DEVELOPING A PEDAGOGICAL MODEL FOR HEALTH-BASED PHYSICAL EDUCATION

by

MARK T. BOWLER

A Doctoral Thesis
Submitted in partial fulfilment of the requirements for the
award of

Doctor of Philosophy of Loughborough University

April 2019

ABSTRACT

Despite global support for the role of physical education in health promotion, if we judge the subject against this goal alone, the profession has failed. Whilst multiple goals of the subject are acknowledged, this study positioned 'valuing a physically active life' as the priority. However, physical education is characterised by multi-activity, technique-focused, sport-based curricula. Furthermore, when teachers modify their practice with specific health goals in mind, this often takes a fitness for sport and performance focus, despite a vision of promoting healthy, active lifestyles.

This study builds on the groundwork of Haerens et al. (2011) who advocated for and initiated the first steps towards the development of a pedagogical model for Health-Based Physical Education. It aimed to develop a comprehensive evidence-informed pedagogical model, and to support teachers in the design, implementation and evaluation of the first school-based programmes using this model.

Taking an eight-stage process to the pedagogical model development, this research drew on practitioner research, and most specifically, participatory action research, as its predominant methodology. Multiple and predominantly qualitative methods drew on Brookfield's (1995) four lenses: self-reflection, the experiences of teachers and students and the theoretical literature. Study participants were nine specialist physical education teachers and 263 students (161 male, 102 female, aged 11-14 years) from two diverse schools in the east of England.

The findings present the types of programmes designed and implemented after teachers' introduction to a theoretically-informed conceptual framework for Health-Based Physical Education. The impact of the programmes on students is considered against the four main goals of the model – the development of habitual, motivated, informed and critical movers. The pedagogical model provides a comprehensive evidence-informed framework to support teachers to effectively promote positive physical activity behaviours in young people. It aims to support young people to be habitual, motivated, informed and critical movers. This model offers a new opportunity for physical education as there is currently no pedagogical model which forefronts 'valuing a physically active life' as its primary goal.

ACKNOWLEDGEMENTS

have talked about for so many years. I also hope we get to spend more time together in the future NOT just talking about this research!

To David and Leen: were it not for my relationship with David (who was working at Bedford at the time), and Leen, this thesis (at least written by me) would not have been possible. From the very first reading of the draft paper 'Toward the development of a pedagogical model for Health-Based Physical Education', I was sold. Thank you for entrusting me to lead the development of this exciting and innovative pedagogical model. I know you would have liked to see this thesis come to fruition sooner, but I am proud of what I have achieved. To David – I would like to acknowledge the strong support you provided during the planning and intervention stages of this research. Your experience, passion and understanding of curriculum development undoubtedly shaped the schools' programmes and the subsequent conceptual framework. To Leen – I would like to thank you for your early involvement as third supervisor, and your expertise in supporting me to develop rhe conceptual framework for Health-Based Physical Education.

I am indebted to my students and colleagues at the University of Bedfordshire, both in the School of Teacher Education and Sport Science and Physical Activity, for the things we have shared and learnt together. More than you know about our positive interactions is reflected in this thesis. In particular, my work around Health-Based Physical Education with the Year 2 undergraduate Physical Education with QTS trainees has provided both a test-bed for ideas, as well as sharing and reflecting on developments in the model as they occurred. Furthermore, my informal conversations and support from other staff who are also conducting or have recently completed their doctoral studies has helped to keep me focused and provided a sounding board on many an occasion.

To John Evans: for your socio-critical perspective in my final two PhD annual reviews at Loughborough. These were enjoyable and thought provoking in equal measure.

To my family: To Lucas and Joshua – for the unknown sacrifices you have made throughout this process, for reminding me that 'life is happening now' and that 'this is just a PhD'. Your smiles, characters and unconditional love have been central in keeping my eye on the end goal of creating a model for the next generation of young

people, so that they might better value a physically active life for all of the richness it can offer. To Rose and Keith – for always supporting my academic endeavours and helping me be the first in my family to go to University. Without the upbringing that you afforded me, I would not have become the person I am today. To Sue and Jim – for the support provided for Sarah, myself and the boys, whilst I tried to find space to write, particularly in the latter stages of this thesis write-up. To Sarah – for your unconditional love, support and thesis checking during this process, which neither of us knew would be so considerable. Between the start and end points of this PhD we have had significant change and challenges as a family, as well as some amazing times. I hope we can get back to the beautiful family times much more now.

MATERIAL PRESENTED FROM THE PHD

The following material has been presented during the development of this thesis:

Bowler, M. (2016) 'Promoting Healthy Active Lifestyles in Schools - Developing a Model for Health-Based Physical Education'. Paper presented at the Association for Physical Education (afPE) Annual Physical Education Conference, St Georges Park, 5-6 July.

Bowler, M., Sammon, P., Kirk, D., Haerens, L., Cale, L. & Casey, A. (2015) Developing a prototype Health-Based Physical Education pedagogical model. Paper presented at the International Association for Physical Education in Higher Education (AIESEP) Annual Conference, Universidad Europea, Madrid, Spain, 8-11 July. Available at: http://aiesep.org/wp-content/uploads/2014/11/PROCEEDINGS-OF-THE-AIESEP-CONFERENCE-MADRID-Final-Verssion.pdf pp.97-98.

Sammon, P., Bowler, M., Kirk, D., Haerens, L., Cale, L. & Casey, A. (2015) 'Supporting teachers to implement a new pedagogical model for Health-Based Physical Education'. Paper presented at the International Association for Physical Education in Higher Education (AIESEP) Annual Conference, University of Madrid, Spain, 8-11 July. Available at: http://aiesep.org/wp-content/uploads/2014/11/PROCEEDINGS-OF-THE-AIESEP-CONFERENCE-MADRID-Final-Verssion.pdf pp.110-111.

Sammon, P., Bowler, M., Casey, A., Haerens, L. & Kirk, D. (2014) 'Teachers' experiences engaging in professional development for a Health-Based Physical Education model'. Paper presented at the British Educational Research Association Annual Conference, Institute of Education, London, 23-25 September.

Sammon, P. & Bowler, M. (2014) 'A new pedagogical model for Health-Based Physical Education'. Paper presented at the Association for Physical Education (afPE) Annual Physical Education ITTE Conference, University of Wolverhampton, 20 March.

Bowler, M., Sammon, P., Casey, A., Haerens, L. & Kirk, D. (2013) 'What's the impact of Health-Based Physical Education? Initial findings from a student perspective'. Paper presented at the British Educational Research Association Annual Conference, University of Sussex, 3-5 September.

Bowler, M., Sammon, P., Casey, A., Haerens, L. & Kirk, D. (2012) 'Validating the Health-Based Physical Education pedagogical model: Defining teacher and student benchmarks'. Paper presented at the British Educational Research Association Annual Conference, University of Manchester, 4-6 September.

Bowler, M., Sammon, P., Casey, A., Haerens, L. & Kirk, D. (2012) 'Validating the Health-Based Physical Education pedagogical model: Defining teacher and student benchmarks'. Paper presented at the 2nd Exchange Conference between the University of Bedfordshire, Ghent University and University of Birmingham, University of Bedfordshire, 19 June.

Sammon, P., Bowler, M., Casey, A., Haerens, L. & Kirk, D. (2011) 'Developing a professional development programme for teachers to implement and sustain a Health-Based Physical Education model in their schools'. Paper presented at the British Educational Research Association Annual Conference, Institute of Education, London, 6-8 September.

Bowler, M., Sammon, P., Casey, A., Haerens, L. & Kirk, D. (2011) 'Developing a pedagogical model for Health-Based Physical Education: Identifying assumptions about learning and teaching'. Paper presented at the International Association for Physical

Education in Higher Education (AIESEP) Annual Conference, University of Limerick, Ireland, 22-25 June.

Bowler, M. (2011) 'Valuing the physically active life: Developing and sustaining Health-Based Physical Education in primary schools'. Paper presented at the Inaugural Exchange Conference between the University of Bedfordshire, Ghent University and University of Birmingham, Ghent University, Belgium, 16 February.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

<u>Rationale for the study</u>

The benefits associated with regular physical activity are without question (Bailey et al., 2013; Biddle et al., 2015; Donnelly et al., 2016; Hardman & Stensel, 2009; Janssen & LeBlanc, 2010; National Institute for Health and Care Excellence, 2009, 2015; Public Health England, 2014). Although evidence largely reports on the physical benefits associated with physical activity, such as the reduction of non-communicable diseases (e.g. cancer, diabetes and heart disease), or issues surrounding fitness, overweight and obesity levels, much research proposes that there are potentially multiple and diverse benefits to be accrued from physical activity in the right environments. These benefits are categorised in Chapter 2 into physical, emotional, personal, social, academic/cognitive and financial effects. In this thesis, I propose then, that physical activity, much like Antonovsky's (1979) view of health, is a positive resource for life.

Despite the wealth of evidence for the benefits associated with physical activity, global evidence on school-attending individuals claims that approximately only 20% of children and adolescents are achieving the recommended levels of physical activity (World Health Organization, 2014; Sallis et al., 2016; Scholes, 2016). This has resulted in claims that 'the world has stopped moving' (Nike Inc. 2012) and that, because the levels of physical inactivity worldwide are so low, the issue should be treated as pandemic and a major public health priority (Kohl et al., 2012).

Physical education, and the wider school environment, are located by many internationally as a central source for learning about and participating in healthy, active lifestyles (Association for Physical Education (afPE), 2015; Cale & Harris, 2005; Fairclough & Stratton, 2005a; Fox et al., 2004; Harris & Cale, 2018; Kelder et al., 2014; Kirk, 2010; Langford et al., 2014; Lima-Serrano & Lima-Rodríguez, 2014; McKenzie and Lounsbery, 2009; Sallis et al., 2012; Trost, 2004). The strongest evidence for school-based approaches to physical activity promotion appear to indicate the importance of physical education as a key component (Centers for Disease Control and Prevention (CDC), 2013; Pardo et al., 2013; Kriemler et al., 2011; Quitério, 2012; Salmon et al., 2007). However, put differently, this thesis argues for the centrality of physical education interventions, supported by wider school approaches in order to

make a sustained and significant difference to the physical activity levels of young people.

If physical education is to make a difference to young peoples' healthy, active lifestyles, however, the philosophy, approach and experiences it offers to students, need to be reconceptualised and reconsidered. Current practice in the wider physical education curriculum has been said to be dominated by multi-activity, technique-driven, sport-based curricula (Green, 2009; Kirk, 2010; Siedentop, 2002). In the teaching of health in physical education more specifically, practice generally reflects a fitness, sport and exercise philosophy (Alfrey et al., 2012; Cale & Harris, 2009a, 2009b; Green, 2009; Harris & Leggett, 2015a, 2015b; Puhse et al., 2011). These practices may be seriously misdirected. In relation to the whole physical education curriculum, it is unlikely that all of the legitimate learning outcomes for the subject can be achieved through one predominant approach. Equally, for teaching health specifically, fitness, sport and exercise foci are unlikely to translate into positive physical activity outcomes for young people.

One alternative approach to these shortcomings of current practice within the subject is the use of pedagogical models or models-based practice (Casey, 2014, 2016; Casey & MacPhail, 2018; Haerens et al., 2011; Hastie & Casey, 2014; Jewett et al., 1995; Lund & Tannehill, 2015; Metzler, 2011; Kirk, 2010, 2013; Kirk et al., 2018). A pedagogical model is a coherent plan, or blueprint, that includes a theoretical foundation, intended learning goals, learning, teaching and assessment structures as well as teacher and contextual requirements (Metzler, 2011). Notwithstanding their comprehensive framework, pedagogical models are also flexible, and provide space for 'local adaptation' (Kirk, 2013) through a number of identified modifications to the model's initial framework.

Personal and professional involvement

Physical education, physical activity and sport have (nearly) always been a positive and significant part of my life. This positions me as 'pro' physical education and physical activity, as long as the experiences that it provides are meaningful, constructive and positive for participants. I was 'sporty' as a youngster, through many different sports and activities in my primary school years, and then through football and, from my teenage years through, until only a few years ago, track and field

athletics. Competitive sport has therefore played a key role in my life in terms of the spectrum of physical activity opportunities.

Despite this, I believe my view and philosophy of promoting 'more than sport' began during my initial-teacher education (1998-2002) when studying a BEd (Hons) in physical education and history. It was nurtured during my degree, and developed, tested and evolved over the next three years as a teacher, where I taught much about physical activity, health, exercise and fitness (along with wider physical education and accredited courses activities and topics). However, after a relatively short 'teaching' career, my entry into Higher Education, with access to greater research, and critical perspectives from a number of colleagues at home and abroad, was the real springboard to challenge the 'dominant' approaches to physical education, and after a few years in the role, to teaching health in physical education.

At the start of this study, towards the end of 2010, I was (and still am) a Senior Lecturer in Physical Education, having been in that role for five years. At the end of this study, in April 2019, my total time working in Higher Education is approaching fourteen years. My current role is varied, although the most significant position is leading a four-year undergraduate degree in Secondary Physical Education with Qualified Teacher Status and teaching the pre-service teachers on this and a postgraduate (PGCE) route. I am also a lecturer, a Teacher Educator, a PhD student, a researcher, and an administrator. My main contact with schools since my entry into Higher Education is through regular supervision of trainee teachers on placement, facilitating professional development courses for teachers and carrying out research projects with schools and other organisations.

My involvement with Health-Based Physical Education came about when Leen Haerens, David Kirk and colleagues (Haerens et al., 2011) published 'Toward the development of a pedagogical model for Health-Based Physical Education'. The article advocated for and indicated the first steps in 'starting to think about a pedagogical model' (p.329) for Health-Based Physical Education. The proposals for the model would reconceptualise the approach to teaching physical activity and health in physical education and would require a focus on helping young people to 'value a physically active life' (Haerens et al., 2011). As David Kirk was working at the University at this time, this paper became the catalyst for my doctoral research.

Research aims and questions

This research aimed to build on the groundwork of Haerens et al. (2011) identified above. The primary aim of the study was to develop a comprehensive, evidence-informed pedagogical model framework for teaching Health-Based Physical Education with a focus on supporting young people to 'value a physically active life'. A secondary aim was to support teachers in the design, implementation and evaluation of the first school programmes of Health-Based Physical Education using this specific pedagogical model. This was in order that I could, firstly, assess the potential impact on students, and secondly, learn lessons to further develop the pedagogical model framework. Specifically, this research sought to answer the following research questions:

1. What are the major elements of a Health-Based Physical Education pedagogical model that has the major goal of encouraging young people to 'value a physically active life'?

2. What type of programmes do teachers design and implement in order to encourage young people to 'value a physically active life'?

