by BT6 and BT7, namely hall use for Foundation Stage after-school clubs. Their school day finished an hour earlier at 2pm so their clubs occupied the hall from 2-3pm which is the last teaching hour for Key Stage 1 and 2 teachers. If weather prevented outdoor PE scheduled for this time '*We've lost our time so we haven't been able to do it at all.'* (BT7).

Dataset (3) Desk-Based Research of School & PE Documents

Reports of reduced hall availability due to multi-use, notably assemblies, choir and drama, were partly authenticated and contradicted by both school's PE hall timetable. School A's timetable listed three 40-minute assemblies per week but teacher references to choir and

drama were not reflected in the timetable. School B's timetable specified four 45- minute assemblies but contained no information regarding drama activities. Beliefs the hall was unusable between 2-3pm as reserved for after-school clubs conflicted with the reservation for three Key Stage 2 classes and two unreserved slots at this time. The presence of five and nine unallocated slots on School A and B timetables respectively undermined reasoning that restricted hall availability reduced amounts of PE.

<u>Explanation-Building in Two Activity Areas</u>

Similar reasoning emerged when teachers clarified how weather diminished amounts of Athletics and Games but with one difference in Athletics as an assumption it only occurred outside was exposed.

Athletics

Dataset (1) Teacher Interviews

All explanations for Athletics presumed outdoor delivery as '*Obviously for Athletics you go outside.'* (AT4) and this activity is *'Reliant on going outside.'* (BT1). Therefore, it was compromised by weather specifically rain as it created a 'S*afety issue as they could slip and fall.'* (BT3). The option of indoor Athletics was not mentioned by any School A teachers but four from school B (BT3, BT5, BT6 & BT7) did. Although the idea was dismissed as their hall was too small so '*You couldn't do athletics in our hall. It wouldn't be big enough.'* (BT7) which meant '*You are all crammed in, then you have got your safety aspect there too.'* (BT5).

Dataset (2) Observation of PE Facilities & Equipment

These concerns were substantiated by Dataset (2). Deficiencies in both indoor halls' dimensions may be more significant in Athletics as there is insufficient space for developing speed in running events and distance in throwing activities. The hard surface in both halls might also preclude some jumping movements. The assumption Athletics is only delivered outside may have made weather a more prominent factor. Its second position in Athletics compared to eighth for Games, indicated weather was not as influential possibly because teachers viewed indoor Games as conceivable but not Athletics.

Games

Dataset (1) Teacher Interviews

In Games, outdoor delivery was envisaged but not always achieved as weather made it unsafe for two reasons. Firstly, *'Children quite often do not have the right gear for outside – they get too cold.'* (AT5) and secondly because it is *'Too wet and slippy … would be slipping and sliding.'* (BT7). Indoor provision was contemplated but uncertain as *'Depends on timetabling of the hall and whether it is free when you need it.'* (AT5). Availability was also vulnerable to seasonal events notably *'Coming up to Christmas you lose the hall quite a lot especially when all the staging is out for the nativity play … seats out for parents.'* (BT7).

6.2.3.6 Lack of Expertise

A lack of expertise acquired the sixth highest influence score (=13) for PE and was positioned fourth in Athletics, first for Dance, fourth in Games and second for Gymnastics. It was not recognised as influential by any teacher for Swimming. This is explicable as it is usually delivered by a swim instructor so teacher expertise may not be required. Teachers' descriptions of how it minimised PE time focused on professional knowledge, i.e., what they know, but not professional skills, i.e., what they can do. They also suggested low expertise was related to training and confidence. Their rationale was mostly consistent within and across PE and activities. Slight variations arose in Games as personal experiences were raised as well as in Gymnastics as professional skills were mentioned.

Explanation-Building in PE

Dataset (1) Teacher Interviews

Teachers commented on their perceived deficiency of PE subject knowledge as *'I don't know enough about PE to know what I am supposed to be doing.'* (AT1) and *'I've no expertise at all … I just don't know what I and the children are supposed to be doing.'* (BT3). These shortfalls manifested in reduced PE as '*Lessons are shorter as I don't know new things to teach them.'* (AT3) and/or non-teaching because *'If I don't know what to teach then I can't teach it so I don't teach that bit of PE.'* (BT3). Links with confidence were made by one teacher as they *'don't have any expertise or confidence and that probably has a knock-on effect on my class.'* (BT4). A preference for someone else to teach PE was articulated by another teacher who *'Would rather someone would just come in and do it.'* (AT3). A scarcity of training was cited

by all teachers as they *'haven't received any training in a long time.'* (AT1) and *'only got some training at college – that is it.'* (BT4). A willingness to acquire knowledge independently was voiced by one teacher but also dissatisfaction as *'I have looked up rules and stuff for a game but need to do it rather than look at a diagram'.* (AT3).

Dataset (3) Desk-Based Research of School & PE Documents

School documents confirmed teacher contentions regarding non-provision of recent training internally, e.g., by the PE co-ordinator, and/or externally, for instance, by the Education Authority for Northern Ireland[41]. School A's development plan did not include PE and therefore related continuing professional development. It did contain four references to training pertaining to ICT, SEN and child protection. Their PE policy referred to a 7-year process to develop 22 fundamental movement skills but not training per se. Only a reference to regular meetings but their purpose was to provide ideas, feedback and support rather than provide formalised instruction. School B's development plan also excluded PE and associated courses but promoted 10 training opportunities for ICT, child protection, pastoral care and SEN. Their PE policy mentioned continuing professional development but frequency and duration were unspecified only that external coaches were occasionally employed to assist with training. Interestingly, no training was mentioned for literacy or numeracy in either school development plans despite being prominent objectives in both schools' plans. School documents included teaching manuals but were discovered in one school only. School A had 10 PE-related manuals: three were A*f*PE's (2000) safe practice guidance; four were activity-specific – Athletics, Dance, Games and Gymnastics; one was game-specific namely football; one on fundamental movement skills; and the other on active schools. All publications were on the top shelf in the PE store. Levels of teacher engagement with these manuals was indeterminable. Only one teaching manual was detected in School B – A*f*PE's (2005) safe practice book. Although this did not preclude their existence in other locations in the school, e.g., PE co-ordinator's classroom, it did imply they were not readily and privately available to teachers.

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[41] Or previously by the five Education & Library Boards which preceded and were replaced by the Education Authority for Northern Ireland when it was created in 2015

<u>Explanation-Building in Four Activity Areas</u>

Similar logic was presented in teachers' illuminations of how expertise lessened quantitative provision of specific activities. However, minor deviations were observed as personal experiences were implicated in Games and professional skills were mentioned in Gymnastics.

Athletics

Dataset (1) Teacher Interviews

In Athletics, expertise was restricted by low levels of curricular knowledge because *'I am not familiar enough with the Curriculum … I do not know what we should actually be doing in Athletics'* (AT3). A lack of subject knowledge was indicated in questions such as *'Is there a correct way to run … what is the right technique?'* (BT3). One teacher was slightly more knowledgeable about running so *'I can cope ok with running'* (BT4). All teachers expressed doubts about their knowledge of throwing and jumping as *'Not sure what to do for throwing and jumping'* (BT7). The outcome could be *'I just have them running around and around in a circle.'* (BT4). All teachers referred to inadequate training and confidence. One teacher (AT3) admitted they *'Can't remember any training in Athletics … wouldn't be confident doing i*t' and another (BT3) reasoned it is *'down to training … not enough … don't feel confident teaching Athletics.'*.

Dance

Dataset (1) Teacher Interviews

In Dance, low proficiency was attributed to *'not enough training'* (BT2) resulting in '*low levels of confidence'* (AT1) and *'reluctance to teach it'* (BT3). New explanations emerged regarding insufficient knowledge of contemporary and culturally relevant dances. Teachers remarked how it was difficult to know *'some kind of dance that would appeal to them that's not old'* (BT7) and *'that they want to do outside of school … something more meaningful'* (AT3). Similar comments were not made for any of the other four activities.

Games

Dataset (1) Teacher Interviews

In Games, low expertise was associated with knowledge of the different types of games and rules. One teacher (BT3) conceded there are *'Too many Games and I know very little if any about them.'* and another (AT3) commented how there were *'So many games and all different rules.'* (AT3). The result could be lack of variation as *'We just do a lot of running games'* (BT2) and *'I just teach the Games I already know.'* (BT4). Training and confidence were implicated as some *'Got minimal training for Games so always unsure.'* (AT3). Additionally, new reasoning relating to a lack of personal experience playing the game emerged in BT3's comment that they *'Didn't really play many Games growing up … so unfamiliar.'* and BT4's disclosure of *'Not much experience playing Games growing up … no confidence.'*

Gymnastics

Dataset (1) Teacher Interviews

Teachers conceded inadequate knowledge of Gymnastics including BT3 who acknowledged *'I don't really have enough expertise – limited knowledge about what to do.'* (BT3). This was attributed to inadequate or no training which was explicit in AT1's admission of *'no training in Gymnastics.'* (AT1). This resulted in low levels of confidence and willingness to teach it *'Because I have low expertise, I then don't have the confidence or motivation to do it.'* (BT1). Dissimilar to PE and other activities were the references to professional skills. Some teachers recognised their inability to perform specific motor skills as they were unacquired as pupils themselves. As a child, AT3 *'would never have done a cartwheel or a handstand – nothing.'* (AT3) and BT4 *'never learned how to do a roll at school so couldn't teach it.'*. Comments about being unable to do movement skills were not mentioned for PE or the four other activities suggesting teachers were more self-aware of their physical competence in Gymnastics.

Athletics, Dance, Games & Gymnastics

Dataset (3) Desk-Based Research of School & PE Documents

Claims of no training in all four activities were verified by the aforementioned finding that neither schools' development plans mentioned continuing professional development for PE.

However, inadequate knowledge is queried in School A as teachers could have increased their understanding by consulting the Athletics, Dance, Games and Gymnastics resource manuals located in their PE store.

6.2.3.7 Lack of Confidence

A lack of confidence attained the seventh highest influence score (n=10) for PE but it was only influential in School B as unplaced in School A. It was ordered eighth in Athletics, fourth for Dance and sixth in Games and Gymnastics. It was not positioned for Swimming but this is explained by the previous argumentation that expertise was not proposed for Swimming as it is normally delivered by an external swim coach. Teachers' descriptions of how it reduced PE time linked to expertise although training was not mentioned. Their rationale was consistent within and across PE and the other activities except training was cited for Dance, Games and Gymnastics.

<u>Explanation-Building in PE</u>

Dataset (1) Teacher Interviews

The three teachers who ranked this reason for PE expressed varying levels of confidence as they *'Haven't enough confidence to teach all PE.'* (BT2), *'Usually don't feel confidence when teaching PE.'* (BT3) and *'Don't feel confident at all.'* (BT4). Explicit references to expertise were made by BT2 who does not *'consider myself to be an expert – I do not have enough expertise.'* as well as BT4 who does not '*know what I am doing – no expertise.'* (BT4). The other teacher highlighted how the year group could influence confidence levels and implied this related to insufficient subject knowledge as they are '*more confident since I moved back down the school because up the school there are children having lessons outside school who know more than I did … felt a little bit intimidated.'* (BT3). The same teacher also implicated personal PE experiences as it *'strongly affects my levels of confidence to teach PE … I was humiliated at school.'* (BT3). All acknowledged delivery time was reduced as *'My lessons are probably shorter.'* (BT3). Although one teacher remarked how they *'Still do it … you can do a wee bit of research to find ways how to do it and be creative … Some people think I hate PE, I can't do PE – I hate sports. But it's not rocket science.'* (BT2).

Dataset (2) Observation of PE Facilities & Equipment & Dataset (3) Desk-Based Research of School & PE Documents

No evidence emerged in Dataset (2) or (3) specifically relating to teachers' confidence. Nevertheless, support for their disclosures was borrowed from aforementioned findings pertaining to expertise which argued shortcomings in PE subject knowledge could reduce confidence to teach it.

<u>Explanation-Building in 4 Activity Areas</u>

Dataset (1) Teacher Interviews

Overall, the reasoning provided for four of the activities reflected the rationale provided for PE. The only exception was that training was mentioned for Dance, Games and Gymnastics but not Athletics. In Athletics, BT2 was '*Maybe going to go with parts of Athletics that you are more comfortable with as you know more … certain areas of Athletics I just avoid.*'. Whilst BT3 reasoned '*It is down to the low confidence – it is about knowing what to do*'. For Dance, teachers admitted they '*Do not have enough expertise so low levels of confidence teaching the dancing … would be really great to get some training.*' (AT1) and '*Don't know what to teach in Dance … so my confidence isn't great.*' (AT5). The perceived options were '*Try and bluff it.*' (BT1), '*Focus more on what I am comfortable with.*' (BT2) and '*Make it up.*' (BT4). Regarding Games, some teachers recognised they '*Know a bit more but not enough so still lack confidence … could do with some training.*' (BT2) and '*Have less confidence because did not play enough of them growing up … no training.*' (BT3). In Gymnastics, BT1 concluded '*I don't have enough confidence … need more expertise.*' and BT2 reinforced how their '*Low levels goes back to school … didn't do Gymnastics … need trained.*'.

6.2.3.8 Lack of Time

A lack of time achieved the eighth highest influence score (n=9) for PE and ninth place for Athletics, sixth in Dance, second for Games, 11th in Gymnastics and eighth for Swimming. It was not ranked by any School B teachers for Athletics and Swimming. Teachers' interpretations of how it compromised quantitative provision of PE corresponded with those offered for competing priorities and timetabling, namely a busy, hierarchical curriculum which prioritised English and Mathematics. Their rationale was consistent within and across PE and the activity areas but for planning time being raised in Dance and Games.

<u>Explanation-Building in PE</u>

Dataset (1) Teacher Interviews

Initial references were made regarding curriculum content because *'There's so much in the curriculum.'* (AT2) and *'The curriculum has lot of stuff – too much.'* (BT7). These were followed by concerns of insufficient time to deliver all content as *'Don't have enough time to deliver the full curriculum.'* (AT5) due to limited teaching time because there *'Aren't enough hours in the day and week to teach what you need to … can't get it all in.'* (BT7). Consequently, subject prioritisation was implicated as *'Feel under pressure to prioritise subjects.'* (AT4) specifically *'to get all the Maths and English done all of the time – that's always the priority.'* (AT5). Teachers commented on PE's low status as *'PE isn't one of the priorities'* (AT2) and *'PE is down the list of priorities.'* (AT5). The result was reduced PE time so *'Don't always do the amount of PE we plan to.'* (AT2). Although a teacher stated *'I try to find even a bit of time for PE albeit shortened.'*, this was for non-educational reasons namely to *'Give them freedom and time to let off steam.'* (BT7).

Dataset (3) Desk-based Research of School & PE Documents

Aforementioned findings arising when analysing school and PE documents pertaining to competing priorities and timetabling issues supported teacher complaints of a lack of time as they were related. Only raising inadequate time for teaching and not for planning and/or discharging other professional duties was unexpected. This diverged from calculations derived from deducting available teaching hours, inferred from both schools' prospectus, from the legal maximum 32.5 contracted hours (DENI 1987). Figures signalled insufficient time for these two other dimensions to their job. Table 6.6 suggests Year 1-3 teachers in School A had 13 hours and 50 minutes, and Year 4-7 had 8 hours and 50 minutes, remaining for lesson planning and other professional roles. School B teachers for Years 1-3 had 14 hours and Years 4-7 had nine hours.

Table 6.6: Maximum Contracted Hours Minus Available Teaching Time In Schools A & B

School & Year Group	Weekly Available Teaching Time	Weekly Remaining Time - Max. 32.5 Contracted Hours Minus Available Teaching Time
School A		
Year 1-3	18 hours & 40 mins	13 hours & 50 mins
Year 4-7	23 hours & 40 mins	8 hours & 50 mins
School B		
Year 1-3	18 hours & 30 mins	14 hours
Year 4-7	23 hours & 30 mins	9 hours

Explanation-Building in the Five Activity Areas

Dataset (1) Teacher Interviews

The reasoning offered for the five activities showed commonality with that for PE except planning time was introduced in Dance and Games. In Athletics, *'Trying to fit everything in … so difficult.'* (AT1) as *'Don't have enough time … something has to give … sometimes it is PE including Athletics.'* (AT5). Similarly, for Dance *'It's about trying to fit it all in along with everything else I have to teach and get through in the curriculum.'* (AT1) and *'If things run over you need the time to do it so no Dance.'* (AT4). BT3 considered planning as *'There would be more Dance If I didn't have other pressures … more time to research and plan for Dance.'* (BT3). Games provision was influenced by time constraints as *'Such a busy curriculum.'* (AT1) and *'Don't have enough time during the day … other priorities.'* (AT5). Consequently, playing games *'Would be a reward.'* (BT4). Another teacher's delivery was reduced as *'Difficult to make time to plan for Games … good activities.'* (BT1) otherwise Games *'Can be a time filler … doing it ad hoc.'* (BT3). In Gymnastics, AT1 was restricted as they *'Don't have enough time to fit it in with the rest of the curriculum.'*. Set up and delivery time were challenging for BT3 as they *'Can't find the time in busy day to set out apparatus and get lesson done … so many other things just get in the way.'* For Swimming, *'It takes a full afternoon … couple of hours … transport and getting changed but for a half-hour lesson … a good chunk out of the day that you need for other important subjects.'* (AT5).

6.2.3.9 Class Size

Class size achieved the ninth highest influence score (n=5) for PE. It was positioned seventh in Athletics, eighth for Dance, tenth in Games, fifth for Gymnastics and fourth in Swimming. It was only ranked by School A teachers for Swimming. Teachers' explanations of how it affected PE time related to equipment and facilities. Although similar rationale was provided, such as the sharing of equipment, some reasons were unmentioned namely insufficient movement space. New insights were also generated regarding behavioural problems and changing time. The logic provided was consistent within and across PE and the activity areas but for new information about teaching assistance in Gymnastics and group management in Swimming.

<u>Explanation-Building in PE</u>

Dataset (1) Teacher Interviews

Teachers reasoned more children in a PE class increased the likelihood of negative behaviour including AT5 who reflected how in *'a very big class there could be more behavioural issues in PE.'*. This was challenging as *'The class could get carried away.'* (BT4) and *'Play up more in PE because they have more freedom.'* (BT5). This influenced teachers as *'More difficult to control and manage – affects whether you take the whole class easily for PE.'* (AT5) and *'Trying to deal with a lively class on your own would nearly determine what I do in PE.'* (BT4). PE was reduced *'If they are really misbehaving, it's just not worth the hassle.'* (AT5) and *'Lessons are cut short and we go back to the classroom as easier.'* (BT4). Another reason was *'You have to share equipment if you have a bigger class which is not always ideal.'* (BT5). More pupils meant *'More changing time … can't all fit in the changing areas … have lots of small groups taking turns.'* (BT5).

Dataset (2) Observation of PE Facilities & Equipment

Teacher reports of inadequate amounts of equipment were validated by the aforementioned findings arising from the observation of PE equipment. The previously cited scenario of insufficient number of quoits is supplemented by another example of 12 and 13 generic racquets in School A and B respectively. As per Table 6.7, School A's class range was 20-26 pupils and School B's class range was 16-30 pupils so there were not enough racquets for each child.

Table 6.7: Teacher-Reported Typical Average Class Size & Movement Area Per Pupil in Indoor Hall by Teachers In Schools A & B

School & Teacher	Teacher-Reported Typical Average Class Size	Movement Area Per Pupil in Indoor Hall (m²/pupil)
School A (78m² usable space)		
AT1	20	3.9
AT2	22	3.5
AT3	25	3.1
AT4	26	3.0
AT5	25	3.1
School B (60m² usable space)		
BT1	30	2.0
BT2	16-29	3.8-2.1
BT3	26-27	2.3-2.2
BT4	27	2.2
BT5	20	3.0
BT6	25-30	2.4-2.0
BT7	18-27	3.3-2.2

Concerns about changing time due to inadequate changing area were verified by on-site observation. Contrary to DENI (2020) guidance, neither school had 2 x 24m² pupil changing rooms and 2 x 15m² pupil toilets at the multi-purpose hall. The only changing facilities were one set of two male and female toilets near the Foundation Stage classrooms and another set of two male and female toilets beside Key Stage 1 and 2 classrooms. They could be congested as they were not intended to accommodate entire classes at any one time and they were also used by other children concurrently albeit for toileting only. Evidence of equipment sharing and delays due to prolonged changing time and in cramped areas might authenticate accusations of poor behaviour due to class size. Either or both reasons may evoke frustration, boredom and/or mischief amongst pupils as they wait to use equipment and/or get changed. No remarks about reduced and unsafe indoor movement space due to class size was unusual as contrary to calculations of usable indoor space per pupil. Table 6.7 shows usable indoor movement area may not exceed 3m² per pupil for some School A

pupils and 2m² per pupil for some in School B. Some teachers may have reasonably rated these ratios as unsafe and curtailed PE time.

<u>Explanation-Building in Four Activity Areas</u>

Dataset (1) Teacher Interviews

The logic for the other activities aligned with PE but was extended to include teaching assistance in Gymnastics and group management in Swimming. In Athletics, BT5 surmised how they '*Don't have the equipment … or have enough things.*' and AT2 recalled '*A lot of children waiting their turn for equipment*.'. For BT2, outdoor space was unsuitable as '*Not keen on the tarmac … grass can be soggy … more safety issues.*' and the indoor hall was '*Confined … then we get our bumps, knocks and falls.*'. For Dance, behavioural concerns were raised as '*Not everyone wants to do Dance.*' (AT2) as well as space because '*Class size is too big for hall so not enough room to move safely*'. (BT1). Regarding Games, behaviour management compromised safety as '*With a large class you can't have eyes everywhere … think safety.*' (AT2). For BT3, hazards were attributed to '*Being in a small space … bats and balls going everywhere … not safe.*'. In Gymnastics, equipment was queried as '*Probably isn't not enough apparatus for everyone.*' (BT5). As was space because '*Not enough area to experience apparatus*' (AT2) especially '*Getting room to do the moves and tumbles and things properly and safely.*' (AT4). Concerns about restricted space in Gymnastics contradicted a previous finding pertaining to a facilities shortage that no teachers indicated the quality of their indoor facility impacted PE time. This highlights how there are activity-specific issues. New perspectives arose about assistance as '*Can't get things done if there is only one teacher*' (AT2); '*Need a classroom assistance.*' (AT5); and '*Would not entertain doing it on my own … that would dictate it.*' (BT4). For Swimming, behaviour was mentioned as there '*Are some difficult children.*' (AT4). Original insights emerged revealing how swim coaches '*Asked for bigger classes to be split into two groups.*' (AT5) which meant '*There are too many to take in one session but not enough time for two sessions.*' (AT4).

6.2.3.10 New Ideas

A lack of new ideas acquired the tenth highest influence score (n=4) for PE but was ordered in School B only and nominated by one teacher. It was positioned 12th in Athletics and Dance, 11th for Games and 16th in Gymnastics. It was not placed for Swimming as the

teacher was not required to provide this activity. The teacher's insight regarding how it decreased PE indicated links with explanations provided for a lack of expertise, namely deficiencies in training. It also disclosed additional reasoning involving motivation and innovation. Although their rationale was consistent within and across PE and the activity areas, this factor and its reasoning could be unique to the teacher so it did not substantiate the creation of a corresponding theoretical generalisation.

Explanation-Building in PE

Dataset (1) Teacher Interviews

The teacher's explanation for PE implied new ideas were related to minimal training because *'so out of touch … out of uni for so long … ideas get a bit boring.'*. However, *'more'*, *'new'*, *'updated'* and *'refreshed'* ideas were welcomed as this would *'Give you a bit of motivation.'* (BT5). They reasoned how they *'Don't want it to be boring for children.'* and *'New ideas makes it more interesting – more of an impact and benefit more from their PE.'* Additionally, BT5 admitted they *'Don't want it to be boring for yourself – don't want to be teaching the same thing in the same way.'.* PE delivery time was impacted as *'I would probably do more PE if I knew it was something new and different'*.

Dataset (3) School Documents

Inferences of unavailability of recent continuing professional development was supported by the aforementioned non-existence of references to PE training in the school documents. Training might provide participants with new thoughts and/or the inspiration to create their own. The non-detection of any PE teaching manuals in School B other than A*f*PE's (2000) safety guidance also corroborated BT5's disclosure as these resources normally contain original concepts and promote innovative practice.

Explanation-Building in Four Activity Areas

Dataset (1) Teacher Interviews

The rationale for the four activities was consistent with PE but training was more explicit in Gymnastics. In Athletics, BT5 conceded they *'Would probably need new ideas – new ways to deliver aspects of athletics … different activities … to change it up'*. For Dance *'I just need ideas and more expertise … harder to come up with things and think outside the box.'*.

Games also required *'New ideas ... doing the same thing all the time with them ... don't know how to make things a bit different*.'. Similarly, Gymnastics time was lessened as '*Doing the same things over and over again. Minimal training for PE but especially Gymnastics – it would be nice to have new ideas to give me some motivation in my professional career*.'.

6.2.3.11 Safety

Safety issues attained the 11th highest influence score (n=4) for PE and sixth position in Athletics, 11th for Dance, seventh in Games, first for Gymnastics and seventh in Swimming. Although placed for Dance it was advanced in School A only by one teacher. Teachers' accounts of how it lessened PE time connected it with equipment, facilities and expertise and corresponding argumentation. They also contained new reasoning about jewellery. The rationale provided for PE was inconsistent across the activity areas as not all three factors were cited for all activities. However, the explanations for a factor when it was raised was similar for each activity. Additionally, new reasoning regarding behaviour management in Games and class size in Swimming emerged.

Explanation-Building in PE

Dataset (1) Teacher Interviews

The suitability and safeness of general and specific equipment was cited as *"Using apparatus makes me nervous sometimes as unsure if safe.'* (BT6) and '*Would not feel comfortable with children climbing bars as unsafe.'* (BT3). Facility safety was also queried because *'I sometimes worry that in the hall ... it is not entirely safe ... sometimes there are things about the hall ... dumping ground ... having to move the piano.'* (AT1). As before this contradicted an earlier finding relating to lack of facilities that no teachers suggested the quality of their indoor facility reduced PE time. Inadequate knowledge of motor skills was referenced by one teacher, specifically *'Delivering specific skills like forward rolls and not knowing how to do that correctly is unsafe ... worry someone could get hurt'* (BT6). Jewellery was identified as a hazard by another teacher as some children *'Are wearing earrings and if the parents haven't removed them ... just too unsafe so no lesson.'* (AT1). Consequently, *'Some lessons are shorter as can't progress them safely.'* (AT1) and *'Some parts of PE don't get as much time as more chance of accident.'* (BT3).

Dataset (2) Observation of PE Facilities & Equipment

Remarks about general equipment safety were substantiated by multiple findings of faulty items in both schools which were highlighted when analysing teachers' explanations regarding an equipment deficit. The School B teacher's rating of their school's wall bars as unsafe differed from assessments made during the onsite observation as no visible faults were detected so they appeared safe. Conversely, safety concerns about congestion were supported by observations of indoor facilities as both school's halls were visibly crammed with obstructions.

Dataset (3) Desk-Based Research of School & PE Documents

The teacher's reference to insufficient knowledge was supported by aforesaid teacher accounts rationalising their ranking of low expertise. They were verified by school documents as both school's PE policies contained no mention of PE training. The scenario of a cancelled PE lesson in School A due to a child wearing jewellery was not verified by their PE policy. The document prohibited a pupil wearing earrings from participating but similar to School B's policy, it did not say or imply the lesson was abandoned. School A's 23-page policy devoted seven pages (=30% of overall content) to safety. Whereas School B designated a third of a page (=4% of overall content) of its 8-page policy to safety. This might explain why only one teacher from School A identified safety in their top five influential factors. Interestingly, both schools' policy cited older editions of A*f*PE's safety guidance – 2000 version in School A and 2005 edition in School B – rather than the recent 2020 publication.

Explanation-Building in the Five Activity Areas

Reasoning varied across activity areas as equipment, facilities and expertise were not implicated in all activities. Also, some new logic emerged about behaviour in Games and class size in Swimming. In Athletics, safety pertained to equipment, facilities and expertise as *'Unsure if the apparatus is safe to use.'* (BT3), *'Not enough space inside for all events.'* (AT2) and *'I do not have enough expertise to be training them properly and safely.'* (BT3). For Dance, reasoning was confined to indoor movement space as *'Running into each other … swinging each other too far.'* (AT4). In Games, only facilities was raised as sufficient indoor space was queried because of *'Worry there is not enough space … a few things sitting*

around the hall.' (AT1). The suitability of the outdoor surface was also queried as *'Tarmac puts people off … in Games more likely someone will fall or trip.'* (AT3). Equipment and expertise were not mentioned but behaviour management was as *'Some children can be very boisterous and get carried away.'* (BT4).

Gymnastics

Dataset (1) Teacher Interviews

In contrast, facilities was not referenced for Gymnastics but equipment and expertise were. Equipment safety was doubted. AT1 questioned *'how good our equipment is … how safe?'* (AT1) and BT4 admitted *'There is equipment here but would not be happy using it – definitely not.'*. Some teachers queried gymnastics-specific items namely those for climbing because *'Have concerns about wall bars' safety.'* (BT3) and landing as *'May not just have the equipment that is suitable … to do landings … more at risk of hurting themselves.'* (AT4). Low expertise was associated with specialist knowledge of motor skills because they *'May not be technically correct or the safe way to do it.'* (BT6). Teaching a forward roll was cited by one teacher (BT6) when discussing safety for PE but by four teachers (AT3, AT5, BT2 & BT3) for Gymnastics. Three teachers articulated trepidation all of whom were from School A. They were *'Terrified having to do that'* (AT3), *'Afraid of getting a child to do something wrong'* (AT4) and *'Would not be confident … fear a child could get hurt'* (AT5). References to feeling *'terrified'*, *'afraid'* and *'fear'* were not made for PE or any of the other activities implying safety concerns in Gymnastics were more intense as well as frequent.

Dataset (2) Observation of PE Facilities & Equipment

As discussed, claims about unsafe wall bars were undermined by observation of the schools' facilities but apprehensions about landing equipment were validated. Misgivings were warranted as although both schools' stores contained a mats trolley, School A's held nine mats and School B's contained ten. Both amounts may not provide the necessary coverage for the landing area around the wall bars and their depth might not give enough protection for falls from the full bar height. The shortage of mats could also prevent safe delivery of other landing-related activities, e.g., jumping from benches, as there is not enough for each child.

For Swimming, safety concerns related to class size rather than equipment, facilities or expertise because *'You hope a child does not drown … If a bigger class, you are more aware someone is messing about or missing something … something could have happened.'* (AT4).

6.3 Proposition 4: Some Factors Interconnect to Influence the Amount of PE in General and the Five Specific Activity Areas

6.3.1 Pattern-Matching

The predicted pattern for Proposition 4 was each teacher's six response sets would contain at least one example of two or more factors being connected. The observed patterns for the 12 cases matched the predicted pattern so complete replication authenticated Proposition 4. The foregoing application of the explanation-building technique to Proposition 3, highlighted how some teachers alluded to inter-relatedness between factors when explaining how their ranked factors influenced time allocation. Potential connections between factors were more explicit when examining Proposition 4 as direct verification was obtained from responses to six interview questions[42] which specifically asked teachers whether any of their ranked influential factors for PE and the five activity areas were related and then to explain why. Table 6.8 collates individual teachers' responses (Appendices 36-41) and provides evidence of replication. It illustrates how all teachers in both schools replied 'yes' to all six questions and consequently made at least one connection between two to three factors.