3. What is the impact of a programme of Health-Based Physical Education on students' achievement of the model's goals?

The primary aim (pedagogical model development) is aligned with the first research question. These are addressed explicitly in chapter 4 where I present a theoretically informed 'conceptual framework' which builds on the initial steps of model development by Haerens et al. (2011). In this chapter a number of key theoretical and teaching and learning principles that were used to support teachers to design and implement programmes of Health-Based Physical Education are explained. The design, implementation and evaluation of Health-Based Physical Education programmes (the focus of the secondary aim) are explicitly related to research questions 2 and 3 and addressed in chapter 5, which focuses on the type and impact of the taught programmes in schools. Importantly, and as has been acknowledged by Casey (2017), until a framework has been implemented and evaluated it should not be considered a pedagogical model. Therefore, in further addressing the primary aim and research question 1, chapter 6 provides a detailed evidence-informed pedagogical model for Health-Based Physical Education. This draws on the main empirical findings of this research (in chapter 5) and on an updated review of literature which considers my new

thinking and understanding to more comprehensively support the realisation of the model's major theme.

Wider Research Programme

It is important at this juncture to locate this thesis within a wider research programme surrounding Health-Based Physical Education. Paul, a Teacher Education colleague and part-time PhD student, completed his research in parallel to mine. He explored teachers' reported learning experiences during a collaborative and sustained professional development programme for Health-Based Physical Education. Specifically, he has been concerned with the impact of this programme on teachers' learning and practice over time. As a result of the related foci of these two theses, it is important to clarify that we collectively gathered data and worked with the same teachers in phases one (conceptual framework development and teacher recruitment), two (teacher initiation to Health-Based Physical Education) and three (co-construction of Health-Based Physical Education units of work) of the research (see chapter 3, section 5 on the research design of this study). However, the analysis of data for our respective studies and writing of our theses were completed entirely independently; shaped solely by our unique foci, personal interpretations and our intended original contribution to knowledge. In addition, the different research foci entailed us each reviewing and critiquing a good deal of different literature as they related to our studies. Paul therefore became, as I explore in chapter 3, a critical friend throughout our interactions with teachers and students and during our frequent reflexive dialogue, most notably during phases one to three of the research and, though to a much lesser degree, throughout the latter elements of our individual work.

The separation of our research foci was deliberate and a key consideration from the outset of the research. This was done in order to ensure 'the creation and interpretation of new knowledge' (Quality Assurance Agency, 2014, p.30) and so that the resulting theses respectively contained 'original work worthy of publication' (Loughborough University, 2018, p.8). At the same time, a programmatic approach to research, created through closely interlinked studies, offered compelling opportunities in the development of a pedagogical model for Health-Based Physical Education. Kirk and Haerens, two supervisors at the outset of these doctoral studies, claimed (later publishing this rationale, see Kirk & Haerens, 2014) that programmatic research provides opportunities to more effectively accumulate knowledge through the use of

complementary bodies of literature, research designs and methods. Looking back on my PhD journey, I can see the clear advancement of knowledge in each of our studies, which I do not feel would have been possible had I had been working in a research silo. However, the artificial division of our two foci for the purposes of completing our doctoral studies could in other ways be seen to have limited the breadth of our respective work. For example, there is limited coverage in this thesis of the influence and impact of the teacher initiation (professional development) phase on teachers (as this was a focus in Paul's study). Similarly, Paul has noted the tension in his project of not evaluating students' perceptions of their experiences in Health-Based Physical Education (as this was central to my thesis). Whilst these divisions have undoubtedly shaped the foci and content of the two theses, for better and perhaps in some respects, for worse, the collective knowledge developed in our two studies will be brought together in the future. For example, through peer-reviewed and professional publications, and in face-to-face and online outlets, notably in professional development opportunities for teachers (see chapter 7).

Structure of the thesis

This thesis is presented in seven chapters. Following this introductory chapter, five chapters containing substantial bodies of work and one concluding chapter are presented. This section overviews the content of each chapter.

Chapter 2 – Literature Review: This chapter explores four needs through its narrowing focus. Firstly, the need for greater attention to the issue of physical activity, explored through the section on 'Physical Activity: Benefits, Guidelines and Physical Activity Levels'. Second, the need for more effective school-based approaches to physical activity promotion, explored through the section on 'Schools, Physical Education and Physical Activity'. This section considers the benefits of physical education approaches to physical activity promotion that draw on wider school and community strategies. Section 3 'Health-Related Physical Education: Curriculum, Practice and Pedagogy' considers the need for more effective 'PE-for-health' (Armour & Harris, 2013) pedagogies to combat the predominant and enduring tendencies for many misdirected approaches in this area. In section 5, the need for a new pedagogical model, as one alternative to the current approaches for teaching health in physical education is justified. This chapter has guided both the research questions and the subsequent research design.

Chapter 3 – Methodology: This chapter explores the key terms within the philosophy of research literature in order to explore the inter-relationship between these issues and as a basis for justifying the later research design. This includes a standpoint on my own research assumptions and paradigmatic perspectives. What follows is a critical evaluation of teacher and curriculum change literature as it relates to this study. Building on the teacher and curriculum change literature, I justify the methodological approaches used in this research, namely practitioner research and participatory action research. The final section explores the settings, participants and research design, followed by a justification of the specific methods of data generation and analysis used in this study.

Chapter 4 – Conceptual Framework for Health-Based Physical Education: This chapter explores the groundwork and advocacy for a Health-Based Physical Education pedagogical model by Haerens et al. (2011) as a basis for developing the model in this research study. Based on a further review of literature, a number of key concepts, guidelines, structures and definitions were developed, following the notion of a conceptual framework by Jewett and Bain (1985). If the Haerens et al. paper was the very first step in pedagogical model development, the conceptual framework I present in this chapter is the second step.

Chapter 5 – The Type and Impact of Health-Based Physical Education Programmes: This chapter draws on the work completed with teachers and their students over a sustained period. The conceptual framework presented in chapter 4 became the basis for co-constructing programmes of Health-Based Physical Education in two schools. In the first section, the chapter explores the types of programme that were designed and taught, considering the programme aims, the subject matter (activities and health-related learning) and teaching and learning approaches. In section 2, the impact that these programmes had on the students was evaluated. This evaluation considered the effectiveness of the programmes in achieving the goals of Health-Based Physical Education, notably the extent to which students had developed the characteristics of habitual, motivated, informed and critical movers. Considerable findings and reflections on this phase of the research have informed the subsequent development of the pedagogical model reported in chapter 6.

Chapter 6 – Health-Based Physical Education Reconsidered: This chapter represents the culmination of this research, drawing on the conceptual framework, the design, implementation and evaluation of school programmes and further contemporary research. The result is a comprehensive yet flexible pedagogical model framework with the goal of 'valuing a physically active life, so that students learn to value and practise physical activity for their health and well-being, joy, social interaction, challenge, competence and personally relevant learning experiences'.

Chapter 7 – Conclusion: This chapter firstly revisits the research aims and questions before drawing on the findings of the previous chapters to make a clear response to each research question. This leads to a statement of this research's original contribution to the field. Next, the key limitations of the research are highlighted, before a number of future research avenues and recommendations are explored. I conclude by looking back and forward from a personal perspective, considering the journey travelled thus far and the steps needed to move the ideas presented in this thesis forward, with the aspiration of shaping practice and policy in this area. The realisation that this will be a complex and significant task is abundantly clear!

CHAPTER 2: REVIEW OF LITERATURE

The literature review is divided into five key sections. In section one, key concepts and definitions are explored and prioritised as a basis for researching the field and in order to provide a rationale for greater promotion of physical activity. Section two discusses the far-reaching benefits of physical activity, drawing on physical, emotional, social, personal, academic/cognitive and financial effects. Within this section the physical activity guidelines are discussed and contrasted with current levels of physical (in)activity, specifically in young people. Finally, in section two, a note of caution surrounding the almost exclusively positive connotations of participation in physical activity is provided. Section two therefore provides a rationale for broader and more focused approaches to the promotion of physical activity than are often reported in the literature. In section three, the place of schools and physical education in physical activity and health promotion are considered. First, a rationale for physical activity promotion through schools is established, followed by an evaluation of previous school-based approaches that draw on physical education as a central component. Section three provides a critical rationale for school-based approaches to physical activity promotion. Section four presents a critical review of approaches related to teaching health in physical education. National curricula expectations for teaching health in physical education are considered, followed by clarification on terminology used in this area. This section also includes a critical overview of PE-for-health pedagogies that are most commonly used to teach health in physical education. Section five considers the place of pedagogical models and models-based practice as one solution to the traditional multi-activity curricula in physical education and the dominant health-related practices which to date have appeared unsuccessful in achieving their multiple aspirations for the subject. Whilst a growing evidence base suggests that pedagogical models can be effective in achieving specifically designed learning outcomes, a critical perspective is also taken of these and of the application of models in practice. Section six concludes the chapter and presents a strong argument for the development of a research-informed pedagogical model that could support young people to value a physically active life.

Section 1. Concepts and Definitions: Health, Physical Activity, Exercise and Fitness

In this section, definitions of health, physical activity, exercise and fitness are provided. This allows for a critical stance to be taken in later sections of the chapter and thesis on the 'taken-for-granted role of PE [physical education] in <u>health</u> promotion' (Green, 2002, p.95, emphasis added). Although the promotion of physical activity in young people is the primary focus and topic of this study, a range of other concepts are also defined because of their links to physical activity, the potential secondary outcomes of participation in physical activity, the variety of practices within physical education and their interchangeable use within the subject, as will be explored in this chapter.

Health

Health has perhaps been most famously defined by the World Health Organization (WHO) as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (1946, p.1). However, Huber et al. (2011) argue that the requirement for 'complete' well-being would leave most people unhealthy for most of the time. In fact, as our population ages and patterns of illness change, the importance of adapting and managing our lifestyles to optimise levels of physical, mental and social well-being, *despite* life's challenges, should be a key consideration. Whilst not disregarding the aspirational essence of the WHO definition, Quennerstedt (2010) acknowledges that viewing an individual as 'healthy' or 'unhealthy' is potentially too simplistic and, perhaps even worse in the case of young people, might label those individuals as either 'normal' or 'abnormal'. In reconsidering health, Antonovsky (1979) rejected the traditional medical focus of illness prevention and argued instead for wellness and its promotion. He proposed a shift away from a pathogenic model of health (also known as 'biological' and 'deficit' models), towards a salutogenic model (or strength-based model).

In this respect, Antonovsky (1979) characterised health more holistically, as (1) a positive resource for life (not the goal of living), (2) a multidimensional state of physical, cognitive, social and emotional well-being, and (3) a dynamic (ever-changing) concept located on a health continuum. As a resource, health and well-being can support and enhance the multiple facets of life. As a multidimensional state, optimum health will only be achieved through the enhancement of physical, cognitive, social *and* emotional

well-being. As a dynamic concept, health is inferred along a continuum, rather than a dichotomy (health vs ill-health). It is believed that Antonovsky's (1979) work had a direct influence on the WHO (1986, p.1) revised definition of health: 'a resource for everyday life, not the object of living. It is a positive concept emphasising social and personal resources as well as physical capabilities'.

Taking a pro-active role in managing one's own health and ill-health (with the support of others) could lead to greater life resources and optimum health and well-being. It is hoped that practitioners who work in physical education, physical activity promotion, and health promotion consider health in this broader and multidimensional definition. Physical activity and health promotion are defined as all measures deliberately designed to promote either physical activity or health (Cale & Harris, 2009b).

Similar to the holistic view taken of health above, my understanding of the role of physical activity in health promotion goes beyond a mere focus on the physical effects, to encompass a view that physical activity can also positively impact social, emotional, cognitive, personal and financial outcomes (see section 2) and thereby enrich people's lives. A definition of physical activity is therefore considered next.

Physical Activity

Caspersen et al. (1985, p.126) define physical activity as 'any bodily movement produced by skeletal muscles that results in energy expenditure'. Physical activity incorporates elements such as the type, intensity, duration, frequency and amount of energy expended. The Chief Medical Officers in the UK (2011) categorise physical activity into everyday activities (e.g. active travel, heavy housework, gardening, DIY, manual work), active recreation (e.g. recreational walking or cycling, active play, dance) and sport (e.g. structured competitive activity, swimming, exercise and fitness). Meanwhile, the intensity of physical activity is often described in terms of light, moderate and vigorous movements (Ainsworth et al., 2000; Chief Medical Officers, 2011).

The benefits accrued from more intense forms of physical activity (see section 2) have led to the promotion of moderate to vigorous physical activity (MVPA), and to specific recommendations to reduce extended periods of inactivity, such as sitting (Chief Medical Officers, 2011; Lee et al., 2012; Ekelund et al., 2016). Moderate and vigorous

intensity physical activity have independently been defined as follows:

> Moderate intensity: A moderate intensity physical activity requires an amount of effort and noticeably accelerates the heart rate, e.g. brisk walking, housework and domestic chores. On an absolute scale, moderate intensity is defined as physical activity that is between 3 and 6 METs (Chief Medical Officers, 2011, p.54).

> Vigorous intensity: An activity that requires a large amount of effort, causes rapid breathing and a substantial increase in heart rate, e.g. running and climbing briskly up a hill. On an absolute scale, vigorous intensity is defined as physical activity that is above 6 METs (Chief Medical Officers, 2011, p.54).

Although MVPA is the most frequently cited intensity in the literature, this is not to suggest that light physical activity has no benefits. Light physical activity is characterised as 'slow movement of the trunk… standing up… [and] walking at a slow pace' (Chief Medical Officers, 2011, p.25). Recent research into increasing time spent standing has also shown it to have some physical (Benden et al., 2011; Reiff et al., 2012) and cognitive (Mehta et al., 2015) benefits, and has led to some recommendations that desk-based individuals should stand up whilst working (Buckley et al., 2015). However, this line of research is still relatively in its infancy, and not all studies have found positive effects of standing (Halim & Omar, 2011; MacEwan et al., 2015).

In addition to light, moderate and vigorous intensity physical activity, a final category of physical inactivity, or sedentary behaviour, is often used to imply the absence of physical activity (Marshall & Welk, 2008). The Chief Medical Officers (2011, p.54) define sedentary behaviour as:

> Activities that do not increase energy expenditure much above resting levels… Activities considered sedentary include sitting, lying down and sleeping because they do not require any muscle recruitment. Associated activities, such as watching TV and reading, are also in the sedentary category.

It is important that practitioners who promote physical activity are aware of the difference between light, moderate and vigorous movement, and of the current evidence base for the effects of different forms of physical activity. In addition to physical activity, 'exercise' is also a term that those working with young people need to understand, so that a distinction between these can be made. A definition of exercise is provided next.

Exercise

The term 'exercise' has often been used interchangeably with the term 'physical activity'. However, exercise is defined as a subset of physical activity that is planned, structured and repetitive, and that is done to intentionally improve or maintain one or more components of physical fitness (American College of Sports Medicine [ACSM], 2006, p.3). Exercise has most frequently been categorised into three types: aerobic, anaerobic and flexibility (National Institutes of Health and National Heart, Lung, and Blood Institute, 2006).

The distinction between physical activity and exercise is important for those interested in promoting movement in its widest sense. Participants should understand that being active may, or may not involve 'planned, structured and repetitive' (ACSM, 2006, p.3) movements. For some individuals an unstructured form of physical activity, such as 'walking the dog', will be preferred, whilst for others, a structured 'exercise to music' class will likely have greater appeal. One of the most frequently cited effects of participation in physical activity and exercise - 'fitness' - is defined next.

Fitness

Physical fitness is not defined in relation to the movements that people perform, but to a set of attributes that they have or achieve, largely as a result of those movements. 'Physical fitness is a set of attributes that are either health- or skill-related' (Caspersen et al.1985, p.126). Health-related components of fitness are closely associated with an individual's physical health and include cardiorespiratory endurance, muscular strength, muscular endurance, body composition and flexibility, whilst skill-related components of fitness pertain more to athletic performance and include agility, balance, coordination, speed, power and reaction time (Casperson et al., 1985).

An understanding of health, physical activity, exercise and fitness is important in this research in order to appreciate the historical roots of teaching health in physical education, given the multitude of approaches which have had various labels such as 'Health Related Fitness', 'Health Focused Physical Education' and 'Health Related Exercise' (to name but a few).

In summarising this section, physical education's key contribution to health is in its role in promoting physically active lifestyles (afPE, 2015; Trost, 2004) and physical activity

in young people. As section 3 will argue, physical education is a prime location for the promotion of physical activity. The benefits of participation in physical activity are far-reaching and should be a key focus for physical educators in helping young people to value and take part in sustained physical activity for life. The following section provides a justification for the promotion of physical activity amongst young people, in addition to a critical overview of the current physical activity guidelines and participation data for young people.

Section 2. Physical Activity: Benefits, Guidelines and Participation Levels

This section presents a rationale for prioritising the promotion of active lifestyles amongst individuals in society. A wide range of benefits are discussed, which show participation in physical activity to offer a broad range of diverse outcomes. Next, the current physical activity guidelines are presented to highlight the recommended levels of activity throughout the lifecourse. These guidelines are then compared against participation data, exploring the trends across age groups. Finally, a note of caution regarding physical activity participation draws this section to a close.

Benefits of Participation in Physical Activity

It is suggested that a commitment to physical activity 'especially when made early in the life course, can yield significant rewards, both at that time and for years to come' (Bailey et al., 2013, p.289). In this sense, much like Antonovsky's (1979) view of health, I suggest that physical activity may be viewed as a positive resource for life.

The following justification focuses on those benefits where the evidence is strongest. However, it should be noted that participation in physical activity alone will not necessarily result in the stated benefits, and may, in some circumstances, have negative effects (considered at the end of section 2). With the exception of physical benefits, the social relationships developed within activity settings are the key to realising the benefits (Bailey et al., 2013).

Physical Benefits

Physical inactivity is the world's fourth leading risk factor for mortality, believed to be directly responsible for nearly six percent of all deaths worldwide, behind high blood pressure (13%), tobacco use (9%) and high blood glucose (6%) (WHO, 2009). Physical

inactivity causes more deaths annually than overweight and obesity (5%), high cholesterol (5%) and alcohol (4%). Inactivity is predicted to cause over 20% of breast and colon cancers, and around 30% of cases of diabetes and heart disease. These, and other non-communicable diseases, account for around 68% of the world's deaths each year (WHO, 2014). Based on these statistics, the relationship between positive physical health and physical activity is undeniable (Bailey et al., 2013; Chalkley et al., 2015; Hardman & Stensel, 2009; Reiner et al., 2013).

Chalkley et al. (2015) claim that, for children aged 5-11, the evidence for the association between physical activity and cardiovascular health, muscular strength, bone health and cardiovascular fitness is strong. There is also evidence that physical activity is positively associated with motor skill development and body composition. For school-aged children (5-18 years), a systematic review of health benefits established that physical activity is associated with many physical health benefits, including improved cholesterol, blood pressure, overweight and obesity and bone mineral density (Janssen & LeBlanc, 2010). The review also revealed that these benefits (and potentially other benefits reported below) suggest a dose-response relationship, that 'the more physical activity, the greater the health benefit' (p.13) (presumably, although rarely explicitly stated in the literature, up to a certain point) and that, to achieve substantial health benefits, physical activity should be of at least moderate intensity, with aerobic-based activities providing the greatest effects. Vigorous activities can also provide additional benefits, particularly in muscle and bone health (Janssen & LeBlanc, 2010).

In line with the point relating to the dose-response relationship above, even small increases in physical activity can have health benefits in high-risk youths, such as those who are overweight and obese (Janssen & LeBlanc, 2010). In adults, a recent longitudinal systematic review found that physical activity has beneficial effects on weight gain and obesity, coronary heart disease (including multiple risk factors for this disease) and type 2 diabetes (Reiner et al., 2013). Reductions in the risk of several site-specific forms of cancer (colon, breast and prostate) have also been associated with increased physical activity levels (Hardman & Stensel, 2009) and there is growing evidence of the potential positive effects of physical activity for reducing lung and endometrial cancers.

Emotional Benefits

There is compelling evidence that regular physical activity has a positive effect on mental health and well-being. Most particularly, physical activity has been shown to have a positive effect on the self-esteem of participants of all ages (Biddle et al., 2004; Eime et al., 2013). There is also convincing evidence that physical activity can reduce both trait (enduring) and state (situation-specific) anxiety (Biddle et al., 2015). Bailey et al. (2013) point to the potentially positive effects on anxiety reduction being due to a range of factors, including distraction, relaxation, improvements to self-esteem and mood enhancement. Furthermore, research has established that in patients diagnosed with depression, exercise produces 'generally comparable' positive effects to antidepressant medication (Blumenthal et al., 2007). However, when the larger evidence base is reviewed, small but positive effects of physical activity participation and a reduction in depression and its related symptoms are more likely (Cooney et al., 2013; Janssen & LeBlanc, 2010).

Physical activity has also been shown to have positive effects for a range of socially marginalised groups, such as at-risk youth, women, people with disabilities and minority ethnic groups (Bailey et al., 2013). These have included reduced social isolation, making new friends, improved confidence relating to others and improved social skills. It is also believed, in the right social environment, that participation in physical activity supports individuals to experience and learn about different emotions and how to regulate them (Bailey et al., 2013) although it is felt that these and other life skills are not frequently transferred outside of the activity setting (Gould & Carson, 2008). It should further be noted that a great deal of the emotional development in participants is closely related to the outcome of an activity (winning or losing) and, as previously suggested, to the quality and structure of the social and learning environment (Bailey et al., 2013).

Social Benefits

The potential value of physical activity to social development becomes most apparent in contexts that involve groups or teams. One of the most widely cited claims for physical activity and sport is that they reduce disaffection and increase pro-social behaviour in young people (Department for Education, 2013; Sandford et al., 2008). However, despite government policy expressing a seemingly unequivocal link between physical activity and such behaviours, the conclusions from many researchers are

more cautious. Whilst many studies have established links between physical activity and positive youth development (social development, teamwork, reduction in the use of illegal drugs and fewer risky sexual behaviours), physical activity has rarely been found to be a 'causal' factor (i.e. those involved in physical activity may already have greater positive behaviours or those with delinquent behaviour may leave sport) (Holt, 2008). Rather, there is evidence to suggest that the effect of physical activity on anti-social behaviour works indirectly by influencing a range of factors (Makkai et al., 2003). Additionally, a number of potentially negative effects of participation in physical activity have been found, including some cases of increased delinquent behaviour and alcohol use (Holt, 2008). It is clear that pro-social behaviours are not automatic and several good practice principles should be applied (Makkai et al., 2003; Sandford et al., 2008). Leaders will also need to apply specific goals and techniques (Holt, 2008) within their programmes. Despite the varied findings, Bailey suggests that because of the 'profound and long-lasting negative effects of such [antisocial] behaviour on life chances, these findings concerning the impact of physical activity, are of enormous significance' (Bailey et al., 2013, p.297).

Another benefit of physical activity appears to be its potential effect on combatting social exclusion, which is a key factor leading to mental health problems, crime and poverty (Bailey et al., 2013). Certain physical activities can give individuals a sense of belonging, opportunities to make friends and develop networks, as well as promoting inter-generational family relationships. This most often occurs where there is a sense of belonging, such as in a team or club sport (Eime et al., 2013), and a shared interest, which can often bring people from different social backgrounds together (Sport England, 2016b). However, participation in more informal 'lifestyle' activities has also led to greater social identity and cohesion (Wheaton, 2004).

Personal Benefits
The evidence base for the effect of physical activity on participants' personal development is also growing. Bailey et al. (2013) suggest that whilst there is still a need for further research, physical activity has been shown to promote a broad range of values and skills including problem solving, decision making, empathy and resilience. Additionally, an international review found that well designed physical activity programmes for young people can develop a range of skills which are highly valued by employers, such as commitment, teamwork, acceptance of rules and positive attitudes

to cultural diversity (DiCola, 2006). What is apparent in the development of these skills and values is that the pedagogy of the teacher or coach and the social environment are more important than the actual activity (Petitpas et al., 2008). Further, unless the skills are promoted intentionally, they do not always transfer outside of the physical activity setting (Bailey et al., 2013).

A number of school-based programmes have been successfully designed to teach young people a range of skills and values that will enhance their character and values. One example is Teaching for Personal and Social Responsibility (TPSR) (Hellison, 2011). TPSR has been shown to enhance interpersonal relations, teamwork, communication skills, sportspersonship and a range of personal and socially responsible behaviours (leadership, respect, autonomy and effort) (Hellison & Walsh, 2002). More recently, behaviours such as resisting peer pressures to engage in anti-social behaviours, improved peer interaction and empathy have been observed following TPSR programmes (Escartí et al., 2010). However, the most extensive review of TPSR to date indicates the potential of the approach to support transfer of these behaviours outside of physical education to real life as a 'work in progress' (Hellison & Walsh, 2002, p.304). Despite this, some studies have found positive transfer of self-control, effort and self-esteem into classroom contexts, and in the value of violence prevention and reduced school dropout (Hellison & Walsh, 2002). To increase the chances of transfer, Escartí et al. (2010) suggest utilisation of the model across the school curriculum, whilst others suggest that transfer of behaviours need to be specifically planned and structured into programmes (Gordon, 2011; Hammond-Diedrich & Walsh, 2006). Despite the positive evidence base for the effects of TPSR, there is still a need for more rigorously assessed studies that can reliably evidence the impact on participants (Escarti et al., 2015).

Academic and Cognitive Benefits

A number of organisations and individuals have highlighted that the frequent assumption that physical activity interferes with academic development is worryingly misguided, as the evidence for a positive association is rather strong (Bailey et al., 2013; CDC, 2010; Chalkley et al., 2015; Sport England, 2016a). Research typically focuses on the impact of physical activity on three components of academic performance: academic achievement (grades and test scores), academic behaviour (attendance and on-task behaviour), and cognitive skills (attention, concentration,

memory). Results of a rigorous scientific review on the effects of school-based physical activity and physical education (CDC, 2010) indicate very positive associations for all three components. This led CDC to conclude that there is 'substantial evidence that physical activity helps to improve academic achievement, including grades and test scores' (CDC, 2010, p.6). Furthermore, 'physical activity promotes cognitive skills and attitudes and academic behaviour… [which] include enhanced concentration and attention as well as improved classroom behaviour' (CDC, 2010, p.6). Furthermore, 'Increasing or maintaining time dedicated to physical education may help, and does not appear to adversely impact, academic performance' (CDC, 2010, p.6). A word of caution should be noted as some studies (although none of those reported by the CDC, 2010) reportedly lack experimental rigour and, despite high correlations between physical activity and academic performance, the associations are not always shown to be causal (Sport England, 2016a).

Financial Benefits

Whilst it is fair to suggest that most countries around the world equate career success with academic achievement, there is now strong evidence to suggest that a number of non-cognitive skills developed through participation in physical activity can also have a powerful effect on future career and financial success (Dworkin et al., 2003). Bailey et al. (2013) claim that physical activity can help make people more financially successful because these individuals often possess a range of 'soft skills' such as communication, collaboration, decision-making, resilience, and empathy. It appears that active individuals behave differently, and frequently, in ways which are valued by employers (Ewing, 1998). They also tend to be more competitive and productive as well as earn higher salaries (Cabane & Clark, 2011). These indicators strengthen the rationale for the benefits of physical activity participation on career and financial success.

This section has considered the effect that physical activity can have on a range of physical, emotional, social, personal, academic/cognitive and financial outcomes, providing a strong rationale for all individuals to pay greater attention to physical activity participation. As a result of these potential benefits, guidelines for the promotion of physical activity have been published in many countries. Of relevance to this research are the UK physical activity guidelines for young people, an overview of which is provided next.

Physical Activity Guidelines

The current UK guidelines for physical activity (Chief Medical Officers, 2011) represent, for the first time, a consensus on the amount and type of physical activity recommended for individuals in England, Scotland, Wales and Northern Ireland. Figure 2.1 below provides an overview of the physical activity guidelines for: under 5s, 5-18 years, 19-64 years and 65+ years in the UK, each of which have distinct recommendations. The guidelines draw on a global evidence base, including comprehensive reviews, and are reflective of physical activity guidelines in America (US Department of Health and Human Services, 2008; Tremblay & Haskell, 2012), Australia (Okely et al., 2008) and Canada (Canadian Society for Exercise Physiology, 2012), as well as of the World Health Organization global recommendations on physical activity for health (2010). The UK guidelines are thus closely aligned with other developed countries around the world (Kahlmeier et al., 2015).