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[42] Interview Guide (Appendix 13): PE – questions C(1)D & E; Athletics – questions C(2)D & E; Dance – questions C(3)D & E; Games – questions C(4)D & E; Gymnastics – questions C(5)D & E; and Swimming – questions C(6)D & E

Table 6.8: Connected Ranked Influential Factors for PE & 5 Activity Areas in Schools A & B

School & Teacher	PE (General)		Athletics		Dance		Games		Gymnastics		Swimming		Total No. of Connections
	Q.C1 - Are any factors connected? Yes or No	No. of Connections Provided	Q.C2 - Are any factors connected? Yes or No	No. of Connections Provided	Q.C3. - Are any factors connected? Yes or No	No. of Connections Provided	Q.C4 – Are any factors connected? Yes or No	No. of Connections Provided	Q.C5 – Are any factors connected? Yes or No	No. of Connections Provided	Q.C6 – Are any factors connected? Yes or No	No. of Connections Provided	
School A													
AT1	Yes	2	Yes	1	Yes	2	Yes	1	Yes	2	n/a	n/a	8
AT2	Yes	2	Yes	2	Yes	1	Yes	2	Yes	1	n/a	n/a	8
AT3	Yes	2	Yes	3	Yes	2	Yes	1	Yes	2	n/a	n/a	10
AT4	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	6
AT5	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	6
School B													
BT1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	2	Yes	1	7
BT2	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	n/a	n/a	5
BT3	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	n/a	n/a	5
BT4	Yes	2	Yes	1	Yes	1	Yes	1	Yes	1	n/a	n/a	6
BT5	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	n/a	n/a	5
BT6	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	6
BT7	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	Yes	1	6
Combined School A & B Total	12	16	12	15	12	14	12	13	12	15	5	5	78

n/a denotes not applicable as the Northern Ireland Primary Curriculum (2009) states Swimming is required at Key Stage 2 only

6.3.2 Explanation-Building for the Most Frequent Sets of Connected Influential Factors

Similar to Proposition 3, analysis of Proposition 4 entailed application of the same second analytical technique, namely explanation-building. Consequently, individual teachers' interpretations of how some factors interconnected in PE were first inspected for commonality before comparing them to those advanced for the five activities. Table 6.9 shows that 33 sets of connected influential factors were generated - 27 were 2-factor and six were 3-factor. A comparative number of sets were proposed for PE and four activity areas as they ranged from 13-16 but not for Swimming. This activity produced five connections but was explicable by the reduced number of cases for Swimming as only five of the 12 teachers were required to provide this activity. Teachers made 78 connections across PE and the five activities which converted to 62 when duplicate answers were discounted. Of the 78, *time & priorities* were considered to be related by the highest number of teachers (n=9) followed by *class size & safety* (n=7), *timetabling & priorities* (n=6), *facilities & weather* (n=6), *equipment & facilities* (n=5) and *expertise & confi*dence (n=5).

Time & Priorities

Although *time & prio*rities attained the highest number of responses (n=9) it was not proposed for Gymnastics or Swimming. This was logical as teachers previously alluded to relatedness when explaining why they ranked one or both factors in their five most influential factors for these activities. Perhaps it was not raised again when explicitly asked about connections as they reasoned they had previously mentioned this link and wanted to avoid repetition. Their reasoning for joining these factors was consistent within and across PE and activity areas, namely inadequate teaching time resulting in subject prioritisation, specifically English and Mathematics. This aligned with argumentation advanced when explaining how each of their ranked factors influenced delivery time. Consistency was evidenced in numerous responses. For instance, for PE in general, there is *'Not enough time for everything so need to prioritise other subjects especially Maths and English … PE gives way'* (BT6). In Athletics, teachers are *'Trying to get everything done and something has to give – even if the week before sports day.'* (AT1). For Dance, there is *'Too much to do but no time to deliver Dance.'* (AT1). In Games, there is *'Never have enough time no matter what day Games is on, what with everything else going in the curriculum.'* (AT5).

Table 6.9: Frequency of Sets of Connected Ranked Influential Factors for PE & 5 Activity Areas Across Schools A & B

Set No.	Set of Connected Influential Factors	PE (General)	Athletics	Dance	Games	Gymnastics	Swimming	Total No. of Responses
1	Expertise & Priorities	1	1	-	-	-	-	2
2	Equipment & Safety	1	-	-	-	1	-	2
3	Timetabling & Priorities	2	-	1	-	2	1	6
4	*Facilities, Equipment & Safety	1	1	-	-	-	-	2
5	Facilities & Weather	3	2	-	1	-	-	6
6	*Equipment, Expertise & Safety	1	-	-	-	-	-	1
7	Time & Priorities	3	2	2	2	-	-	9
8	*Expertise, Confidence & Safety	1	-	-	-	1	-	2
9	*Expertise, Training & Confidence	1	-	1	1	-	-	3
10	Class Size & Teaching Assistance	1	1	-	1	-	-	3
11	Equipment & New Ideas	1	1	-	1	-	-	3
12	Expertise & Safety	-	1	-	-	1	-	2
13	Expertise & Equipment	-	2	1	-	-	-	3
14	Equipment & Facilities	-	1	1	1	2	-	5
15	Class Size & Safety	-	1	1	1	4	-	7
16	Expertise & Confidence	-	1	2	1	1	-	5
17	SEN & Equipment	-	1	-	-	-	-	1
18	Boy's Lack of Engagement & Teacher's Enjoyment	-	-	1	-	-	-	1
19	Expertise & Types of Dance	-	-	1	-	-	-	1
20	Equipment & Types of Dance	-	-	1	-	-	-	1
21	Expertise & New Ideas	-	-	1	-	-	-	1
22	Expertise & Resources	-	-	1	-	-	-	1
23	Facilities & Safety	-	-	-	1	-	-	1
24	Time & Children's Enjoyment	-	-	-	1	-	-	1

#								Total
25	Time & Safety	-	-	-	1	-	-	1
26	SEN & Children's Confidence	-	-	-	1	-	-	1
27	*Time, Priorities & Expertise	-	-	-	-	1	-	1
28	*Equipment, Facilities & Class Size	-	-	-	-	1	-	1
29	Equipment & Class Size	-	-	-	-	1	-	1
30	Number of Classes & Class Size	-	-	-	-	-	1	1
31	Timetabling & Time	-	-	-	-	-	1	1
32	Cost to School & Timetabling	-	-	-	-	-	1	1
33	Timetabling & Less Time for Other Areas of PE	-	-	-	-	-	1	1
Total (duplicate responses inc.)		16	15	14	13	15	5	78
Total (duplicate responses exc.)		11	12	12	12	10	5	62

* Denotes 3-factor connections (n=6)

Class Size & Safety

Class size & safety was raised by seven teachers but none pertained to PE or Swimming, however as before, some links were made in previous responses. In contrast, four of the seven were forwarded for Gymnastics which is the biggest number of responses received by any one set of connections for PE and the five activities. There was commonality in reasoning across the other four activity areas as well as some of the rationale previously articulated when explaining each ranked factor. Explanations described insufficient space becoming more congested if the pupil number increased which resulted in a perception that accidents were probable. For example, in Athletics, *'The hall is such a confined space. That's when we get our bumps, knocks and falls.'* (BT2). In Dance, teachers *'Don't always have enough room in the hall … accidents!'* (AT4). For Games, *'If you have a smaller class, you can spread out more and hopefully not collide.'* (AT4). In Gymnastics, *'A lot more children means more risk and accidents.'* (BT3).

Timetabling & Priorities

Timetabling & priorities were regarded as connected by six teachers but none related to Athletics or Games. This accorded with teachers' justifications of why they ranked each of these two factors for Athletics as none made links between the two factors. However, connections were made between both factors when defending their inclusion in the top influential factors for Games. As before, they may not have restated to avoid duplication. Adequate consistency in logic was observed across PE and the three other activities. All mentioned challenges in delivering the whole curriculum and feeling compelled to concentrate on certain subjects notably English and Mathematics. This parallels with reasoning previously expressed when explaining how each factor influenced time as well as why *time & priorities* were interconnected. One example of reasoning in PE is they *'Do not have enough time … I choose literacy and numeracy over PE'* (AT2). Likewise in Dance, there is *'Never enough time … have to get their Maths and English done even if it means no Dance'* (BT4). For Gymnastics it is *'Time consuming getting everything organised and done in timetable but do not have this time for Gymnastics … other things to do which have to be prioritised'* (BT2). Similarly, some teachers *'Could not do more Swimming as isn't enough time on timetable … Need to make sure other subjects are covered ok especially Maths and English'* (BT7).

Facilities & Weather

Six teachers coupled *facilities & weather but* none applied to Dance, Gymnastics or Swimming. This was logical as weather was not identified as a top influential factor by any teacher for these three activities. Consistency was apparent across PE and the other two activities. As was alignment with other accounts provided about each factor, notably inaccessibility and unsuitability of the indoor hall. Reasoning was exemplified in explanations for PE as *'If we had more than one facility, we would not have the issue with the timetabling … cannot use the outdoor facilities if it is raining.'* (AT3). For Athletics, it was *'Harder to do athletics inside if weather bad and can't go outside.'* (BT1). In Games, *'If the weather is not great so you don't go outside … if hall isn't free or stuff lying around so can't use it.'* (BT7).

Equipment & Facilities

Equipment & facilities were linked by five teachers. None related to PE or Swimming but this was explicable as teachers made associations when explaining how equipment and facilities were ranked influential factors for PE. As before, it was not reiterated to avoid duplication. Neither factor were recognised as influential for Swimming so associations between the two were not made for this activity. Consistency was detected in their justifications within and across the remaining four activities. They also agreed with some themes raised when previously explaining each ranked factor as they related to difficulty of accessing and finding equipment before the lesson to set up if the indoor hall is being used, and also safety. Reasoning was illustrated in Athletics as *'Only have one hall and can't find equipment … want to set-up … ideally … gym that was always set up all the time … just go in and get sorted.'* (AT4). For Dance, this issue was *'Having and getting equipment … being able to get the hall to set it up beforehand – can't do this – hall being used.'* (BT3). In Games, teachers *'Maybe can't get equipment from store if someone else in the gym … do need equipment even if going outside.'* (AT2). Although AT4's comments contradicted other comments about Athletics which assumed it was always delivered outside. Links differed for Gymnastics as responses focused on the absence of fixed and/or not easily movable apparatus. Thus, it is *'Difficult to teach as do not have safe wall bars in our hall.'* (AT1) and *'Have the hall but do not have beams or horses or ropes'* (AT3).

Expertise & Confidence

Five teachers merged *expertise & confidence* except for PE or Swimming. This was understandable as connections were made when teachers were explaining their reasons for selecting them as one of their five most influential factors for reducing PE. Neither factor were recognised as influential factors for Swimming so rationally links were not made. Sufficient consistency in their explanations was discerned within and across the four other activity areas as well as their previous reasoning for each factor, e.g., low expertise decreased confidence. Suggestions of a direct relationship between expertise and confidence were detected for all four activities. In Athletics, one teacher was '*Not always sure what needs to be done so lack confidence*' (BT3). For Dance, AT1 said they '*Do not have enough expertise so low levels of confidence teaching dancing*'. In Games, one teacher stated they '*Don't know enough … do not do things as never sure of myself*' (BT3). For Gymnastics, BT1 remarked they '*Do not have enough expertise, I am not going to feel as confident teaching Gymnastics*' (BT1).

6.3.3 Single Influential Factors – Unconnected & Most Frequently Connected

Extra insights were gained when individual influential factors were examined to determine whether any were unconnected or frequently connected. Analysis of the 38 different factors identified in this study (Table 5.4) alongside data in Table 6.10 revealed 28 (n=74%) of them were regarded as related to at least one other problem. Conversely, no explicit connections were made for the remaining 10 factors: cost to parents, knowing rules, guidance, technology, children's size and age, teachers' interest, children's attitude, children's ability, children's interest and less time for other PE areas. This finding denoted that most factors were interconnected rather than some contrary to the current wording of Proposition 4.

A lack of expertise obtained the most connections followed by equipment, safety, facilities, class size and time. Expertise was linked to nine other factors, implicated in 11 (=33%) of the 33 sets of connected influential factors and achieved a total number of 22 responses – five of which were advanced for its perceived relatedness with low confidence. Safety was also associated in five responses. Two linked shortages of expertise and confidence with safety issues. Two other replies joined expertise and safety only and one answer allied expertise with safety and equipment. An equipment deficit was allied with seven other factors,

mentioned in 10 of the 33 sets (=33%) and received 20 responses overall. Eight of the 20 involved facilities - five connected *equipment & facilities* alone whereas two other responses joined *equipment, facilities & safety* and one linked *equipment, facilities & class size*. Six involved safety - *equipment & safety* were coupled twice but then extended to include facilities on two occasions and then expertise on another two. Safety was partnered with six other factors, included in eight of the 33 sets (=24%) and obtained a total of 18 citations. In addition to expertise and equipment, it was regarded as being related to class size as referenced in seven of the 18 responses - the second highest number of replies received by any of the 33 sets. Facilities was joined with four other factors, mentioned in five of the 33 sets (=15%) and attained 15 references overall. It was linked to weather in six of the 15 responses which was the third highest number of responses attained by any one of the 33 sets. In addition to safety, it was associated with equipment in five replies but then joined with *equipment & safety* in two answers and *equipment & class size* in another. Class size was associated with five other factors, occurred in five of the 33 sets (=15%) and attracted 13 citations overall. In addition to safety and equipment, it was linked with teaching assistance on three instances. Time was combined with five other factors, arose in five of the 33 sets (=15%) and obtained 13 citations overall. Nine of these citations were connected to priorities - the highest number of replies across the 33 sets.

Table 6.10: Ranked Influential Factors Most Frequently Connected Across PE & 5 Activity Areas Across Schools A & B

Factor No.	Factor	Sets the Factor was Connected To	Total No. of Sets the Factor was Connected To	No. of Sets the Factor was Connected To When Duplicates Removed	No. of Connections To Other Factors
1	Expertise	Priorities (x2), Equipment & Safety (x1), Confidence & Safety (x2), Training & Confidence (x3), Safety (x2), Equipment (x3), Confidence (x5), Types of Dance (x1), New Ideas (x1), Resources (x1), Time & Priorities (x1)	22	11	9
2	Equipment	Safety (x2), Facilities & Safety (x2), Expertise & Safety (x1), New Ideas (x3), Expertise (x3), Facilities (x 5), SEN (x1), Types of Dance (x1), Facilities & Class Size (x1), Class Size (x1)	20	10	7
3	Safety	Equipment (x2), Facilities & Equipment (x2), Equipment & Expertise (x1), Expertise & Confidence (x2), Expertise (x2), Class Size (x7), Facilities (x1), Time (x1)	18	8	6
4	Facilities	Equipment & Safety (x2), Weather (x6), Equipment (x5), Safety (x1), Equipment & Class Size (x1)	15	5	4
5	Class Size	Teaching Assistance (x3), Safety (x7), Equipment & Facilities (x1), Equipment (x1), Number of Classes (x1)	13	5	5
6	Time	Priorities (x9), Children's Enjoyment (x1), Safety (x1), Priorities & Expertise (x1), Timetabling (x1)	13	5	5
7	Timetabling	Priorities (x6), Time (x1), Cost to School (x1), Less Time for Other Areas of PE (x1)	9	4	4
8	Priorities	Expertise (x2), Timetabling (x6), Time (x9), Time & Expertise (x1)	18	4	3

9	Confidence	Expertise & Safety (x2), Expertise & Training (x3), Expertise (x5)	10	3	3
10	New Ideas	Equipment (x3), Expertise (x1)	4	2	2
11	SEN	Equipment (x1), Children's Confidence (x1)	2	2	2
12	Types of Dance	Expertise (x1), Equipment (x1)	2	2	2
13	Weather	Facilities (x6)	6	1	1
14	Training	Expertise & Confidence (x3)	3	1	1
15	Teaching Assistance	Class Size (x3)	3	1	1
16	Number of Classes	Class Size (x1)	1	1	1
17	Cost to School	Timetabling (x1)	1	1	1
18	Less Time for Other Areas of PE	Timetabling (x1)	1	1	1
19	Boys' Lack of Engagement	Teacher's Enjoyment (x1)	1	1	1
20	Teacher's Enjoyment	Boys' Lack of Engagement (x1)	1	1	1
21	Resources	Expertise (x1)	1	1	1
22	Children's Enjoyment	Time (x1)	1	1	1
23	Children's Confidence	SEN (x1)	1	1	1

6.4 Proposition 5: Factors Operate at External and Internal Levels to Influence the Amount of PE In General and the Five Specific Activity Areas

6.4.1 Pattern-Matching

The predicted pattern for Proposition 5 was each teacher's six response sets would hold a combination of external and internal factors. Aligned with procedures in existing studies (Appendices 9 & 42), a factor was classified as internal if operative at individual level, such as expertise. Conversely, a factor that functioned at situational level, e.g., weather, or institutional level, e.g., facilities, or pupil level, e.g., children's interest, was categorised as external. The observed pattern for the 12 cases matched the pattern for PE and activity areas except for Swimming so Proposition 5 was predominantly verified. Replication evidence displayed in Table 6.11, shows how six of the 12 (=50%) teacher response sets for their five ranked factors for PE held a blend of external-internal factors whereas the other six had external only. Athletics and Games, akin to PE, each contained six sets (=50%) combining external and internal causes and another six sets containing external-only. Dance attained 10 sets (=83%) that merged external and internal factors. The other two sets for Dance comprised one with external only and the other was the only set across the 12 cases' six response sets which had internal only. Gymnastics generated 10 sets mixing external and internal factors but the other two held external only. None of the sets for Swimming contained external and internal factors as all five sets held external factors only.[43]

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[43] Only 5 sets were generated for Swimming as this activity is delivered to Key Stage 2 pupils only and five of the 12 teachers taught Key Stage 2 pupils

Table 6.11: Category of Levels for Influential Factors for PE & 5 Activity by Teachers In Schools A & B

School & Teacher	PE				Athletics		Dance		Games		Gymnastics		Swimming	
	All Reported Factors		5 Ranked Factors		5 Ranked Factors		5 Ranked Factors		5 Ranked Factors		5 Ranked Factors		5 Ranked Factors	
	External	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External	Internal
School B														
AT1	80% (n=8)	20% (n=2)	80% (n=4)	20% (n=1)	*100% (n=5)	0% (n=0)	60% (n=3)	40% (n=2)	*100% (n=5)	0% (n=0)	80% (n=4)	20% (n=1)	n/a	n/a
AT2	92% (n=12)	8% (n=1)	*100% (n=5)	0% (n=0)	*100% (n=5)	0% (n=0)	80% (n=4)	20% (n=1)	*100% (n=5)	0% (n=0)	*100% (n=5)	0% (n=0)	n/a	n/a
AT3	83% (n=5)	17% (n=1)	80% (n=4)	20% (n=1)	80% (n=4)	20% (n=1)	60% (n=3)	40% (n=2)	60% (n=3)	40% (n=2)	60% (n=3)	40% (n=2)	n/a	n/a
AT4	83% (n=5)	17% (n=1)	*100% (n=5)	0% (n=0)	*100% (n=5)	0% (n=0)	*100% (n=5)	0% (n=0	*100% (n=5)	0% (n=0)	80% (n=4)	20% (n=1)	*100% (n=4)	0% (n=0)
AT5	*100% (n=5)	0% (n=0)	*100% (n=5)	0% (n=0)	*100% (n=5)	0% (n=0)	80% (n=4)	20% (n=1)	*100% (n=5)	0% (n=0)	80% (n=4)	20% (n=1)	*100% (n=4)	0% (n=0)
School A														
BT1	*100% (n=2)	0% (n=0)	*100% (n=2)	0% (n=0)	*100% (n=3)	0% (n=0)	**50% (n=2)**	**50% (n=2)**	*100% (n=2)	0% (n=0)	**50% (n=2)**	**50% (n=2)**	*100% (n=2)	0% (n=0)
BT2	75% (n=3)	25% (n=1)	75% (n=3)	25% (n=1)	80% (n=4)	20% (n=1)	60% (n=3)	40% (n=2)	40% (n=2)	60% (n=3)	60% (n=3)	40% (n=2)	n/a	n/a
BT3	60% (n=3)	40% (n=2)	60% (n=3)	40% (n=2)	60% (n=3)	40% (n=2)	80% (n=4)	20% (n=1)	60% (n=3)	40% (n=2)	60% (n=3)	40% (n=2)	n/a	n/a

BT4	67% (n=4)	33% (n=2)	60% (n=3)	40% (n=2)	67% (n=2)	33% (n=1)	67% (n=2)	33% (n=1)	75% (n=3)	25% (n=1)	80% (n=4)	20% (n=1)	n/a	n/a
BT5	67% (n=2)	33% (n=1)	67% (n=2)	33% (n=1)	75% (n=3)	25% (n=1)	0% (n=0)	**100% (n=2)	**50% (n=1)**	**50% (n=1)**	80% (n=4)	20% (n=1)	n/a	n/a
BT6	*100% (n=5)	O% (n=0)	*100% (n=5)	0% (n=0)	*100% (n=4)	O% (n=0)	60% (n=3)	40% (n=2)	80% (n=4)	20% (n=1)	80% (n=4)	20% (n=1)	*100% (n=4)	0% (n=0)
BT7	83% (n=5)	17% (n=1)	*100% (n=5)	0% (n=0)	67% (n=2)	33% (n=1)	**50% (n=1)**	**50% (n=1)**	*100% (n=4)	O% (n=0)	*100% (n=4)	0% (n=0)	*100% (n=2)	0% (n=0)
Total No. of Combined External-Internal Factor Sets	9		6		6		10		6		10		0	
Total No. of External Factor Only Sets	3		6		6		1		6		2		5	
Total No. of Internal Factor Only Sets		0		0		0		1		0		0		0
Total No. of External Factor Only & Internal Factor Only Sets	3		6		6		2		12		12		5	

* denotes external factors only

** denotes internal factors only

Bold denotes equal % of external and internal factors

<u>Underline</u> denotes higher % of internal factors

n/a denotes not applicable as the Northern Ireland Primary Curriculum (2009) states Swimming is required at KS2 only

6.4.2 Dominance of External Factors

Proposition 5 was mostly substantiated subject to Swimming being excluded. Yet analysis of individual teachers' responses across PE and the five activities uncovered variations and signalled a dominance of external factors. As per Table 6.11, a minority - four of the 12 (=25%) teachers – each returned six sets for PE and the five activity areas holding external and internal factors. Whereas the majority - eight of the 12 (=75%) teachers - had at least one of their six sets holding external or internal only factors. Seven of these eight teachers collectively yielded 26 sets which contained external factors only with a range of 2-5 sets per teacher. One teacher (AT1) provided two sets, one teacher had three (BT6), four teachers (AT2, AT5, BT1 & BT7) generated four each and one teacher (AT4) produced 5[44]. In contrast, one of these eight teachers (BT5) provided one set which included internal factors only. Whilst four teachers produced six sets each which all held combined external-internal factors only, no teacher produced six sets holding external factors or internal factors only. Nevertheless, these findings highlighted how 26 of the 27 sets containing one level factor only pertained to external factors thus showing their predominance. Supremacy was also reflected in the combined external-internal factor sets as only one set (BT2) had more internal factors than external (60%:40%). In all other mixed sets, external factors represented a majority of the set except for four from three teachers. BT1 provided two and BT5 and BT7 created one each wherein factors were equally external and internal (50%:50%).

Further evidence of external factor dominance is obtained from Chart 6.1 and Table 6.12 as both confirm they were more prevalent and influential in PE and the five activities. Chart 6.1 shows prevalence as a majority of ranked factors were categorised as external for PE (73%), Athletics (79%), Dance (70%), Games (68%), Gymnastics (77%) and Swimming (100%).

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[44] 16 of the 26 external-only sets were from school A and 10 from school B

Chart 6.1: Category of Levels for Ranked Influential Factors for PE & 5 Activity Areas Across Schools A & B
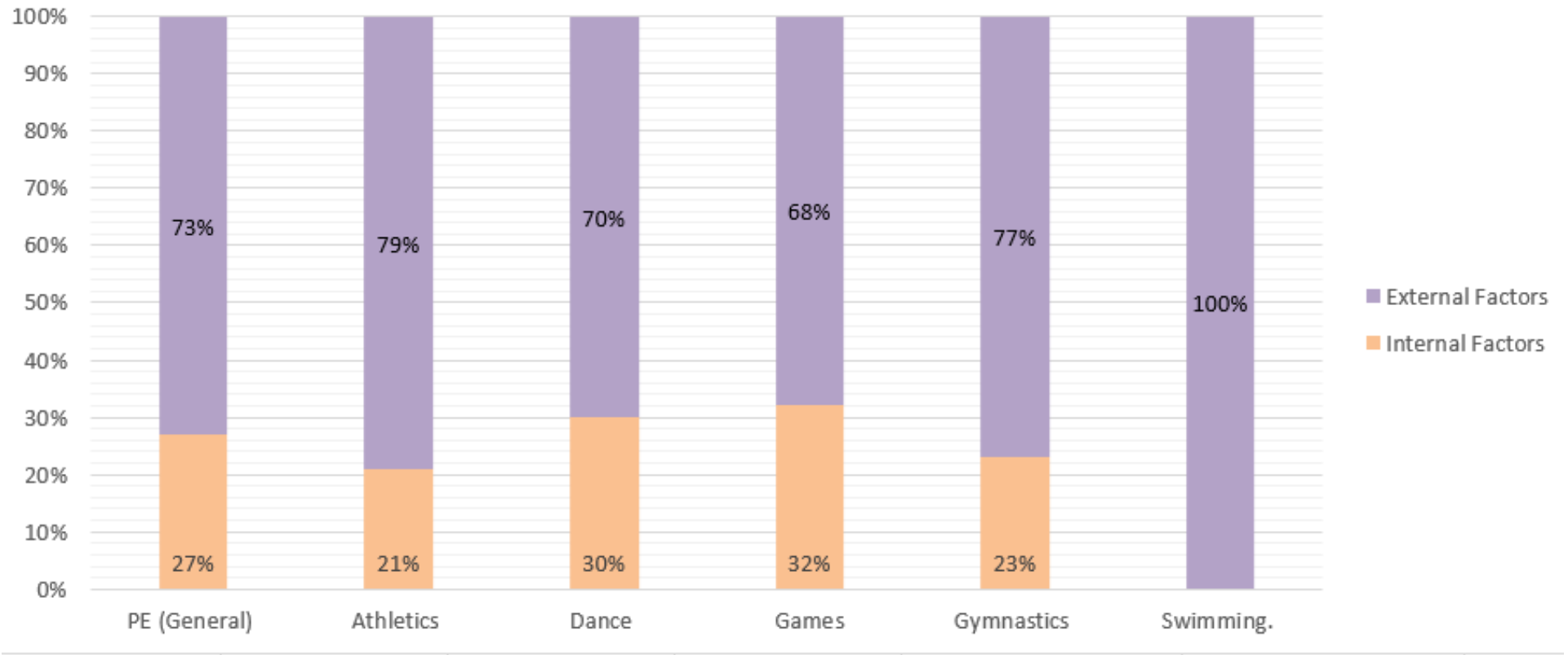
Table 6.12 conveys enhanced influence as external factors attained the highest influence score for PE and all five activity areas except Dance. They also dominated the top five influence scores for each of the six sets. The four highest scores for PE and Games were external as were three of the top five scores for Athletics and Dance. Four of Gymnastics' top five scores were external and all of Swimming's five highest scores were external.

Table 6.12: Category & Sub-Category of Levels for Ranked Influential Factors for PE & 5 Activity Areas Across Schools A & B

Order	PE (General)			Athletics			Dance			Games			Gymnastics			Swimming		
	Factor	*Cat (EX or IN)	**Sub-Cat (S, I, P or T)	Factor	*Cat (EX or IN)	**Sub-Cat (S, I, P or T)	Factor	*Cat (EX or IN)	**Sub-Cat (S, I, P or T)	Factor	*Cat (EX or IN)	**Sub-Cat (S, I, P or T)	Factor	*Cat (EX or IN)	**Sub-Cat (S, I, P or T)	Factor	*Cat (EX or IN)	**Sub-Cat (S, I, P or T)
1st	Priorities	EX	I	Equipment	EX	I	Expertise	IN	T	Equipment	EX	I	Safety	EX	I	Time-tabling	EX	I
2nd	Time-tabling	EX	I	Weather	EX	S	Equipment	EX	I	Time	EX	I	Expertise	IN	T	Cost to School	EX	I
3rd	Equipment	EX	I	Facilities	EX	I	Priorities	EX	I	Timetabling	EX	I	Equipment	EX	I	Priorities	EX	I
4th	Facilities	EX	I	Expertise	IN	T	Confidence	IN	T	Facilities	EX	I	Facilities	EX	I	Class Size	EX	I
5th	Weather	EX	S	Priorities	EX	I	Timetabling	EX	I	Expertise	IN	T	Class Size	EX	I	Number of Classes	EX	I
6th	Expertise	IN	T	Safety	EX	I	Time	EX	I	Confidence	IN	T	Confidence	IN	T	Children's Enjoyment	EX	P
7th	Confidence	IN	T	Class Size	EX	I	Resources	EX	I	Safety	EX	I	Teaching Assistance	EX	I	Safety	EX	I
8th	Time	EX	I	Confidence	IN	T	Class Size	EX	I	Weather	EX	S	Timetabling	EX	I	Time	EX	I
9th	Class Size	EX	I	Time	EX	I	Facilities	EX	I	Priorities	EX	I	Training	IN	T	Less Time for Other PE Areas	EX	I
10th	New Ideas	IN	T	Children's Size & Age	EX	p	Guidance	EX	I	Class Size	EX	I	Cost to Parent	EX	S			
11th	Safety	EX	I	Teaching Assistance	EX	I	Safety	EX	I	New Ideas	IN	T	Time	EX	I			
12th				New Ideas	IN	T	New Ideas	IN	T	Training	IN	T	Children's Ability	EX	P			
13th				SEN	EX	P	Teacher's Interest	IN	T	Knowing Rules	IN	T	Children's Interest	EX	P			
14th				Timetabling	EX	I	Pupil's Confidence	EX	P	Children's Enjoyment	EX	P	Priorities	EX	I			
15th							Teacher's Enjoyment	IN	T	Teacher's Interest	IN	T	Staffing	EX	I			
16th							Types of Dance	IN	T	Children's Attitude	EX	P	New Ideas	IN	T			

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	A-Label	A-Cat	A-Sub	B-Label	B-Cat	B-Sub	C-Label	C-Cat	C-Sub	D-Label	D-Cat	D-Sub	E-Label	E-Cat	E-Sub	F-Label	F-Cat	F-Sub
17th							Children's Enjoyment	EX	P	Teaching Assistance	EX	I	Children's Confidence	EX	P			
18th							Technology	EX	I	SEN	EX	P						
19th							Children's Size & Age	EX	P	Children's Confidence	EX	p						
20th							Boy's Lack of Engagement	EX	P									
Total No. & % by Cat. for Level of Influence		EX x 8 (73%) IN x 3 (27%)			EX x 11 (79%) IN x 3 (21%)			EX x 14 (70%) IN x 6 (30%)			EX x 13 (68%) IN x 6% (32%)			EX x 13 (77%) IN x 4 (23%)			EX x 9 (100%) IN x 0 (0%)	
Total No. & % by Sub-Cat. for Level of Influence		S x 1 (9%) I x 7 (64%) P x 0 (0%) T x 3 (27%)			S x 1 (7%) I x 8 (58%) P x 2 (14%) T x 3 (21%)			S x 0 (0%) I x 10 (50%) P x 4 (20%) T x 6 (30%)			S x 1 (5%) I x 8 (42%) P x 4 (21%) T x 6 (32%)			S x 1 (6%) I x 9 (53%) P x 3 (18%) T x 4 (23%)			S x 0 (0%) I x 8 (89%) P x 1 (11%) T x 0 (0%)	

*Category: EX = External and IN = Internal

**Sub-Category: S = Situational, I = Institutional, P = Pupil and T = Teacher

6.4.3 Dominance of Institutional Factors

More insights were gained by classifying external factors under the three sub-categories used in other research studies that were reviewed in the literature (Appendices 9, 42 & 43). The three sub-categories were situational, e.g., weather; institutional, e.g., equipment; and pupil-related, e.g., children's size and age. Internal factors represented a fourth sub-category termed teacher-related so it was renamed. As per Chart 6.2, a majority of factors were categorised under institutional in PE and all activities - PE (64%), Athletics (58%), Dance (50%), Games (42%), Gymnastics (53%) and Swimming (89%). This was reinforced when figures for the three external sub-categories were converted as a percentage of the external factor only. Findings show that 88% of PE's external factors were institutional as well as 73% for Athletics, 71% for Dance, 62% for Games, 69% for Gymnastics and 89% for Swimming.

Chart 6.2: Sub-Category of Levels for Ranked Influential Factors for PE & 5 Activity Areas Across Schools A & B
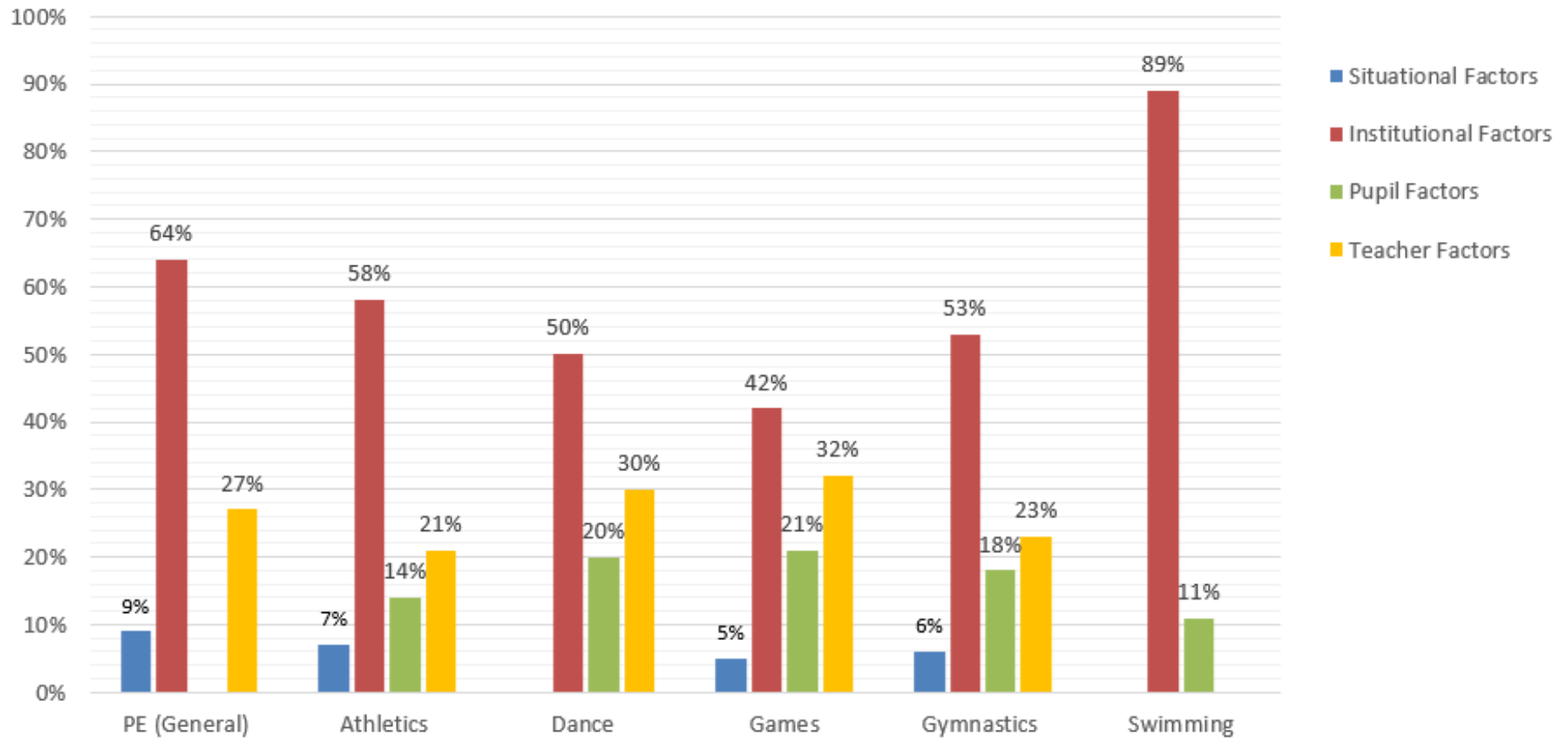
Table 6.12 also highlights an increased influence for institutional factors as the top influence score for PE and activity areas was achieved by an institutional reason except for Dance. Additionally, the four highest scores for PE and Games were institutional. As were the top three scores for Athletics and Dance, four for Gymnastics and all of five for Swimming. In contrast, no pupil factors emerged in PE's influence score list and no situational factors arose for Dance and Swimming. This was explicable because three of the four situational factors proposed overall pertained to weather and both activities were assumed to be delivered indoors.

6.5 Conclusion

This chapter answered Research Question 2 as it collated teachers' explanations of how factors influenced the amount of PE and the five activity areas. Testing Propositions 3-5 verified some factors were regarded as more influential than others, interconnected and operative at external and internal levels. Data for Proposition 1 revealed how collectively 38 factors were proposed for PE and the five activities - 19 pertained to PE, 14 to Athletics, 20 to Dance, 19 to Games, 16 to Gymnastics and nine to Swimming. Testing Proposition 3 enhanced this information by highlighting how some were viewed as more influential. For instance, 11 of the 19 factors identified for PE were ranked as influential factors by teachers. Application of the explanation-building technique to Propositions 3 and 4 further enriched this finding by procuring teachers' perceptions of how causes reduced PE time which were then used to inform the construction of theoretical generalisations.

Chapter 7
Discussion &
Recommendations

7.1. Overview of Chapter 7

This exploratory case study investigated what factors primary school teachers in NI identified as influencing the amount of PE delivered and how they explained those factors' influence on PE time. It did so by creating five theoretical propositions informed by the literature review and utilising them as the theoretical framework for this project. Following theory testing of the five propositions via a pattern-matching technique and theory building arising from the teachers' explanations using an explanation-building technique, a set of 16 theoretical generalisations was formulated to address both research questions. The set comprises two sub-sets: the first pertains to all factors in general whereas the second relates to specific factors as illustrated in Table 7.1. This chapter initially discusses sub-set 1 to part-answer Research Questions 1 and 2. It then proceeds to consider sub-set 2 to enrich and complete the responses for both questions as theoretical generalisations 10-16 disclose the highly influential factors and contain additional insights regarding how primary teachers explain specific factors' influence on the quantitative provision of PE. Consequently, a number of recommendations are offered in response to the key findings of this research.

Table 7.1: Set of 16 Theoretical Generalisations

Research Question	Original Set of 5 Theoretical Propositions	New Set of 16 Theoretical Generalisations	
		Sub-Set 1: Applicable to Factors in General (x 9)	**Sub-Set 2: Applicable to Specific Factors (x 7)**
1. What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in Northern Ireland?	1. Multiple factors influence the amount of PE in general and the five specific activity areas	**TG1.** Multiple factors influence the amount of PE in general and the five specific activity areas **TG2.** Teachers identify a different number of factors which influence the amount of PE in general and the five specific activity areas than other teachers	**TG10.** Competing priorities, lack of time and timetabling issues are highly influential factors which interconnect to influence the amount of PE in general and five specific activity areas as a crowded, hierarchical curriculum prioritises academic subjects with a higher subject status **TG11.** Lack of equipment is a highly influential factor on the amount of PE in general, Athletics, Dance, Games and Gymnastics as items may be inaccessible, unavailable, unsuitable and/or unsafe **TG12.** Lack of facilities is a highly influential factor on the amount of PE in general, Athletics, Dance, Games and Gymnastics as venues may be inaccessible, unavailable, unsuitable and/or unsafe
	2. Similar and different factors influence the amount of PE in general and the five specific activity areas	**TG3.** Similar and different types of factors influence the amount of PE in general and the five specific activity areas **TG4.** Some factors which influence the amount of PE in general and the five specific activity areas are unique to PE, an activity area and/or a teacher	
2. How do primary school teachers explain factors' influence on the amount of PE delivered in primary schools in Northern Ireland?	3. Some factors are more influential than others on the amount of PE in general and the five specific activity areas	**TG5.** Some factors are more influential than others on the amount of PE in general and the five specific activity areas	**TG13.** Adverse weather is a highly influential factor which interconnects with lack of facilities to influence the amount of PE in general, Athletics and Games as the indoor facility may be inaccessible, unavailable, unsuitable and/or unsafe **TG14.** Lack of expertise and confidence are highly influential factors which interconnect to influence the amount of PE in general, Athletics, Dance, Games and Gymnastics as teachers have insufficient training **TG15.** Class size and safety are highly influential factors which interconnect with lack of equipment and facilities to influence the amount of PE in general and the five specific activity areas as they decrease pupil-equipment and pupil-movement space ratio which increases behavioural issues and risk **TG16.** Adverse weather and lack of equipment, facilities, expertise and confidence are unlikely to affect the amount of Swimming as this is normally delivered by an external specialist instructor at an off-site indoor venue
	4. Some factors interconnect to influence the amount of PE in general and the five specific activity areas	**TG6.** Most factors interconnect with at least one other factor to influence the amount of PE in general and the five specific activity areas	
	5. Factors operate at external and internal levels to influence the amount of PE in general and the five specific activity areas	**TG7.** Factors operate at external and internal levels to influence the amount of PE in general, Athletics, Dance, Games and Gymnastics **TG8.** Most factors which influence the amount of PE in general and the five specific activity areas operate at external level **TG9.** Most external factors which influence the amount of PE in general and the five specific activity areas are institutional	

7.2 Sub-Set 1 - Theoretical Generalisations Applicable to Factors in General

Sub-set 1 holds nine of the 16 theoretical generalisations. Five of these nine are the five original theoretical propositions as they were mostly verified but with minor changes to the wording of Proposition 4. The other four are those induced during application of the pattern-matching technique to the propositions as an extra one was produced for Proposition 1 and 2, and two for Proposition 5. Generalisations 1-4 address Research Question 1 and Generalisation 5-9 respond to Research Question 2.

7.2.1 Research Question 1: What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in Northern Ireland?

Multiple Factors

> **TG1:** Multiple factors influence the amount of PE in general and the five specific activity areas

As complete replication, i.e., the observed pattern matched the predicted pattern, was achieved for Proposition 1, it was substantiated and qualified as a generalisation without modification. Establishing multiple factors influence time for PE and the five activities is original as although previous studies reported numerous causes, they were aggregate figures across the sample. As existing research did not disclose how many individual teachers proposed them, it was unknown whether any teacher identified a single cause for reduced PE or indeed each activity area as they were never examined. This generalisation conveys how the amount of PE delivered is not affected by just one factor as various factors are implicated. The rival hypothesis there could be one solitary factor, specifically a lack of facilities, was tested but countered by selecting a school (School A) wherein it was mathematically impossible to schedule each class the recommended two hours of PE in their indoor hall. Teachers in this school could have reasonably identified one factor only, namely insufficient facilities, however they all cited more than one thus verifying that quantitative provision is reduced by several factors.

Different Number of Factors

TG2: Teachers identify a different number of factors which influence the amount of PE in general and the five specific activity areas than other teachers

A related generalisation was created following the finding of a wide range (=2-13) between the number of factors each teacher proposed. This generalisation signifies how some teachers recognise greater or fewer factors than others and reinforces how the number any one teacher identifies can be individualistic and unpredictable. Consideration of a related generalisation asserting the number of factors varies depending on the school was discounted as this was indeterminable from the data. School A's wider range of factors (=5-13) compared to school B's range (=2-6) denoted more arose but did not reliably indicate that they were attributable to the school. Some could be personal to the teacher and so operate internally at individual level as per Proposition 5. Interestingly, not all teachers in the same school proposed an identical number of factors indicating some teachers perceive more factors than their colleagues even though they work under similar conditions in the same setting. This highlighted how a teacher's perception of a particular feature and whether it is negative may determine how many factors they identify. To illustrate, all five School A teachers had the same facilities yet three ranked them as one of their top five factors and two did not. Similarly, two School B teachers placed facilities as a factor but five of their colleagues did not. Another generalisation contending the number of factors diverges between activity areas was dismissed as this was unverified by the data due to the 5-factor cap applied to the activities. Further research is required to substantiate this claim.

Similar & Different Types of Factors

TG3: Similar and different factors influence the amount of PE in general and the five specific activity areas

As sufficient replication of Proposition 2 was observed, it was authenticated and converted to a generalisation without change. This generalisation depicts how some of the factors identified for reducing PE in general might be similar to those for the five activity areas but

not identical as different factors may arise within and between activities. Consequently, this claim justifies the need to examine PE and the individual activities to ascertain congruence and divergence within and between them, and then to develop common and/or different strategies to minimise their impact. This is important as one of the observations made during the literature review was that activity-specific causes and interventions were overlooked by the research community. Overall, teachers identified 38 different types of factors which lessen time for PE and the five activities: 19 applied to PE, 14 for Athletics, 20 to Dance, 19 for Games, 16 to Gymnastics and 9 for Swimming. Although there could be more for each activity area as teachers could only nominate a maximum of five for any one activity. Nevertheless, this discovery is useful as this figure is significantly higher than those emerging from other studies. Penny & Thompson (2018) identified the highest number (n=17) of barriers in their global study whereas only six were previously known in NI (Department of Education for Northern Ireland (DENI) 2012). Discerning up to 38 factors may be implicated, 20 of which were not previously reported in existing literature, suggests under-provision of PE is more multifarious than originally considered.

Unique Factors

> **TG4:** *Some factors which influence the amount of PE in general and the five specific activity areas are unique to PE, an activity area and/or a teacher*

The testing of Proposition 2 also initiated the creation of another generalisation after discovering factors unique to PE (n=6), Dance (n=5), Games (n=2), Gymnastics (n=3), Swimming (n=3) and teachers (n=24). This generalisation denotes how some factors are activity- and teacher-specific which reinforces the importance of activity-specific investigations, strategies and interventions, but also how some factors are exclusive to individuals. Therefore, any research, policy or programme should consider the presence of teacher-specific factors and include additional support for those teachers.

7.2.2 Research Question 2: How do primary school teachers explain factors' influence on the amount of PE delivered in primary schools in Northern Ireland?

More Influential Factors

> **TG5:** Some factors are more influential than others on the amount of PE in general and the five specific activity areas

As Proposition 3 attained complete replication, it was validated and adapted as a generalisation without amends. This generalisation highlights how not all factors are regarded as equally influential as some are perceived as more impactful than others. Of the 19 factors proposed for PE, 11 of them were ranked as the most influential. It also implies the number of factors a teacher identifies may not determine how much time is allocated as the weighting attached to the factor is also instrumental. There may also be variations between PE and the five activities as some factors may be viewed more influential in certain activities, e.g., competing priorities attained the highest influential score in PE but did not do so for any of the five activities. Moreover, the cost to school achieved the second highest influential score for Swimming but it was not nominated by any teacher for any other activity.

Interconnecting Factors

> **TG6:** Most factors interconnect with at least one other factor to influence the amount of PE in general and the five specific activity areas

As Proposition 4 acquired complete replication, it was corroborated and endorsed as a generalisation but with a minor change of wording from 'some' to 'most' in response to the finding 74% of factors were linked to at least one other. This exposed how interrelatedness was more prevalent than expected notably for certain factors. Of the 78 connections made by the teachers, *time & priorities* were considered to be related by the highest number of teachers (n=9). This was followed by *class size & safety* (n=7), *timetabling & priorities* (n=6) and *facilities & weather* (n=6). This generalisation elucidates how a single factor may not

operate independently. Its perceived influence and resulting impact may be strengthened by its affiliation with another one. Additionally, from the teacher's perspective, it illustrates the complexity of how their factors function and may initiate teacher doubt about whether and how they can be removed if intricately intertwined.

Combination of External & Internal Factors

TG7: Factors operate at external and internal levels to influence the amount of PE in general, Athletics, Dance, Games and Gymnastics

As sufficient replication was obtained for Proposition 5 except for Swimming, it was upheld and accepted as a generalisation subject to a word change reflecting its inapplicability to this activity. This generalisation affirms how quantitative provision of PE and most of the activities are affected by a combination of external and internal factors. External factors are considered as not originating within the individual but from elsewhere, e.g., school, government and/or environment. Conversely, internal factors are regarded as occurring inside the individual. This assertion is significant as it reveals how factors operate at both levels rather than just one level. However, teachers' perceptions of their levels of control over external and internal factors was not ascertained in this study. Also, the binary external-internal classification precluded consideration of how some factors may be viewed as both. To illustrate, class size, which was the ninth most influential factor for PE, is not determined by teachers. Yet they retain autonomy regarding whether to teach on a whole-class, small group and/or individual basis. Nevertheless, establishing whether influential factors are external or internal is necessary to identify appropriate interventions and target resources to effectively help teachers overcome the challenges they identified.

Dominance of External Factors

TG8: Most factors which influence the amount of PE in general and the five specific activity areas operate at external level

A second generalisation was constructed from Proposition 5 after calculating a majority of ranked factors were external – a range of 68-100% across PE and the five activities. This generalisation shows there is a dominant level and that it is external. However, it is challengeable as the reliability of the finding on which it is based could have been compromised by self-serving attributional bias. Heider's (1958) attribution theory asserts that a person attributes the outcomes of their actions to themselves (internally) or the environment (externally). Self-serving bias arises because of people's propensity to over-exaggerate personal credit when they succeed but deny responsibility when they fail (Miller & Ross 1975; Guo 2022). Moreover, people tend to assign failure more to external factors in a public context compared to a private context (Wen 2018). As the teachers disclosed their explanations in an interview and knew their comments could be published, albeit anonymously, they may have been more likely to implicate external factors when explaining their under-provision of PE. Nonetheless, this finding could inform interventions, e.g., attribution retraining (Graham 2020), and whether any should be prioritised. It also corresponds with the only two primary PE studies which categorised barriers proposed by teachers. Morgan & Hansen (2008) generated nine ranked barriers of which 56% were classified as external and 44% as internal. The top five were external and rated by teachers as moderate to major strength and beyond their control. The four internal obstructions were considered weak to moderate. Similarly, Friskawati et al. (2020) produced 13 unranked barriers comprising 71% external and 29% internal.

Dominance of Institutional Factors

TG9: Most external factors which influence the amount of PE in general and the five specific activity areas are institutional

The third generalisation arising from Proposition 5 was devised to reflect how a majority (range = 42-89%) of the external factors were sub-categorised as institutional across PE and the five activities - PE (64%), Athletics (58%), Dance (50%), Games (42%), Gymnastics (53%) and Swimming (89%). This generalisation illuminates how most factors that compromise quantitative provision are systemic, i.e., school and/or departmental level. This insight should also inform selection and implementation of strategies to offset their impact.

7.3 Sub-Set 2 – Theoretical Generalisations Applicable to Specific Factors

Sub-set 2 contains seven of the 16 generalisations and are those induced during application of the explanation-building technique to the five initial propositions. All seven enlighten both research questions as they identify what the highly influential factors are and how they reduce time for PE and the five activities.[45]

Priorities, Time & Timetabling

> **TG10:** Competing priorities, lack of time and timetabling issues are highly influential factors which interconnect to influence the amount of PE in general and five specific activity areas as a crowded, hierarchical curriculum prioritises academic subjects with a higher subject status

This generalisation was warranted as teachers frequently nominated competing priorities, a lack of time and timetabling issues in their top five most influential factors. For instance, they attained the first, third and eighth highest influence scores for PE respectively. This corresponds with DENI's (2012) survey as time, timetabling and competing priorities were the first, second and third most common reasons advanced for reduced primary PE. Their interconnectedness was warranted as teachers consistently cited them as examples of interrelated factors, e.g., *time & priorities* were viewed as linked by the biggest number of teachers (n=9) and *timetabling & priorities* received the fourth highest number of citations (n=6). This generalisation asserts that these three factors are highly influential factors that interlock, as originally speculated by DENI (2012), and also explains how. Aligned with argumentation in the literature review, teachers' explanations indicated the factors interrelate as there is insufficient time in the timetable to deliver all of a congested curriculum. Consequently, they feel compelled to prioritise subjects regarded as having superior status which are typically those categorised as academic. As practitioners may view PE as practical and non-intellectual, its curriculum time decreases to facilitate coverage of its academic counterparts. This reasoning agrees with the Education & Training

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[45] The 11th most influential factor for PE - new ideas - is not discussed as it was nominated by one teacher so there was insufficient replication logic to formulate a theoretical generalisation

Inspectorate's (ETI) (2022) finding that 52% of primary schools in NI identified pressure to prioritise delivery of literacy, numeracy and ICT as adversely impacting PE. It also corresponds with a specific discussion in the literature review on Iannucci et al.'s (2020) framework on teaching multiple school subjects role conflict which proposes that teachers responsible for multiple disciplines experience extra stressors.

Equipment

TG11: Lack of equipment is a highly influential factor on the amount of PE in general, Athletics, Dance, Games and Gymnastics as items may be inaccessible, unavailable, unsuitable and/or unsafe

Generalisation 11 was devised as equipment was commonly advanced by teachers in their list of five most influential factors except for Swimming. A lack of equipment attained the third highest influence score for PE, first for Athletics and Games, and second for Dance and Gymnastics. This result is consistent with DENI's (2012) reporting of equipment as the sixth most frequent cause of reduced primary PE. Thus, this generalisation presents equipment as a highly influential barrier and conveys how it compromises delivery time. In accordance with speculations in the review of literature, teachers' accounts implicated quantitative and qualitative deficiencies. Quantitative issues included accessibility and availability, e.g., whether the school owns the desired items and quantity required, if they can be easily retrieved from where they are stored and whether they are available when needed. Qualitative matters concerned suitability and safety as some resources could be inappropriate for the activity and/or age group, so unsafe and unusable. As teachers may assume equipment is integral to delivery of PE and these four activities, their limited accessibility, availability, suitability and safeness may reduce allocated time.

Facilities

TG12: Lack of facilities is a highly influential factor on the amount of PE in general, Athletics, Dance, Games and Gymnastics as venues may be inaccessible, unavailable, unsuitable and/or unsafe

The twelfth generalisation was formed as teachers regularly proposed facilities as one of their five ranked influential factors except for Swimming. For instance, it obtained the fourth highest influence score for PE, third in Athletics, ninth in Dance and fourth in Games and Gymnastics. This matches DENI's (2012) finding that facilities was the fourth most common explanation for restricted PE. Hence this generalisation affirms a facilities deficit as a highly influential barrier and clarifies how it lessens provision. In agreement with argumentation in the literature review, teachers' rationale entailed quantitative and qualitative shortcomings. Similar to equipment, quantitative dimensions relate to accessibility and availability including whether the school has any facility and quantity required, and if so, whether it is available when needed. Qualitative aspects relate to suitability and safety, for instance, whether the venue is appropriate for the activity and/or age group, as well as safe. Restricted access, availability, suitability and safeness therefore compromises delivery time. However, this generalisation's applicability to all teachers may be doubted. ETI's (2022) evaluation stated a majority (=70%) of schools self-reported access to adequately-sized indoor and outdoor facilities compared to a minority (=30%) who reasoned PE was adversely affected by inadequate facilities. Although any challenges could be countered by querying representativeness as insights were provided by middle/senior leaders so they may not reflect the everyday challenges experienced by class teachers.

Weather

> **TG13:** Adverse weather is a highly influential factor which interconnects with lack of facilities to influence the amount of PE in general, Athletics and Games as the indoor facility may be inaccessible, unavailable, unsuitable and unsafe

Generalisation 13 was supported as weather was repeatedly forwarded by teachers in their ranked list of factors. It gained the fifth highest influence score in PE, second for Athletics and eighth for Games. Its connection to facilities was warranted as *weather & facilities* attracted the joint third highest number of citations (n=6) by teachers when asked to identify linked factors. Similar to parts of the aforementioned explanation for facilities, this generalisation portrays how weather and facilities interrelate to decrease quantitative provision of PE, Athletics and Games. A school may not have an indoor hall and/or more

than one hall if required. Even if they do, it may be unavailable as it is occupied by another user. It also signifies how concerns about weather may be heightened in only two of the five activities. Athletics and Games are normally delivered outdoors as they both require more space. Even if an indoor hall is available, it might be rated as unsuitable and unsafe for both activities due to its limited area.

Expertise & Confidence

> **TG14:** Lack of expertise and confidence are highly influential factors which interconnect to influence the amount of PE in general, Athletics, Dance, Games and Gymnastics as teachers have insufficient training

This generalisation was created as teachers routinely ranked expertise and confidence as influential factors. For instance, they acquired the sixth and seventh highest influence scores respectively for PE. This aligns with DENI's (2012) research wherein expertise was the fifth most commonly cited reason for less PE. Inter-relatedness was verified as *expertise & confidence* gained the fifth biggest number (n=5) of citations for connected factors and *expertise, training & confidence* received three mentions. This generalisation conveys expertise and confidence as highly influential factors and discloses how they operate to diminish delivery time. They do so as their relationship is directly proportional, i.e., low expertise results in low confidence, which is attributable to insufficient training. This corresponds with argumentation in the literature review which made links between expertise, Brown et al.'s (1998) deficit model of primary teachers' knowledge and Bandura's (1995) teaching self-efficacy theory. Although this generalisation's applicability to all teachers is contested by ETI's (2022) finding that a majority (=62%) of primary schools in NI stated they understood all elements of the PE curriculum and were confident planners and deliverers of PE. They compared to the remaining minority (=38%) who reported a knowledge, skill and confidence deficit to fully deliver the PE curriculum. As before, ETI's sample could be queried as it comprised middle/senior leaders so these claims may not reliably signify teachers' concerns.

Class Size & Safety

> **TG15:** Class size and safety are highly influential factors which interconnect with lack of equipment and facilities to influence the amount of PE in general and the five specific activity areas as they decrease pupil-equipment and pupil-movement space ratio which increases behavioural issues and risk

Generalisation 15 was composed as class size was recurrently recognised in teachers' lists of top influential factors. It achieved the ninth highest influence score for PE, seventh for Athletics, eighth for Dance, 10th for Games, fifth for Gymnastics and fourth for Swimming. Safety was also frequently advanced as it received the 11th highest influence score for PE, sixth in Athletics, 11th for Dance, seventh in Games, first for Gymnastics and seventh in Swimming. Asserting links between class size, safety, equipment and facilities was defensible as they received multiple citations from teachers as examples of interconnected factors. For instance, *class size & safety* were considered as related by the second highest number of teachers (n=7). Other examples were *equipment, facilities & class size* (n=1); *equipment & class size* (n=1); *equipment & safety* (n=2); *facilities, equipment & safety* (n=2); and *facilities & safety* (n=1). This generalisation explains how these factors interplay to comprise quantitative provision. Specifically, they reduce pupil-equipment and pupil-movement space ratios which consequently encourages behavioural problems and/or increases the likelihood of an accident.

Weather, Equipment, Facilities, Expertise & Confidence

> **TG16:** Adverse weather and lack of equipment, facilities, expertise and confidence are unlikely to affect the amount of Swimming as this is normally delivered by an external specialist instructor at an off-site indoor venue

The absence of Swimming in four of the seven factor-specific generalisations may be unnoticed. Therefore, a separate generalisation was created to explicitly denote how a significant amount of highly influential factors for other activities do not affect Swimming. It discloses factors which are unlikely to decrease Swimming time and the reasoning. As

Swimming is typically delivered by an external specialist instructor, teachers may infer they do not require expertise. Consequently, sufficient confidence levels to teach Swimming are irrelevant. It could be counter-argued that whilst it is acceptable for teachers to delegate the teaching of Swimming to a specialist coach, the teacher retains responsibility for assessing children's progress in this activity, so expertise and confidence are necessary. It is improbable weather and facilities influences Swimming time as it is normally conducted inside at an off-site location. Thus, climate does not interfere with delivery or indeed venue availability as session times are usually reserved in advance. Although pool access could be problematic for teachers in rural locations as their nearest pool may not be within a reasonable travelling time. Equipment is unlikely to compromise time as it is ordinarily provided by the pool provider. This generalisation also emphasises how Swimming differs more from the other four activities as teachers do not encounter the same factors as they do for Athletics, Dance, Games and Gymnastics. This aligns with other findings showing how most teachers nominated fewer factors for Swimming as the range for the number of factors was 2-4. Moreover, no teacher cited the permitted maximum of five factors as three of them identified four causes and the other two advanced two and three respectively[46].

7.4 Theoretical Generalisations & Recommendations

Collectively, the 16 generalisations highlight how the research problem, namely insufficient amounts of primary PE in general and the five specific activity areas, is engendered by a variety of factors and reasons. Minimising or negating their influence is a multi-faceted challenge necessitating numerous solutions as addressing one factor will be insufficient to fully remedy under-provision. A new finding arising from this study is that although some factors are common to PE and the five activity areas, teachers identify different factors in specific activities. Hence activity-specific interventions are warranted otherwise unique factors associated with a particular activity will persist. Some are more influential than others as well as being interconnected so implementation of any one counteractive approach may need to be prioritised. Additionally, most factors have external origins in traditional customs which remain entrenched in current educational policy and practice.

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[46] Only five of the 12 teachers were Key Stage 2 teachers and therefore required to include Swimming as a fifth activity area in PE

Thus, reform of educational strategy and its enactment via curriculum delivery may be required to produce any meaningful increase to the amount of PE primary children receive. Consequently, multiple proposals informed by the theoretical generalisations are discussed including a key recommendation pertaining to all factors in general as well as other solutions for specific factors.

7.5 Key Recommendation for All Factors in General

As this is an exploratory study, the purpose of the theoretical generalisations was not to conclude the investigation but to conceive ideas for further research. Despite this study's methodological rigour, its scope is modest. This small-scale dimension alongside its exploratory aspiration, constrain its potential to directly influence policy and practice. Nevertheless, its findings can initiate and direct further research which could. Therefore, the key recommendation arising from this project advocates the initiation of government-commissioned policy research. The outcome should be an 'evidence-based information product' (Majchrzak & Markus 2014, p2) with the intentional purpose that it is used to improve public policy makers' decision making (Springer et al. 2017). Specifically, a large-scale longitudinal survey integrating a trend study (Creswell 2012) which produces baseline data is suggested. This information would facilitate follow-up research to identify patterns of change over time and evaluate the effectiveness of any policies and interventions. Whilst the proposed investigation could imitate the key features of the researcher's study, it would address its limitations. Thus, it would be considerably more comprehensive, representative, authoritative, collaborative and consultative to maximise its impact on educational policy and practice (Springer et al. 2017).

The comprehensiveness of the proposed investigation could be reflected in the wide and deep remit of its aim and research questions. Similar to this study, it could use mixed methods to examine the same two explanatory research questions. Breadth will be attained by inspecting PE and specific activities to ascertain the full extent of the number of factors as well as their type. Therefore, the number of factors teachers can cite for PE and the five activities should be uncapped to enable detection of all possible factors. This should also highlight similarities and differences between and within PE and the five activities as well as

those unique to PE or a particular activity. Data regarding how much time is allocated to PE and the five activities could be collected. This would permit robust statistical testing of an inversely proportionate relationship between the number of factors and delivery time. A potential correlation was undetermined by this study but should be an area for future research. Additionally, it could entail examination of which factors are more influential, interconnect and/or operate at external and internal levels to help justify prioritisation of any proposed solutions. Depth should be achieved via teacher narratives explaining how factors lessen delivery time to preserve the complexity and authenticity of challenges they encounter. They would also ensure the 'hard' quantitative data typically associated with large-scale surveys is contextualised and balanced by the actors under investigation (Springer et al. 2017).

Representativeness could be maximised by recruiting a representative sample of primary teachers in NI to participate. Expense, time and accessibility related problems might be mitigated by using an online survey research design (Regmi et al. 2016). The survey could comprise an interactive questionnaire and interview to procure quantitative and qualitative data. Engagement with the questionnaire may be enhanced by complementing the traditional question-answer format with a hybrid card-sorting activity akin to the in-person version used in this study wherein teachers identify and rank factors in an interactive way. A digital card-sorting tool may also be more time-saving from the researchers' perspective as many have integrated statistical analysis software (Ford 2013). The interview could invite participants to explain how factors influence delivery time but it might integrate voice recording software. Instructions could be transmitted via a voice recording from the researcher(s) to personalise the experience. Teachers could also have the option to reply with a voice recording. This option might make it easier for them to articulate explanations by removing the burden of a written response (Springer et al. 2017).

Authoritativeness is required to convey weighting and credibility amongst policy makers and practitioners. This could be increased by the investigation being commissioned by DENI but conducted by ETI. The former could establish and chair a research consortium comprising representatives from the Inspectorate as well as the other two key policy makers namely the Education Authority for Northern Ireland (EANI) and Council for Curriculum

Examinations & Assessment. This consortium would be tasked with coordinating the survey. This membership might help counter a common criticism of policy research that it typically sits unread on the shelf (Springer et al. 2017) as to do so would mean ignoring their own evidence. The collective standing and specialism associated with these organisations should increase teacher response rates. Although its authoritative tone should be balanced by its collaborative and consultative ethos notably in relation to the subjects of the study. Collaboration is vital as teachers esteem opportunities for engagement with research resulting in productive partnerships otherwise it is rated as another burden in their excessive workloads (Leat et al. 2013). Consultation is proposed to form positive bonds between the commissioning organisation and those being researched (Association for Qualitative Research 2023). This is essential as historically teachers' enactment of educational reform is resisted. Often, this is because they were not sufficiently consulted during the evidence collecting and policy formulation stages (Terhart 2013). Asking those who deal with the problem under investigation to identify and explain reasons should increase their sense of involvement in and ownership of the research.

The main output of this policy research should be a robust evidence base to enrich policy makers' decision making and inform their recommendations. Whilst their proposals are not pre-determined, an indication of the types of solutions which might emerge is illustrated by tentatively discussing potential interventions that could help destabilise 10 of the 11[47] most influential factors advanced for PE. However, it is acknowledged these ideas are speculative and some could result in unintended negative consequences. Nonetheless, they do highlight how a combination of macro-, meso- and micro-level changes may be needed in order to make any significant improvement to the quantitative provision of PE in Northern Irish primary schools.