There are 3 key physical activity guidelines for school-aged young people (5-18 years) (Chief Medical Officers, 2011). The first recommends young people engage in at least one hour of moderate to vigorous physical activity every day. The guidelines provide flexibility in achieving these recommended levels by suggesting that total activity be built up in blocks of at least 10 minutes and by offering options for moderate and vigorous physical activity (Chief Medical Officers, 2011). Importantly, for those young people who are currently inactive, the guidelines acknowledge that doing even a small amount of physical activity can provide some benefits. It is also recommended that activity levels should be increased gradually in respect to the frequency, duration and intensity of physical activity (Chief Medical Officers, 2011). The duration of the guideline (at least one hour) is drawn from the evidence claiming young people can experience significant and meaningful health benefits if they participate in 60 minutes of physical activity, *in addition to daily living* (Kesaniemi et al., 2010). This final point is important as it has recently been established that many young people and adults do not meet (Currie et al., 2008; Sallis et al., 2016; Scholes, 2016, 2017) or know the physical activity guidelines, with most underestimating the minimum expectation (Townsend et al., 2012; Knox et al., 2015).

EARLY YEARS (under 5s)
1. Physical activity should be encouraged from birth, particularly through floor-based play and water-based activities in safe environments.
2. Children of pre-school age who are capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day.
3. All under 5s should minimise the amount of time spent being sedentary (being restrained or sitting) for extended periods (except time spent sleeping).

CHILDREN AND YOUNG PEOPLE (5–18 years)
1. All children and young people should engage in moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day.
2. Vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week.
3. All children and young people should minimise the amount of time spent being sedentary (sitting) for extended periods.

ADULTS (19–64 years)
1. Adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes (2.5 hours) of moderate intensity activity in bouts of 10 minutes or more – one way to approach this is to do 30 minutes on at least 5 days a week.
2. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or a combination of moderate and vigorous intensity activity.
3. Adults should also undertake physical activity to improve muscle strength on at least two days a week.
4. All adults should minimise the amount of time spent being sedentary (sitting) for extended periods.

OLDER ADULTS (65+ years)
1. Older adults who participate in any amount of physical activity gain some health benefits, including maintenance of good physical and cognitive function. Some physical activity is better than none, and more physical activity provides greater health benefits.
2. Older adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes (2.5 hours) of moderate intensity activity in bouts of 10 minutes or more – one way to approach this is to do 30 minutes on at least 5 days a week.
3. For those who are already regularly active at moderate intensity, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or a combination of moderate and vigorous activity.
4. Older adults should also undertake physical activity to improve muscle strength on at least two days a week.
5. Older adults at risk of falls should incorporate physical activity to improve balance and co-ordination on at least two days a week.
6. All older adults should minimise the amount of time spent being sedentary (sitting) for extended periods.

Figure 2.1: UK Physical Activity Guidelines (Adapted from Chief Medical Officers, 2011)

The second guideline for 5-18 year olds recommends that young people take part in vigorous activity at least three times per week. Evidence indicates that vigorous activity is necessary for several health benefits, including cardio-respiratory fitness and muscular and bone strength in growing bodies (Janssen & LeBlanc, 2010). The third guideline recommends that young people minimise time spent sedentary (sitting) for extended periods of time, as this has been found to be an independent risk factor for

becoming overweight or obesity and developing metabolic dysfunction, even in active individuals (Sedentary Behaviour and Obesity Expert Working Group, 2010).

Despite the widely reported benefits of physical activity, many adults and young people are not meeting the recommended levels of participation. The next sub-section provides a review of evidence on trends in physical activity participation. For the purpose of this research, an overview is provided for pre-school children (under 5s), adults (19-64 years) and older adults (65+ years), whereas a more detailed analysis is provided for school-aged young people (5-18 years).

Levels of Physical Activity Participation

The latest international data on global physical activity prevalence indicates that approximately one quarter of adults are not meeting the guidelines of 150 minutes of MVPA per week. Additionally, females are less active than males and older adults less active than young people (WHO, 2014; Sallis et al., 2016). In the UK, less than one in ten under 5s (9%) is believed to meet the current physical activity guidelines of at least three hours of activity per day (Scholes, 2016). The data for adults in the UK indicates that 61% meet the current recommendations of 150 minutes per week (66% of men and 56% of women) (Scholes & Mindell, 2013). Finally, for those aged 65+, data suggests that only 36% of females and 49% of males meet the guidelines of 150 minutes per week (Scholes & Mindell, 2013).

Global data on school-attending individuals indicates that around 80% of children and adolescents are not achieving at least 60 minutes of daily MVPA (WHO, 2014; Sallis et al., 2016). Statistics from school-aged individuals in the UK specifically indicate only one in five (22%) young people aged 5-15 meet the one hour per day recommendation, with 23% of boys and 20% of girls reporting to meet this minimum expectation (Scholes, 2016). Whilst this latest data shows an increase in overall physical activity for this age group since 2012, when 21% of boys and 16% of girls met the recommendations (Scholes & Mindell, 2013), there are fewer positive trends when reviewing the evidence tracking physical activity from childhood to adolescence. The proportion of young people meeting the physical activity guidelines decreases with age, in line with international findings (Scholes, 2016) and in the UK, young people's participation in physical activity declines year on year – from 30% of boys and 26% of girls aged five to seven years, to just 15% of boys and nine percent of girls aged

thirteen to fifteen.

Physical Activity Promotion: A Note of Caution

Whilst this section has so far provided evidence that meaningful physical activity can be extremely beneficial, a critical note of caution is equally required in that physical activity is not automatically or inherently 'good'. It is true that there are very many individuals who love the joy of movement, physical activity, physical education, exercise or sport. However, it is also true that, for some people, their experiences in these pursuits have had a damaging effect – physically, socially, emotionally and/or psychologically. For these individuals, 'physical activity becomes something to be avoided rather than embraced' (Flintoff & Fitzgerald, 2012, p.13). It is beyond the scope of this section to provide a detailed review of the research relating to young people's negative experiences in physical activity. However, a good body of knowledge indicates significant inequality of opportunity, participation and experience in physical activity for many individuals because of their gender, social class, ethnicity, (dis)ability, sexuality and body shape (Armour, 2011; Scholes & Mindell, 2013; Oliver & Kirk, 2015; O'Sullivan & MacPhail, 2010; Stidder & Hayes, 2013). There is also evidence to suggest that participation in physical activity carries a small chance of physical injury. A recent systematic review by Nauta et al. (2015) for example, reports that there are between 0.15 and 0.27 medically treated injuries per 1000 hours of participation in all forms of physical activity (one in every 4000-7000 hours of participation). Despite these cautions, and as outlined earlier, there is a substantial evidence base which suggests that the benefits of physical activity can be both significant and far-reaching.

This section has provided a critical review of the evidence justifying greater attention and action in the name of physical activity. There are potentially multiple and wide-ranging benefits of participation in physical activity. Whilst many of the benefits are widely understood, there appear to be a significant number of individuals who are not meeting the recommended guidelines for physical activity. The lack of participation by certain groups of society has led to physical inactivity being labeled as a pandemic and a global public health priority (Kohl et al., 2012). In many countries across the world, schools and physical education have furthermore been hailed as prime locations for the promotion of physical activity. The following section provides a critical overview of the role that schools, and physical education in particular, have claimed and their potential effectiveness in physical activity promotion.

Section 3. Schools, Physical Education, Health and Physical Activity

This section explores the rationale for health and physical activity promotion within schools and physical education most specifically, from a policy and research perspective. Next, it considers the evidence on whole-school approaches to physical activity promotion, including those with a central physical education focus as a basis for considering a future for Health-Based Physical Education. The following sub-section discusses and evaluates the approaches taken within physical education to promote physical activity both within and beyond lessons.

A Rationale for Health and Physical Activity Promotion in Schools and Physical Education

Schools and physical education are widely cited as an appropriate site for the promotion of health and physical activity (Cale et al., 2016; Institute of Medicine, 2013; Sallis et al., 2012; Trost, 2004). This section provides a rationale for the prioritisation of physical activity promotion within schools, and specifically, within physical education, in order to try to positively influence young people's physical activity within and beyond the curriculum.

A number of government policies and initiatives in the UK have cited schools, and physical education and school sport in particular, as key contexts for promoting physical activity and health in young people. These include the National Curriculum for England (Department for Education (DfE), 2013) which has important links with health through its overarching curriculum aims, as well as through the subjects of science, personal, social, health and economic (PSHE) education and physical education. Other government policies relevant to this area include the most recent sport strategies: *Sporting future: a new strategy for an active nation* (HM Government, 2015), *Creating a sporting habit for life: a new youth sport strategy* (Department for Culture, Media and Sport/Sport England, 2012), plus *Be active, be healthy: A strategy to get the nation moving* (Department of Health, 2009). Schools and physical education are highlighted in each of these policy documents as key stakeholders in physical activity promotion.

In addition, the Office for Standards in Education (Ofsted, 2018) require young people

to understand how to stay healthy, physically and emotionally, and have also recently reported on good practice for schools in using the government's 'Physical Education and Sport Premium' funding (DfE, 2015) for primary schools (Ofsted, 2014) which is directly associated with improvements to physical education and school sport provision. A key source of funds for this premium is from another government initiative, the soft drinks levy (or the 'sugar tax', HM Treasury, 2018). Other national initiatives led by the Government and their agencies include Sport England's (2016c) *Towards an active nation: Strategy 2016-2021*, the All-Party Commission on Physical Activity's (2014) report on *Tackling Physical Inactivity – A coordinated approach,* the Department for Health's (2009) *Change4life* initiative and the national *This Girl Can* campaign (Sport England, 2015). A recent collaboration of government and sport agencies has also led to the publication of *What works in schools and colleges to increase physical activity?* (Public Health England, Youth Sport Trust & Association of Colleges Sport, 2015). Finally, the National Child Measurement Programme (National Health Service, 2017), a mandated health programme led by local authorities and implemented in schools, has been in place in schools for over a decade. Collectively, these policies and initiatives emphasise the key role that schools and physical education are seen to have in supporting the promotion of health and physical activity in young people.

Whilst a key focus of many of these initiatives is the promotion of physical activity, some emphasise and/or prioritise addressing overweight and obesity in young people (e.g. Department for Health, 2009; HM Government, 2015; NHS, 2017). The issue of overweight and obesity is described as a global concern (WHO, 2016) which has led to the term 'obesity epidemic' widely being used to indicate the severity of the problem (Wright, 2009). In England specifically, around one third of young people are reported to be either overweight or obese (Conolly, 2016) and this figure doubles to nearly two thirds in adults (Moody, 2016), However, notwithstanding the significant number of young people and adults who are identified as overweight or obese and the associated health implications (Conolly, 2016; Moody, 2016; WHO, 2016), there are a number of people who question the validity of the claim that there is an obesity epidemic, and encourage a more critical attitude towards health and obesity discourses (see afPE, 2015; Campos et al., 2006; Evans et al., 2004; Gard, 2010; Gard & Wright, 2005) and who are critical of the often simplistic and narrow approaches to health education and promotion adopted within and beyond schools (Armour & Harris, 2013; Evans & Rich, 2011; Harris & Cale, 2018; Quennerstedt, 2008). For example, Gard and Wright (see

Gard, 2010; Gard & Wright, 2005) are highly sceptical and attempt to dispel common myths surrounding the so-called global obesity epidemic. Similarly, Cale and Harris (2013, p.433) critique such obesity discourse and suggest that 'every child of every size matters' and can benefit from physical activity involvement. It is also contended that the very talk of a global obesity epidemic does little to promote serious discussion of issues such as social division and of regional or international contexts (Gard, 2004; Sparkes, 1989). Indeed, taking an alternative perspective on the prioritisation of physical activity over overweight/obesity reduction, and as has been identified earlier in this chapter, physical inactivity represents a more widespread global health concern than obesity (WHO, 2009). The above, along with the multi-dimensional definitions of health (see section 1) and the range of benefits of physical activity (see section 2) beyond the mere physical, support a more critical stance on the promotion of healthy active lifestyles.

Crawford (1986, p.66) is believed to be one of the first to suggest that rising expectations of improving or protecting the body have led to issues of health, fitness and weight loss becoming 'entangled'. Kirk and Colquhoun (1989) also acknowledged this point, claiming that an uncritical view of health and physical education supports the triplex of 'exercise = slenderness = health', which they argued could place an unhealthy emphasis on body shape and size. Drawing on research over the last decade, it appears that the earlier cautions have not been heeded , with the role of physical education in public health arguably being simplistic, narrow and performative, with a growing emphasis on health surveillance (Armour & Harris, 2013; Cale & Harris, 2013; Evans & Rich, 2011; Gard & Wright, 2001; Quennerstedt, 2008; Rich & Mansfield, 2018). These issues align with the ideology of healthism, or 'the preoccupation with personal health as a primary focus for the definition and achievement of personal wellbeing' (Crawford, 1986, p.368). Healthism is a representation of health characterised by moral imperative and self-control (Crawford, 1980) whereby health is seen to be achieved by those who work hard to take responsibility for themselves, much like the idea of the body as a machine which requires regular maintenance (Colquhoun, 1990).

In Colquhoun's words, healthism is 'void of critical analysis in the PE field' (1990, p.249). The limitations leveled at healthism are that it reduces the perceived importance of a wide range of agencies in society for their role in health promotion

(Sparkes, 1989), and can conceal and even exacerbate social divisions (Gard, 2004; Sparkes, 1989). Furthermore, Sparkes (1989) argues that individuals who do not achieve health (read as slenderness) or are deemed overweight, become the victims of blame simply because health is viewed by many to be a matter of choice. Those who believe health is a matter of one's individual self-control or choice are demonstrating, and in some cases compounding, the 'selective blindness regarding other structural issues such as social class, gender, and race that also impact upon health' (Sparkes, 1989, p.212). Locating the promotion of one's health at the individual level, particularly where young people are concerned, is also highly questionable given the limited influence they have over many elements of their health and well-being (Cale et al., 2014). One way of moving away from an ideology of healthism, however, is to consider the role of others and the influence of the school and subject environments in the promotion of health, in its broadest sense, which is the focus of the following arguments.

Since schools have a direct influence over at least 40-45% of a young person's waking time (Fox et al., 2004; Harris & Cale, 2018) and the infrastructure is in place in many schools (Wechsler et al., 2004), a growing field of policy, research and practice is in whole-school approaches to physical activity and health promotion (Kelder et al., 2014; Langford et al., 2014; Lima-Serrano & Lima-Rodríguez, 2014). Indeed, the importance of whole-school approaches in this regard has been reiterated in a special issue of the Journal of Teaching in Physical Education (2014, volume 33, issue 4). This approach is recognised at a global level (WHO, 2008; 2012; 2016), which has led to a number of such initiatives being developed in many countries across the world (Dyson et al., 2015; Institute of Medicine, 2013; McMullen et al., 2015). Whole-school approaches are considered later in this section. Suffice to say here though, is that the rationale for whole-school approaches is supported with a great deal of academic literature, which similarly locates physical education as central to the development of young people's health and physical activity (afPE, 2015; Cale & Harris, 2005; Fairclough & Stratton, 2005a; Fox et al., 2004; Harris & Cale, 2018; Kirk, 2010; McKenzie and Lounsbery, 2009; Sallis et al., 2012; Trost, 2004). This has led to Ken Green referring to a 'taken-for-granted role of PE [physical education] in <u>health</u> promotion' (2002, p.95, emphasis added). However, Cale and Harris (2011) among others (Fox et al., 2004; McKenzie & Lounsbery, 2009), caution that physical education cannot provide all of young people's health needs, and nor should it be held solely responsible for increasing the physical

activity and health of young people. 'In short, improving health is a far more complex aspiration' (Cale & Harris, 2011, p.55).