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[47] One of the 11 most influential factors for PE - new ideas - is not discussed as it was nominated by one teacher only so there was insufficient replication logic for it to be the focus of a theoretical generalisation

7.6 Recommendations for Specific Factors

Competing Priorities, Time & Timetabling

As per Generalisation 10, teachers' explanations of how competing priorities, time and timetabling reduce PE situated their dilemma in a wider debate on neo-liberal agendas' influence in education. According to Sturrock (2022), the global phenomenon of neo-liberal educational policy reform is evidenced in the marketisation of education as subjects were commodified. Notably, literacy and numeracy held higher 'market value' which was reflected in the 'heavily-weighted teaching' of both subjects in primary education (Sturrock 2022, p1217). Alongside subject commodification was the intensification of the teacher's role due to increased levels of accountability. The combined effect of this commodification and intensification was a performativity culture which prioritised literacy and numeracy, and which burdened teachers with excessive workloads (Sturrock 2022). Therefore, policy-level changes to the current delivery of the NI Primary Curriculum may be required to address the combined effect of these three factors. The disproportionate amount of delivery time allocated to literacy and numeracy could be addressed by DENI-approved curriculum time indicators for each of the six areas of learning. Although this approach was recently advocated in the Republic of Ireland's draft Primary Curriculum Framework (National Council for Curriculum & Assessment 2020), it has never been considered in NI. Indicators could gain additional weighting if their recording and monitoring were designated as a compulsory matter in a school's development plan as prescribed in The Education (School Development Plan) Regulations (NI) 2010. DENI's endorsement of time indicators should convey how the promise of a 'broad and balanced' (Council for Curriculum Examinations & Assessment 2009, p3) curriculum can be enacted in practice. This idea responds to findings in this study as time indicators could alleviate teachers' complaints of feeling pressured to implement a crowded curriculum which prioritises English and Mathematics. Although an unintended outcome might be that teachers' recording of their levels of compliance with these indicators becomes an additional administrative duty. This suggestion is also advanced on the premise that any new time indicator for PE remains at least two hours. However, this could be reduced if DENI then prescribes times for the other five areas of learning.

Lack of Equipment

As conveyed in Generalisation 11, teachers reasoned a lack of equipment compromised PE time as items may be inaccessible, unavailable, unsuitable and/or unsafe. This deficit could be remedied by awarding all primary schools recurrent yearly funding specifically for purchasing PE items under the existing Local Management of Schools funding arrangements financed by DENI. This award could be itemised in the annual budget notification sent by the EANI to each school. However, it would be accompanied with a reminder its expenditure pertains to PE equipment only which will be verified by EANI via the school's yearly accounts. The extra cost to DENI could be subsidised by the Soft Drinks Industry Levy Regulations 2018 which generates around £240 million per annum (UK Government 2023a). Inspiration is gained from England's PE & Sport Premium which is a grant awarded to all primary schools to improve provision (UK Government 2023b). Although this initiative was introduced before the levy, part of the revenue generated from this tax is used to boost the Premium. Similar to the other three home countries, NI is designated a portion of the levy income. Although how it is spent has not been publicly disclosed by the NI Executive so PE advocates would need to actively campaign for it to be ring-fenced for PE.

Facilities & Weather

As per Generalisations 12 and 13, teachers perceive a facilities shortage and weather as interconnecting factors that lessen PE as venues may be inaccessible, unavailable, unsuitable and unsafe. These problems could be diminished by challenging their reliance on indoor halls and instead implementing more creative solutions pertaining to outdoor facilities. The problem of limited hall availability for PE arises from a dependency on an indoor venue for delivery due to the perceived unavailability of outdoor areas when the weather is poor. As climatic conditions are regarded as external, teachers may consider weather to be beyond their control but how they respond to the weather is arguably within their control. The automated reaction to adverse weather, specifically to relocate indoors, is a protective behaviour decision (Jeuring & Becken 2013). This could be resisted by encouraging teachers to consider other options, such as waterproof and thermal clothing and footwear. DENI could also upgrade existing outdoor areas with free-standing, all-weather canopies to shelter surfaces, equipment, children and teachers. Whilst commonly associated with sun defence for schools in hot climates (Giles-Corti et al. 2004), they are overlooked for rain and cold protection in wet and cold environments. However, an

unintended consequence could be that previous indoor classroom-based lessons are relocated to these new sheltered outdoor spaces to facilitate DENI's (2023d) outdoor learning initiative. The delivery of outdoor PE might be curtailed by five other areas of learning competing for covered outdoor areas.

Expertise & Confidence

As portrayed in Generalisation 14, teachers described a lack of expertise and confidence as inter-related factors as they have insufficient training so PE and activity-specific time is curtailed. Hence, additional training for pre-service and in-service primary teachers is recommended. This suggestion is also consistent with a proposal arising from ETI's (2022) report. Published information on PE training offered to trainee pre-service primary teachers enrolled at the three teacher training providers of primary teaching qualifications in NI is unavailable. Therefore, a strategic and standardised approach across the three organisations is doubted. Notably, the Association for Physical Education (A*f*PE) does not provide any guidance on this issue. Ideally, they would so any existing disparities in NI, and indeed the rest of the UK, are minimised. This could mean all pre-service teachers across the UK would receive equal training as not all aspiring teachers in NI will complete their training within NI. Continuing professional development for PE is currently non-existent for in-service teachers in NI as it is no longer provided by EANI. Thus, responsibility for doing so could be delegated equally to the three initial teacher training providers[48]. Any additional financial costs could also be subsidised by extra funding provided by the NI Executive from part-proceeds of the soft drinks levy. This should avoid placing new pressures on the budget for the Department for the Economy and DENI as they are responsible for pre-service and in-service teacher training respectively.

Class Size & Safety

As per Generalisation 15, class size and safety are recognised by teachers as interconnecting factors which lessen delivery time as decreasing pupil-equipment and pupil-movement space ratio increases behavioural problems and risk. These factors could be abated by

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[48]Declaration of conflict of interest as the researcher is an employee in one of these three initial teacher training colleges

funding and training. Complaints of low pupil-equipment ratio would be lessened by the foregoing idea that each primary school was awarded an annual PE grant. More equipment could be purchased to ensure sufficient numbers for each child. Children would not have to share so behavioural problems and risk are minimised. Improving a facilities shortage by installing canopies to outdoor spaces might partially counter concerns of low pupil-movement space ratio as outside areas tend to be more spacious although this is not guaranteed. Teachers could receive training demonstrating how creative pedagogical approaches, e.g., grouping and rotational tasks, can maximise positive behaviour as well as safe movement in confined spaces. Instruction in PE-specific behaviour management strategies (Lavay et al. 2016), including cooperative learning (Dyson & Casey 2012), could also be offered. Additionally, training relating to A*f*PE's (2020) safety guidance would help familiarise teachers with its provisions and illustrate application to their PE lessons.

7.7 Contribution of the Study to Existing Research

The foregoing discussion highlighted how the findings of this study contribute to the existing research on how much PE is delivered in primary schools by widening and deepening what was already known as well as addressing some issues which were unknown. Whilst multiple factors were reported in other investigations, none of them disclosed the number proposed by each teacher so it was unknown whether any teacher identified a single cause for reduced PE time. This study did and therefore showed how the amount of PE delivered was not influenced by just one factor as all participating teachers identified more than one factor. The wide range (=2-13) between the number of factors each teacher advanced also revealed how some teachers may identify a higher or lower number of factors compared to other teachers, including those working in the same school. The presence of these variations was previously undetermined as they were unreported in the literature. This study also extended the number of known factors. The highest number discovered in a single study was 17 in Penny & Thompson's (2018) global enquiry. This was increased to 38 as this study included an investigation of activity-specific factors for Athletics, Dance, Games, Gymnastics and Swimming. Additionally, this study's findings enriched the existing literature as 20 of those 38 factors were new as they were not previously detected in other research. Analysis of activity-specific factors further highlighted how some may be unique to PE in general

(n=6) whilst others may be exclusive to one of the activity areas as teachers advanced five unique factors for Dance, two for Games and three for Gymnastics and Swimming. Moreover, this study's finding that seven teachers nominated one or more factors which were exclusive to them was another novel finding. The discovery of teacher- and activity-specific factors, some of which may be unique to a teacher and/or an activity, helped address a gap in the knowledge base as these insights were unexamined in other investigations. Widening this study's remit to include exploration of activity-specific factors also exposed previously unknown variations in the influence levels of factors between the five activities as some factors may be regarded as more influential depending on the activity. Generating data which indicated most factors interconnect with at least one other factor to influence the amount of PE, assisted in resolving another deficit in the literature. Whilst other research speculated that factors may interrelate to influence PE delivery time, this claim was unverified. Obtaining explanations directly from primary teachers regarding how factors influenced the amount of time they allocated to PE also helped address a shortfall in the knowledge base as detailed teacher insights were not reported in the existing research.

7.8 Conclusion

This chapter's presentation and discussion of the 16 theoretical generalisations reinforced how the under-provision of primary PE is multi-dimensional. Various factors are implicated and the number and type may be teacher- and activity-specific. Some are more influential and most interconnect with at least one other. Whilst factors have external and internal origins, they are mostly external and specifically institutional. The subsequent advancement of recommendations emphasised the importance of responding with multiple interventions including large-scale policy research which may petition for macro-, meso- and micro-level change. This chapter also exposed the absence of a NI government policy and strategic investment in PE. This contrasts with the English government's ongoing funding of the PE & Sport Premium initiative alongside its recent allocation of an extra £600 million for PE and sport (Department for Education for England 2023).

Chapter 8

Conclusion

8.1 Summary of the Study

The purpose of this exploratory study was to produce new knowledge derived from primary teachers' perspectives that will develop understanding of why an insufficient amount of PE is delivered in primary schools in NI. This was achieved by investigating and answering two research questions. The outcome was the production of 16 theoretical generalisations disclosing what factors primary teachers identify as influencing the amount of PE and the five activity areas as well as explaining how they affect quantitative provision. Although they pertain to primary PE in NI, they might also be transferable to other regions as some or indeed most of the factors and explanations may not be exclusive to NI as they were also reported in the literature from the other countries. The generalisations show how the research problem, namely low levels of PE, is multi-dimensional as numerous factors were advanced. Whilst some factors for PE may be similar for some of the five activities, they may also be different. Moreover, several may be unique to PE, an activity and/or a teacher. Additionally, the number of factors experienced can differ between teachers but more or fewer does not necessarily mean less or extra PE respectively. This may be because the intensity of a factor determines its impact as some are more influential especially those interconnecting with others. Although they can be external and internal, most are external, specifically institutional, as they relate to school and or government-level issues

This study makes an original contribution to educational research by broadening and enriching the existing knowledge base on the quantitative provision of primary PE. The highest number of factors detected in existing research was 17 in a global enquiry (Penny & Thompson 2018) and six in a NI survey (DENI 2012). This project extended this number to 38 as it expanded its scope to include examination of the five specific activities which was also a novel approach as activity-specific insights were not previously gained. Highly influential factors were also discovered as teachers were required to rank them. Obtaining explanations from teachers regarding how factors reduced PE time was unprecedented as this research question had not been formerly investigated. These findings might generate international interest and initiate similar research in other countries to ascertain commonality and variations across regions. These collective efforts could help address the global decline in levels of PE. This investigation also highlighted how multiple macro-, meso-

and micro-level solutions could be required to minimise or negate their impact. Although their implementation may be challenging, they are necessary to ensure every child experiences a 'broad and balanced' curriculum that provides equal opportunities to become a physically educated person and avail of the associated benefits.

DENI's (2021b) most recent curriculum planning advice to schools may assist in this respect as it affirmed the importance of a 'broad and balanced' curriculum as well as supporting children's health and wellbeing during the post-pandemic recovery period. This guidance may have elevated PE as the two hours of PE a week recommendation was one of the document's eight key messages. No other area of learning was explicitly mentioned in the remaining seven key messages. Moreover, DENI acknowledged the 'central role' (p7) and 'critical importance' (p8) of PE, and how the 2-hour recommendation 'has never been more important' post-pandemic. Ramires et al.'s (2023) recent scoping review of systematic reviews supports DENI's association between health and PE. Their research concluded that evidence from the systematic reviews supported the claim that PE contributes to all four health domains – physical, cognitive, affective and social. Additionally, evidence highlighted how the quantity of PE, as well as the quality, were related to better benefits in pupils' health status. A positive outcome of the COVID-19 experience could be the reorientation of strategic level curriculum priorities towards health and wellbeing, and the importance of PE's contribution in this respect. However, whether this outlook is implemented in schools and results in more PE is currently unknown.

8.2 Limitations of the Study

Notwithstanding this study's contribution, its limitations are acknowledged. Notably its small-scale dimension as it only utilised two schools both of which were categorised as mainstream, controlled and urban. The inability to conduct cross-case analysis by a range of variables is also conceded.

Both schools were mainstream schools so insights from special schools remain unknown. However, not all children with SEN attend special schools as 21% of pupils in mainstream primary schools in NI have some form of SEN (O'Connor et al. 2022). Interestingly, only one

teacher in this study identified SEN as a factor – they ranked it third for Athletics and fourth for Games (Table 6.1). Also, SEN was one of the 20 newly discovered factors generated in this study as it was not previously reported in other investigations (Table 5.4). This was surprising as teaching PE to learners with SEN could entail more and diverse issues. Minimal citations by teachers could be attributed to concerns that proposing SEN as a factor is socially unacceptable. This gap and anomaly emphasise how future research priorities could focus on factors teachers experience when physically educating those with SEN to ensure these challenges are known and addressed. This objective would be enriched by also discovering factors encountered by teachers with a SEN, disability and/or long-term medical condition. The management type of both schools was controlled. The other three management types - integrated, maintained and voluntary - were unconsidered but variations may exist. Sport Northern Ireland's (2009a) primary PE survey revealed how integrated schools had the highest average of weekly PE (=94 minutes). An insignificant difference between the averages in the two main types of schools in NI, namely controlled (=88 minutes) and maintained (=90 minutes) was reported. However, this finding does not preclude dissimilar factors and reasoning operating in the different school types. Teachers of PE in voluntary schools, e.g., preparatory schools, typically employ a specialist who delivers PE to all classes. Their perceptions of influential factors may also vary. As could those of teachers in NI's only hospital school as particularly unusual factors could be operative. Location was not in the selection criteria but both schools were unintentionally in urban areas. Thus, representativeness is challengeable as over half of the primary schools in NI are located in rural areas (Buzinin & Durbin 2020), and any discrepancies between urban and rural schools were undiscovered. They could be present as 68% of the primary schools that scheduled the 2-hour target were in a rural location (Sport Northern Ireland 2009a). More atypical perspectives could be obtained by involving NI's only primary school located on an island. School size was indirectly in the selection criteria to test the rival hypothesis. School A had 14 classrooms (n=262 pupils) and School B had 7 classrooms (n=167 pupils) but figures do not reflect the primary school enrolment range of 10-965 pupils (DENI 2022). Uncovering factors in different-sized schools is beneficial as Sport Northern Ireland (2009a) detected a negative correlation between enrolment figure and scheduled PE time.

Other restrictions pertained to the omission of cross-case analysis by different variables.

For ethical reasons, specifically traceability, comparison between teachers by year group and/or subject specialism was precluded. Year-group specific factors could be operative as Sport Northern Ireland (2009) reported variations, e.g., the lowest weekly mean time was 85 minutes in Year 3 and the highest was 95 minutes in Year 7. Potential differences in primary PE delivery time depending on a teacher's subject specialism is currently unknown as relevant studies were undetected in the literature review. Analysis by year group and subject specialism could be ethically compliant by including more schools and teachers alongside an explicit request in the principal and teacher information sheets to accept a higher risk of traceability. Procuring explanations from non-teachers such as principals, classroom assistants and parents/guardians might also enhance the debate on the under-provision of PE in primary schools.

8.3 Inspiration for Post-Doctoral Research

Awareness of these limitations reinforces the need to maximise methodological rigour and should improve the robustness of any post-doctoral research. This may include a re-examination of the same research problem but through a sociological lens advocated by Power (2008) and inspired by Wright Mills (1959). The latter described a 'sociological imagination' which conferred understanding of how an individual's or society's biography could not be explained without comprehending both. This distinction between the 'personal trouble of milieu' and 'public issues of social structure' (Wright Mills 1959, p8) was borrowed by Power (2008) who identified three perspectives to oppose the challenges of contemporary professionals. The first – 'therapeutic perspective' – is predicated on 'personal troubles'. It portrays a 'distressed professional' blighted by stressors attributable to individual and/or institutional deficiencies. The second – 'deterministic perspective' – relates to 'public issues'. It depicts an 'oppressed professional' afflicted by oppressors derived from bigger structural forces. Power evolved the 'sociological imagination' by creating a third perspective - the 'professional imagination'. This helped the modern-day professional rationalise their frustrations by locating themselves within wider society and identifying therapeutic and deterministic remedies. As this study highlighted how under-provision of PE is attributable to numerous internal and external factors, post-doctoral research could apply Power's three perspectives. The research problem could be grounded

within primary teachers' susceptibility to become oppressed and/or distressed professionals. Thus, it would examine potential for them to develop a 'professional imagination' to help identify solutions for the factors they perceive as reducing the amount of PE.

8.4 Reflections on the Doctoral Research Journey

This thesis closes by reflecting on the doctoral research journey which is summarised in two observations. Firstly, conducting research entails multiple roles necessitating various cognitive, intra-personal and inter-personal skills. To illustrate, interviewing highlighted how the interviewer is choreographer, performer and audience (David & Sutton 2004). They must maintain a balance between creativity and precision, focus and flexibility, receptiveness and attentiveness as well as enthusiasm and restraint. Deficiencies in the researcher's skill set were initially exposed but subsequently enhanced by this experience. Secondly, the originality and trustworthiness of research knowledge is compromised if the researcher examines familiar settings. Research agendas and methods are duplicated and results are tainted by preconceptions. Whilst the 'familiarity problem' (Geer 1964) can influence what is researched and how, the researcher 'fought familiarity' by being reflexive, proactive and imaginative throughout all stages. To avoid repetition of research priorities, the research questions were broadened to include the five activities as previous studies lacked an activity-specific focus. Familiarity could also flourish when reviewing literature as the aim was to establish what is already known. Intellectual comfort was interrupted by resisting inclinations to exclusively appraise culturally recognisable research. Consequently, culturally diverse studies including global and country-specific literature were consulted. To avert duplicating familiar research procedures, an uncommon data collection technique, namely card-sorting, which was proposed by the doctoral supervisors but unexperienced by the researcher, was employed to procure new insights. Creative counter-measures for familiarity continued when acknowledging how one of the study's limitations could be addressed by involving atypical schools. Completing this study confirmed research is anything but a neutral activity. Although an absolute detached perspective does not exist (Waller et al. 2016), all researchers must 'fight familiarity' to safeguard the ongoing production of innovative research of scientific value. This long-serving educator and now

aspiring educational researcher concludes by asking 'What does a fish know about the water in which he swims all his life.' (Einstein 1936, p5). This question reminds them of how they are burdened with preconceived knowledge and taken-for-granted assumptions which may have rendered them oblivious to the invisibilities of schooling. Therefore, they are obliged to continually and humbly ask whether they know what they do not know about education especially Physical Education.

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Appendices

Appendix 1: Summary of the Study

Table 1.1: Summary of Study Investigating Factors Influencing the Amount of PE in Primary Schools in Northern Ireland

Research Problem	Insufficient amount of Physical Education (PE) provided to children in primary schools in Northern Ireland (NI)		
Research Title	A multiple case study of primary school teachers' perceptions of the factors influencing the quantitative provision of PE in primary schools in NI		
Purpose	Generate new knowledge derived from primary school teachers' perspectives that will help develop an understanding of why an insufficient amount of PE is being delivered in primary schools in NI		
Aims	Investigate primary school teachers' identification of factors which influence the quantitative provision of PE and explanations of how these factors influence the amount of PE delivered		
Research Questions	1. What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in NI? 2. How do primary school teachers explain factors' influence on the amount of PE delivered in primary schools in NI?		
Theoretical Propositions	1. Multiple factors influence the amount of PE in general and the 5 specific activity areas 2. Similar and different factors influence the amount of PE in general and the 5 specific activity areas 3. Some factors are more influential than others on the amount of PE in general and the 5 specific activity areas 4. Some factors interconnect to influence the amount of PE in general and the 5 specific activity areas 5. Factors operate at external and internal levels to influence the amount of PE in general and the 5 specific activity areas		
Type of Literature Review	Narrative		
Type of Literature	Local, national & international research studies; scholarly articles; policy documents; theoretical perspectives		
Philosophical Orientation	Pragmatism		
Orientation Towards Role of Theory in Research	Deductive (theory testing) Inductive (theory construction)	**Research Design**	Case study
Case Study Design	Exploratory, explanatory, multiple, sequential & retrospective	**Research Strategy**	Mixed methods, concurrent, non-priority
Data Source, Collection & Type	Dataset (1) - participants (primary teachers), interviews, quantitative & qualitative Dataset (2) - physical artefacts (PE facilities & equipment), observation, quantitative & qualitative Dataset (3) - documents (school and PE policies), desk-based, secondary source, quantitative & qualitative		
Analytical Approach	Theoretical propositions, theory testing & building via pattern-matching & explanation-building	**Outcome**	Set of Theoretical generalisations

Appendix 2: Management Type of Schools in Northern Ireland

Table 2.1: Management Type of School

Management Type (DENI 2022)	Number	Percentage
Primary Schools		
Controlled*	355	44.6
Catholic Maintained	355	44.6
Other Maintained – Irish Medium	25	3.1
Other Maintained - Other	2	0.2
Controlled Integrated	24	3.1
Grant Maintained Integrated	23	2.9
Total Primary Schools =	784	98.5
Preparatory Departments		
Controlled	1	0.1
Voluntary – Schools under Catholic Management	-	-
Voluntary – Schools under Other Management	11	1.4
Total Preparatory Departments =	12	1.5
Total no. of Schools =	796	100

Appendix 3: Northern Ireland Primary Curriculum

Produced by CCEA (2020) The 'Big Picture' of the Curriculum at Primary

The "Big Picture" of the Curriculum at Primary

CURRICULUM AIM	The Northern Ireland Curriculum aims to empower young people to achieve their potential and to make informed and responsible decisions throughout their lives.		
CURRICULUM OBJECTIVES	**TO DEVELOP THE YOUNG PERSON AS AN INDIVIDUAL**	**TO DEVELOP THE YOUNG PERSON AS A CONTRIBUTOR TO SOCIETY**	**TO DEVELOP THE YOUNG PERSON AS A CONTRIBUTOR TO THE ECONOMY AND ENVIRONMENT**
	personal understanding · moral character · mutual understanding · spiritual awareness · personal health	citizenship · media awareness · cultural understanding · ethical awareness	employability · education for · economic awareness · sustainable development

INFUSING

CROSS-CURRICULAR SKILLS	COMMUNICATION	USING MATHEMATICS	USING ICT	
THINKING SKILLS AND PERSONAL CAPABILITIES	Managing Information · Working with Others	Thinking, Problem Solving, Decision Making	Self-Management	Being Creative

ACROSS

AREAS OF LEARNING	THE ARTS	LANGUAGE AND LITERACY	MATHEMATICS AND NUMERACY	PERSONAL DEVELOPMENT AND MUTUAL UNDERSTANDING	PHYSICAL EDUCATION*	THE WORLD AROUND US	RELIGIOUS EDUCATION

INCORPORATING

ASSESSMENT FOR LEARNING	building a more open relationship between learner and teacher	clear learning intentions shared with pupils	shared/ negotiated success criteria	individual target setting	taking risks for learning	advice on what to improve and how to improve it	peer and self assessment	celebrating success	peer and self evaluation of learning

PROMOTING/ENCOURAGING

LEARNING EXPERIENCE	investigation and problem solving	links between curriculum areas	relevant and enjoyable	media-rich	skills integrated	active and hands on	offer choice
	challenging and engaging	supportive environment	culturally diverse	positive reinforcement	varied to suit learning style	on-going reflection	enquiry based

FOSTERING

ATTITUDES AND DISPOSITIONS	personal responsibility	concern for others	commitment – determination – resourcefulness	openness to new ideas	self-confidence
	curiosity	community spirit	flexibility	tolerance	integrity moral courage	respect

*Physical Development and Movement at Foundation Stage

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Appendix 4: Summary of Statutory Requirements for PE in the Northern Ireland Primary Curriculum

Derived from CCEA (2009) NI Primary Curriculum

5 Activity Areas	Foundation Stage (FS)[49]		Key Stage 1 (KS1)		Key Stage 2 (KS2)		
	Year 1 (age 4-5 years)	Year 2 (age 5-6 years)	Year 3 (age 6-7 years)	Year 4 (age 7-8 years)	Year 5 (age 8-9 years)	Year 6 (age 9-10 years)	Year 7 (age 10-11 years)
	Statutory Requirements						
1. Athletics	Pupils should be provided with opportunities for activities and physical challenges enabling them to learn, understand and develop the core skills of running, jumping and throwing in a co-operative context. (p44)		Pupils should be enabled to: • Participate in fun activities and physical challenges enabling them to begin to learn, understand and develop the core skills of running, jumping and throwing individually and in a co-operative context, using a variety of equipment • Practise simple running techniques in a variety of fun activities • Practise jumping and throwing activities, initially from a stationery position progressing to a controlled run-up • Measure performance in simple athletic activities (p102)		Pupils should be enabled to: • Participate in activities and physical challenges to learn, understand and continue to develop the core skills of running, jumping and throwing in a co-operative and competitive context using a variety of equipment • Progress from simple running, throwing and jumping activities towards becoming involved in more difficult personal challenges and through them, improving performance • Practise running over short and long distances • Practise jumping for height and distance • Practise throwing activities for accuracy and distance from a stationary position to a controlled run-up • Record and analyse personal performance in a variety of ways (p106)		
2. Dance	Pupils should be given opportunities to respond to a variety of stimuli and the use of body movements to communicate ideas and express feelings. (p44)		Pupils should be enabled to: • Use different body parts to explore personal and general space and to move using simple actions • Listen , and move in, response to different stimuli and accompaniments • Move in a controlled manner, at different speeds and in different directions, using different levels in space (high, low), and different strengths (heavy, light)		Pupils should be enabled to: • Progress from using simple movements and gestures, towards developing these into a structured, sequenced and co-ordinated set of movements using variables such as space, direction and speed • Develop their movements progressively individually, in pairs, in trios, small groups and larger groups • Develop more effective use of space levels, directions, speed and strength • Move with increased control, co-ordination and poise, using a variety of actions and gestures which communicate ideas and feelings		

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[49] In Foundation Stage the area of learning is called 'Physical Development & Movement' and not PE

		• Perform simple steps and movements to given rhythms and musical phrases • Create, practise, remember and perform simple movement sequences • Develop their movements progressively and in pairs (p103)	• Structure dances with clear beginnings, middles and ends • Perform a selection of simple folk dances (p107)
3. Games	Pupils should be taught to develop games skills through a range of activities and using a variety of equipment. (p44)	Pupils should be enabled to: • Practise and develop the skills of handling, hitting and kicking through a range of activities and using a variety of equipment • Develop the skills relevant to games, including running, stopping, jumping and skipping • Make use of space to outwit an opponent • Take part in simple games involving individual and co-operative play (p104)	Pupils should be enabled to: • Progress from developing individual and partner activities and games to suitable small-sided, adapted and mini-games through both co-operative and then competitive play • Develop control in running, jumping, changing speed, stopping and starting, with and without small equipment • Improve their skills of handling, hitting and kicking using a variety of equipment and progress from developing individual skills and partner activities and games to suitable small-sided adapted and mini-games through co-operative and then competitive play • Develop an understanding of, and participate in, small-sided, adapted and mini games (p108)
4. Gymnastics	Pupils should be taught to explore, create, practice and improve body management skills. (p44)	Pupils should be enabled to: • Explore a range of movement skills, including travelling, jumping and landing • Explore, practise and improve body management skills • Form simple sequences by linking movements • Progress from working individually to working in pairs • Evaluate their movements and those of others (p105)	Pupils should be enabled to: • Extend their body management skills and improve the variety and quality of movement • Progress from working individually to working in pairs, trios, small groups and whole groups • Explore, practise and refine a range of movement skills, including travelling, flight, rolling, balancing, transferring weight, including weight on hands, twisting, turning and stretching (p109)
5. Swimming	n/a	n/a	n/a	n/a	Pupils should be enabled to: • Develop their basic swimming and personal survival skills • Understand the importance of personal hygiene in relation to pool use • Progress from using a swimming aid to developing their confidence and competence in being able to swim without the use of any aids using recognised swimming strokes (p110)

Appendix 5: Summary of Primary PE Curriculum Time Recommendations in the UK

Country	Time Allocation	Status of Time Allocation	Source of Time Allocation	% of Primary Schools Achieving 2 Hours	Average Weekly Time for Primary PE
England	**2 hours** each week on high quality PE (primary & post-primary)	Non-Statutory **recommendation**	Foster (2018, p7) re status as target below removed by government but recommended by OFSTED (2012) DfES & DCMS (2004) Public Service Agreement (PSA) **target** in strategy for PE, Sport & Club Links (PESSCL): Performance Target 1 - 'Enhance the take-up of sporting opportunities by five- to 16-year-olds by increasing the percentage of school children who spend a minimum of **two hours each week on high quality physical education** and school sport within and beyond the curriculum from 25% in 2002 to 75% by 2006.'	None reported	DCSF (2009) **125 minutes** OFSTED (2012) None reported by: UNESCO (2013, p24)
Northern Ireland	**2 hours** curricular PE per week (primary & post-primary)	Non-Statutory **recommendation**	DENI (2022) **recommendation** in online guidance on the statutory curriculum: 'It is up to schools to determine how much time is devoted to PE in the curriculum but department guidance recommends that they should provide pupils with a minimum of **two hours curricular PE per week**.'	Sport NI (2010) **17%** of primary schools	Sport NI (2010) **90 minutes** (range 34-240)
Scotland	**2 hours** per week (primary) **2 periods** (100 minutes) (post-primary)	Non-Statutory **recommendation**	Scottish Government (2019) **recommendation** in online guidance: 'We are committed to schools delivering at least **two hours of PE** for all pupils in primary school, and at least **two periods** of PE for all pupils between Secondary 1 and Secondary 4. 98% of all Scottish schools are currently meeting this target.'	Scottish Government (2017) 98% of all primary and secondary schools met the target - **99%** of primary schools were providing at least 120 minutes of PE to all pupils - 93% of schools were providing at least 100 minutes of PE to all pupils in S1 to S4.	None reported by: Scottish Government (2017) UNESCO (2013, p24)
Wales	**2 hours** per week (primary & post-primary)	Non-Statutory **recommendation**	National Assembly for Wales (2019) recommendation in Sport Wales (2018) State of the Nation, p4 AfPE - http://www.afpe.org.uk/physical-education/wp-content/uploads/afPE_Health_Position_Paper_Web_Version.pdf Email sent to customerhelp@gov.wales on 25/8/2020 requesting source	None reported	Sport Wales (2018), p4 **99 minutes** of PE is provided from year groups 3 to 11 (100 minutes in 2015) None reported by: UNESCO (2013, p24)

Appendix 6: Summary of Research on Quantitative Provision of Primary PE in Northern Ireland

Research Study	Data Collection	Quantitative Provision of Primary PE		RQ1 What factors influence the amount of PE?	RQ2 How does those factors influence the amount of PE?
		% of schools delivering 2 hours	Weekly average time (minutes)		
Sport Northern Ireland (2009a) <u>Baseline survey of timetabled PE in primary schools in NI</u>	• Survey – postal and online questionnaire • 419/873 schools = 48% response rate • Self-reported by schools	17% (n=73) overall No breakdown by year group	90 minutes overall Breakdown by year group: Y1=91; Y2=87; Y3=85; Y4=87; Y5=90; Y6=93; Y7=95 Breakdown by key stage FS1=89; KS1=86; KS2=93	No	No
Department of Education for NI (2012) <u>PE in schools – results of an electronic survey</u>	• Survey – online questionnaire • 491/854 schools = 57% response rate • Self-reported by schools	No overall % Breakdown by year group: Y1=7%; Y2=6%; Y3=5%; Y4=5%; Y5=8%; Y6=9%; Y7=10%	No overall weekly average No year group weekly average	Yes 6 ranked factors: 1st (55%) lack of time; 2nd (48%) timetabling issues; 3rd (34%) other competing priorities; 4th (26%) lack of facilities; 5th (11%) lack of expertise; 6th (6%) lack of equipment	No
Sport Ireland & Sport Northern Ireland (2018) <u>Children's Sport Participation & Physical Activity Study 2018</u>	• Survey – online questionnaire • 9/813 schools = 1.1% of primary schools • Self-reported by children (n=446)	No overall % No breakdown by year group	No overall weekly average No year group weekly average	No	No
Department of Education for NI (2018) <u>School Omnibus Survey 2018</u>	• Survey – online questionnaire • 316 grant aided schools = 77% response rate • Self-reported by schools	No overall % Breakdown by key stage: FS=5.2%; KS1=2.8%; KS2=6.5%	No overall weekly average No year group weekly average	No	No
Education & Training Inspectorate for NI (2022) <u>Thematic Evaluation of PE in Primary Schools</u>	• On-site visits • 69 schools = 8.5% of primary schools in NI • Self-report from middle/senior leaders	74% unable No breakdown by year group	No overall weekly average No year group weekly average	No	No