On this note and reflecting on the taken for granted role of physical education in health promotion identified above, it is important to recognise that health is a complex and multi-faceted concept, and as the earlier definition of health revealed, it includes physical, cognitive, social and emotional dimensions. Physical inactivity is just one of many causes of ill-health; and the World Health Organization claim physical inactivity to be the fourth leading risk factor for premature death, behind high blood pressure, tobacco use and high blood glucose (WHO, 2009). This would suggest that, although a major issue, physical inactivity is not <u>the</u> most important world health issue. As such, other individuals and organisations responsible for these other health risk factors also have an important part to play in health promotion. Indeed, government policies make it clear that health promotion requires a complex and multi-level approach, and should involve a wide range of government departments, sporting, health and educational organisations, as well as multi-disciplinary research.

Many researchers also question the claims that are made for the role and impact of physical education on health. The likelihood of a single school subject which occupies less than two percent of a child's waking time (Fox and Harris, 2003; Cale & Harris, 2011) impacting all dimensions of health is very unlikely, and this is supported by evidence from whole-school interventions which is not always promising (Dobbins et al., 2013). This is despite the frequently and widely reported links between physical education and health promotion. Evans et al. (2004, p.386) similarly question the role of physical education in health promotion by claiming that:

> physical education has no more capacity or responsibility to make children... eat well and be thin than have math teachers the capacity or responsibility to make pupils multimillionaires.

It is clear, therefore, that whilst physical education may have an impact on health, it is likely to be a comparatively small effect. However, what <u>is</u> becoming clearer from the literature is that physical education and wider school approaches, if taught and implemented effectively, can have a positive impact on physical activity, both within and beyond lessons (Dudley et al., 2011; Pardo et al., 2013; Kriemler et al., 2011; Quitério, 2012; Salmon et al., 2007). This aligns with calls from the national subject association for physical education in the UK that the subject's contribution to health

should be through the promotion of active lifestyles and a holistic understanding of health and well-being (afPE, 2015). The next sub-section considers school-based approaches to physical activity promotion, including those with physical education as a central focus.

This sub-section has provided a rationale for school and physical education approaches to physical activity promotion. It is clear that a wealth of national and international stakeholders and researchers consider schools to be of central importance in this area. In the next sub-section, whole-school and physical education approaches to physical activity are considered as a potentially influential strategy to support young people to lead healthy active lifestyles.

School-Based Approaches to Physical Activity Promotion

Systematic reviews of school-based physical activity interventions consistently highlight that programmes which incorporate multi-component strategies are the most promising in positively impacting physical activity behaviour (Dobbins et al., 2013; Kriemler et al., 2011; Public Health England, Youth Sport Trust and Association of Colleges Sport, 2015). One example of a whole-of-school physical activity approach is a Comprehensive School Physical Activity Program (CSPAP) (Institute of Medicine, 2013; CDC, 2013). A CSPAP is defined as

> A multicomponent approach by which school districts use all opportunities for students to be physically active, meet the nationally-recommended 60 minutes of physical activity each day, and develop the knowledge, skills, and confidence to be physically active for a lifetime (Kelder et al., 2014, p.442).

The CSPAP approach has and continues to be used as a framework for a range of international initiatives. For example, CSPAP forms the basis of *Let's Move Active Schools*, the US national initiative for active schools (Active Schools, 2018), and the CSPAP components are applied in numerous programmes around the world such as *PE with Class* (Poland), *Active School Flag* (Ireland), the *Finnish Schools on the Move* programme (McMullen et al., 2015) and Germany's *Bewegte Schule* (Moving School) (Kelder et al., 2014) plus a number of individual interventions (see Dobbins et al., 2013; Kriemler et al., 2011; Lai et al., 2014; Pardo et al., 2013; Russ et al., 2015).

The physical activity initiatives and interventions identified above are guided by one or more of the following components of a CSPAP: high quality physical education;

before/after school activity; activity during the school day; staff inclusion in activity promotion; and the involvement of family and community members in young people's activity (CDC, 2013; Erwin et al., 2013; McMullen et al., 2015) (see Fig. 2.2). Kriemler and colleagues (2011, p.927) claim that 'combining educational, curricular and environmental elements' are almost always more effective than interventions which aim only to impact on one area. Changes to the school curriculum and use of printed educational materials are also cited as two key approaches in school-based physical activity interventions (Dobbins et al., 2013). However, most reviews claim that the most promising multi-component interventions in schools draw on strategies to engage the family (Biddle et al., 2015; Kriemler et al., 2011).
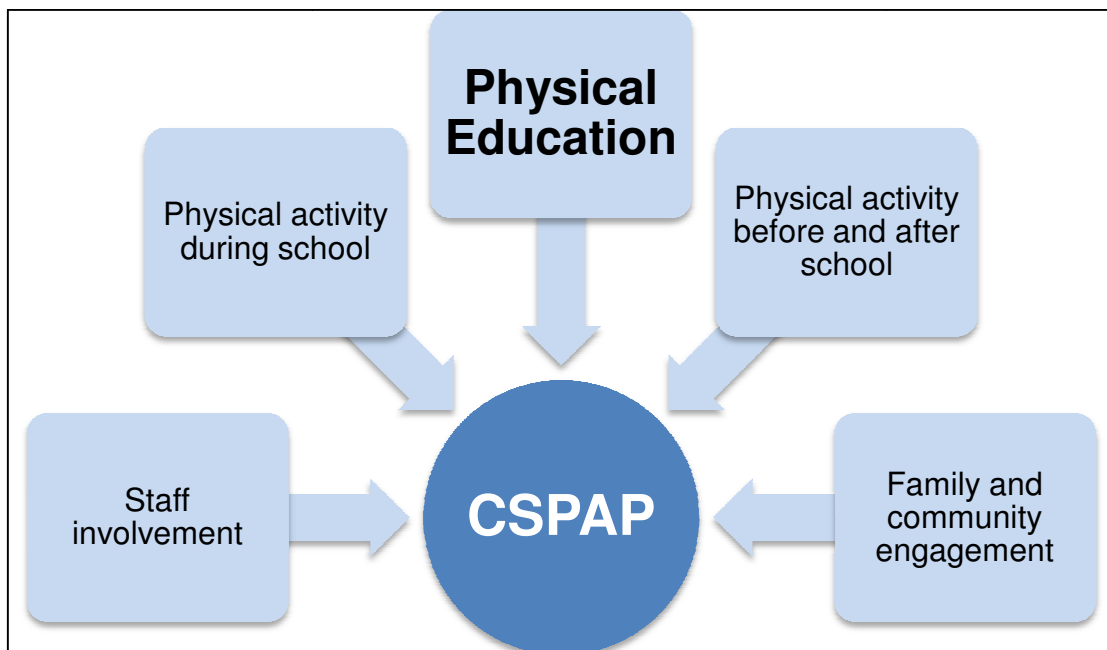
Figure 2.2: Components of a Comprehensive School Physical Activity Program (Adapted from CDC, 2013)

The evidence for school-based physical activity promotion consistently indicates that the most successful interventions include physical education as a core component (Pardo et al., 2013; Kriemler et al., 2011; Quitério, 2012; Salmon et al., 2007). In their review, Salmon et al. (2007) claimed that the most effective interventions include strategies within physical education, activity breaks and the family setting, including the use of motivationally tailored approaches. These add weight to the review presented by Dudley et al. (2011) surrounding the positive effect that physical education and school sport interventions can have on physical activity levels in children and adolescents. In summary, it is largely agreed that whole-school interventions that include physical

education as a central component are the most effective in promoting young people's physical activity (Cale, 2017; Cale & Harris, 2006; Pardo et al., 2013; Van Acker et al., 2011).

As the research evidence cited above would suggest, despite only making up approximately 2% of a young person's waking time (Fox & Harris, 2003), physical education, if taught appropriately, can have a positive impact on physical activity behaviours, including participation, knowledge and understanding, attitudes and perceived competence. Physical education is furthermore a compulsory subject for most school-aged children (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2014) which thus potentially further heightens its role. In fact, physical education is deemed to have the potential to promote physical activity in both a direct and indirect manner (see Figure 2.3 below) (Slingerland & Borghouts, 2011). Directly, the UK and US have called for a minimum of 50% of available lesson time to be spent in moderate to vigorous physical activity (MVPA) (Harris, 2013; US Department for Health and Human Services (USDHHS), 2010). More recently, because of the potential contribution of physical education to the physical activity recommendations for young people (Chief Medical Officers, 2011), guidance in the UK suggests that 50-80% of the available learning time be spent 'moving' (afPE, 2015).
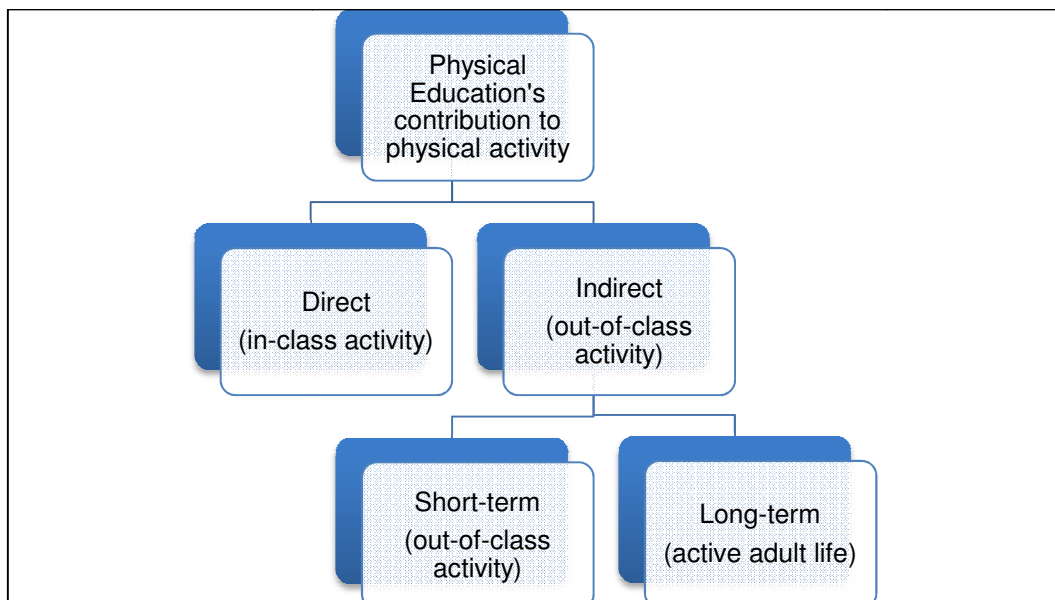
Figure 2.3: Physical Education's Direct and Indirect Contribution to Physical Activity (Adapted from Slingerland & Borghouts, 2011)

This direct impact of physical education on physical activity is significant given that for

many students the subject is the only or main source of regular physical activity (Future Foundation, 2015; Trudeau & Shepherd, 2005). Indirectly, most curricula across the world suggest a key goal of physical education is in promoting active lifestyles in all young people (Department for Education, 2013; SHAPE America, 2013; UNESCO, 2014; Australian Curriculum and Reporting Authority, 2015). Recognition of the potential direct and indirect influence of physical education on physical activity has led to a multitude of interventions and initiatives that aim to increase young people's activity levels.

Physical Education's Direct (in-class) Contribution to Physical Activity

A wealth of evidence is available which suggests that, with relatively simple modifications, teachers can make important direct increases to 'within physical education lesson' activity levels (Dudley et al., 2011; Fairclough & Stratton, 2005b; Lonsdale et al., 2013a; Slingerland & Borghouts, 2011). Studies have used a variety of approaches to promote within-lesson activity levels, although these are typically grouped into 'teaching strategies' and/or 'intensified/fitness infusion' interventions (Lonsdale et al., 2013a). The former include effective activity selection, organisation and management and teaching approach while the latter include supplementation of usual class activities with periods of higher intensity physical activity or exercises tailored to develop specific components of fitness (Lonsdale et al., 2013). Whilst interventions have been shown to increase the amount of lesson MVPA by approximately 24% (Lonsdale et al., 2013a), fitness infusion strategies have been deemed the most effective in promoting within lesson activity levels.

Studies which have used 'fitness infusion' strategies have most frequently adopted unrelated bouts of MVPA within normal physical education lessons. For example, intensified activities can be performed between practice attempts (Ignico et al., 2006), skill development and game-play time can be reduced to allow for aerobic activities to be performed at the end of lessons (Quinn & Strand, 1995; Strand & Anderson, 1996), or fitness activities can be performed during class registration (Scantling et al., 1998). It is also possible to focus on high intensity fitness training within physical education lessons (Baquet et al., 2002). Unfortunately, whilst fitness infusion strategies appear to enhance lesson activity time, it is argued the long-term effect of these interventions could be less than desirable and these approaches rarely consider the educational and motivational context of lessons (Fairclough, 2003; Goudas & Biddle, 1993; Haerens et

al., 2010; Lonsdale et al., 2013a). In contrast, a great deal more is known about the positive effects of changing teaching behaviours and providing professional development on young people's physical activity (Fairclough & Stratton, 2005b; Lander et al., 2017; Lonsdale et al., 2013a; Slingerland, 2014).

A wide range of teaching strategies associated with modifications to the learning environment have led to positive physical activity outcomes within lessons. For example, the inclusion of a specific lesson objective linked to physical activity has shown to have success in raising activity levels without compromising intrinsic motivation or perceived competence (Fairclough & Stratton, 2005a). Replacing an emphasis on technical skill practice with small-sided games has also enhanced student physical activity (Van Acker et al., 2010). In addition, lesson organisation can play a significant role in physical activity promotion through the use of small groups (Young et al., 2006) the minimisation of complex lesson transitions (Fairclough & Stratton, 2005a; Young et al., 2006), as well as efficient student registering and grouping (McKenzie & Marshall, 2000). Use of all available space and equipment is also a beneficial strategy in enhancing levels of student activity (McKenzie et al., 2006). Drawn from a review of literature pertaining to the promotion of physical activity within physical education lessons, Slingerland (2014) has summarised the range of strategies found to be effective in a tabulated list, using several categories: mode of delivery; lesson content; classroom management; instruction; and before the lesson.

However, although a number of studies have shown some positive impact on within-lesson activity levels, these are not always maintained beyond the intervention period (Lai et al., 2014) and often have little significant impact on wider health-related outcomes (Quitério, 2012). There is also a growing body of research that suggests that vigorous physical activity interventions within physical education lessons could have a negative impact on young people's motivation to be active beyond the lesson (Cale et al., 2014; Fairclough, 2003; Haerens et al., 2010; Goudas & Biddle, 1993). As a result, physical activity promotion beyond the lesson is believed to hold the greater likelihood of achievement (Quitério, 2012), and therefore further high quality physical education interventions that are focused on out-of-class and long term physical activity levels are greatly needed (Haerens et al., 2010; McKenzie & Lounsbery, 2013; Slingerland & Borghouts, 2011). Physical education's indirect contribution to physical activity is considered next.

Physical Education's Indirect (out-of-class) Contribution to Physical Activity

It has been suggested by contemporary researchers that looking at only lesson MVPA ignores perhaps physical education's most important role - giving young people the knowledge, skills and confidence to be active throughout their lifetime (Haerens et al., 2011; Heidorn et al., 2016; Lonsdale et al., 2013a; Slingerland, 2014). As a result, active lessons should be balanced with opportunities to also develop these traits in students. A number of researchers have taken on this challenge and sought to apply effective teaching and learning approaches that will positively impact physical activity and motivation.

Evidence indicates that interventions that are designed and implemented using psychological or behavior change theories are more successful than atheoretical interventions (Lai et al., 2014; Lander et al., 2017; Lonsdale et al., 2013a; Lubans et al., 2008). Successful interventions have drawn on theories such as the self-determination theory of motivation, social ecological models, social learning theory and a range of behavior change techniques. For example, linked to self-determination theory, both Chatzisarantis and Hagger (2008) and Cheon et al., (2012) have identified that enhancing student motivation toward physical education and within lesson physical activity can also increase leisure time physical activity. Furthermore, interventions have shown success in physical activity promotion when supported by effective teacher professional development (Dudley et al., 2011; Lander et al., 2017).

Changes to the curriculum and support from educational resources are considered key to increasing young people's physical activity levels (Dobbins et al., 2013). A number of studies have created new curricula with the goal of promoting physical activity out of lessons. The *Lifestyle Education Activity Program* (LEAP) supported girls through a new physical education curriculum that aimed to enhance relevance and confidence through activities and teaching approaches popular with high school girls, as well as develop the skills to set and monitor personal goals, highlight barriers to physical activity and strategies to overcome these (Dishman et al., 2004). Given that research suggests that physical education teachers rarely prompt students to be active outside of lessons (Hepples & Stratton, 2007; McKenzie et al., 1997, 2006) interventions that include this technique have also found success in influencing out of lesson activity levels, particularly when there is closer interaction with parents and students' self-

monitoring of physical activity (Blais, 2008; Hastie et al., 2012; Kriemler et al., 2010; Webber et al., 2008). Finally, a knowledge component, such as 'health education' or 'health messages' within physical education lessons has been deemed an important predictor of physical activity behavior change in young people, supporting students' understanding of the benefits and ways to improve physical activity, health and fitness (Bayne-Smith et al., 2004; Haerens et al., 2006, 2009; Lubans et al., 2009).

Despite these positive outcomes, results from many school-based interventions are often found to be inconclusive or, where increases in physical activity are evidenced, results are often not statistically significant (Biddle et al., 2012; Metcalf et al., 2012; Russ et al., 2015). There are also multiple challenges for schools in promoting physical activity and health, including the status of physical activity and health promotion in schools, teacher expertise, and schools' effectiveness in engaging all students in healthy active lifestyles (Alfrey et al., 2012; Cale et al., 2016). Furthermore, where physical education and school sport interventions have been successful in promoting physical activity, and as alluded to earlier, this has been predominantly within lessons (Dudley et al., 2011) and has been found to be the result of largely teacher-centered and direct approaches, which may have negative implications for students' motivation (Teixeira et al., 2012; Van den Berghe et al., 2014). In line with the results of some school-based approaches, a number of physical education interventions also report few or statistically insignificant improvements to students' physical activity levels (Cale & Harris, 2006; Dudley et al., 2011; Pardo et al., 2013). Many of the most successful physical education interventions are also relatively large, complex and expensive, making their reproducibility and sustainability challenging. Finally, the bewildering number and variety of evidence-based programmes make it difficult to decide which, or which parts, should be disseminated and implemented.

This section has revealed the positive direct and indirect impact that physical education and other school-based approaches can have on physical activity levels. Whilst interventions that promote lesson activity levels seem to be most effective, focusing solely on the 2% of a young person's waking (Fox & Harris, 2003) without considering students' motivation, confidence, competence, knowledge and understanding to be active for life (Whitehead, 2010) is a rather narrow perspective - after all 98% of a young person's waking time is spent outside of their formal physical education lessons.

Although the physical activity interventions discussed above are promising, the evidence related to 'non-intervention' physical education lessons is generally not. Most physical education lessons fall short of the recommendation (afPE, 2015; USDHHS, 2010) to spend at least 50% of the available lesson time in physical activity (Hollis et al., 2017; Fairclough & Stratton, 2005b, 2006; Stratton, 1996). Equally, if one looks at the physical activity levels of the world's youth (if judging physical education against the single goal of supporting all individuals to lead a healthy active lifestyle), the subject has not yet met its aspiration (Haerens et al., 2011; Kirk, 2013; Trost, 2004). Put simply, 'physical education has failed to deliver the goods when it comes to promoting physical activity in children and adolescents' (Trost, 2004, p.334).

The following section considers current issues in teaching health within physical education to explore why it has not been more successful in achieving a key raison d'être of promoting healthy active lifestyles in young people. Whilst there is not a shortage of different approaches to promoting healthy active lifestyles within physical education, the dominant approaches do not seem to have changed in any significant way for several decades.

Section 4. Health-Related Learning in Physical Education: Curriculum, Practice and Pedagogy

This section presents a critical review of approaches to teaching and learning about health in physical education. It first considers current curricula and national expectations for teaching health in physical education in England. Second, key differences in terminology are discussed. Third, 'PE-for-health pedagogies' (Armour & Harris, 2013) used to teach health within physical education are explored – specifically the subject matter, students' perspectives and teaching approaches. The third section on PE-for-health pedagogies critiques why the subject has not been more effective in the promotion of young peoples' healthy, active lifestyles.

Health Within the National Curriculum for Physical Education

In England, the National Curriculum for Physical Education (NCPE) (DfE, 2014) outlines four aims for the subject: (1) develop competence to excel in a broad range of physical activities; and ensure students (2) are physically active for sustained periods of time; (3) engage in competitive sports and activities; and (4) lead healthy active lives. Whilst physical education is typically still dominated with sport-based multi-

activity curricula (Green, 2014; Kirk, 2010; UNESCO, 2014), aims two and four make the link to physical activity and health explicit, as well as, alongside aim one, support a broad curriculum which will potentially include a variety of health-enhancing activities.

In analysing the NCPE by Key Stage, there is no explicit reference to physical activity or health within the key stage one (5-7 years) expectations. In key stage two however, (aged 7-11 years), students should learn how to evaluate their own success, develop a range of components of fitness and compare performances with previous ones to demonstrate improvements (DfE, 2014). Key stage three (11-14 years) broadens the expected content to include 'physical activities' as well as 'different sports' and students should also develop the confidence and interest to get involved in exercise, sports and activities and understand the long-term health benefits of physical activity (DfE, 2014). At key stage four (14-16 years), students should be involved in a range of activities that will help to develop their fitness and which promote an active, healthy lifestyle. Students are furthermore expected to take part in regular activities outside of school through community links or sports clubs (DfE, 2014).

The aims of the NCPE are thus aligned with the promotion of healthy active lifestyles, and the programmes of study include expectations related to students' physical (i.e. physical activity, exercise, fitness, active, healthy lifestyle), cognitive (i.e. components of fitness, long term health benefits) and affective (i.e. confidence, interest) development. However, reference to specific approach(es) or health-related activities to support this development are largely absent. Instead, the 'subject content' names other activities including games, athletics, dance, gymnastics, swimming and outdoor and adventurous activities through which it seems health is to be addressed. The notion of health as a distinct area of the current physical education curriculum is therefore missing, unlike the previous NCPE (Department for Children, Schools and Families / Qualifications and Curriculum Authority, 2007), which included 'exercising safely and effectively' as a key area in its own right.

It could therefore be argued that, as there is no specific mention of the form or context through which 'pupils should be taught' about health (DfE, 2014, p.235) (unlike the activities and sports listed above), health is a marginalised (Cale & Harris, 2013b) area of the curriculum – a forgotten activity area. The lack of clarity surrounding how health-related learning might be taught could lead to an assumption or interpretation that

either (a) it does not need to be taught specifically, or (b) that the health-related learning identified above should be taught through the named activities and sports. This lack of clarity and detail within the National Curriculum arguably does not support practice in this area, which is considered in the next sections.

Health-Related Learning Terminology

Given the lack of guidance from the National Curriculum, it is perhaps not surprising to find that there are a number of different terms and approaches used in the name of teaching health-related learning in physical education. The literature highlights the diverse terminology and emphases, and there is an apparent shift in most countries (in language at least) away from enhancing physical fitness towards promoting physical activity for health. In the UK, the term health-related exercise (HRE) (Cale & Harris, 2009b; Harris, 2000) has been largely preferred over others such as health-related fitness (HRF), health-related physical fitness (HRPF) and health-focused physical education (HFPE). Harris (2000, p.2) claims that HRE includes:

> …the teaching of knowledge, understanding, physical competence and behavioural skills, and the creation of positive attitudes to and confidence associated with current and lifelong participation in physical activity. Within PE, the most appropriate teaching approaches involve learning through active participation in purposeful physical activity embracing a range of sport, dance and exercise experiences including individualised lifetime activities.

This definition of HRE is important for several reasons. Firstly, it suggests the inclusion of multiple learning domains (affective, cognitive, physical and social) (Bailey et al., 2009; Kirk, 2012). Secondly through this area, young people should develop the attitude and confidence to participate in lifelong physical activity. Thirdly, lessons should be taught through active and purposeful participation, not merely through theoretical or 'intensified' lessons (see Baquet et al., 2002) or batteries of physical fitness tests (see Cale & Harris, 2009a for a critique). Fourth, the activities that young people experience should not be limited to traditional activity areas but should include 'lifetime' (Fairclough et al., 2002) activities such as cycling, swimming or other forms of exercise that have greater carry-over value into later life, *as well as* more competitive and sports-based pursuits. These features (summarised from Harris' and Cale's significant and sustained work in this field) could become key components of a pedagogical model for Health-Based Physical Education.

PE-for-Health Pedagogies

Drawing on Armour's (2011) definition of pedagogy, three dimensions are deemed important: knowledge in context, teachers and teaching, and learners and learning. Pedagogy therefore considers the programmes and activities used within a topic, teaching approaches, plus the needs of the learners. Research on teaching health-related learning within physical education has traditionally almost exclusively focused on the first two dimensions – the subject matter/activities and teaching approaches/philosophies, although there is now a growing body of knowledge surrounding student's experiences in this area. Subject matter for health-related physical education (H-RPE), student perspectives on H-RPE and teaching approaches for H-RPE are considered below.

Subject Matter for H-RPE

For over 20 years a consistent message from empirical work with teachers is that the most dominant activities used in H-RPE are those aligned with fitness, exercise and sport – and most notably methods of training (particularly circuits), running, resistance exercise, as well as fitness testing (Harris, 1994, 1997; Green, 2009; Harris & Cale, 2018; Hopple & Graham, 1995; Keating, 2003; Silverman et al., 2008; Wrench & Garrett, 2008). Given that it appears that very little has changed in this regard for two decades, there is clearly a need to disrupt the dominance of fitness, exercise and sport-based outcomes that are aligned with H-RPE for various reasons. For example, they have not been successful in effecting population changes in young peoples' physical activity levels, most likely because these activities are unappealing to many youngsters and do not reflect those that are typically pursued later in life (Green, 2009; Cale & Harris, 2009b).

What activities and content to teach is a debated one in H-RPE. Trudeau and Shephard (2008) and Lund and Tannehill (2010) suggest offering a balance of activities that students will enjoy as young people and as adults. Harris (2000) also recommends delivering a broad range of activities including sport, dance, exercise and lifetime activities within HRE and Fairclough et al. (2002) have urged for greater inclusion of lifetime activities to support teaching and learning in H-RPE. Lifetime activities are defined as those which can be easily 'carried over into adulthood because they generally need only one or two people' (Ross et al., 1985, p.76). However, Fairclough et al. (2002) equally warn that exposure to a range of lifetime activities is not enough,

by itself, to encourage life-long physical activity, suggesting that students must also develop feelings of enjoyment, competence and self-determination, which might best be achieved through either lifetime activities or those more oriented to children and young people.

Equally, in addition to student's perceptions of the activity, the pedagogical approaches used by the teacher (regardless of the activity) can also promote or inhibit these feelings. As the next sub-sections on student's perspectives on H-RPE and teaching approaches for H-RPE will illustrate, common practice and student's experiences are suggested to be somewhat limited, based on the dominance of competitive, fitness, performance and sport-based approaches to H-RPE. Given the close historical ties between health, fitness and sport, I would therefore urge that in a number of cases, more sport may be counter-intuitive to the notion of 'valuing a physically active life', not only because of the relevance to some of the activity used as a vehicle for learning, but also because of the contested nature of how these areas (health, fitness and sport) are frequently taught and experienced. That being said, if teachers are able to modify the dominant approach to teaching health through games and sports indicated below, then they could certainly provide the right context for a number of students to develop or maintain a physically active life. An important point in this discussion is that both the activity and teaching approaches are crucial in relation to promoting healthy active lifestyles and may develop both positive and negative feelings within students depending on their match with their needs and interests. However, with the right teaching approaches, activities such as games, gymnastics and dance, for example, could be taught with a focus on developing student's participation throughout their lifetime.