Appendix 7: Countries/States Reporting Average Primary PE Curriculum Time Allocation of 90 Minutes Per Week

Derived from UNESCO (2013) World-Wide Survey of School PE: Final Report

Regional Nations (N=7)	Africa	Asia	Europe	Latin America & Caribbean	Middle East	North America	Oceania
No. of Participating Countries/ Regions (N=218)	43	23	49	23	14	61	5
Country/ State Reporting Average Primary PE Curriculum Time Allocation of 90 Minutes per Week (N=29)	Angola	Kyrgyyzstan	Albania	Bolivia	Jordan	Prince Edward Island	
	Eritrea	Turkmenistan	Azerbaijan	Dominica	Kuwait	Tennessee	
	Mauritania		Belarus	Dominican Republic	Qatar	West Virginia	
				Ecuador			
			Bosnia-Herzegovina	Guatemala			
			Croatia	Nicaragua			
			Czech Republic				
			Georgia				
			Greece				
			Netherlands				
			Moldova				
			Slovakia				
			Ukraine				
Sub-Totals	= 3	=2	= 12	= 6	= 3	= 3	= 0
Total = 29							

Appendix 8: Global & Regional Nations' Primary PE Curriculum Time Allocation

Derived from UNESCO (2013) World-Wide Survey of School PE: Final Report

Area	Mean Per Week (minutes)	Range (minutes)	Highest Country Mean	Lowest Country Mean
Global	97	25-270		
Africa	86	20-270	Ethiopia = 225	Algeria = 30 Democratic Republic of Congo = 30
Asia	84	35-180	Japan = 125	Pakistan = 35
Europe	109	30-289	France = 220	Belgium = 50 Cyprus = 50
Latin America & Caribbean	90	30-225	Cuba = 183	Paraguay = 35
Middle East	89	55-135	Syrian AR = 115	Egypt = 55
North America	107	30-200	British Colombia, Alberta, Saskatchewan, Ontario, Alabama, District of Colombia, Florida, Louisan & New Jersey = 150	Hawaii = 30+
Oceania	111	27-185	Papau New Guinea = 185	Samoa = 60

Appendix 9: Systematic Literature Searches

Table 9.1: Systematic Literature Search for Factors Influencing PE

Dates	1. 14 July 2019 2. 10 July 2020 3. 18 July 2021 4. 1 July 2022 5. 15 March 2023 6. 1 July 2023
Search level	• Advanced
Search words	• Physical Education; physical education; PE; physical development • School; children; education • amount; quantity; time; provision; delivery; scheduled • primary; elementary; kindergarten • post-primary, secondary, high • factors; influences; barriers; challenges; obstructions; obstacles; blocks; blockades; difficulties; impediments; hindrances, facilitators, enablers, causes, reasons, sources
Date range	• All
Language	• All
Inclusion criteria	• All
Exclusion criteria	• None
Databases	1. Bloomsbury Education & Childhood Studies 2. Early Years Educator Online 3. EBSCO Education Source 4. EBSCO SportDiscus 5. Human Kinetics Library 6. ProQuest Education 7. SAGE Premier Journals 8. Taylor & Francis Online
Search Engines	1. Google Scholar
Number of relevant studies	• 9 publications – displayed in Table 7.2: Systematic Literature Search Results

Table 9.2: Systematic Literature Search Results - Collated List of Factors Influencing Delivery of PE Globally & Locally

UNESCO (2013) x 12	Penney & Thompson (2018) x 17	Morgan & Hansen (2008) x 15 & 9	
• Global • 12 **unranked** factors re 'the gap' between policy and practice of **primary** and **post-primary** PE	• Global • 17 **unranked** 'drivers of the enacted curriculum' **primary** and **post-primary** organised as 4 categories of influences	• Global • 15 **unranked** factors perceived to impact **primary** PE • Organised as **institutional-** or **teacher-related**	• Australia • 9 **ranked** barriers to teaching primary PE • Organised as **institutional-** or **teacher-related**
1. Devolvement of responsibilities for curriculum development and autonomy of schools 2. Loss of time allocation to other competing prioritised subjects 3. Lower importance of PE in general 4. Non-examinable status 5. Lack of official assessment 6. Financial constraints 7. Diversion of resources elsewhere 8. Lack of or inadequate provision of facilities, equipment and teaching resources 9. Deficiencies in numbers of qualified teaching personnel 10. Non-committed PE teachers 11. Negative attitudes towards PE of other significant individuals such as head teacher 12. Adverse climatic/weather conditions	**Situational (x 4)** 1. Demographic, e.g., public v private school 2. Historical, e.g., sporting traditions 3. Cultural, e.g., valuing nature 4. Climatic, e.g., weather **Professional (x 5)** 5. Head teacher attitudes 6. Subject status 7. Teacher values 8. Teacher qualifications 9. Professional development **Material (x 5)** 10. Time 11. Facilities 12. Equipment 13. New technologies 14. Teaching resources **External (x 3)** 15. Numeracy and literacy frameworks 16. Health agendas 17. Sport agendas	**Institutional (x 8)** 1. Other teaching priorities 2. Amount of time 3. Equipment availability 4. Quality of facilities 5. Level of departmental assistance/professional development 6. School executive attitudes towards PE 7. Funds available 8. Class size **Teacher (x 7)** 9. Confidence teaching PE 10. Interest/enthusiasm for PE 11. PE content knowledge 12. Personal school experiences in PE 13. Attitudes towards PE 14. Perceptions of value of PE 15. Expertise/qualifications	**Institutional (x 5)** 1. Lack of time/crowded curriculum 2. Lack of departmental assistance/professional development 3. Lack of money 4. Inadequate facilities & equipment 5. Class size too big* **Teacher (x 4)** 6. Poor expertise/qualifications 7. Low levels of teaching confidence* 8. Poor personal experiences of PE 9. Low levels of personal interest/enthusiasm in PE

Friskawati et al. (2020) x 13	Dwyer at al. (2003) x 10	DeCorby et al. (2005) x 6	Sofo & Asola (2016) x 11
• Indonesia • 13 **unranked** barriers to teaching primary PE • Organised as **institutional-, teacher-** or **student-related**	• Canada • 3 **unranked** major categories of barriers to **primary** Health & PE curriculum guidelines for physical activity	• Canada • 6 **unranked** barriers and constraints re **primary** PE	• Ghana • 11 **frequently cited** major barriers to teaching **primary** PE
Institutional (x 5) 1. Lack of time for PE 2. Lack of departmental assistance 3. Lack of money for PE equipment 4. Inadequate facilities and equipment 5. Large class size **Teacher (x 4)** 6. Low levels of confidence or interest in teaching PE 7. Being unable to provide safely planned and structured lessons 8. Personal negative experiences in PE & lacking training, knowledge, & expertise 9. Qualifications to teach PE **Student (x 4)** 10. Student unwillingness to participate in PE 11. Dislike of activity 12. Lack of understanding on benefits of PA 13. Decline in student interest in PE	**Lower priority for Health & PE (x 5)** 1. Overloaded curriculum 2. Insufficient time 3. Lower priority for PE 4. Insufficient curriculum guidance for PE 5. Difficulty integrating with other subjects **Lack of Performance Measures (x 2)** 6. Curriculum guidance unclear about expectations, e.g., frequency and amount of physical activity 7. Difficult to measure performance **Insufficient Infrastructure (x 3)** 8. Facilities too small, overcrowded, inadequate, unsafe 9. Facilities unavailable & scheduling unfeasible 10. Lack of equipment	1. Lack of training & knowledge 2. Gender 3. Safety* 4. Logistics of gym sharing 5. Lack of suitable equipment 6. Lack of extra-curricular activities	1. Lack of resources, e.g., teacher's guide 2. Lack of time 3. Lack of support from colleagues 4. Lack of adequate training 5. No support from head teacher 6. PE specialist's responsibility 7. Lack of required physical fitness 8. I will be sweaty and smelly 9. Time used for other subjects 10. Students are not interested 11. PE is not important

Quyen et al. (2019) x 8		DENI (2012) x 6	ETINI (2022) x2
• Vietnam • 3 themes & 8 sub-themes for **primary** PE implementation barriers		• Northern Ireland • 6 **frequently cited** reasons reported for limited **primary** PE	• Northern Ireland • 2 unranked reasons for inability to provide 2 hours of PE
Governance & Regulation (x 4) 1. Monotony of PE programme content 2. Lack of autonomy 3. Monitoring & surveillance **4.** Lack of PE incentives	**Perceptions of PE (x 2)** 5. Different levels of support 6. Perceived value of PE **PE Personnel (x 2)** 7. Non-teaching of PE 8. Qualifications of PE instructors	1. Lack of time* 2. Timetabling issues* 3. Other competing priorities* 4. Lack of facilities* 5. Lack of expertise* 6. Lack of equipment*	1. Perceived curricular demands 2. Insufficient timetabled access to a multi-purpose hall

Table 9.3: 52 Factors Influencing Qualitative & Quantitative Provision of PE Globally & Locally

Factor	UNESCO (2013)	Penney & Thompson (2018)	Morgan & Hansen (2008a)	Morgan & Hansen (2008b)	Friskawati et al. (2020)	Dwyer et al. (2003)	DeCorby et al. (2005)	Sofo & Asola (2016)	Queyen et al. (2019)	DENI (2012)	ETI (2022)
1. Devolve curriculum responsibility	✓										
2. Subject prioritisation	✓		✓					✓		✓	✓
3. Low importance/status	✓	✓				✓		✓	✓		
4. Non-examinable status	✓										
5. Lack of official assessment	✓										
6. Funding/financial constraints	✓		✓	✓	✓						
7. Diversion of resources	✓							✓			
8. Lack of facilities	✓	✓	✓	✓	✓	✓	✓			✓	✓
9. Lack of equipment	✓	✓	✓	✓	✓	✓	✓			✓	
10. Lack of teaching resources	✓	✓									
11. Insufficient qualified teaching personnel	✓										
12. Non-committed PE teachers	✓										
13. Negative teacher attitudes to PE	✓		✓								
14. Negative head teacher attitude to PE	✓	✓	✓								
15. Adverse weather	✓	✓									
16. Teacher values		✓									
17. Teacher qualifications		✓		✓	✓			✓			
18. Training/professional development		✓	✓	✓	✓		✓	✓			
19. Time		✓	✓	✓	✓	✓			✓	✓	
20. New technologies		✓									
21. Literacy & numeracy frameworks		✓									
22. Health agendas		✓									
23. Sport agendas		✓									
24. Departmental assistance			✓		✓						
25. Class size			✓		✓						
26. Teaching confidence in PE			✓	✓	✓						
27. Teacher interest in PE			✓	✓	✓						
28. PE subject knowledge			✓		✓					✓	
29. Personal school experiences of PE			✓	✓	✓						
30. Perceived low value of PE			✓								
31. Expertise			✓	✓	✓						
32. Safety					✓		✓				
33. Student unwillingness					✓						
34. Student dislike					✓						
35. Student low of value of PE					✓						
36. Student interest					✓			✓			
37. Overloaded curriculum						✓					
38. Insufficient curriculum guidance						✓					
39. Difficulty integrating into subjects						✓					
40. Unclear curriculum guidance						✓					
41. Difficult to assess						✓					
42. Gender							✓				
43. Lack of extra-curricular activities							✓				
44. Lack of colleague support							✓	✓	✓		
45. Lack of head teacher support								✓	✓		
46. PE specialists' responsibility								✓			
47. Lack of required fitness								✓			
48. Monotony of PE									✓		
49. Lack of autonomy									✓		
50. Monitoring & surveillance									✓		
51. Lack of PE incentives									✓		
52. Timetabling issues										✓	

Table 9.4: Systematic Literature Search for PE Facilities

Dates	1. 14 July 2019 2. 10 July 2020 3. 18 July 2021 4. 1 July 2022 5. 15 March 2023 6. 1 July 2023
Search level	• Advanced
Search words	• Physical Education; physical education; PE; physical development; sport • school; children; education • primary; elementary; kindergarten • post-primary, secondary, high • facilities, pitches, grounds, playground
Date range	• All
Language	• All
Inclusion criteria	• All
Exclusion criteria	• None
Databases	1. Bloomsbury Education & Childhood Studies 2. Early Years Educator Online 3. EBSCO Education Source 4. EBSCO SportDiscus 5. Human Kinetics Library 6. ProQuest Education 7. SAGE Premier Journals 8. Taylor & Francis Online
Search Engines	1. Google Scholar
Number of relevant studies	• 7 publications: o Hill & Hulbert (2007) – US o Orunaboka & Nwachukwu (2012) – Nigeria o Kroupis et al. (2019) – Greece o Dewi et al. (2021) – Indonesia o Rainer et al.'s (2012) – England o Hanggara & Sulaiman (2019) – Indonesia o UNESCO (2013) – Global

Table 9.5 Systematic Literature Search for PE Equipment

Dates	1. 14 July 2019 2. 10 July 2020 3. 18 July 2021 4. 1 July 2022 5. 15 March 2023 6. 1 July 2023
Search level	• Advanced
Search words	• Physical Education; physical education; PE; physical development; sport • school; children; education • primary; elementary; kindergarten • post-primary, secondary, high • equipment, items, apparatus
Date range	• All
Language	• All
Inclusion criteria	• All
Exclusion criteria	• None
Databases	1. Bloomsbury Education & Childhood Studies 2. Early Years Educator Online 3. EBSCO Education Source 4. EBSCO SportDiscus 5. Human Kinetics Library 6. ProQuest Education 7. SAGE Premier Journals 8. Taylor & Francis Online
Search Engines	1. Google Scholar
Number of relevant studies	• 4 publications: ○ Bevans et al. (2010) – US ○ Orunaboka & Nwachukwu (2012) – Nigeria ○ Rainer et al. (2012) – England ○ UNESCO (2013) – Global

Appendix 10: Professional Duties of a Teacher in Northern Ireland

Derived from UK Government (1987) Teachers' (Terms & Conditions of Employment) regulations (NI) 1987

3. The following duties shall be deemed to be included in the professional duties which a teacher may be required to perform:			
Teaching	1	(a)	planning and preparing courses and lessons
		(b)	teaching, according to their educational needs, the pupils assigned to him, including the setting and marking of work to be carried out by the pupils in school and elsewhere;
		(c)	assessing, recording and reporting on the development, progress and attainment of pupils;
Other Activities	2	(a)	promoting the general progress and well-being of individual pupils and of any class or group of pupils assigned to him;
		(b)	providing guidance and advice to pupils on educational and social. matters and on their further education and future careers including information about sources of more expert advice on specific questions; making relevant records and reports
		(c)	making records of and reports on the personal and social needs of pupils except in instances where to 00 so might be regarded as compromising a teacher's own position;
		(d)	communicating and consulting with the parents of pupils;
		(e)	communicating and co-operating with such persons or bodies outside the school as may be approved by the employing authority and, in the case of a controlled school, the Board of Governors;
		(f)	participating in meetings arranged for any of the purposes described above;
Assessments & Reports	3		providing or contributing to oral and written assessments, reports and references relating to individual pupils and groups of pupils except in instances where to do so might be regarded as compromising a teacher's own position;
Performance Review	4		participating, if required, in any scheme of staff development and performance review;
Review	5	(a)	reviewing from time to time his methods of teaching and programmes of work;
Further Training & Development		(b)	participating in arrangements for his further training and professional development as a teacher;
Educational Methods	6		advising and co-operating with the principal and other teachers (or anyone or more of them) on the preparation and development of courses of study, teaching materials, teaching programmes, methods of teaching and assessment and pastoral arrangements;
Discipline, Health & Safety	7		maintaining good order and discipline among pupils in accordance with the policies of the employing authority and safeguarding their health and safety both when they are authorised to be on the school premises and when they are engaged in authorised school activities elsewhere;

Staff Meetings	8		participating in meetings at the school Which relate to the curriculum for the school or the administration or organisation of the .school, including pastoral arrangements;
Cover	9		Supervising and teaching any pupils whose teacher is not 'available provided that:
		(a)	in schools with an average daily enrolment greater than 222 pupils a teacher other than a supply teacher shall not be required to provide such cover after the '. second day on which a teacher is absent or otherwise not available or from the first day if the fact that the teacher would be absent or otherwise not available for a period exceeding 2 days was known to and agreed by the employing authority in advance;
		(b)	in schools with an average daily enrolment of 222 pupils or less a teacher other than a supply teacher shall not be required to provide such cover after the first day on which a teacher is absent or otherwise not available or from the first day if the fact that the teacher would be absent or not otherwise available for more than 1 day was known to and agreed by the employing authority in advance;
		(c)	in schools with a complement of, 2 or 3 teachers and in nursery units in primary schools, a teacher other than a supply teacher,' shall, notwithstanding heads (a) and (b), not be required to provide such cover;
Public Examinations	10		participating in arrangements for preparing pupils for public examinations and in assessing pupils for the purposes of such examinations; recording and reporting such assessments; and participating in arrangements for pupils' presentation for and supervision during such examination;
Management	11	(a)	contributing to the selection for appointment and professional development of other teachers, including the induction and assessment of probationary teachers;
		(b)	co-ordinating or managing the work of other teachers;
		(c)	taking such part as may be required of him in the review, development and management of activities relating to the curriculum, organisation and pastoral functions of the school;
Administration	12	(a)	participating in administrative and organisational tasks related to such duties as are described above, including the management or supervision of persons providing support for the teachers in the school and the ordering and allocation of equipment and materials;
		(b)	subject to the provisions of Article 22 of the Order, attending assemblies;
		(c)	registering the attendance of pupils and supervising pupils, whether these duties are to be performed before, during or after school sessions.

Appendix 11: General Teaching Council for Northern Ireland Professional Competences

Derived from <u>General Teaching Council for Northern Ireland (2011) Teaching: the Reflective Profession</u>

(a) Professional Values and Practice

Professional Competence 1

- Understand and uphold the core values and commitments enshrined in the Council's Code of Values and Professional Practice

(b) Professional Knowledge and Understanding

Professional Competence 2

- A knowledge and understanding of contemporary debates about the nature and purposes of education and the social and policy contexts in which the aims of education are defined and implemented

Professional Competence 3

- Teachers will have developed a knowledge and understanding of the learning area/subjects(s) they teach, including the centrality of strategies and initiatives to improve literacy, numeracy and thinking skills, keeping curricular, subject and pedagogical knowledge up-to-date through reflection, self-study and collaboration with colleagues

Professional Competence 4

- Teachers will have developed a knowledge and understanding of how the learning area/subject(s) they teach contribute to the Northern Ireland Curriculum and be aware of curriculum requirements in preceding and subsequent key stages

Professional Competence 5

- A knowledge and understanding of curriculum development processes, including planning, implementation and evaluation

Professional Competence 6

- A knowledge and understanding of the factors that promote and hinder effective learning, and be aware of the need to provide for the holistic development of the child

Professional Competence 7

- Teachers will have developed a knowledge and understanding of a range of strategies to promote and maintain positive behaviour, including an acknowledgement of pupil voice, to establish an effective learning environment

Professional Competence 8

- A knowledge and understanding of the need to take account of the significant features of pupils' cultures, languages and faiths and to address the implications for learning arising from these

Professional Competence 9

- Teachers will have developed a knowledge and understanding of their responsibilities under the Special Educational Needs Code of Practice and know the features of the most common special needs and appropriate strategies to address these

Professional Competence 10

- Teachers will have developed a knowledge and understanding of strategies for communicating effectively with pupils

Professional Competence 11

- Teachers will have developed a knowledge and understanding of how to use technology effectively to aid pupil learning

Professional Competence 12

- A knowledge and understanding of the interrelationship between schools and the communities they serve, and the potential for mutual development and well-being

Professional Competence 13

- A knowledge and understanding of the statutory framework pertaining to education and schooling and their specific responsibilities emanating from it

(c) Professional Skills and Application

Planning and Leading

Professional Competence 14

- Teachers will set appropriate learning objectives/outcomes/intentions, taking account of what pupils know, understand and can do, and the demands of the Northern Ireland Curriculum in terms of knowledge, skills acquisition and progression

Professional Competence 15

- Teachers will plan and evaluate lessons that enable all pupils, including those with special educational needs, to meet learning objectives /outcomes/ intentions, showing high expectations and an awareness of potential areas of difficulty

Professional competence 16

- Teachers will deploy, organise and guide the work of other adults to support pupils' learning, when appropriate

Professional Competence 17

- Plan for out-of-school learning, including school visits and field work, where appropriate

Professional Competence 18

- Manage their time and workload effectively and efficiently and maintain a work/life balance.

Teaching and Learning

Professional Competence 19

- Teachers will create and maintain a safe, interactive and challenging learning environment, with appropriate clarity of purpose for activities

Professional Competence 20

- Teachers will use a range of teaching strategies and resources, including e-learning where appropriate, that enable learning to take place and which maintain pace within lessons and over time

Professional Competence 21

- Employ strategies that motivate and meet the needs of all pupils, including those with special and additional educational needs and for those not learning in their first language

P*rofessional competence 22*

- Secure and promote a standard of behaviour that enables all pupils to learn, pre-empting and dealing with inappropriate behaviour in the context of school policies and what is known about best practice

Professional Competence 23

- Contribute to the life and development of the school, collaborating with teaching and support staff, parents and external agencies

Assessment

Professional Competence 24

- Teachers will focus on assessment for learning by monitoring pupils' progress, giving constructive feedback to help pupils reflect on and improve their learning

Professional Competence 25

- Teachers will select from a range of assessment strategies to evaluate pupils' learning and use this information in their planning to help make their teaching more effective

Professional Competence 26

- Assess the levels of pupils' attainment against relevant benchmarking data and understand the relationship between pupil assessment and target setting

Professional Competence 27

- Liaise orally and in written reports in an effective manner with parents or carers on their child's progress and achievements

Appendix 12: Case Study Protocol

Section A. Overview of the Case Study – check with Appendix 1 – Conceptual Framework

Research Problem	Insufficient amount of Physical Education (PE) provided to children in primary schools in Northern Ireland (NI)		
Research Title	A multiple case study of primary school teachers' perceptions of the factors influencing the quantitative provision of PE in primary schools in NI		
Purpose	Generate new knowledge derived from primary school teachers' perspectives that will help develop an understanding of why an insufficient amount of PE is being delivered in primary schools in NI		
Aims	Investigate primary school teachers' identification of factors which influence the quantitative provision of PE and explanations of how these factors influence the amount of PE delivered		
Research Questions	1. What factors do primary school teachers identify which influence the amount of PE delivered in primary schools in NI? 2. How do primary school teachers explain those factors' influence on the amount of PE delivered in primary schools in NI?		
Theoretical Propositions	1. Multiple factors influence the amount of PE in general and the 5 specific activity areas 2. Similar and different factors influence the amount of PE in general and the 5 specific activity areas 3. Some factors are more influential than others on the amount of PE in general and the 5 specific activity areas 4. Some factors interconnect to influence the amount of PE in general and the 5 specific activity areas 5. Factors operate at external and internal levels to influence the amount of PE in general and the 5 specific activity areas		
Type of Literature Review	Narrative		
Type of Literature	Local, national & international research studies; scholarly articles; policy documents; theoretical perspectives		
Philosophical Orientation	Pragmatism		
Orientation Towards Role of Theory in Research	Deductive (theory testing) Inductive (theory construction)	**Research Design**	Case study
Case Study Design	Exploratory, explanatory, multiple, sequential & retrospective	**Research Strategy**	Mixed methods, concurrent, non-priority
Data Source, Collection & Type	Dataset (1) - participants (primary teachers), interviews, quantitative & qualitative Dataset (2) - physical artefacts (PE facilities & equipment), observation, quantitative & qualitative Dataset (3) - documents (school and PE policies), desk-based, secondary source, quantitative & qualitative		
Analytical Approach	Theoretical propositions, theory testing & building via pattern-matching & explanation-building	**Outcome**	Set of Theoretical generalisations
Audience	Unpublished – supervisory team at Cardiff University, external examiner, gatekeepers and participants Published - generally members of the public and specifically members of the research community	**Protocol Role**	Provides the agenda for the study's line of enquiry

Section B. Data Collection Procedures

Stage	Date	Procedure
1	May 2021	• Create Case Study Database on secure One Drive for Business network – researcher access only with 2-factor authentication
2	Jun 2021	• Obtain institutional ethical approval from School Research Ethics Committee Ethics Committee at Cardiff University
3	Aug 2021	• Pilot draft Interview Guide on 2 teachers in a school which will not be one of the two participating schools • Amend and finalise Interview Guide
School A		
4	Sep 2021	• Identify School 1 using Context Selection Criteria for first school - between 13-20 or 26 or more classrooms as unable to allocate each class two hours for indoor hall
5	Sep 2021	• Email principal to obtain gatekeeper's consent – forward 4 documents: o Principal Cover Letter o Principal Information Sheet o Principal Consent Form o Staff Development Day Agenda • Counter-sign Principal Consent Form and return a copy to the principal
6	Sep 2021	• Schedule and deliver an Information Session for principal and all Year 1-7 teachers • Forward teachers a hard copy of 4 documents 7 days' beforehand: o Teacher Cover letter o Teacher Information Sheet o Teacher Consent Form o Staff Development Day Agenda • Counter-sign Teacher Consent Form(s) and return a copy to the teacher(s)
7	Oct 2021	• Collect Dataset 1 (quantitative & qualitative) • Schedule, conduct, record and transcribe 5 teacher interviews
8	Nov 2021	• Collect Dataset 2 (quantitative & qualitative) • Schedule, conduct and record observation of physical artefacts – PE facilities and equipment
9	Nov 2021	• Collect Dataset 3 (quantitative & qualitative) • Schedule, conduct and record desk-based research of general school and specific PE policies
School B		
10	Mar 2021	• Identify School 2 using Context Selection Criteria for second school – up to and including 12 or between 21-25 classrooms as able to allocate each class two hours for indoor hall
11	Mar 2022	• Email principal to obtain gatekeeper's consent – forward 4 documents:

11		o Principal Cover Letter o Principal Information Sheet o Principal Consent Form o Staff Development Day Agenda • Counter-sign Principal Consent Form and return a copy to the principal
12	Mar 2022	• Schedule and deliver an Information Session for principal and all Year 1-7 teachers • Forward teachers a hard copy of 4 documents 7 days' beforehand: o Teacher Cover letter o Teacher Information Sheet o Teacher Consent Form o Staff Development Day Agenda • Counter-sign Teacher Consent Form(s) and return a copy to the teacher(s)
13	Apr 2022	• Collect Dataset 1 (quantitative & qualitative) • Schedule, conduct, record and transcribe 5 teacher interviews
14	May 2022	• Collect Dataset 2 (quantitative & qualitative) • Schedule, conduct and record observation of physical artefacts – PE facilities and equipment
15	May 2022	• Collect Dataset 3 (quantitative & qualitative) • Schedule, conduct and record desk-based research of general school and specific PE policies

Section C. Protocol Questions

Was the researcher:

- **Ethical** - upheld established ethical principles at all times?
- **Objective** - remained reflective, neutral and clinical throughout all stages?
- **Focused** – collected sufficient, relevant and accurate data to test the five propositions and answer the two research questions?
- **Open-minded** – considered unusual discoveries and alternative perspectives including rival hypotheses?
- **Consistent** – adhered to the Case Study Protocol?
- **Adaptive** – responded flexibly and appropriately to unpredictable events?
- **Analytical** – thought meticulously, logically and critically?
- **Transparent** - created and securely stored a chain of evidence in a Case Study Database?

Section D. Tentative Outline for Case Study Report

- Linear analytical structure comprising 7 sections: Introduction; Literature Review; Methodology; Results; Analysis; Conclusions; and Recommendations

- Results and Analysis sections based on replication logic and included:
  o Composition and analysis of single-case reports for each teacher using a pattern-matching technique
  o Cross-case synthesis between the teachers within their respective school and then between all teachers across the two schools

Appendix 13: Interview Guide

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

Interview Guide

Summary

Section	Sub-Section	Title	Number of Questions	Approx. Time (minutes)	Activity	Interviewee's Response	Recording Method
A Introduction		Introduction	2	5	Question & Answer	Oral	Researcher's handwritten notes
B Background Information	(1)	Interviewee's Details	6	1.5	Question & Answer	Oral	Digital audio recording Researcher's handwritten notes
	(2)	Timetabling PE	3	0.5			
	(3)	Who delivers PE	4	3			
	(4)	Amount of PE	6	5			
	(5)	Recommended Time for PE	7	3			
C Influential Factors	(1)	Factors influencing PE (General)	6	15	Question & Answer	Written Pictorial/ Diagrammatic Oral	Digital audio recording Digital visual recording (photo) Researcher's handwritten notes
	(2)	Factors influencing Athletics	5	5			
	(3)	Factors influencing Dance	5	5			
	(4)	Factors influencing Games	5	5	Card-sorting		
	(5)	Factors influencing Gymnastics	5	5			
	(6)	Factors influencing Swimming	5	5			
D Conclusion		Conclusion	1	2	Question & Answer	Oral	Digital audio recording Researcher's handwritten notes
			= 60	= 60			

SECTION A	INTRODUCTION

Ethical Issues

- Please confirm you have read and understood the Teacher Information Sheet
- Reminder: your identity and responses are coded to maximise anonymity
- Do you have any questions or concerns?
- Please remember you have the right to withdraw your consent at any point for any or no reason without prejudice or explanation

A(1)(a). Do you wish to proceed with the interview? yes/no

Structure

- Completion should take approx. 60 minutes but please feel free to take a break in between if required
- I will hand write your oral responses on an Interview Record Form and photograph your visual responses to the card-sorting activity, and then insert them into the Interview Record Form

Reliability

- Questions relate to the quantity of PE delivered and not the quality
- Your answers should relate to a **typical** academic year and exclude those affected by the COVID-19 pandemic, i.e., before January 2020
- This is not a test - there are no right or wrong answers so answer honestly as this study is interested in what you think and do, and not what the researcher or others expect of you
- Avoid providing socially desirable answers, i.e., provide answers you think the researcher wants or others expect of you
- Reminder: the researcher was a former primary teacher so aware of expectations placed on and challenges encountered by primary teachers
- Responses will be improved if you provide specific comments, e.g., I spend more time teaching … than … because …

- Some questions are about PE **generally** whereas some are **specifically** about each of the

  5 PE activity areas (Athletics, Dance, Games, Gymnastics and Swimming)

Q(1)(b). Do you have any questions before we proceed? yes/no

SECTION B	BACKGROUND INFORMATION

Subsection B(1)	Interviewee's Details

B(1)(a). How many years have you been primary teaching? Please exclude any break in service:

No of Primary Teaching Years

B(1)(b). Which year group do you normally teach? Please select **one** only except for composite classes:

P1	P2	P3	P4	P5	P6	P7

Additional explanation (if required)

B(1)(c). How many pupils are typically in the class you teach?

Number of Pupils in Class

Additional explanation (if required)

B(1)(d). Do you have a subject (Area of Learning) specialism?

Yes	No

Additional explanation (if required)

B(1)(e). If yes to B(1)(d) what is your main subject (Area of Learning) specialism. Please select **one** only:

Language & Literacy	Mathematics & Numeracy	World Around Us (WAU)	The Arts	Physical Education (PE)	Personal Development & Mutual Understanding (PDMU)	Religious Education (RE)

B(1)(f). Are you the co-ordinator for the subject (Area of Learning) you specialise in?

Yes	No

Subsection B(2)	Timetabling PE

B(2)(a). Do you timetable your class's PE times?

Yes	No

B(2)(b). If no to B(2)(a), can you specify who timetables PE times for your class, please?

Principal	PE Co-ordinator	Other
		Specify their role

Additional explanation (if required)

B3. If no to B(2)(a), have you ever queried the time you were allocated?

Yes	No	Details

Subsection B(3)	Who Delivers PE

B(3)(a). Do you deliver all of your class's PE?

Yes	No

B(3)(b). If no to B(3)(a), please specify which of the 5 PE activity areas of the PE curriculum they deliver to your class?

PE Activity Area	Another Teacher in the School	An External Sport Coach	Other
Athletics			
Dance			
Games			
Gymnastics			
Swimming (KS2 only)			

B(3)(c). Do you think the class teacher should deliver all PE to their class?

Yes	No	Unsure

B(3)(d). Can you explain your answer to B(3)(c), please?

Subsection B(4)	Amount of PE

B(4)(a). On average, how many minutes of PE generally is *normally* delivered to your class over a *typical* week, i.e., pre-Covid so before January 2020?

Number of Minutes

B(4)(b). Do you think the amount of time allocated to PE for your class is sufficient to deliver the relevant PE provisions in the NI Primary Curriculum?

Yes	No	Unsure	Other

B(4)(c). Can you explain your answer to B(4)(b), please?

B(4)(d). On average, what percentage of your PE teaching time is normally allocated to each of the following 5 PE activity areas over a typical school year? (display visual aid of 5 PE activity areas)

Athletics	Dance	Games	Gymnastics	Swimming (KS2 only)

Additional explanation (if required)

B(4)(e). Do you think the amount of time allocated to each of the 5 activity areas for your class is sufficient to deliver the relevant PE provisions in the NI Primary Curriculum?

	Athletics	Dance	Games	Gymnastics	Swimming (KS2 only)
Yes					
No					
Unsure					

B(4)(f): Can you explain your answer to B(4)(e), please?

Athletics	
Dance	
Games	
Gymnastics	
Swimming (KS1 only)	

Subsection B(5)	Recommended Time for PE

B(5)(a). Do you know if there is a recommended amount of PE?

Yes	No	Unsure

B(5)(b). If yes to B(5)(a), what do you think is the recommended amount of PE?

Number of Minutes per Week

B(5)(c). Do you think there should be a recommended amount of PE?

Yes	No	Unsure

B(5)(d) Can you explain your answer to B(5)(c), please?

B(5)(e). Do you think there should be a statutory (compulsory) amount of PE rather than a recommended amount?

Yes	No	Unsure	Other

Additional explanation (if required)

B(5)(f). What do you think should be the recommended or statutory (compulsory) amount of PE?

Number of Minutes per Week

B(5)(g). Can you explain your answer to B(5)(f), please?

SECTION C	INFLUENTIAL FACTORS

Subsection C(1)	Factors Influencing PE (General)

C(1)(a). Can you identify the factor(s) *you think* influences the amount of weekly PE delivered to your class in a typical year, i.e., not during the Covid 19 pandemic, please? You can write the factor(s) on a blank cards(s) and/or choose any of the examples of factors provided on the preformatted cards if applicable. Remember that *you* identify the influencing factors, decide how many there are and can change your factor(s) at any point by excluding or including cards. Additionally, you do not have to use any or all of the pre-formatted cards.

Here are the two types of cards:

Blank cards – there are lots of blank cards which you can use to write the factor(s) on:
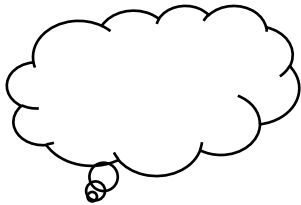
Preformatted cards – which display 10 examples[50] of known and frequently cited factors:

When you have identified the factor(s), please place it/them on the Display Board.

Number of factors identified:

Factor(s) identified:

---

[50] (1) I do not have enough time (2) There are timetabling issues (3) There are competing priorities (4) There is a lack of PE facilities (5) I do not have enough PE expertise (6) There is a lack of PE equipment (7) I have concerns about safety issues (8) I have concerns about class size (9) PE has non-examinable status (10) Adverse weather

✓ Tick	Blank Card	Pre-formatted Card
		I do not have enough time
		There are timetabling issues
		There are competing priorities
		There is a lack of PE facilities
		I do not have enough PE expertise
		There is a lack of PE equipment
		I have concerns about safety issues
		I have concerns about class size
		I have low levels of confidence to teach PE
		Adverse weather conditions

Photo Response

C(1)(b). Of the factors you identified, can you select the 5 most influential factors?

Yes	No	Unsure

C(1)(c). Then can you sort them on the Display Board in rank order, please? For example, number 1 is the factor that influences the amount of PE the most. More than one factor can be ranked equally if applicable. Remember that you can change how you sort them at any point.

Rank Order	Factor	Blank Card	Pre-formatted Card
1st			
2nd			
3rd			
4th			
5th			

Photo Response

C(1)(d). Can you explain how each factor, starting with the 1st factor, influences the amount of PE you deliver, please?

Rank Order	Factor	Explanation

1st		
2nd		
3rd		
4th		
5th		

C(1)(d). Do you think any of these factors are related?

Yes	No	Unsure

C(1)(e): Can you explain your answer to C(1)(d), please:

Subsection C(2)	Factors Influencing Athletics

C(2)(a). Can you identify the most influential factor(s) *you think* influences the amount of weekly **Athletics** delivered to your class in a typical year, i.e., not during the Covid 19 pandemic, please? You can identify more than one but a maximum of 5. You can write the factor(s) on a blank cards(s) and/or choose any of the examples of factors provided on the preformatted cards if applicable. Some or all of them can be the same or different as the factors you identified for PE – you decide this and there is no right or wrong answer.

C(2)(b) Can you sort them in rank order, please? For example, number 1 is the factor that influences the amount of **Athletics** the most. Remember that you can change how you sort them at any point.

Rank Order	Factor	Blank Card	Pre-formatted Card
1st			
2nd			
3rd			
4th			
5th			

Photo Response

C(2)(c) Can you explain how each factor influences the amount of **Athletics** delivered, please?

Rank Order	Factor	Explanation
1st		
2nd		
3rd		
4th		
5th		

C(2)(d). Do you think any of these factors are related?

Yes	No	Unsure

C(2)(e). Can you explain your answer to C(2)(d), please:

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Subsection C(3)	Factors Influencing Dance

C(3)(a). Can you identify the most influential factor(s) *you think* influences the amount of weekly **Dance** delivered to your class in a typical year, i.e., not during the Covid 19 pandemic, please? You can identify more than one but a maximum of 5. You can write the factor(s) on a blank cards(s) and/or choose any of the examples of factors provided on the preformatted cards if applicable. Some or all of them can be the same or different as the factors you identified for PE – you decide this and there is no right or wrong answer.

C(3)(b) Can you sort them in rank order, please? For example, number 1 is the factor that influences the amount of **Dance** the most. Remember that you can change how you sort them at any point.

Rank Order	Factor	Blank Card	Pre-formatted Card
1st			
2nd			
3rd			
4th			
5th			

Photo Response

C(3)(c) Can you explain how each factor influences the amount of **Dance** delivered, please?

Rank Order	Factor	Explanation
1st		
2nd		
3rd		
4th		
5th		

C(3)(d). Do you think any of these factors are related?

Yes	No	Unsure

C(3)(e). Can you explain your answer to C(2)(d), please:

Subsection C(4)	Factors Influencing Games

C(4)(a). Can you identify the most influential factor(s) *you think* influences the amount of weekly **Games** delivered to your class in a typical year, i.e., not during the Covid 19 pandemic, please? You can identify more than one but a maximum of 5. You can write the factor(s) on a blank cards(s) and/or choose any of the examples of factors provided on the preformatted cards if applicable. Some or all of them can be the same or different as the factors you identified for PE – you decide this and there is no right or wrong answer.

C(4)(b) Can you sort them in rank order, please? For example, number 1 is the factor that influences the amount of **Games** the most. Remember that you can change how you sort them at any point.

Rank Order	Factor	Blank Card	Pre-formatted Card
1st			
2nd			
3rd			
4th			
5th			

Photo Response

C(4)(c) Can you explain how each factor influences the amount of **Games** delivered, please?

Rank Order	Factor	Explanation
1st		
2nd		
3rd		
4th		
5th		

C(4)(d). Do you think any of these factors are related?

Yes	No	Unsure

C(4)(e). Can you explain your answer to C(2)(d), please:

Subsection C(5)	Factors Influencing Gymnastics

C(5)(a). Can you identify the most influential factor(s) *you think* influences the amount of weekly **Gymnastics** delivered to your class in a typical year, i.e., not during the Covid 19 pandemic, please? You can identify more than one but a maximum of 5. You can write the factor(s) on a blank cards(s) and/or choose any of the examples of factors provided on the preformatted cards if applicable. Some or all of them can be the same or different as the factors you identified for PE – you decide this and there is no right or wrong answer.

C(5)(b) Can you sort them in rank order, please? For example, number 1 is the factor that influences the amount of **Gymnastics** the most. Remember that you can change how you sort them at any point.

Rank Order	Factor	Blank Card	Pre-formatted Card
1st			
2nd			
3rd			
4th			
5th			

Photo Response

C(5)(c) Can you explain how each factor influences the amount of **Gymnastics** delivered, please?

Rank Order	Factor	Explanation
1st		
2nd		
3rd		
4th		
5th		

C(5)(d). Do you think any of these factors are related?

Yes	No	Unsure

C(5)(e). Can you explain your answer to C(2)(d), please:

Subsection C(6)	Factors Influencing Swimming

C(6)(a). Can you identify the most influential factor(s) *you think* influences the amount of weekly **Swimming** delivered to your class in a typical year, i.e., not during the Covid 19 pandemic, please? You can identify more than one but a maximum of 5. You can write the factor(s) on a blank cards(s) and/or choose any of the examples of factors provided on the preformatted cards if applicable. Some or all of them can be the same or different as the factors you identified for PE – you decide this and there is no right or wrong answer.

C(6)(b) Can you sort them in rank order, please? For example, number 1 is the factor that influences the amount of **Swimming** the most. Remember that you can change how you sort them at any point.

Rank Order	Factor	Blank Card	Pre-formatted Card
1st			
2nd			
3rd			
4th			
5th			

Photo Response

C(6)(c) Can you explain how each factor influences the amount of **Swimming** delivered, please?

Rank Order	Factor	Explanation
1st		
2nd		
3rd		
4th		
5th		

C(6)(d). Do you think any of these factors are related?

Yes	No	Unsure

C(6)(e). Can you explain your answer to C(2)(d), please:

SECTION D	CONCLUSION

Thank you for taking the time to help me with my research study.

D(1)(a). Do you wish to change any of your responses, provide additional comments and/or ask a question? yes /no

Appendix 14: Interview Guide Summary

Table 14.1: Interview Guide Summary

Section	Sub-Section	Title	Number of Questions	Approx. Time (minutes)	Activity	Interviewee's Response	Recording Method
A Introduction		Introduction	2	5	Question & Answer	Oral	Digital audio recording Researcher's handwritten notes
B Background Information	(1)	Interviewee's Details	6	1.5	Question & Answer	Oral	Digital audio recording Researcher's handwritten notes
	(2)	Timetabling PE	3	0.5			
	(3)	Who delivers PE	4	3			
	(4)	Amount of PE	6	5			
	(5)	Recommended Time for PE	7	3			
C Influential Factors	(1)	Factors influencing PE (General)	6	15	Question & Answer	Written Diagrammatic Oral	Digital audio recording Digital visual recording (photo) Researcher's handwritten notes
	(2)	Factors influencing Athletics	5	5			
	(3)	Factors influencing Dance	5	5			
	(4)	Factors influencing Games	5	5	Card-sorting		
	(5)	Factors influencing Gymnastics	5	5			
	(6)	Factors influencing Swimming	5	5			
D Conclusion		Conclusion	1	2	Question & Answer	Oral	Digital audio recording Researcher's handwritten notes
Total			= 60	= 60			

Appendix 15: Pre-Formatted Sorting Card Labels & Categories

I do not have enough time …

There are timetabling issues …

There are competing priorities …

There is a lack of PE facilities …

I do not have enough PE expertise …

There is a lack of equipment …

I have concerns about safety issues …

I have concerns about class size …

I have low levels of confidence to teach PE …

Adverse weather conditions …
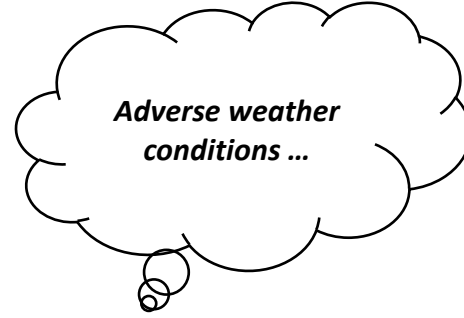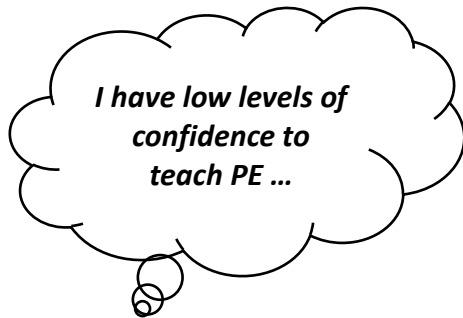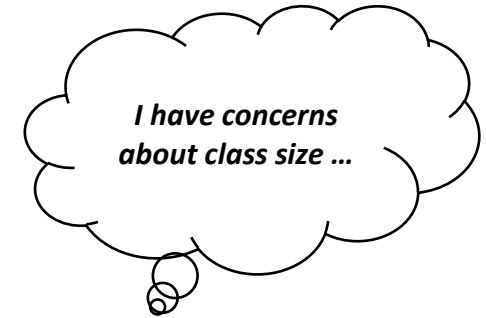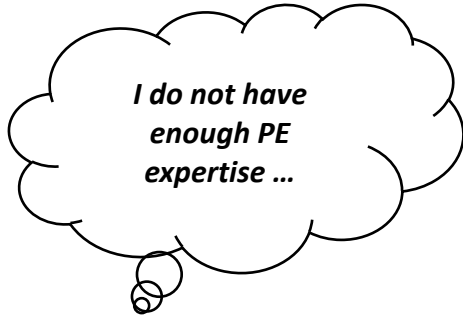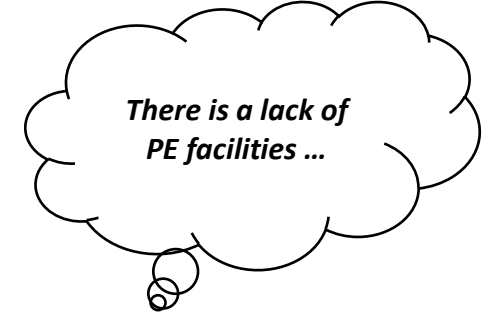
The factor(s) *I think* influences the amount of weekly **PE** delivered to my class in a typical year.
The **5** most influential factor(s) *I think* influences the amount of weekly **PE** delivered to my class in a typical year.
The most influential factor(s) *I think* influences the amount of weekly **Athletics** delivered to my class in a typical year.
The ranked influential factor(s) which *I think* influences the amount of weekly **Athletics** delivered to my class in a typical year.
The most influential factor(s) *I think* influences the amount of weekly **Dance** delivered to my class in a typical year.
The ranked influential factor(s) which *I think* influences the amount of weekly **Dance** delivered to my class in a typical year.
The most influential factor(s) *I think* influences the amount of weekly **Games** delivered to my class in a typical year.
The ranked influential factor(s) which *I think* influences the amount of weekly **Games** delivered to my class in a typical year.

The most influential factor(s) *I think* influences the amount of weekly **Gymnastics** delivered to my class in a typical year.

The ranked influential factor(s) which *I think* influences the amount of weekly **Gymnastics** delivered to my class in a typical year.

The most influential factor(s) *I think* influences the amount of weekly **Swimming** delivered to my class in a typical year.

The ranked influential factor(s) which *I think* influences the amount of weekly **Swimming** delivered to my class in a typical year.

Appendix 16: PE Facilities Record Form

*This data will be collated to produce a PE Profile

Facility (1)

1. Date of Inspection		2. Time of Inspection	
3. Facility Number		4. Facility Name	
5(a). Internal		5(b). External	
6(a). Positioning (visual)			

6(b). Positioning (description)	
7. Access	

8a. Surface Type		8b. Surface Level	

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9(a). Layout (visual)			

9(b). Layout (description)			
10. Length		11. Breadth	
12. Height		13. Area	
14. Markings		15. Run-off Area	
16. Fixtures		17. Non-fixtures	
18. Fences		19. Windows	
20(a). Lighting (artificial)		20(b). Lighting (natural)	
21(a). Ventilation (artificial)		21(b). Ventilation (natural)	
22. Technology		23. Health & Safety	
24. Sound		25. Other	
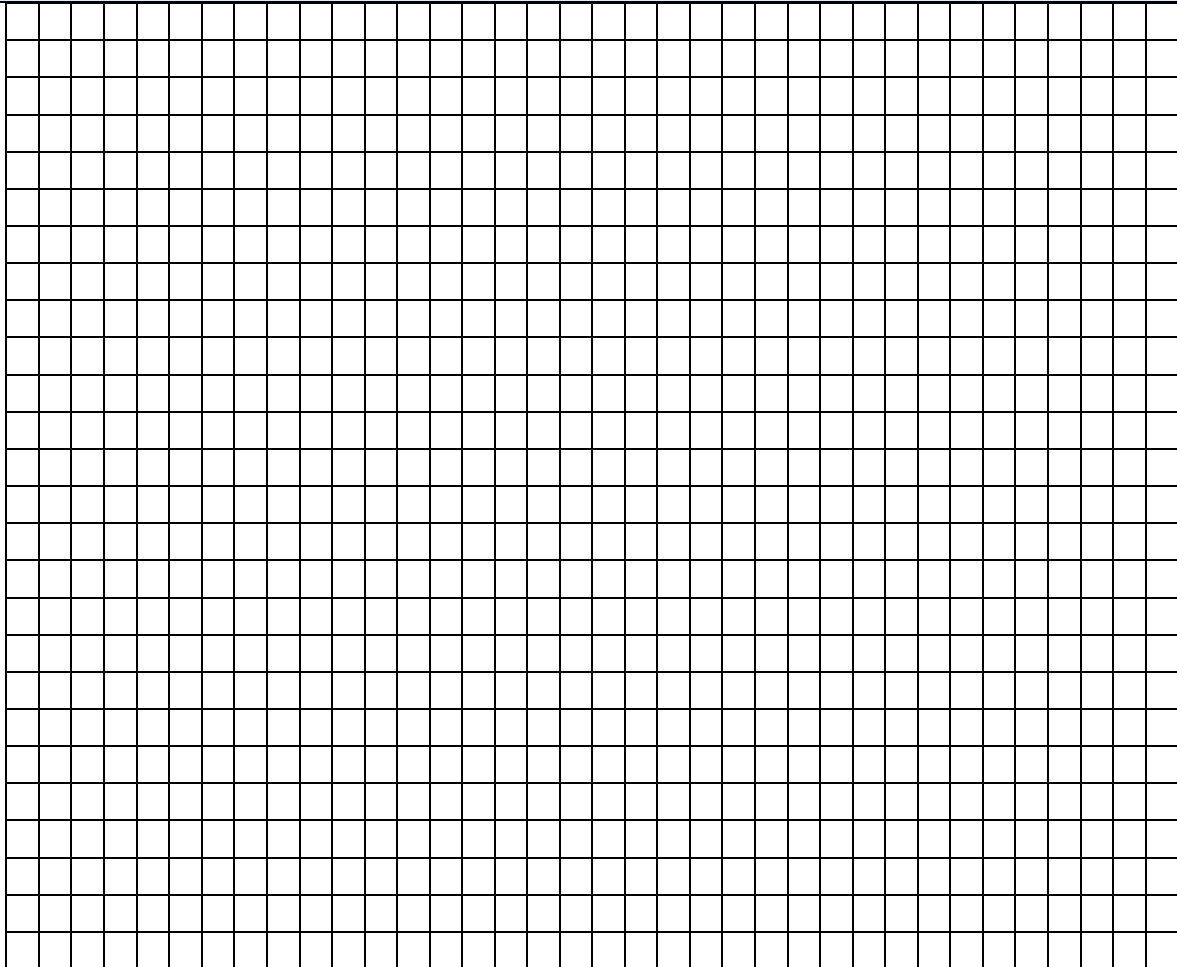
Appendix 17: PE Equipment Record Form

URN:

*This data will be collated to produce a PE Profile

Storage (1)

1. Date of Inspection		2. Time of Inspection	
3. Storage Number		4. Storage Name	
5(a). Internal		5(b). External	

6(a). Positioning (visual)

6(b). Positioning (description)	
7. Access	

8(a). Layout – Floor (visual)
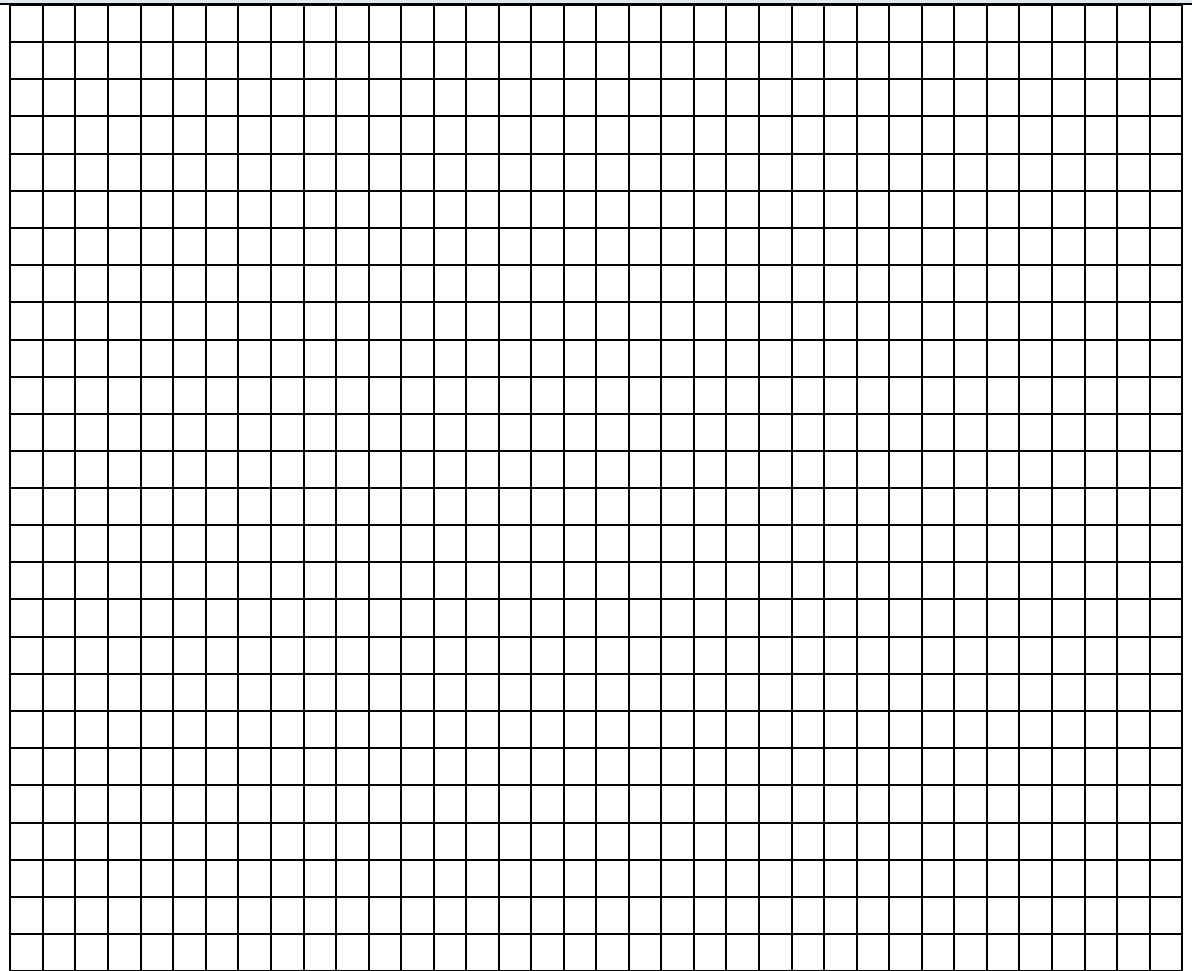
8(b). Layout – Floor (description)

9(a). Layout – Wall 1 (visual)
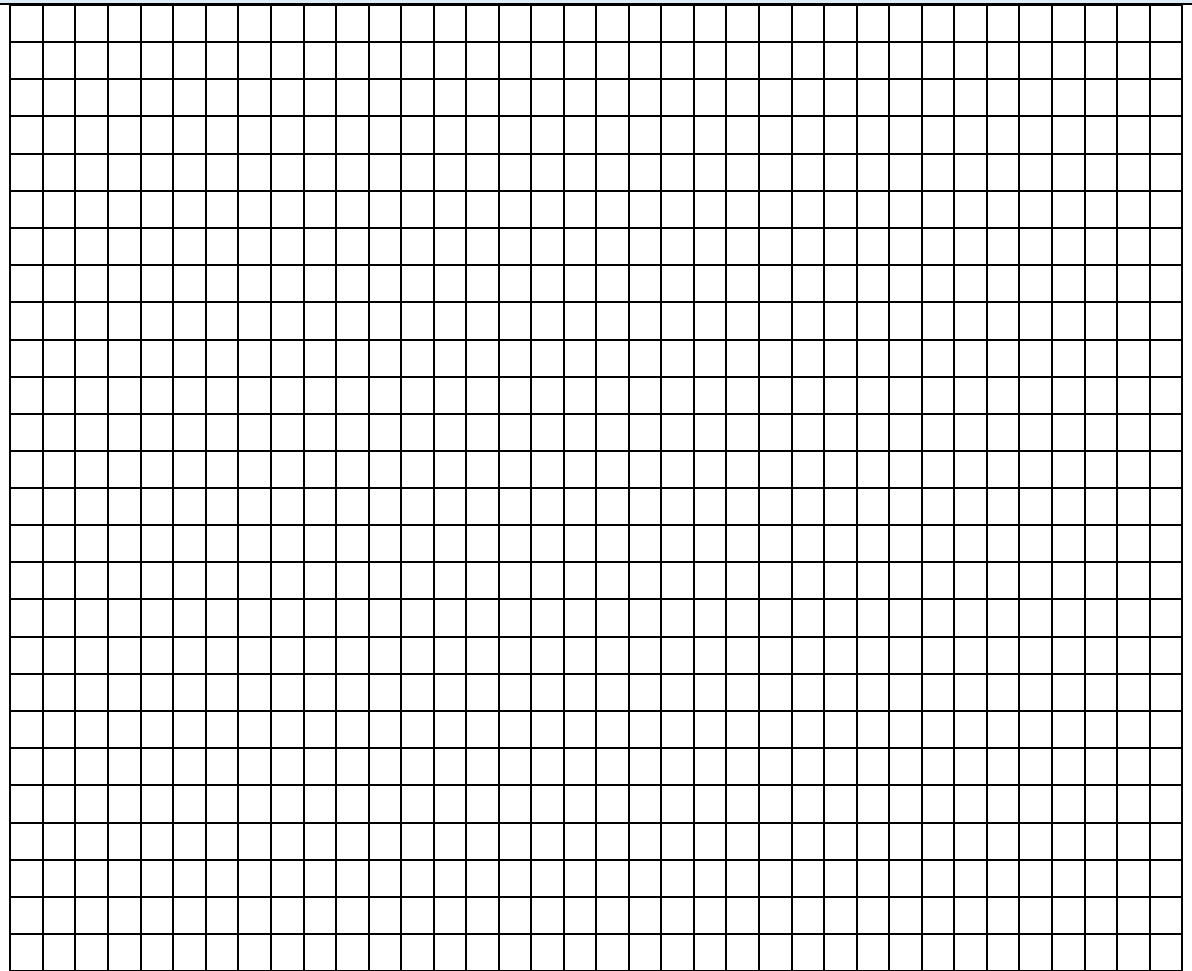
9(b). Layout – Wall 1 (description)

10(a). Layout – Wall 2 (visual)

10(b). Layout –Wall 2 (description)

11(a). Layout – Wall 3 (visual)
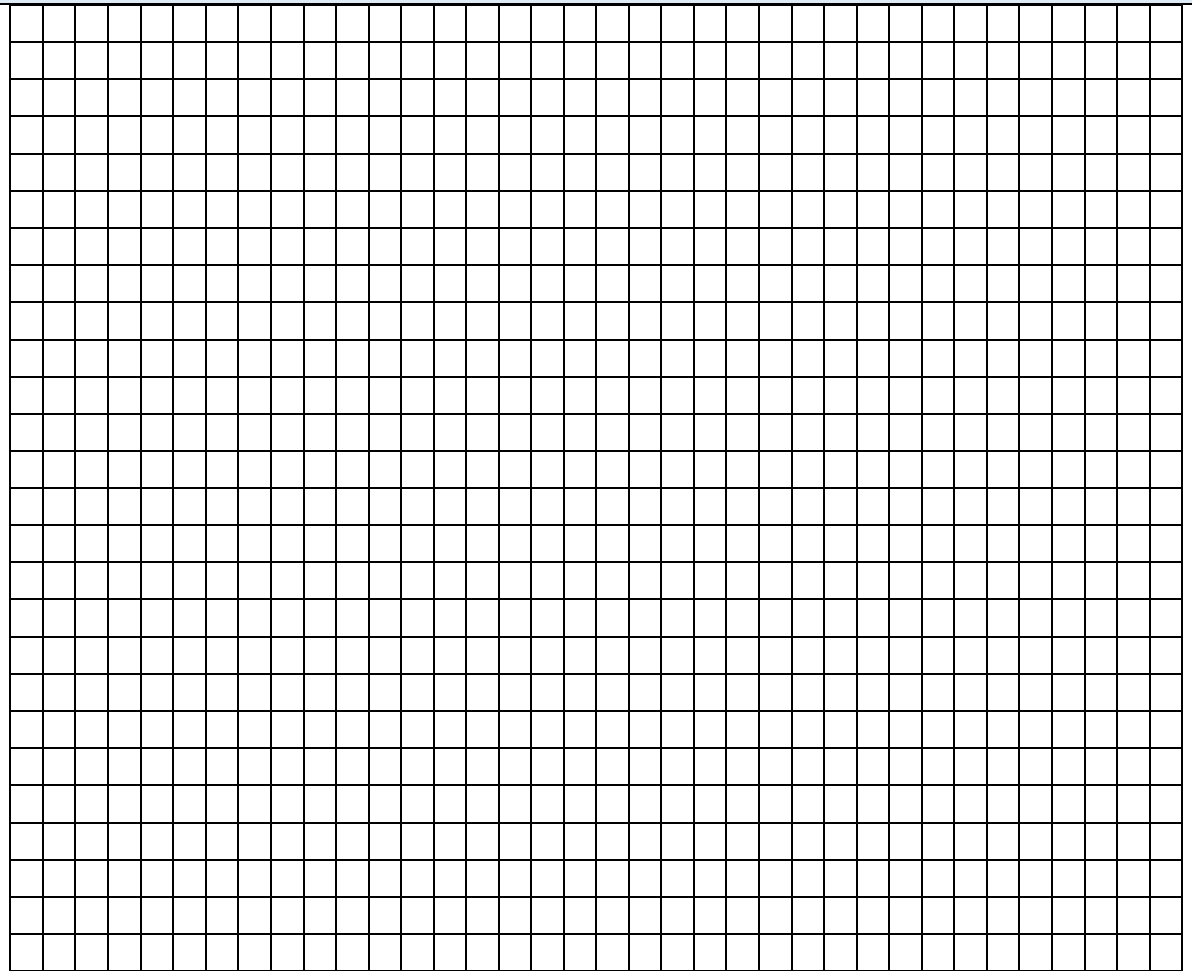
11(b). Layout – Wall 3 (description)

12(a). Layout – Wall 4 (visual)		

12(b). Layout –Wall 4 (description)			
13. Length (floor)		11. Breadth (floor)	
12. Height (floor)		13. Area (floor)	
14. Volume		15. Security	
16. Fixtures		17. Non-fixtures	
18. Doors		19. Windows	
20(a). Lighting (artificial)		20(b). Lighting (natural)	
21(a). Ventilation (artificial)		21(b). Ventilation (natural)	
22. Technology		23. Health & Safety	
24. Sound		25. Other	

26(a). General PE (non-fixed)

Item	Quantity	Quality	Location

26(b). General PE (fixed)

Item	Quantity	Quality	Location

27(a). Athletics (non-fixed)

Item	Quantity	Quality	Location

27(b). Athletics (fixed)

Item	Quantity	Quality	Location

28(a)5. Dance (non-fixed)

Item	Quantity	Quality	Location

28(b). Dance (fixed)

Item	Quantity	Quality	Location

29(a). Games (non-fixed)

Item	Quantity	Quality	Location

29(b). Games (fixed)

Item	Quantity	Quality	Location

30(a). Gymnastics (non-fixed)

Item	Quantity	Quality	Location

30(b). Gymnastics (fixed)

Item	Quantity	Quality	Location

31(a). Swimming (non-fixed)

Item	Quantity	Quality	Location

31(b). Swimming (fixed)

Item	Quantity	Quality	Location

32(a). Other (non-fixed)

Item	Quantity	Quality	Location

32(b). Other (fixed)

Item	Quantity	Quality	Location

Appendix 18: School Policy Record Form

*This data will be collated to produce a School Profile

1. Age

Year of School Build

2. Type

Mainstream	Special	Mainstream with onsite Special Units

3. Status

Controlled	Maintained	Voluntary	Integrated	Preparatory

4. Location – Urban or Rural

Urban	Rural	Semi-Rural

6. Pupil Enrolment – School

Number of Pupils in the School

7. Pupil Enrolment – Year Group

P1	P2	P3	P4	P5	P6	P7
Total number of classes =						

8. Number of Teachers – Full-Time & Part-Time

Number of FT Teachers	Number of PT Teaches

9. Number of Teachers – Gender

Female	Male

10. General School Documents

Type	Document	Present Y or N	Notes
Formal (internal)	School Development Plan (past)		
	School Development Plan (current)		
	School Prospectus		
	Admissions Policy		
	Attendance Policy		
	School Uniform Policy		
	Pastoral Care Policy		
	Health & Safety Policy		
	Child Protection & Safeguarding Policy		
	Special Educational Needs (SEN) Policy		
	Discipline Policy		
	Anti-Bullying Policy		
	Community Use of School Premises Policy		
	Pupil Health & Wellbeing Policy		
	Staff Health & Wellbeing Policy		
	Sustainability Policy		
Formal (external)	General ETI Report (past)		
	General ETI Report (current)		

Informal (internal)	Hall Timetable		
Informal (external)	After-school Clubs (all_		
Other			

Appendix 19: PE Policy Record Form

*This data will be collated to produce a PE Profile

1. Is there a designated PE Co-ordinator?

Yes	No

2. Is the PE Co-ordinator a PE specialist?

Yes	No

3. How long has the PE co-ordinator had this role?

Years	Months

4. Is the PE co-ordinator allocated a Teaching Allowance for this role?

Yes	No

5. Does the PE co-ordinator have other positions of responsibility?

Yes	No	Details

6. Did the current PE co-ordinator write the current PE policy?

Yes	No

7. General School Documents

Type	Document	Present Y or N	Notes
Formal (internal)	PE Policy		
	PE Uniform Policy		
	PE Staff Development Day Agendas		
	PE Equipment Inventory		

	PE Timetable		
	PE Coordinators' Report		
	AfPE (2020) Safe Practice in PE handbook		
Formal (external)	PE-Specific ETI Report (past)		
	PE-Specific ETI Report (present)		
Informal (internal)	PE timetable		
Informal (external)	After-School Clubs (Sport & Physical Activity)		
Other			

Appendix 20: Primary School Enrolment Figures & Weekly Average PE Times

Table 20.1: Primary School Enrolment Figures & Weekly Average PE Times

Primary School Enrolment Figures 2020-2021 (DENI 2022)			Weekly Average PE Time (SNI 2009)	Application of Context Selection Criteria
Enrolment Figure	**Number of Schools**	**Percentage of Schools**		
< 100[51]	199	24.8%	94	
101-200	248	30.9%	90	**School B** Enrolment = 167 No of classes = 8 8 classes x 2 hours = 16 hours Can schedule as 1 hall available for 25 hours
201-300	135	16.8%	89	**School A** Enrolment = 262 No of classes = 14 14 classes x 2 hours = 28 Cannot schedule hours as 1 hall available for 25 hours
301-400	81	10.1%	88	
401-500	85	10.6%	77	
501-600	24	3.0%	75	
601-700	20	2.5%	71	
701-800	4	0.5%	59 (700+)	
801-900	6	0.7%		
901-1000[52]	1	0.1%		
	Total = 803	Total = 100%		

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[51] The lowest enrolment figure is 10
[52] The highest enrolment figure is 965

Appendix 21: Breakdown of Cases by School & Year Group

Table 21.1: Breakdown of Cases by School & Year Group

Key Stage	Year Group	Age (years)	School A			School B		
			Consent Form	Interviewed	Interview Duration (mins)	Consent Form	Interviewed	Interview Duration (mins)
Foundation	1	4-5	y	y	39.31	y	y	60.10
(n=4)	2	5-6	y	y	65.59	y	Y	40.11
1	3	6-7	y	cancelled		y	Y	57.46
(n=3)	4	7-8	y	y	58.56	y	y	34.45
2	5	8-9	y	y	57.17	y	no response	
(n=5)	6	9-10	y	y	59.11	Y (x2)	(1) Y (2) Y	(1) 65.07 (2) 51.46
	7	10-11	y	no response		y	Y	43.25
			= 7	= 5		= 8	= 7	

Appendix 22: Principal Cover Letter

Invitation: Research Study & Free Training on Staff Development Day

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

Dear <insert name>,

My name is Melanie and I am a senior lecturer in the Department of Health & Physical Education (PE) at Stranmillis University College - please click here to view my staff profile.