Whilst there is some argument for greater inclusion of lifetime activities, it is acknowledged that these are typically marginalised in the physical education curriculum (Fairclough, et al., 2002; UNESCO, 2014). Fairclough et al. (2002) further suggest that as lifetime activities require little organisation or equipment, a number of activity options fit this definition. Walking, jogging, running, swimming, cycling, resistance exercise, aerobic exercise, as well as golf, badminton, tennis and martial arts, to name just a few, are common lifetime activities participated in by adults across the country (Sport England, 2017), most of which would seem to be suitable physical education curriculum activities. That said, whilst there is a call for greater inclusion of

such activities within physical education, it should be noted that there is little evidence on what lesson content is most likely to promote effective H-RPE (Haerens et al., 2011). Further, it is important to recognise that children's physical activity engagement is sporadic and often very informal, and young people 'do activity in different ways to adults' (Corbin, 2002, p.132). This latter point represents an argument for not 'imposing' adult lifetime activities on young people, but instead allowing them the freedom to choose activities which suit their interests, lifestyles and preferences.

In addition to the activities employed within H-RPE, fitness-related practices often use fitness tests to support students to be active, develop their understanding of how to improve personal fitness, and to motivate young people to be more active (Alfrey & Gard, 2014; afPE; 2015; Cale & Harris, 2009a; Cale et al., 2014; Harris & Leggett, 2015a; Jaakkola et al., 2013). However, some fitness testing practices have come under critique because of the inappropriateness, impact and relevance of measuring health/fitness outcomes to actual engagement in physical activity (Alfrey & Gard, 2014; Cale & Harris, 2009a; Lund and Tannehill, 2010). For example, there is little empirical evidence supporting the view that testing motivates individuals to be active or that young people value fitness tests (Cale & Harris, 2009a; Keating, 2003). Despite this lack of evidence, reviews of children's fitness testing (e.g. Cale & Harris, 2009a; Harris & Cale, 2006) reveal that many advocates of testing claim that it *can* promote physical activity, fitness and health as well provide a basis for cognitive and affective development However, whilst accepting that fitness testing, if appropriately employed, may contribute to the above, the authors of these reviews agree that the activities (see subject matter for H-RPE) and approaches (see PE-for-health pedagogies below) used within fitness testing practices are a key determinant in whether they have a positive or negative influence. Cale & Harris (2009a) furthermore conclude that much of the fitness testing carried out in physical education may well represent a misdirected effort in the promotion of physical activity and that physical education time could therefore be better spent.

Considering the critique of fitness testing and recent reports of negative (Domangue & Solmon, 2013) and widely variable (Jaakkola et al., 2013) motivational responses to testing, an alternative perspective, based on valuing physical activity is evidently needed to inspire young people to lead physically active lives (Armour and Harris, 2013; Haerens et al., 2011; Puhse et al., 2011). The Health-Based Physical Education pedagogical model offers one possible solution to overcome the misdirected

predominance of fitness monitoring (Cale & Harris, 2009a; Cale et al., 2014) as an approach to promote increased physical activity in young people. After all, 'no child needs to be measured to be helped to enjoy being physically active' (Cale & Harris, 2009b, p.143).

Students' Perspectives on H-RPE

Research has shown that many young people can have somewhat limited knowledge and understanding about healthy, active lifestyles and display negative perceptions of their H-RPE experiences (Harris et al., 2016; Hooper et al., 2017; Hopple & Graham, 1995; Luke & Sinclair, 1991; McDermott, 2012). For example, students have frequently reported a dislike for fitness training and testing activities (Hopple & Graham, 1995; Luke & Sinclair, 1991; McDermott, 2012). Indeed, primary school students in Hopple & Graham's (1995) study disliked fitness testing so much that they found ways to dodge the tests, including feigning sickness or bringing an excuse note. In addition, and one potential cause of their dislike for testing activities, was that students showed little or no understanding of why they were asked to take part in the tests. These findings are in line with the suggestions of Cale and Harris (2009b) who advocate that the affective and cognitive domains are the most important but are typically given the least attention in H-RPE.

Some students have also identified narrow and confused views of health dominated by physical components, talking about health in terms of what not to do, rather than what to do, and demonstrating misunderstandings surrounding physical activity, health and fitness (Hooper et al., 2017). These findings, related to narrow, unenjoyable, boring and painful experiences in H-RPE are worrying given many young people believe it is important to lead a healthy, active lifestyle and would like to learn more about how to do so (Hooper et al., 2017). As such, action is clearly required in this area.

These results signify that many young people's experiences of H-RPE, particularly in relation to fitness testing, are less than favourable (Cale & Harris, 2009a). Whilst, there are some examples of studies that reveal a positive effect of participation in fitness testing (Jaakkola et al., 2013), greater research is needed to deduce and assess young people's development in the affective and cognitive domains through such lessons. Given the success found by Jaakkola et al. (2013), it is suggested that more research is carried out into students' experiences of health within physical education

characterised with a positive motivational climate that emphasises progress, effort and cooperation. Hooper et al. (2017) also suggest that teachers should teach healthy active lifestyles as an explicit, broad and positive concept and build on what students already know about these issues.

Teaching Approaches for H-RPE

In this sub-section, the possible reasons for the failure of physical education to achieve what many people view as a key goal of supporting young people to lead healthy, active lifestyles are explored. Some argue that the subject's multiple goals and aspirations have left it 'ambivalent' about its role (Kirk, 2006, p.127), and it having a *muddled mission* (Pate & Hohn, 1994) or being the 'chameleon of all curricula' (McKenzie, 2001). Given the widely cited aspirations of physical education linked to developing motor and social skills, cognitive, moral and emotional development as well as health and fitness (to name a few) (Bailey et al., 2009; Whitehead, 2015), it is not difficult to see why many within the profession are unclear about its priorities. Equally, trying to do 'too much' in terms of affective, cognitive, physical and social learning outcomes has arguably resulted in the subject frequently 'changing its colours' (like the chameleon) to meet specific government, educational, school, physical activity and health priorities.

As mentioned earlier, it is also widely acknowledged that many physical education programmes are dominated by multi-activity, sport-based curricula (Green, 2009; Kirk, 2010; Siedentop, 2002) that pose a problem for the achievement of physical activity promotion goals. If physical education is dominated by 'physical-education-as-sports-techniques' (Kirk, 2010), then it is not surprising that the teaching of H-RPE likewise largely reflects a 'fitness', 'fitness for sport' or 'fitness for performance' philosophy (Alfrey & Gard, 2014; Alfrey et al., 2012; Green, 2009; Harris, 1994, 1997; Harris & Leggett, 2015a, 2015b; Puhse et al., 2011) or, as Armour & Harris (2013, p.207) suggest, 'pedagogies of health through competitive sport'. Evans et al. (2008, p.147) go as far as to argue that if fitness and performance are prioritised in H-RPE, this may result in 'a cocktail of high performance mixed with body-centred pathology codes [which] may have deeply damaging consequences for students' identity, their education and health'.

Harris (1994, 1997) was one of the first to establish that H-RPE in the UK is more

closely aligned to fitness for sports performance than the promotion of healthy active lifestyles. Unfortunately, this same finding is still prevalent today, some 20 years later (Harris & Leggett, 2015a, 2015b; Cale et al., 2016). There also appears to be a mismatch between teachers' philosophy (i.e. fitness for life) and their practice (i.e. fitness for sport/performance) (Alfrey & Gard, 2014; Harris & Leggett, 2015a, 2015b). Whilst the former focuses on the role of physical activity in health enhancement, the latter is characterised by increasing students' fitness for sport performance.

It is suggested that this mismatch between teachers' philosophies and pedagogies in practice is caused by a number of factors. For example, many physical educators have a sport-based background and therefore tradition and familiarity with what they know (i.e. sport) frames their dominant H-RPE practice (Harris & Leggett, 2015a). Initial teacher training in this area has also been identified as part of the cause of the fitness for performance practice in H-RPE (Alfrey et al., 2012; Harris & Leggett, 2015a) with typically narrow and sport science foci during university and initial teacher training courses. It is also suggested that teachers' lives and philosophies, for some, have a stronger impact on their practice than initial teacher training or H-RPE professional development (Green, 2003), the latter of which is rare for physical educators to engage with (Alfrey et al., 2012; Armour & Harris, 2013).

Teachers' H-RPE knowledge has also been questioned from several perspectives. Firstly, many teachers appear to have an over-inflated confidence in their knowledge relating to H-RPE (Alfrey et al., 2012; Castelli & Williams, 2007) although in a study of American Middle School physical educators, their assessed understanding did not meet the expected standards of health for a typical class of 14-15 year olds (Castelli & Williams, 2007). A UK study by Alfrey et al. (2012) also discovered that, despite three-quarters of secondary school physical educators indicating the inadequacy of their initial teacher training to teach H-RPE, the vast majority felt confident or very confident in teaching the area. This confidence is disconcerting given many teachers suggest that they gain their H-RPE knowledge from their own life experiences (Alfrey et al., 2012; Harris & Leggett, 2015a; O'Sullivan, 2005; Tsangaridou, 2006) and/or from mass media (i.e. the internet, magazines, DVDs) (Alfrey et al., 2012; Giroux, 2004; Rich, 2011). Whilst one's own physical activity experiences and the information gleaned from mass media can be useful to teachers, it is contended that 'they may not always be wholly accurate, reliable, up to date or comprehensive in scope, and therefore

appropriate for an educational context' (Alfrey & Cale, 2013, p.71). In a strong challenge to the issues causing and surrounding teachers' knowledge for H-RPE, Armour contends that 'it is one thing for a teacher to be out-of-date in the teaching of a specific sports technique, but quite another to teach children discredited health knowledge' (Armour, 2010, p.7).

Despite many teachers' reliance on personal experience and mass media for their H-RPE knowledge development, there are a significant number of resources, across many countries, which *could* provide more evidence-informed, contemporary and detailed support. In the US, for example, popular health-based frameworks include 'Fitness for Health' (Corbin and Lindsey, 2007), 'Fitnessgram' and 'Activitygram' (The Cooper Institute, 2010). In Europe, popular resources include the European Test of Physical Fitness (EUROFIT, Council of Europe, 1988) and the more recent Assessing Levels of Physical Activity and Fitness resources (ALPHA-FIT, see http://www.thealphaproject.net). In the UK, published resources available to support teaching and learning include 'Health Related Exercise in the National Curriculum: Key stages 1 to 4' (Harris, 2000), 'Getting the Buggers Fit' (Cale & Harris, 2009b), 'Warming up, cooling down' (Elbourn & Harris, 2002), 'Fitness room activities for secondary schools' (Elbourn & James, 2013) and 'Aerobics and circuits for secondary schools' (Elbourn, 2008). (Note: Whilst the titles of some of these resources may imply a heavy fitness emphasis, they do promote physical activity more broadly and holistically and have a clear educational focus).

Indeed, relating to the above point, much can be learnt from the strategies employed in these and other resources. For example, the importance of focussing on the process of physical activity rather than merely health/fitness outcomes, and developing young people's competence to set goals, manage their own physical activity and health programmes and move from dependence on the teacher to independence. There is also consistent support for effectively teaching a range of lifetime and exercise-based activities as well as enhancing students' health-related learning plus guidance for optimising the effectiveness of fitness testing practices to support student progress in all learning domains. However, resources alone can only achieve so much and will not result in deep or sustained changes to philosophy, knowledge or pedagogy (Cale et al., 2002). It is recognised that this will require changes to initial teacher training and continuous professional development and the development and incorporation of new

PE-for-health pedagogies in particular (Armour & Harris, 2013; McKenzie, 2007; Metzler, 2013b).

Harris & Leggett (2015a) identify further pragmatic reasons for teachers' H-RPE focus on fitness for performance, which concerns the links between many units of work and examination physical education course requirements (such as muscles, fitness, methods and principles of training). In this sense, some schools take a predominantly fitness focus as a precursor to support students' later study in accredited courses in physical education. It is also clear that many teachers lack awareness of alternative pedagogies for H-RPE (Harris & Leggett, 2015a), because of their already mentioned narrow initial teacher training experiences and limited engagement with health-related professional development. It is therefore argued that the profession needs a general but flexible framework for teaching H-RPE (Puhse et al., 2011) and new, complex and evidence-informed PE-for-health pedagogies (Armour & Harris, 2013).

To this point, this chapter has reviewed the commonly used (and confused) terms in physical activity, health and fitness, as well as provided a comprehensive overview of the benefits of physical activity. The literature on whole-school and physical education approaches for physical activity promotion has also been considered, revealing a range of opportunities to promote physical activity within and beyond lessons. This section has furthermore considered H-RPE curriculum, practice and pedagogy, and has highlighted limitations in the national curricula, as well as in the content and approaches to this area. Teachers' knowledge and practice has been identified as being largely socialised, often limited by their own life experiences and mass media messages and dominated by fitness for sport performance approaches. This has generated questions surrounding the suitability of the subject matter and the approaches used in the name of promoting healthy, active lifestyles.

Given the above findings, many of which are long standing, the development of a new pedagogical model for Health-Based Physical Education that provides a detailed evidence-informed framework whilst offering room for local adaptation (see Kirk, 2013, Metzler, 2011 and others in section 5) appears to be 'compelling' (Armour & Harris, 2013, p.212) and much needed. These and other scholars calling for more effective H-RPE practices, have also signposted the potential of a pedagogical model for Health-Based Physical Education, with valuing a physically active life as its theme, as one

possible approach to overcome some of the limitations of current H-RPE practice (Armour & Harris, 2013; Harris & Leggett, 2015a; Fernandez-Rio, 2016; Slingerland, 2014). The next section introduces and provides a rationale for the use of pedagogical models and models-based practice as a means of supporting the legitimate learning outcomes for physical education, and as a basis for justifying the need for a pedagogical model for Health-Based Physical Education.

Section 5. Pedagogical Models and Models-Based Practice

As the previous section has highlighted, much current practice in the name of physical activity promotion in physical education is based on sport and fitness ideologies, with a focus on testing, training and monitoring (Alfrey et al., 2012; Green, 2009; Harris & Leggett, 2015a, 2015b; Puhse et al., 2011). One approach advocated and adopted by physical educators to overcome this, as well as the subject's 'muddled mission' (Pate & Hohn, 1994) more generally, is to develop a model to support the design of programmes that better align particular learning outcomes, subject matter and teaching strategies (Casey, 2017; Kirk, 2013; Metzler, 2011). In short, rather than an approach which seeks to achieve the subject's broad but legitimate learning outcomes (affective, cognitive, physical, social) via the multi-activity or similar programmes, a model seeks to provide a framework or meta-curricula (Kirk, 2013) to support teachers in designing programmes to attain specific learning outcomes. This section introduces the concept of pedagogical models (and the associated terms of curriculum and instructional models) and models-based practice, before charting the growth, success and challenges of their use. As a number of models have been successfully developed to achieve specific learning outcomes in physical education, this section argues for the development of a new pedagogical model for Health-Based Physical Education.