Research Study

I am also a part-time doctoral student at Cardiff University and my thesis aims to ascertain factors which influence the amount of PE delivered in primary schools in NI. Therefore, I would like to invite your school to be one of up to three schools asked to participate in my research study which involves one-to-one interviews (in-person) with teachers. The attached document titled **'Primary PE Research Study – Information Sheet'** outlines what is involved. Ethical approval to conduct this research was granted by the School Research Ethics Committee at Cardiff University in June 2021 and is subject to an ongoing COVID-19 risk assessment which is fully compliant with the most recent government guidelines, e.g., online interviews will replace in-person interviews if required.

Free Training for Staff Development Day

To show my appreciation to you and your colleagues for helping me, I offer a free one-day training event at your school on one of your staff development days. The attached document titled **'Staff Development Day - Agenda'** displays a draft agenda for this event, however I am flexible and will work with you to plan and deliver a useful and productive training experience. Please be assured that all teachers will be able to avail of this training and not just those participating in the research study.

A **'Principal Consent Form'** is also attached which needs to be completed if you would like your school to participate. I appreciate you may have additional queries so please do not hesitate to contact me by phone (02890 384311) or email (m.mckee@stran.ac.uk) as I welcome the opportunity to answer your questions.

Kind regards

Melanie McKee

Senior Lecturer, Department of Health & PE

Appendix 23: Principal Information Sheet

Primary PE Research Study Information Sheet (Principal)

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

Your school is being invited to take part in the **Primary PE Research Study** so before you decide whether or not your school will be involved, it is important for you to understand why the research is being undertaken and what it will involve. This Information Sheet is provided to ensure your decision to participate is informed and voluntary. Thank you for taking the time to read the following content carefully and discussing it with others, if you wish.

1. Who is conducting this research study?

The research will be conducted by Melanie McKee, a senior lecturer at Stranmillis University College and part-time student on the Professional Doctorate in Education course at Cardiff University. The study will be monitored by the researcher's supervisory team comprising 2 supervisors - Professor Graham Moore and Dr Charlotte Brookfield.

2. What is the purpose of this research study?

While numerous studies confirm the amount of PE schools offer varies, factors which influence the amount of PE delivered are under-researched. Therefore, this study will address 2 research questions:

- What factors influence the amount of PE delivered in primary schools in NI?
- How do those factors influence the amount of PE delivered in primary schools in NI?

This study will help teachers by producing new knowledge to inform and improve future curriculum design and teacher training relating to primary PE in NI.

3. Why is your school being invited to take part?

Your school is one of up to three primary schools identified as an appropriate case study for this research as it represents a typical <small/medium/large> primary school in NI – the other 2 schools will be a classified as a <small/medium/large> and <small/medium/large> school respectively. You have been contacted as you are the principal and therefore the gatekeeper of a potential research setting.

4. Which teachers will be invited to participate in an interview?

All teachers from years 1-7 will be invited to participate in a 60-minute, one-to-one interview (in-person) to understand the delivery of PE from a range of perspectives including those teaching younger and older children.

5. Do you have to consent for the school to be involved in this research study?

No - your school's participation is voluntary and it is up to you to decide whether the school will take part. If you decide to participate, you will be asked to sign a Principal Consent Form (attached). If you choose not to take part, you do not have to explain your reasons and the researcher will not request an explanation for this decision.

6. If you consent now, can you change your mind later?

Yes - you are free to withdraw your consent for the school to participate at any time before the thesis is written up and published, and without giving a reason, even after signing the Principal Consent Form. The decision to withdraw consent can be easily communicated to the researcher via email (m.mckee@stran.ac.uk) or telephone (02890384311) at any time. The researcher will not request an explanation for this decision.

7. Do teachers have to consent to be involved in this research?

No – teachers' participation is voluntary and it is up to each teacher to decide whether to take part. Teachers will be reassured they are not obliged to consent to participate because the principal has consented to the school being involved. They will also be advised that the researcher will not disclose to the principal or colleagues which teachers have or have not consented, and reassured that all teachers are able to avail of the training day irrespective of whether they are participating in the research study.

8. If teachers consent now, can they change their mind later?

Yes - teachers are free to withdraw their consent to participate at any time before the thesis is written up and published, and without giving a reason, even after signing the Participant Consent Form or during the interview. The decision to withdraw consent can be easily communicated to the researcher via email (m.mckee@stran.ac.uk) or telephone (02890384311) at any time. The researcher will not request an explanation for this decision or disclose to the principal or colleagues which teachers have or have not withdrawn their consent. Any data provided by the teacher prior to withdrawal of their consent will be destroyed at their request.

9. What data will be collected, recorded and published?

Data will be collected over an 8-week period. In weeks 1-4, information provided by teachers via interview will be transcribed into a Record Form which will be used to inform a Teacher Profile that will be published in the thesis and related publications. During weeks 5-8, information about the school, PE in the school, PE facilities and PE equipment will be collected via desk-based research and observation, i.e., a site visit of the PE store may be conducted but no PE lessons will be observed at any stage. This information will be summarised in unpublished Record Forms which will be used to inform a School Profile and PE Profile that will be published in the thesis and other mediums, e.g., journal article.

10. What will the principal be asked to do in this research study?

If the principal consents for the school to be involved, they will be asked to facilitate the researcher's access to:

- School documents to enable the researcher to obtain general school information and specific information about PE in the school. Only publicly available documents about the school and PE will be requested, e.g., school development plan and PE policy, and not documents containing private and confidential information, e.g., personnel records
- PE facilities and equipment to assist the researcher in obtaining information about what resources are currently available to teachers
- Teachers so that the researcher can explain the study; invite them to participate; answer questions; obtain consent and arrange an interview to obtain their insights of PE delivery

11. What will the teachers be asked to do in this research study?

If a teacher consents to be involved, they will be asked to participate in a one-to-one, 60-minute interview (in-person) at the school at a mutually convenient time. The interview involves 2 activities:

- Question & Answer Activity – the researcher will ask them questions about the amount of PE delivered to their class
- Card-Sorting Activity - the teacher will be asked to identify factors which influence how much PE is provided by choosing from pre-labelled cards or by writing factors on blank cards, and then encouraged to rank and discuss the factors they identified

12. Will the teacher's voice be audio recorded during the interview?

Yes – with their permission, interviews will be recorded on the researcher's digital audio recording device to maximise the researcher's level of interaction during the interview and the accuracy of the content that will be transcribed and reported.

13. Will the teacher's image be video recorded during the interview?

No - the teacher's image will not be recorded at any stage. The teacher's visual responses to the Card-Sorting Activity will be photographed using the digital camera device in the researcher's tablet computer but their image (part or full) will not be visually recorded at any point.

14. How will the data be recorded?

Data will be recorded in unpublished Record Forms which will be coded as each school and teacher will be allocated a Unique Reference Number (URN) and pseudonym. The principal can request a copy of the Record Forms (except teachers' Interview Record Forms) to check content for accuracy and ensure directly identifiable information, e.g., names, was removed. The teacher can request a copy of their Interview Record Form to check content for accuracy and ensure directly identifiable information was removed.

15. How will the data be published?

Data from the Record Forms will be used to create a corresponding Profile which will be published in the thesis report:

- School Profile
- PE Profile
- Teacher Profile

All published Profiles will refer to the URN and/or pseudonym. Each Profile will be subjected to individual analysis and cross-case analysis, i.e., they will be compared with responses from other teachers in their school and other participating schools, but no teacher or school will be negatively portrayed. The aim of the research is to produce new knowledge to help teachers rather than criticise or discredit them. All or part of the thesis may also be published in other mediums, e.g., report, journal article, book or conference presentation.

16. Will the school's identity be anonymous?

The school's name will not appear in the published School Profile and PE Profile as each school will be given a URN and pseudonym, however, there is a _**risk**_ the school and principal may be identifiable by members of the participating school as they might be able to recognise their own school from the content in the School Profile and PE Profile as this may be different from the other two case study schools.

17. Will the teacher's identity be anonymous?

The teacher's name will not appear in the published Teacher Profile as each teacher will be given a URN and pseudonym, however, there is a _**risk**_ the teacher may be identifiable by members of the participating school as they might be able to recognise them from the content in the Teacher Profile, i.e., a verbatim quote. In the event, a teacher mentions the name(s) of a colleague or pupil during the interview, their real names will be replaced with a pseudonym in the unpublished Record Form and published Teacher Profile to ensure the colleague or pupil is not identifiable.

18. Will anyone other than the researcher have access to participant's personal data held by the researcher?

No - the researcher will keep a record of personal data for each teacher, e.g., their school, name, year group and contact details, but no one other than the researcher will have access to this information.

19. What are the possible benefits of taking part in the research?

To show appreciation to you and your colleagues for helping, participating schools will be offered a free one-day training course which will be delivered at the school on one of their school development days. All teachers will be able to avail of this training and not just those participating in the research study.

20. What are the possible risks of taking part in the research?

As per Q16 and Q17, there is a *__risk__* that a school and/or its' principal and teachers may be identifiable by members of the participating school.

21. How will the data be stored and retained?

All data will be stored in accordance with Stranmillis University College's Data Protection Policy which is fully compliant with the UK General Data Protection Regulation (GDPR) (2021). All data will be safely stored on the College's secure network as it can only be accessed via the researcher's personal account on the employer's OneDrive for Business (SSL/TLS encryption) with the relevant 2-factor authentication being fulfilled. Data will be retained as follows:

- Personal and identifiable data about the principals and teachers that will not be published, e.g., information in their Consent Form, will be retained until 2025 (2 years' post-publication of thesis report) and then destroyed in accordance with GDPR

- Anonymised data about the school and teachers that will not be published, e.g., information in the Record Forms, will be retained until 2025 (2 years' post-publication of thesis report) and then destroyed in accordance with GDPR

- Anonymised data about the school and teachers that will be published, e.g., information in the 3 Profiles, will be retained indefinitely so that it can be disseminated to others via the thesis report and other mediums, e.g., in a report, journal article, book or conference presentation

22. What if there is a problem?

If there is a problem and/or you have concerns about any aspect of the manner in which you have been approached or treated during the course of this research, please contact the researcher Melanie McKee. If your complaint or concern is not managed to your satisfaction, please contact the researcher's supervisors - Professor Graham Moore (MooreG@cardiff.ac.uk) and Dr Charlotte Brookfield (BrookfieldC@cardiff.ac.uk), or alternatively the School Research Ethics Committee at Cardiff University (socsi-ethics@cardiff.ac.uk).

23. What do I do next if I want my school to be involved in the study?

Please complete the attached 'Principal Consent Form' and forward to the researcher who will then contact the school secretary to arrange a time to meet with teachers, e.g., staff meeting, to explain the study and invite them to take part.

Thank you for considering participation in this research study.

Please do not hesitate to contact me via email (m.mckee@stran.ac.uk) or telephone (02890 384311) if you have any queries or concerns.

Appendix 24: Principal Consent Form

Principal Consent Form

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

Researcher	Melanie McKee – Senior Lecturer at Stranmillis University College & part-time doctoral student at Cardiff University
Research Study Title	An exploratory case study of the quantitative provision of Physical Education (PE) in primary schools in Northern Ireland (NI)
Research Questions	1. What factors influence the amount of PE delivered in primary schools in NI? 2. How do those factors influence the amount of PE delivered in primary schools in NI?
Cardiff University - School Research Ethics Committee Reference	SREC/4250

*Please insert **Y** (Yes) or **N** (No) in the last column to denote your agreement with the 4 statements in the first column

Statement	Y or N
I have read and understood the Primary PE Research Study Information Sheet for the above research study.	
I have had the opportunity to ask questions and any questions I asked have been answered satisfactorily.	
I am aware my participation is voluntary and I am free to withdraw at any time without giving a reason and without any adverse consequences.	
I understand and accept there is a _**risk**_ that a school and/or its' principal and teachers may be identifiable by members of the participating school.	

Principal's name		Researcher's name	Melanie McKee
Principal's signature		Researcher's signature	
Date		Date	

Thank you for participating in this research study. You will be given a copy of this Consent Form to keep for your records.

Appendix 25: Teacher Cover Letter

Invitation: Research Study & Free Training for Staff Development Day

Dear <insert name>,

My name is Melanie and I am a senior lecturer in the Department of Health & Physical Education (PE) at Stranmillis University College - please click here to view my staff profile.

Research Study

I am also a part-time doctoral student at Cardiff University and my thesis aims to ascertain factors which influence the amount of PE delivered in primary schools in NI. Therefore, I would like to invite your school to be one of up to three schools asked to participate in my research study which involves one-to-one interviews (in-person) with teachers. The attached document titled **'Primary PE Research Study – Information Sheet'** outlines what is involved. Ethical approval to conduct this research was granted by the School Research Ethics Committee at Cardiff University in June 2021 and is subject to an ongoing COVID-19 risk assessment which is fully compliant with the most recent government guidelines, e.g., online interviews will replace in-person interviews if required.

Free Training for Staff Development Day

To show my appreciation to you and your colleagues for helping me, I offer a free one-day training event at your school on one of your staff development days. The attached document titled **'Staff Development Day - Agenda'** displays a draft agenda for this event, however I am flexible and will work with your school's Senior Management Team to plan and deliver a useful and productive training experience. Please be assured that all teachers will be able to avail of this training and not just those participating in the research study.

A **'Teacher Consent Form'** is also attached which needs to be completed if you would like to participate. I appreciate you may have additional queries so please do not hesitate to contact me by phone (02890 384311) or email (m.mckee@stran.ac.uk) as I welcome the opportunity to answer your questions. There will also be an opportunity to ask me any questions directly or indirectly via your principal during an Information Session which will be delivered at your school.

Kind regards

Melanie mckee

Senior Lecturer, Department of Health & PE

Appendix 26: Teacher Information Sheet

Primary PE Research Study Information Sheet (Teacher)

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

Your school is being invited to take part in the **Primary PE Research Study** so before you decide whether or not to be involved, it is important for you to understand why the research is being undertaken and what it will involve. This Information Sheet is provided to ensure your decision to participate is informed and voluntary. Thank you for taking the time to read the following content carefully and discussing it with others, if you wish.

1. Who is conducting this research study?
The research will be conducted by Melanie McKee, a senior lecturer at Stranmillis University College and part-time student on the Professional Doctorate in Education course at Cardiff University. The study will be monitored by the researcher's supervisory team comprising 2 supervisors - Professor Graham Moore and Dr Charlotte Brookfield.

2. What is the purpose of this research study?
While numerous studies confirm the amount of PE schools offer varies, factors which influence the amount of PE delivered are under-researched. Therefore, this study will address 2 research questions:
- What factors influence the amount of PE delivered in primary schools in NI?
- How do those factors influence the amount of PE delivered in primary schools in NI?
This study will help teachers by producing new knowledge to inform and improve future curriculum design and teacher training relating to primary PE in NI

3. Why are you being invited to take part?
Your school is one of up to three primary schools identified as an appropriate case study for this research as it represents a typical <small/medium/large> primary school in NI – the other 2 schools will be a classified as a <small/medium/large> and <small/medium/large> school respectively. You have been invited to take part as a teacher at the school who is involved in the delivery of PE. Your voluntary informed consent is required to participate in an interview.

4. Which teachers will be invited to participate in an interview?
All teachers from years 1-7 will be invited to participate in a 60-minute, one-to-one interview (in-person) to understand the delivery of PE from a range of perspectives including those teaching younger and older children.

5. Do you have to consent to be involved in this research?

No – your participation is voluntary and it is up to each teacher to decide whether to take part. Please be reassured you are not obliged to consent to participate because the principal has consented to the school being involved. The researcher will not disclose to the principal or colleagues which teachers have or have not consented, and all teachers are able to avail of the training day irrespective of whether they are participating in the research study. If you decide to participate, you will be asked to sign a Teacher Consent Form (attached). If you choose not to take part, you do not have to explain your reasons and the researcher will not request an explanation for this decision.

6. If you consent now, can you change your mind later?

Yes - you are free to withdraw your consent to participate at any time before the thesis is written up and published, and without giving a reason, even after signing the Participant Consent Form or during the interview. The decision to withdraw consent can be easily communicated to the researcher via email (m.mckee@stran.ac.uk) or telephone (02890384311) at any time. The researcher will not request an explanation for this decision or disclose to the principal or colleagues which teachers have or have not withdrawn their consent. Any data provided by you prior to withdrawal of your consent will be destroyed at your request.

7. What data will be collected, recorded and published?

Data will be collected over an 8-week period. In weeks 1-4, information provided by teachers via interview will be transcribed into a Record Form which will be used to inform a Teacher Profile that will be published in the thesis and related publications. During weeks 5-8, information about the school, PE in the school, PE facilities and PE equipment will be collected via desk-based research and observation, i.e., a site visit of the PE store may be conducted but no PE lessons will be observed at any stage. This information will be summarised in unpublished Record Forms which will be used to inform a School Profile and PE Profile that will be published in the thesis and other mediums, e.g., journal article.

8. What will the principal be asked to do in this research study?

If the principal consents for the school to be involved, they will be asked to facilitate the researcher's access to:

- School documents to enable the researcher to obtain general school information and specific information about PE in the school. Only publicly available documents about the school and PE will be requested, e.g., school development plan and PE policy, and not documents containing private and confidential information, e.g., personnel records
- PE facilities and equipment to assist the researcher in obtaining information about what resources are currently available to teachers

- Teachers so that the researcher can explain the study; invite them to participate; answer questions; obtain consent and arrange an interview to obtain their insights of PE delivery

9. What will you be asked to do in this research study?

If you consent to be involved, you will be asked to participate in a one-to-one, 60-minute interview (in-person) at the school at a mutually convenient time. The interview involves 2 activities:

- Question & Answer Activity – the researcher will ask you questions about the amount of PE delivered to their class
- Card-Sorting Activity - you will be asked to identify factors which influence how much PE is provided by choosing from pre-labelled cards or by writing factors on blank cards, and then encouraged to rank and discuss the factors you identified

10. Will your voice be audio recorded during the interview?

Yes – with your permission, interviews will be recorded on the researcher's digital audio recording device to maximise the researcher's level of interaction during the interview and the accuracy of the content that will be transcribed and reported.

11. Will your image be video recorded during the interview?

No - your image will not be recorded at any stage. Your visual responses to the Card-Sorting Activity will be photographed using the digital camera device in the researcher's tablet computer but your image (part or full) will not be visually recorded at any point.

12. How will the data be recorded?

Data will be recorded in unpublished Record Forms which will be coded as each school and teacher will be allocated a Unique Reference Number (URN) and pseudonym. The principal can request a copy of the Record Forms (except teachers' Interview Record Forms) to check content for accuracy and ensure directly identifiable information, e.g., names, was removed. The teacher can request a copy of their Interview Record Form to check content for accuracy and ensure directly identifiable information was removed.

13. How will the data be published?

Data from the Record Forms will be used to create a corresponding Profile which will be published in the thesis report:

- School Profile
- PE Profile
- Teacher Profile

All published Profiles will refer to the URN and/or pseudonym. Each Profile will be subjected to individual analysis and cross-case analysis, i.e., they will be compared with responses from other teachers in their school and other participating schools, but no teacher or school will be negatively portrayed. The aim of the research is to produce new knowledge to help

teachers rather than criticise or discredit them. All or part of the thesis may also be published in other mediums, e.g., report, journal article, book or conference presentation.

14. Will the school's identity be anonymous?

The school's name will not appear in the published School Profile and PE Profile as each school will be given a URN and pseudonym, however, there is a _**risk**_ the school and principal may be identifiable by members of the participating school as they might be able to recognise their own school from the content in the School Profile and PE Profile as this may be different from the other two case study schools.

15. Will the teacher's identity be anonymous?

Your name will not appear in the published Teacher Profile as each teacher will be given a URN and pseudonym, however, there is a _**risk**_ you may be identifiable by members of the participating school as they might be able to recognise you from the content in the Teacher Profile, i.e., a verbatim quote. In the event, you mention the name(s) of a colleague or pupil during the interview, their real names will be replaced with a pseudonym in the unpublished Record Form and published Teacher Profile to ensure the colleague or pupil is not identifiable.

16. Will anyone other than the researcher have access to participant's personal data held by the researcher?

No - the researcher will keep a record of personal data for each teacher, e.g., their school, name, year group and contact details, but no one other than the researcher will have access to this information.

17. What are the possible benefits of taking part in the research?

To show appreciation to you and your colleagues for helping, participating schools will be offered a free one-day training course which will be delivered at the school on one of their school development days. All teachers will be able to avail of this training and not just those participating in the research study.

18. What are the possible risks of taking part in the research?

As per Q14 and Q15, there is a _**risk**_ that a school and/or its' principal and teachers may be identifiable by members of the participating school.

19. How will the data be stored and retained?

All data will be stored in accordance with Stranmillis University College's Data Protection Policy which is fully compliant with the UK General Data Protection Regulation (GDPR) (2021). All data will be safely stored on the College's secure network as it can only be accessed via the researcher's personal account on the employer's OneDrive for Business (SSL/TLS

encryption) with the relevant 2-factor authentication being fulfilled. Data will be retained as follows:

- Personal and identifiable data about the principals and teachers that will not be published, e.g., information in their Consent Form, will be retained until 2025 (2 years' post-publication of thesis report) and then destroyed in accordance with GDPR
- Anonymised data about the school and teachers that will not be published, e.g., information in the Record Forms, will be retained until 2025 (2 years' post-publication of thesis report) and then destroyed in accordance with GDPR
- Anonymised data about the school and teachers that will be published, e.g., information in the 3 Profiles, will be retained indefinitely so that it can be disseminated to others via the thesis report and other mediums, e.g., in a report, journal article, book or conference presentation

20. What if there is a problem?

If there is a problem and/or you have concerns about any aspect of the manner in which you have been approached or treated during the course of this research, please contact the researcher Melanie McKee. If your complaint or concern is not managed to your satisfaction, please contact the researcher's supervisors - Professor Graham Moore (MooreG@cardiff.ac.uk) and Dr Charlotte Brookfield (BrookfieldC@cardiff.ac.uk), or alternatively the School Research Ethics Committee at Cardiff University (socsi-ethics@cardiff.ac.uk).

21. What do I do next if I want to be involved in the study?

Please complete the attached 'Teacher Consent Form' and forward to the researcher who will then contact you to arrange a mutually convenient time to conduct an interview.

Thank you for considering participation in this research study.

Please do not hesitate to contact me via email (m.mckee@stran.ac.uk) or telephone (02890 384311) if you have any queries or concerns.

Appendix 27: Teacher Consent Form

Teacher Consent Form

STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast

Researcher	Melanie McKee – Senior Lecturer at Stranmillis University College & part-time doctoral student at Cardiff University	
Research Study Title	An exploratory case study of the quantitative provision of Physical Education (PE) in primary schools in Northern Ireland (NI)	
Research Questions	1. What factors influence the amount of PE delivered in primary schools in NI? 2. How do those factors influence the amount of PE delivered in primary schools in NI?	
Cardiff University - School Research Ethics Committee Reference		SREC/4250

*Please insert **Y** (Yes) or **N** (No) in the last column to denote your agreement with the statements in the first column

Statement	Y or N
I have read and understood the Primary PE Research Study Information Sheet for the above research study.	
I have had the opportunity to ask questions and any questions I asked have been answered satisfactorily.	
I am aware my participation is voluntary and I am free to withdraw at any time without giving a reason and without any adverse consequences.	
I understand and accept there is a **_risk_** that a school and/or its' principal and teachers may be identifiable by members of the participating school.	

Teacher's name		Researcher's name	Melanie McKee
Teacher's signature		Researcher's signature	
Date		Date	
Teacher's email*			
Teacher's mobile*		*These contact details are requested to facilitate the scheduling of an interview	

Thank you for participating in this research study. You will be given a copy of this Consent Form to keep for your records.

Appendix 28: Staff Development Day Agenda

Staff Development Day – Agenda

Date	TBC
Time	TBC
Venue	Primary School
Facilitator	Melanie McKee, Stranmillis University College
Participants	Any employee of the school can attend part or all of the training
Medium	In-person, theoretical but interactive

Theme: Physical Literacy & Active Schools/Staff Health

Time	Content	
9.00 – 9.30	Welcome & Introductions	
9.30 – 10.30	Understanding Physical Literacy – Part 1*	
10.30 – 11.00	Break	
11.00 – 12.00	Understanding Physical Literacy – Part 2*	
12.00 – 1.00	Break	
1.00 – 3.00	Option 1 Active Schools – A Whole School Approach to Promoting Physical Activity	Option 2 Staff Health - A Whole School Approach to Staff Health & Wellbeing

*This is a theoretical course created by Sport Ireland and all participants will receive a Certificate of Attendance

Appendix 29: Individual Teacher Profiles of Ranked & Unranked Factors for PE & 5 Activity Areas

Table 29.1: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher AT1

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Timetabling	Facilities	Timetabling	Time	Equipment	n/a
2nd	Priorities	Equipment	Time	Priorities	Facilities	
3rd	Equipment	Time	Priorities	Equipment	Safety	
4th	Safety	Priorities	Expertise	Safety	Time	
5th	Expertise	Weather	Confidence	Timetabling	Expertise	
Other factors proposed but unranked						
6	Time					
7	Facilities					
8	Confidence					
9	Resources					
10	Behaviour					
Total No. of Factors	10	5	5	5	5	

Table 29.2: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher AT2

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Equipment	Facilities	Resources	= Facilities	Cost to parents	n/a
2nd	Facilities	Equipment	Equipment	= Timetabling	Timetabling	
3rd	= Priorities	Teaching Assistance	Teacher enjoyment	Equipment	Priorities	
4th	= Timetabling	= Class size	Boys' lack of engagement	Class size	Staffing	
5th	Time	= Safety	Class size	Safety	Class size	
Other factors proposed but unranked						
6	Safety					
7	Class size					
8	Weather					
9	PE kit not in					
10	Planning time					
11	Carol Service					
12	Storage					
13	Burn out					
Total No. of Factors	13	5	5	5	5	

Table 29.3: Individual Teacher Profile of Ranked &Unranked Factors for PE & 5 Activity Areas - Teacher AT3

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Expertise	Expertise	Expertise	Expertise	Expertise	n/a
2nd	Facilities	Facilities	Resources	Knowing rules	Safety issues	
3rd	Equipment	Equipment	Types of dance	Facilities	Confidence	
4th	Timetabling	Safety	Facilities	Equipment	Equipment	
5th	Weather	Weather	Equipment	Safety issues	Facilities	
Other factors proposed but unranked						
6	Priorities					
7						
8						
9						
10						
Total No. of Factors	6	5	5	5	5	

Table 29.4: Individual Teacher Profile of Ranked and Unranked Factors for PE & 5 Activity Areas - Teacher AT4

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Equipment	Equipment	Class size	= Equipment	Safety	Number of classes
2nd	Facilities	Facilities	Safety	= Facilities	Class size	Class size
3rd	Timetabling	= weather	Children's enjoyment	Class size	= Equipment	Safety
4th	= Priorities	= safety	Priorities	Safety	= Facilities	Priorities
5th	= Time	Priorities	Time	Priorities	Confidence	
Other factors proposed but unranked						
6	Confidence					
7						
8						
9						
10						
Total No. of Factors	6	5	5	5	5	4

Table 29.5: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher AT5

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Time	Weather	Confidence	Timetabling	Safety	Cost to school
2nd	Priorities	Equipment	Equipment	Weather	Equipment	Timetabling
3rd	Timetabling	Time	Time	Equipment	Expertise	Time
4th	Weather	Priorities	Priorities	Time	Class size	Class size
5th	Class size	Safety	Timetabling	Priorities	Timetabling	
Other factors proposed but unranked						
6						
7						
8						
9						
10						
Total No of Factors	5	5	5	5	5	4

Table 29.6: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT1

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Weather	Facilities	Expertise	Time	Expertise	Cost to school
2nd	Facilities	Equipment	Equipment	Pupil enjoyment	Confidence	Timetabling
3rd		Weather	Confidence		Equipment	
4th			Class size		Safety	
5th						
Other factors proposed but unranked						
6						
7						
8						
9						
10						
Total No. of Factors	2	3	4	3	4	2

Table 29.7: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT2

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Confidence	Confidence	Guidance	Confidence	= Expertise	
2nd	Facilities	Class size	Expertise	= Expertise	= Training	
3rd	= Timetabling	Equipment	Technology	= Training	Safety	
4th	= Priorities	= Timetabling	Confidence	= Timetabling	Equipment	
5th		= Priorities	Timetabling	= Priorities	Timetabling	
Other factors proposed but unranked						
6						
7						
8						
9						
10						
Total No. of Factors	4	5	5	5	5	

Table 29.8: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT3

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Priorities	Expertise	Equipment	Expertise	Safety	
2nd	Expertise	Confidence	Facilities	Confidence	Expertise	
3rd	Confidence	Equipment	Priorities	Equipment	Confidence	
4th	Equipment	Safety	Time	Time	Time	
5th	Safety	Weather	Expertise	Class size	Equipment	
Other factors proposed but unranked						
6						
7						
8						
9						
10						
Total No. of Factors	5	5	5	5	5	

Table 29.9: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT4

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	= Priorities	Priorities	Priorities	Time	Safety	n/a
2nd	= Timetabling	Expertise	Timetabling	Expertise	Teaching Assistance	
3rd	Expertise	Weather	Confidence	Safety	Class size	
4th	Confidence			Teaching Assistance	Timetabling	
5th	Class size				Expertise	
Other factors proposed but unranked						
6	Teaching Assistance					
7						
8						
9						
10						
Total No. of Factors	6	3	3	4	5	

Table 29.10: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT5

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Equipment	Equipment	Expertise	New ideas	Safety	n/a
2nd	New ideas	Class size	New ideas	Equipment	= Equipment	
3rd	Class size	New ideas			= Facilities	
4th		Weather			Class size	
5th					New ideas	
Other factors proposed but unranked						
6						
7						
8						
9						
10						
Total No. of Factors	3	4	2	2	5	

Table 29.11: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT6

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	Priorities	Weather	Expertise	Equipment	= Safety	Children's Enjoyment
2nd	Equipment	Children's size & age	= Teacher interest	= Teacher interest	= Expertise	Timetabling
3rd	Weather	SEN	= Children's Confidence	= Children's Attitude	= Children's Ability	Less Time for Other PE Areas
4th	Timetabling	Equipment	Children's size & age	SEN	= Children's Interest	Cost to school
5th	Safety	Safety	Resources	Children's Confidence	Children's Confidence	
Other factors proposed but unranked						
6						
7						
8						
9						
10						
Total No. of Factors	5	5	5	5	5	4

Table 29.12: Individual Teacher Profile of Ranked & Unranked Factors for PE & 5 Activity Areas - Teacher BT7

Rank	PE (General)	5 Activity Areas				
		Athletics	Dance	Games	Gymnastics	Swimming (KS2)
1st	= Timetabling	= Equipment	= Equipment	= Timetabling	Teaching Assistance	= Timetabling
2nd	= Priorities	= Weather	= Expertise	= Facilities	Facilities	= Priorities
3rd	Weather	= Expertise		= Weather	Expertise	
4th	Equipment			Equipment	Safety	
5th	Time					
Other factors proposed but unranked						
6	Expertise					
7						
8						
9						
10						
Total No. of Factors	6	3	2	4	4	2

Appendix 30: Ranked Influential Factors & Influence Scores - PE (General)

Table 30.1: Ranked Influential Factors for PE In Schools A & B

Rank	School A					School B						
	AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
1st	Timetabling	Equipment	Expertise	Equipment	Time	Weather	Confidence	Priorities	= Priorities = Timetabling	Equipment	Priorities	= Timetabling = Priorities
2nd	Priorities	Facilities	Facilities	Facilities	Priorities	Facilities	Facilities	Expertise		New Ideas	Equipment	
3rd	Equipment	= Priorities = Timetabling	Equipment	Timetabling	Timetabling		= Timetabling = Priorities	Confidence	Expertise	Class Size	Weather	Weather
4th	Safety		Timetabling	= Priorities = Time	Weather			Equipment	Confidence		Timetabling	Equipment
5th	Expertise	Time	Weather		Class Size			Safety	Class Size		Safety	Time
Other factors proposed but unranked												
6	Time	Safety	Priorities	Confidence					Teaching Assistance			Expertise
7	Facilities	Class size										
8	Confidence	Weather										
9	Resources	PE kit not in										
10	Behaviour	Planning time										
11		Carol Service										
12		Storage										
13		Burn out										
Total	10	13	6	6	5	2	4	5	6	3	5	6

= denotes factors ranked equally

Table 30.2: Influence Scores for Influential Factors for PE In School A

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Timetabling	5	X		XXX	X		16
Equipment	4	XX		XX			16
Priorities	4		XX	X	X		13
Facilities	3		XXX				12
Time	3	X			X	X	8
Expertise	2	X				X	6
Weather	2				X	X	3
Safety	1				X		2
Class Size	1					X	1
Total = 9							

Table: 30.3: Influence Scores for Influential Factors for PE In School B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Priorities	5	XXXX		X			23
Timetabling	4	XX		X	X		15
Equipment	4	X	X		XX		13
Weather	3	X		XX			11
Confidence	3	X		X	X		10
Expertise	2		X	X			7
Facilities	2		XX				8
New Ideas	1		X				4
Class Size	2			X		X	4
Safety	2					XX	2
Time	1					X	1
Total = 11							

Table 30.4: Influence Scores for Influential Factors for PE Across Schools A & B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Priorities	9	XXXX	XX	XX	X		36
Timetabling	9	XXX		XXXX	XX		31
Equipment	8	XXX	X	XX	XX		29
Facilities	5		XXXXX				20
Weather	5	X		XX	X	X	14
Expertise	4	X	X	X		X	13
Confidence	3	X		X	X		10
Time	4	X			X	XX	9
Class Size	3			X		XX	5
New Ideas	1		X				4
Safety	3				X	XX	4
Total = 11							

Appendix 31: Influential Factors & Influence Scores - Athletics

Table 31.1: Ranked Influential Factors for Athletics In Schools A & B

Rank	School A					School B						
	AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
1st	Facilities	Facilities	Expertise	Equipment	Weather	Facilities	Confidence	Expertise	Priorities	Equipment	Weather	= Equipment = Weather = Expertise
2nd	Equipment	Equipment	Facilities	Facilities	Equipment	Equipment	Class Size	Confidence	Expertise	Class Size	Children's Size & Age	
3rd	Time	Teaching Assistance	Equipment	= Weather = Safety	Time	Weather	Equipment	Equipment	Weather	New Ideas	Ability & SEN	
4th	Priorities	= Class Size = Safety	Safety		Priorities		= Timetabling = Priorities	Safety		Weather	Equipment	
5th	Weather		Weather	Priorities	Safety			Weather			Safety	
Total	5	5	5	5	5	3	5	5	3	4	5	3

Table 31.2: Influence Scores for Athletics in School A

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Equipment	5	X	XXX	X			20
Facilities	4	XX	XX				18
Weather	4	X		X		XX	10
Safety	4			X	XX	X	8
Time	2			XX			6
Priorities	3				XX	X	5
Expertise	1	X					5
Teaching Assistance	1			X			3
Class Size	1				X		2
Total = 9							

Table 31.3: Influence Scores for Athletics in School B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Equipment	6	XX	X	XX	X		22
Weather	6	XX		XX	X	X	19
Expertise	3	XX	X				14
Confidence	2	X	X				9
Class Size	2		XX				8
Priorities	2	X			X		7
Facilities	1	X					5
Children's Size & Age	1		X				4
New Ideas	1			X			3
Ability & SEN	1			X			3
Safety	1				X	X	3
Timetabling	1				X		2
Total = 12							

Table 31.4: Influence Scores for Athletics Across School A & B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Equipment	11	XXX	XXXX	XXX	X		42
Weather	10	XXX		XXX	X	XXX	29
Facilities	5	XXX	XX				23
Expertise	4	XXX	X				19
Priorities	5	X			XXX	X	12
Safety	4			X	XXX	XX	11
Class Size	3		XX		X		10
Confidence	2	X	X				9
Time	2			XX			6
Children's Size & Age	1		X				4
Teaching Assistance	1			X			3
New Ideas	1			X			3
SEN	1			X			3
Timetabling	1				X		2
Total = 14							

Appendix 32: Influential Factors & Influence Scores - Dance

Table 32.1: Ranked Influential Factors for Dance In Schools A & B

Rank	School A					School B						
	AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
1st	Timetabling	Resources	Expertise	Class Size	Confidence	Expertise	Guidance	Equipment	Priorities	Expertise	Expertise	= Equipment = Expertise
2nd	Time	Equipment	Resources	Safety	Equipment	Equipment	Expertise	Facilities	Timetabling	New Ideas	= Teacher Interest = Pupil Confidence	
3rd	Priorities	Teacher Enjoyment	Types of Dance	Children's Enjoyment	Time	Confidence	Technology	Priorities	Confidence			
4th	Expertise	Boys' Lack of Engagement	Facilities	Priorities	Priorities	Class Size	Confidence	Time			Children's Size & Age	
5th	Confidence	Class Size	Equipment	Time	Timetabling		Timetabling	Expertise			Resources	
Total	5	5	5	5	5	4	5	5	3	2	5	2

Table 32.2: Influence Scores for Dance In School A

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Resources	2	X	X				9
Equipment	3		XX			X	9
Time	3		X	X		X	8
Priorities	3			X	XX		7
Expertise	2	X			X		7
Confidence	2	X				X	6
Timetabling	2	X				X	6
Class Size	2	X				X	6
Safety	1		X				4
Teacher Enjoyment	1			X			3
Types of Dance	1			X			3
Children's Enjoyment	1			X			3
Boy's Lack of Engagement	1				X		2
Facilities	1				X		2
Total = 14							

Table 32.3: Influence Scores for Dance In School B

Factor	Total Frequency	1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	Influence Score
				Rank Frequency			
Expertise	6	XXXX	X			X	25
Equipment	3	XX	X				14
Priorities	2	X		X			8
Confidence	3			XX	X		8
Timetabling	2		X			X	5
Guidance	1	X					5
New Ideas	1		X				4
Teacher Interest	1		X				4
Pupil Confidence	1		X				4
Facilities	1		X				4
Technology	1			X			3
Class Size	1				X		2
Time	1				X		2
Children's Size & Age	1				X		2
Resources	1					X	1
Total = 15							

Table 32.4: Influential Scores for Dance Across School A & B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Expertise	8	XXXXX	X		X	X	32
Equipment	6	XX	XXX			X	23
Priorities	5	X		XX	XX		15
Confidence	5	X		XX	X	X	14
Timetabling	4	X	X			XX	11
Time	4		X	X	X	X	10
Resources	3	X	X			X	10
Class Size	3	X			X	X	8
Facilities	2		X		X		6
Guidance	1	X					5
Safety	1		X				4
New Ideas	1		X				4
Teacher Interest	1		X				4
Pupil Confidence	1		X				4
Teacher Enjoyment	1			X			3
Types of Dance	1			X			3
Children's Enjoyment	1			X			3
Technology	1			X			3
Children's Size & Age	1				X		2
Boy's Lack of Engagement	1				X		2
Total = 20							

Appendix 33: Influential Factors & Influence Scores - Games

Table 33.1: Ranked Influential Factors for Games In Schools A & B

Rank	School A					School B						
	AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
1st	Time	= Facilities	Expertise	=	Timetabling	Time	Confidence	Expertise	Time	New Ideas	Equipment	= Timetabling = Facilities = Weather
2nd	Priorities	= Timetabling	Knowing Rules	Equipment = Facilities	Weather	Pupil Enjoyment	= Expertise = Training	Confidence	Expertise	Equipment	= Teacher Interest = Children's Attitude	
3rd	Equipment	Equipment	Facilities	Class Size	Equipment			Equipment	Safety			
4th	Safety	Class Size	Equipment	Safety	Time		= Timetabling = Priorities	Time	Teaching Assistance		SEN	Equipment
5th	Timetabling	Safety	Safety	Priorities	Priorities			Class Size			Children's Confidence	
Total	5	5	5	5	5	2	5	5	4	2	5	4

Table 33.2: Influence Scores for Games In School A

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Equipment	5	X		XXX	X		16
Facilities	3	XX		X			13
Timetabling	3	XX				X	11
Time	2	X			X		7
Priorities	3		X			XX	6
Safety	4				XX	XX	6
Class Size	2			X	X		5
Expertise	1	X					5
Knowing Rules	1		X				4
Weather	1		X				4
Total = 10							

Table 33.3: Influence Scores for Games In School B

Factor	Total Frequency	1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	Influence Score
		Rank Frequency					
Equipment	4	X	X	X	X		14
Expertise	3	X	XX				13
Time	3	XX			X		12
Confidence	2	X	X				9
Timetabling	2	X			X		7
Facilities	1	X					5
Weather	1	X					5
New Ideas	1	X					5
Training	1		X				4
Children's Enjoyment	1		X				4
Teacher Interest	1		X				4
Children's Attitude	1		X				4
Safety	1			X			3
SEN	1				X		2
Priorities	1				X		2
Teaching Assistance	1				X		2
Class Size	1					X	1
Children's Confidence	1					X	1
Total = 18							

Table 33.4: Influence Scores for Games Across Schools A & B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Equipment	9	XX	X	XXXX	XX		30
Time	5	XXX			XX		19
Timetabling	5	XXX			X	X	18
Facilities	4	XXX		X			18
Expertise	4	XX	XX				18
Confidence	2	X	X				9
Safety	5			X	XX	XX	9
Weather	2	X	X				9
Priorities	4		X		X	XX	8
Class Size	3			X	X	X	6
New Ideas	1	X					5
Training	1		X				4
Knowing Rules	1		X				4
Pupil Enjoyment	1		X				4
Teacher Interest	1		X				4
Children's Attitude	1		X				4
Teaching Assistance	1				X		2
SEN	1				X		2
Children's Confidence	1					X	1
Total = 19							

Appendix 34: Influential Factors & Influence Scores - Gymnastics

Table 34.1: Ranked Influential Factors for Gymnastics In Schools A & B

Rank	School A					School B						
	AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
1st	Equipment	Cost to Parents	Expertise	Safety	Safety	Expertise	= Expertise = Training	Safety	Safety	Safety	= Safety = Expertise	Teaching Assistance
2nd	Facilities	Timetabling	Safety	Class Size	Equipment	Confidence		Expertise	Teaching Assistance	= Equipment = Facilities		Facilities
3rd	Safety	Priorities	Confidence	= Equipment = Facilities	Expertise	Equipment	Safety	Confidence	Class Size	= Facilities	= Children's Ability = Children's Interest	Expertise
4th	Time	Staffing	Equipment		Class Size	Safety	Equipment	Time	Timetabling	Class Size		Safety
5th	Expertise	Class Size	Facilities	Confidence	Timetabling		Timetabling	Equipment	Expertise	New Ideas	Children's Confidence	
Total	5	5	5	5	5	4	5	5	5	5	5	4

Table 34.2: Influence Scores for Gymnastics In School A

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Safety	4	XX	X	X			17
Equipment	4	X	X	X	X		14
Expertise	3	X		X		X	9
Facilities	3		X	X		X	8
Class Size	3		X		X	X	7
Cost to Parent	1	X					5
Timetabling	2		X			X	5
Confidence	2			X		X	4
Priorities	1			X			3
Time	1				X		2
Staffing	1				X		2
Total = 11							

Table 34.3: Influence Scores for Gymnastics In School B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Safety	7	XXXX		X	XX		27
Expertise	6	XXX	X	X		X	23
Equipment	4		X	X	X	X	10
Teaching Assistance	2	X	X				9
Facilities	2		XX				8
Confidence	2		X	X			7
Class Size	2			X	X		5
Training	1	X					5
Children's Ability	1			X			3
Timetabling	2				X	X	3
Children's Interest	1			X			3
Time	1				X		2
New Ideas	1					X	1
Children's Confidence	1					X	1
Total = 14							

Table 34.4: Influence Scores for Gymnastics Across Schools A & B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Safety	11	XXXXX X	X	XX	XX		44
Expertise	9	XXXX	X	XX		XX	32
Equipment	8	X	XX	XX	XX	X	24
Facilities	5		XXX	X		X	16
Class Size	5		X	X	XX	X	12
Confidence	4		X	XX		X	11
Teaching Assistance	2	X	X				9
Timetabling	4		X		X	XX	8
Training	1	X					5
Cost to Parent	1	X					5
Time	2				XX		4
Children's Ability	1			X			3
Children's Interest	1			X			3
Priorities	1			X			3
Staffing	1				X		2
New Ideas	1					X	1
Children's Confidence	1					X	1
Total = 17							

Appendix 35: Influential Factors & Influence Scores - Swimming

Table 35.1: Ranked Influential Factors for Swimming In Schools A & B

Rank	School A					School B						
	AT1	AT2	AT3	AT4	AT5	BT1	BT2	BT3	BT4	BT5	BT6	BT7
1st	n/a	n/a	n/a	Number of Classes	Money/ Cost	Cost	n/a	n/a	n/a	n/a	Children's Enjoyment	= Timetabling
2nd				Class Size	Timetabling	Timetabling					Timetabling	= Priorities
3rd				Safety	Time						Less Time for Other PE Areas	
4th				Priorities	Class Size						Cost	
5th												
Total				4	4	2					4	2

Table 35.2: Influence Scores for Swimming In School A

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Class Size	2		X		X		6
Number of Classes	1	X					5
Cost	1	X					5
Timetabling	1		X				4
Safety	1			X			3
Time	1			X			3
Priorities	1				X		2
Total = 7							

Table 35.3: Influence Scores for Swimming In School B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Timetabling	3	X	XX				13
Cost	2	X			X		7
Priorities	1	X					5
Children's Enjoyment	1	X					5
Less Time for Other PE Areas	1			X			3
Total = 5							

Table 35.4: Influence Scores for Swimming Across Schools A & B

Factor	Total Frequency	Rank Frequency					Influence Score
		1st (=5 points)	2nd (=4 points)	3rd (=3 points)	4th (=2 points)	5th (=1 point)	
Timetabling	4	X	XXX				17
Cost	3	XX			X		12
Priorities	2	X			X		7
Class Size	2		X		X		6
Number of Classes	1	X					5
Children's Enjoyment	1	X					5
Safety	1			X			3
Time	1			X			3
Less Time for Other PE Areas	1			X			3
Total = 9							

Appendix 36: Connected Factors in PE

Table 36: Responses to Question F4 - Are any Factors Connected in PE (General)? - In Schools A & B

School & Teacher	Q.F4 - Are any factors connected? Yes or No	Connected Factors											Total No. of Connections
		Expertise & Priorities	Equipment & Safety	Timetabling & Priorities	Facilities, Equipment & Safety	Facilities & Weather	Equipment, Expertise & Safety	Time & Priorities	Expertise, Confidence & Safety	Expertise, Training & Confidence	Class Size & Teaching Assistance	Equipment & New Ideas	
School A													
AT1	Yes	✓	✓										2
AT2	Yes			✓	✓								2
AT3	Yes					✓	✓						2
AT4	Yes							✓					1
AT5	Yes							✓					1
School B													
BT1	Yes					✓							1
BT2	Yes			✓									1
BT3	Yes								✓				1
BT4	Yes									✓	✓		2
BT5	Yes											✓	1
BT6	Yes							✓					1
BT7	Yes					✓							1
Frequency	12	1	1	2	1	3	1	3	1	1	1	1	= 16

Appendix 37: Connected Factors in Athletics

Table 37: Responses to Question G3 - Are any Factors Connected in Athletics? - In Schools A & B

School & Teacher	Q.G3 - Are any factors connected? Yes or No	Connected Factors												Total No. of Connections
		Time & Priorities	Facilities, Equipment & Safety	Class Size & Teaching Assistance	Expertise & Safety	Expertise & Equipment	Facilities & Weather	Equipment & Facilities	Class Size & Safety	Expertise & Confidence	Expertise & Priorities	Equipment & New Ideas	SEN & Equipment	
School A														
AT1	Yes	✓												1
AT2	Yes		✓	✓										2
AT3	Yes				✓	✓	✓							3
AT4	Yes								✓					1
AT5	Yes	✓												1
School B														
BT1	Yes						✓							1
BT2	Yes								✓					1
BT3	Yes									✓				1
BT4	Yes										✓			1
BT5	Yes											✓		1
BT6	Yes												✓	1
BT7	Yes					✓								1
Frequency	12	2	1	1	1	2	2	1	1	1	1	1	1	= 15

Appendix 38: Connected Factors in Dance

Table 38: Responses to Question G7 - Are any Factors Connected in Dance? - In Schools A & B

School & Teacher	Q.G7 - Are any factors connected? Yes or No	Connected Factors												Total No. of Connections
		Time & Priorities	Expertise & Confidence	Boys' Lack of Engagement & Teacher Enjoyment	Expertise & Types of Dance	Equipment & Types of Dance	Class Size & Safety	Expertise, Training & Confidence	Facilities & Equipment	Priorities & Timetabling	Expertise & New Ideas	Expertise & Resources	Equipment & Expertise	
School A														
AT1	Yes	✓	✓											2
AT2	Yes			✓										1
AT3	Yes				✓	✓								2
AT4	Yes						✓							1
AT5	Yes	✓												1
School B														
BT1	Yes		✓											1
BT2	Yes							✓						1
BT3	Yes								✓					1
BT4	Yes									✓				1
BT5	Yes										✓			1
BT6	Yes											✓		1
BT7	Yes												✓	1
Frequency	12	2	2	1	1	1	1	1	1	1	1	1	1	= 14

Appendix 39: Connected Factors in Games

Table 39: Responses to Question G11 - Are any Factors Connected in Games? - In Schools A & B

School & Teacher	Q.G11 - Are any factors connected? Yes or No	Connected Factors												Total No. of Connections
		Priorities & Time	Facilities & Equipment	Teaching Assistance & Class Size	Facilities & Safety	Class Size & Safety	Time & Children's Enjoyment	Confidence, Expertise & Training	Expertise & Confidence	Time & Safety	Equipment & New Ideas	SEN & Children's Confidence	Facilities & Weather	
School A														
AT1	Yes	✓												1
AT2	Yes		✓	✓										2
AT3	Yes				✓									1
AT4	Yes					✓								1
AT5	Yes	✓												1
School B														
BT1	Yes						✓							1
BT2	Yes							✓						1
BT3	Yes								✓					1
BT4	Yes									✓				1
BT5	Yes										✓			1
BT6	Yes											✓		1
BT7	Yes												✓	1
Frequency	12	2	1	1	1	1	1	1	1	1	1	1	1	= 13

Appendix 40: Connected Factors in Gymnastics

Table 40: Responses to Question G16 - Are any Factors Connected in Gymnastics? - in Schools A & B

School & Teacher	Q.G16 - Are any factors connected? Yes or No	Connected Factors										Total No. of Connections
		Equipment & Facilities	Time, Priorities & Expertise	Timetabling & Priorities	Expertise, Safety & Confidence	Class Size & Safety	Expertise & Confidence	Equipment & Safety	Equipment, Facilities & Class Size	Equipment & Class Size	Expertise & Safety	
School A												
AT1	Yes	✓	✓									2
AT2	Yes			✓								1
AT3	Yes	✓			✓							2
AT4	Yes					✓						1
AT5	Yes					✓						1
School B												
BT1	Yes						✓	✓				2
BT2	Yes			✓								1
BT3	Yes					✓						1
BT4	Yes					✓						1
BT5	Yes								✓			1
BT6	Yes									✓		1
BT7	Yes										✓	1
Frequency	12	2	1	2	1	4	1	1	1	1	1	= 15

Appendix 41: Connected Factors in Swimming

Table 41: Responses to Question G19 - Are any Factors Connected in Swimming? - In Schools A & B

School & Teacher	Q.G19 - Are any factors connected? Yes or No	Connected Factors					Total No. of Connections
		Number of Classes & Class Size	Timetabling & Time	Cost to School & Timetabling	Timetabling & Less Time for Other Areas of PE	Timetabling & Priorities	
School A							
AT1	n/a						
AT2	n/a						
AT3	n/a						
AT4	Yes	✓					1
AT5	Yes		✓				1
School B							
BT1	Yes			✓			1
BT2	n/a						
BT3	n/a						
BT4	n/a						
BT5	n/a						
BT6	Yes				✓		1
BT7	Yes					✓	1
Frequency	5	1	1	1	1	1	= 5

Appendix 42: Collated List of Sub-Categories for Levels of Factors Influencing the Delivery of PE

Table 42: Collated List of Sub-Categories for Levels of Factors Influencing the Delivery of PE

Author	Categories			
Penney &Thompson (2018) (x 17)	**Situational (x 4)**	**Professional (x 5)**	**Material (x 5)**	**External (x 3)**
s of the enacted curriculum" **primary** and post-s 4 categories of influences	Demographic, e.g., public v private school Historical, e.g., sporting traditions Cultural, e.g., valuing nature Climatic, e.g., weather	Head teacher attitudes Subject status Teacher values Teacher qualifications Professional development	Time Facilities Equipment New technologies Teaching resources	1. Numeracy and literacy frameworks 2. Health agendas 3. Sport agendas
Morgan & Hansen (2008) – A (x 15)	**Institutional (x 8)**	**Teacher (x 7)**		
perceived to impact **primary** PE tional- or **teacher-related**	Other teaching priorities Amount of time Equipment availability Quality of facilities Level of departmental assistance/professional development School executive attitudes towards PE Funds available Class size	Confidence teaching PE Interest/enthusiasm for PE PE content knowledge Personal school experiences in PE Attitudes towards PE Perceptions of value of PE Expertise/qualifications		
Morgan & Hansen (2008) – B (x 9)	**Institutional (x 5)**	**Teacher (x 4)**		
teaching primary PE tional- or **teacher-related**	Lack of time/crowded curriculum Lack of departmental assistance/professional development Lack of money Inadequate facilities & equipment Class size too big	Poor expertise/qualifications Low levels of teaching confidence Poor personal experiences of PE Low levels of personal interest/enthusiasm in PE		
Friskawati et al. (2020) (x 13)	**Institutional (x 5)**	**Teacher (x 4)**	**Student (x 4)**	
s to teaching primary P tional-, **teacher-** or **student-related**	Lack of time for PE Lack of departmental assistance Lack of money for PE equipment Inadequate facilities and equipment Large class size	Low levels of confidence or interest in teaching PE Being unable to provide safely planned and structured lessons Personal negative experiences in PE & lacking training, knowledge, & expertise Qualifications to teach PE	Student unwillingness to participate in PE Dislike of activity Lack of understanding on benefits of PA Decline in student interest in PE	
Dwyer et al. (2003) (x 10)	**Lower Priority for Health & PE (x 5)**	**Lack of Performance Measures (x 2)**	**Insufficient Infrastructure (x 3)**	
categories of barriers to **primary** Health & PE s for physical activity riority for **Health & PE, lack of performance** nt infrastructure	Overloaded curriculum Insufficient time Lower priority for PE Insufficient curriculum guidance for PE Difficulty integrating with other subjects	Curriculum guidance unclear about expectations, e.g., frequency and amount of physical activity Difficult to measure performance	Facilities too small, overcrowded, inadequate, unsafe Facilities unavailable & scheduling unfeasible Lack of equipment	
Quyen et al. (2019) (x 8)	**Governance & Regulation (x 4)**	**Perceptions of PE (x2)**	**PE Personnel (x 2)**	
8 sub-themes for **primary** PE implementation barriers	Monotony of PE programme content Lack of autonomy Monitoring & surveillance Lack of PE incentives	Different levels of support Perceived value of PE	Non-teaching of PE Qualifications of PE instructors	

Appendix 43: Category & Sub-Category of Levels of Influential Factors for PE & 5 Activity Areas by Teachers In Schools A & B

Table 43: Category & Sub-Category of Levels of Influential Factors for PE & 5 Activity Areas by Teachers In Schools A & B

School & Teacher	PE (General) – All Reported Factors					PE (General) – 5 Ranked Factors					Athletics – 5 Ranked Factors					Dance – 5 Ranked Factors					Games – 5 Ranked Factors					Gymnastics – 5 Ranked Factors					Swimming – 5 Ranked Factors				
	*External				*Internal	*External				*Internal	*External				*Internal	*External				*Internal	*External				*Internal	*External				*Internal	*External				*Internal
	**S	**I	**P	=	**T	**S	**I	**P	=	**T	**S	**I	**P	=	**T	**S	**I	**P	=	**T	**S	**I	**P	=	**T	**S	**I	**P	=	**T	**S	**I	**P	=	**T
School B																																			
AT1	0% (n=0)	70% (n=7)	10% (n=1)	80% (n=8)	20% (n=2)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	100% (n=5)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	n/a	n/a	n/a	n/a	n/a
AT2	8% (n=1)	76% (n=10)	8% (n=1)	92% (n=12)	8% (n=1)	0% (n=0)	100% (n=5)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	100% (n=5)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	60% (n=3)	20% (n=1)	80% (n=4)	20% (n=1)	0% (n=0)	100% (n=5)	0% (n=0)	100% (n=5)	0% (n=0)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	n/a		n/a	n/a	n/a
AT3	17% (n=1)	66% (n=4)	0% (n=0)	83% (n=5)	17% (n=1)	20% (n=1)	60% (n=3)	0% (n=0)	80% (n=4)	20% (n=1)	20% (n=1)	60% (n=3)	0% (n=0)	80% (n=4)	20% (n=1)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	n/a		n/a	n/a	n/a
AT4	0% (n=0)	83% (n=5)	0% (n=0)	83% (n=5)	17% (n=1)	0% (n=0)	100% (n=5)	0% (n=0)	100% (n=5)	0% (n=0)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	80% (n=4)	20% (n=1)	100% (n=5)	0% (n=0)	0% (n=0)	100% (n=5)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	0% (n=0)	100% (n=4)	0% (n=0)	100% (n=4)	0% (n=0)
AT5	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	0% (n=0)	100% (n=4)	0% (n=0)	100% (n=4)	0% (n=0)
School A																																			
BT1	50% (n=1)	50% (n=1)	0% (n=0)	100% (n=2)	0% (n=0)	50% (n=1)	50% (n=1)	0% (n=0)	100% (n=2)	0% (n=0)	33% (n=1)	67% (n=2)	0% (n=0)	100% (n=3)	0% (n=0)	0% (n=0)	50% (n=2)	0% (n=0)	50% (n=2)	50% (n=2)	0% (n=0)	50% (n=1)	50% (n=1)	100% (n=2)	0% (n=0)	0% (n=0)	50% (n=2)	0% (n=0)	50% (n=2)	50% (n=2)	0% (n=0)	100% (n=2)	0% (n=0)	100% (n=2)	0% (n=0)
BT2	0% (n=0)	75% (n=3)	0% (n=0)	75% (n=3)	25% (n=1)	0% (n=0)	75% (n=3)	0% (n=0)	75% (n=3)	25% (n=1)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	40% (n=2)	0% (n=0)	40% (n=2)	60% (n=3)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	n/a	n/a	n/a	n/a	n/a
BT3	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	20% (n=1)	40% (n=2)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	n/a	n/a	n/a	n/a	n/a
BT4	0% (n=0)	67% (n=4)	0% (n=0)	67% (n=4)	33% (n=2)	0% (n=0)	60% (n=3)	0% (n=0)	60% (n=3)	40% (n=2)	33% (n=1)	33% (n=1)	0% (n=0)	67% (n=2)	33% (n=1)	0% (n=0)	67% (n=2)	0% (n=0)	67% (n=2)	33% (n=1)	0% (n=0)	75% (n=3)	0% (n=0)	75% (n=3)	25% (n=1)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	n/a	n/a	n/a	n/a	n/a
BT5	0% (n=0)	67% (n=2)	0% (n=0)	67% (n=2)	33% (n=1)	0% (n=0)	67% (n=2)	0% (n=0)	67% (n=2)	33% (n=1)	25% (n=1)	50% (n=2)	0% (n=0)	75% (n=3)	25% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)	100% (n=1)	0% (n=0)	50% (n=1)	0% (n=0)	50% (n=1)	50% (n=1)	0% (n=0)	80% (n=4)	0% (n=0)	80% (n=4)	20% (n=1)	n/a	n/a	n/a	n/a	n/a
BT6	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	25% (n=1)	50% (n=2)	25% (n=1)	100% (n=4)	0% (n=0)	0% (n=0)	20% (n=1)	40% (n=2)	60% (n=3)	40% (n=2)	0% (n=0)	20% (n=1)	60% (n=3)	80% (n=4)	20% (n=1)	0% (n=0)	20% (n=1)	60% (n=3)	80% (n=4)	20% (n=1)	0% (n=0)	75% (n=3)	25% (n=1)	100% (n=4)	0% (n=0)
BT7	17% (n=1)	66% (n=4)	0% (n=0)	83% (n=5)	17% (n=1)	20% (n=1)	80% (n=4)	0% (n=0)	100% (n=5)	0% (n=0)	33% (n=1)	33% (n=1)	0% (n=0)	67% (n=2)	33% (n=1)	0% (n=0)	50% (n=1)	0% (n=0)	50% (n=1)	50% (n=1)	25% (n=1)	75% (n=3)	0% (n=0)	100% (n=4)	0% (n=0)	0% (n=0)	100% (n=4)	0% (n=0)	100% (n=4)	0% (n=0)	0% (n=0)	100% (n=2)	0% (n=0)	100% (n=2)	0% (n=0)

*Category – EX = External; IN = Internal
**Sub-Category - S = Situational; I = Institutional; P = Pupil; T = Teacher