Model Terminology and Definitions

As an alternative to the multi-activity curriculum approach discussed earlier, there is a growing body of teachers and researchers advocating for a models-based approach to curriculum design and pedagogy in physical education (Casey, 2014, 2017; Casey & MacPhail, 2018; Haerens et al., 2011; Hastie & Casey, 2014; Jewett et al., 1995; Lund & Tannehill, 2015; Metzler, 2011; Kirk, 2010, 2013; Kirk et al., 2018; Siedentop & Tannehill, 2000). Models-based practice (MBP) is increasingly seen as the umbrella term for teachers' use of, and students' learning through, either single pedagogical models or hybrid (combining two or more) models (see Kulinna, 2008; Kirk, 2013;

Casey, 2014, 2017 for fuller explanations). That said, the focus of the term MBP is beginning to shift a little to represent a programmatic (Kirk & Haerens, 2014), 'multimodel' (Lund & Tannehill, 2015; Siedentop & Tannehill, 2000) or 'models-based form of physical education' (Kirk, 2013, p. 225) that aligns the various models with the different learning outcomes, subject matter and teaching strategies inherent in school curricula (Casey & MacPhail, 2018). Put simply, a plethora of models provide a wide range of educational outcomes for young people which teachers can use as a framework to guide their practice in order to achieve said outcomes. In order to achieve specific outcomes for students through a models-based approach, teachers will choose a model (or models) to learn through for a given period of time, rather than an activity (as seen in the multi-activity curriculum) – crucially, it is recognised that no one model can achieve the legitimate learning outcomes for physical education (Casey, 2017; Jewett et al., 1995; Lund & Tannehill, 2015; Siedentop & Tannehill, 2000).

MBP is not a new concept, despite its relative lack of adoption in the majority of physical education curricula (Bechtel and O'Sullivan, 2007; Casey 2014; Kirk, 2010; Pill, 2017). The idea of MBP builds on the work of Jewett and colleagues (1985, 1995), Siedentop and Tannehill (2000), Metzler (2000, 2005, 2011), Lund & Tannehill (2005, 2010, 2015), among others. Jewett et al.'s (1995) work, as well as that of Siedentop and Tannehill (2000) foreshadowed MBP through their description of *curriculum* models, whereas Metzler (2011) refers predominantly to *instructional* models. Meanwhile, Haerens et al. (2011) established the term *pedagogical* model, providing a convincing argument for the use of this term over the previously common terms of curriculum and instructional models. *Curriculum* model, they argue, focuses too heavily on the subject matter, whereas *instructional* model retains a teacher focus. Instead:

> the term *pedagogical* highlights the interdependence and irreducibility of learning, teaching, subject matter and context... does not privilege the instructor or the subject matter in the title and, furthermore, offers an institutionally-neutral term that could be used in sports and exercise, artistic and leisure settings beyond the school, such as sports and dance clubs and outdoor adventure centers (Haerens et al., 2011, p.324, original emphasis).

Jewett et al. (1995), Siedentop and Tannehill (2000) and Metzler (2011) provide similar perspectives on the role of models in physical education as in both instances they are proposed as coherent plans which shape the design of programmes. These authors also base thinking about models on theoretical frameworks and provide an indication of learning goals and suggestions for selecting and structuring lesson content. Metzler

(2011) holds that models frame 'the way teachers instruct and how students are engaged in learning activities' (p.6) on a 'day-to-day' (p.8) basis. In Metzler's terms, models are therefore the 'blueprint' (p.10) from which to plan specific programmes or units of work for a specific activity (or activities), given that they contain '*all* of the planning, design, implementation, and assessment functions for that unit' (p.8, emphasis added). Notwithstanding their comprehensive framework, and importantly, models are also flexible, and provide space for 'local adaptation' (Kirk, 2013), or 'manoeuvre' (Kirk et al., 2018) by 'balancing the challenge of external prescription from outside the school with teacher and pupil agency' (Kirk et al., 2018, p.219).

In his comprehensive text, Metzler (2011) suggests that instructional models are the fourth movement in the development of 'ways to teach' our subject. The first three movements ('the physical education method', 'teaching strategies and styles' and 'teaching skills') are useful for short-term learning activities and outcomes, as has been promoted in most previous approaches to the teaching of H-RPE. However, as indicated just above, a model is designed to be used for an entire unit and includes all the relevant functions for teaching, learning and assessment (Metzler, 2011). Therefore, models could include multiple methods, strategies, styles or skills, but take a more coherent and learner-centred approach. The rationale for a models-based approach in supporting teaching and learning is therefore persuasive given the comprehensive evidence-informed framework used to describe each model (see Figure 2.4), the varied teaching and learning approaches recommended and the range of model outcomes available (Casey, 2014, 2017; Casey & MacPhail, 2018; Haerens et al., 2011; Hastie & Casey, 2014; Jewett et al., 1995; Lund & Tannehill, 2015; Metzler, 2011; Kirk, 2013; Kirk et al., 2018; Siedentop & Tannehill, 2000; Standal, 2016).

Notwithstanding the use of the terms instructional and curriculum model in the literature, for consistency and in order to provide clarity in this thesis, the term pedagogical model is used going forwards. This is in line with the proposal of Haerens et al. (2011) and many others since (e.g. Aggerholm et al., 2018; Barker et al., 2018; Casey, 2014; Casey & MacPhail, 2018; Kirk, 2013; Luguetti et al., 2017; Williams & Wainwright, 2016a, 2016b). I use this term to describe the comprehensive framework for teaching and learning that supports the achievement of a model's major theme and goals. The remainder of the thesis therefore refers to pedagogical models, even when

the term instructional or curriculum model may have been used previously by other authors.

Foundations	Teaching & Learning Features	Implementation Needs and Modifications
Theory & rationale	Directness and inclusiveness	Teacher expertise
Assumptions about teaching and learning	Learning Tasks	Key teaching skills
A theme	Engagement Patterns	Contextual requirements
Learning domain priorities and interactions	Teacher & student roles and responsibilities	Contextual modifications
Student developmental requirements	Verification of instructional processes (benchmarks)	
Validation	Assessment of learning	

Figure 2.4: A Framework for Describing Pedagogical Models (Adapted from Metzler, 2011)

Growth and use of Pedagogical Models

The number and type of pedagogical models continues to grow, with the most commonly known presented with clarity in the compendia of Metzler (2011) and Lund and Tannehill (2015) (thirteen between two books). With the recent development of Health Optimizing Physical Education (HOPE) (Metzler et al., 2013a, 2013b), working with socially vulnerable youths in sport (Luguetti et al., 2017), outdoor adventure education (Williams & Wainwright, 2016a, 2016b), a practicing model (Aggerholm et al., 2018; Barker et al., 2018), a range of hybrid models (Ennis et al., 1999; Hastie & Buchanan, 2000) and several others, the total number at the disposal of teachers totals well over twenty. The potential addition of Health-Based Physical Education offers a further unique set of learning outcomes from a range of models that will support practitioners to help young people to achieve the legitimate goals of the subject (Casey, 2017; Casey & MacPhail, 2018; Jewett et al., 1995; Lund & Tannehill, 2015; Siedentop & Tannehill, 2000).

To illustrate the significant growth and development of single-model research, reviews of literature pertaining to a specific model have reported on more than 160 empirical high quality papers in the field (28 papers on Sport Education in Wallhead and O'Sullivan, 2005; 26 papers on Game-centred approaches in Oslin and Mitchell, 2006; 38 papers on Sport Education in Hastie et al., 2011; 44 papers on Game-Centred

approaches in Harvey and Jarrett, 2014; 27 papers on Cooperative Learning in Casey and Goodyear, 2015). The volume of evidence relating to the use of each of these models is illustrative of the current interest and belief in MBP as an alternative pedagogy to the traditional multi-activity approach.

Challenges to the use of Pedagogical Models

Despite having many advocates, MBP has come under critique from some scholars. Stolz (2014, p.151-152) for example, contends:

> the inference [in models-based practice] is that teaching in physical education involves the teaching of discrete bodies of knowledge in a rigidly non-negotiable specific way which can be followed like a 'blueprint'… As a result, the notion of 'models' creates unnecessary artificial boundaries that are logically problematic.

However, in response to the critique concerning the teaching of discrete bodies of knowledge, Standal (2016) argues that the strength of models-based practice is that it offers more varied and specific learning outcomes and teaching approaches than the traditional multi-activity approach. Pedagogical models, according to Standal (2016), also take away the focus on the activity or technique (see also Kirk, 2010, 2013), allowing teachers to consider the different ways in which an activity can be taught and learnt, such as from a sporting, health or an individual/discovery perspective.

MBP has also been challenged because of the potential for practitioners to uncritically 'reproduce' models in practice (Landi et al., 2016). This point reminds teachers not to replace thoughtful, well-planned and contextually relevant curriculum planning with models. In response, it must be noted that whilst pedagogical model *implementation* requires specific 'non-negotiables' (Goodyear, 2013; Williams & Wainwright, 2016b), 'critical elements' (Casey, 2017; Luguetti et al., 2017) or 'benchmarks' (Metzler, 2011), all other aspects should be developed and adapted by teachers in their local contexts (Casey, 2017; Kirk, 2013; Standal, 2016). The requirement for specific elements of a pedagogical model to remain unmodified is crucial in order to provide greater chances of a model achieving its intended outcomes (Hastie & Casey, 2014). Metzler (2011) identified the parts of a model that should not be modified (i.e. the non-negotiables; critical features), all of which align with the foundations of a model, i.e. the: (1) underlying theories, (2) assumptions of teaching and learning, (3) learning domain priorities, and (4) learning domain interactions. Clearly, it is the role of both the pedagogical model's designer and prospective teachers adopting the model to be

explicit and critically mindful of the purpose(s) of physical education and to ensure a socioculturally relevant curriculum, and that any approaches or models applied will address the curriculum aims of the particular school.

A Need for a Health-Based Physical Education Pedagogical Model

As the section on the growth of models indicated, models for cooperation, teaching games, teaching sport, developing personal and social responsibility, even for fitness and health (Metzler, 2013a, 2013b; McConnell, 2015) have already been created, but none of these forefront 'valuing a physically active life' as their primary goal. There has, however, been recognition of the need and specific calls for such a development (Armour & Harris, 2013; Haerens et al., 2011; Fernandez-Rio, 2016; Puhse et al., 2011; Slingerland, 2014). As has been identified in Chapter 1, a pedagogical model for Health-Based Physical Education with the major goal of 'valuing a physically active life' has been advocated and the first steps in its creation taken (Haerens et al., 2011). The primary aim of this study was to build on the groundwork of Haerens et al. (2011) and develop a comprehensive evidence-informed pedagogical model for teaching Health-Based Physical Education. A secondary aim was to support teachers in the design, implementation and evaluation of the first programmes of Health-Based Physical Education using this model, so that I could, firstly, assess the potential impact on students, and secondly, learn lessons which might further develop the pedagogical model framework.

Section 6. Chapter conclusion

This literature review has justified, informed and guided the research and research design presented in the subsequent chapters. The research on H-RPE highlights the different terminology and emphases that have been adopted for this area over many years, and, more recently, is indicative of a shift away from enhancing physical fitness towards promoting physical activity for health (Harris and Cale, 2006; Jun, 2014). However, notwithstanding scientific evidence and changes to terminology within the literature, common practices in this area are still dominated by methods of training, sport- and fitness-related ideologies, including approaches that test components of fitness (Alfrey and Gard, 2014; Cale et al., 2014; Harris and Leggett, 2015a, 2015b). As one catalyst for change, this study, building on the groundwork of Haerens et al. (2011) proposes Health-Based Physical Education as a model for teachers to (re)consider how to promote physical activity and positive physical activity behaviours with their

students. This literature review has therefore justified, informed and guided the research and research design presented in the subsequent chapters.

CHAPTER 3: METHODOLOGY

"[I]n research, as in life, what one finds depends on where one looks and how one looks – and the tools and methods that are used are determinative of these findings"
(Spencer Foundation Taskforce, 2009, p.28).

Armour and Macdonald (2012, p.3) remind us that 'research begins with *questions*' (which were presented in chapter 1), although suggest their identification is not a simple or judgement free process. The selection of research questions is based on multiple influences, including the researcher's personal background, experiences, training, knowledge, beliefs, interests and skills, as well as the factors related to the social, political and economic context, such as funding, trends and previous 'evidence' (Armour & Macdonald, 2012; Gill, 2011). These influences will determine, as indicated in the quotation above, 'where one looks and how one looks'. A complementary, and arguably more philosophical suggestion is that an individual's research is greatly determined by 'conceptions of who one is and why one exists' (Fernández-Balboa & Brubaker, 2012, p.38). This has led to a general agreement that whilst the visible research process often begins with research questions and methods, these are themselves underpinned by a range of hidden assumptions about the world in which we live, including the nature of reality and of knowledge (Cohen et al., 2011; Sparkes & Smith, 2014; Tinning & Fitzpatrick, 2012). These assumptions, ontological, epistemological and axiological, inform a researcher's paradigmatic decisions and methodology, which in turn, give rise to the methods of data gathering and analysis (Gill, 2011; Grix, 2010; Mack, 2010). This chapter is concerned with these issues, and specifically explores my own research assumptions and how these have given rise to specific paradigms, methodological approaches, the research design, data gathering tools and data analysis procedures related to this thesis.

The chapter has three key purposes: 1) to provide a rationale and overview of the paradigmatic assumptions and decisions that have underpinned this programme of research; 2) to critically justify the methodological approach, namely 'Participatory Action Research' used in this thesis; and 3) to provide an overview of and critically endorse the research design and data gathering methods employed to answer this project's research questions, describing how and why they were used specifically in this study. It is important to recognise that the research paradigms, methodology and methods were guided by a commitment to the development, implementation and initial

impact evaluation of a new pedagogical model for Health-Based Physical Education. In this chapter, section 1 explores the key terms used in the philosophy of research including ontology, epistemology, axiology, paradigm and methodology before outlining my own ontological, epistemological and axiological beliefs. Section 2 outlines the paradigmatic perspectives considered in this study, notably critical educational research, whilst Section 3 sheds light on the important teacher and curriculum change literature as it relates to supporting teachers in this research. Section 4 considers the methodological frameworks that underpinned this research, specifically practitioner research and participatory action research, and the approaches that these invoked. In Section 5, an overview is provided of the research design, participants and settings and a critical justification of the specific research methods and data analysis procedures used in this thesis, considering their suitability to address the project's research questions. Issues of trustworthiness and authenticity are considered, along with the ethical considerations of conducting this research.

Section 1. Definitions and Research Assumptions

Grix (2010) and Easterby et al. (2002) collectively suggest four vital reasons for making key research terms and one's philosophical standpoint clear: (1) to understand the interrelationships between the key components of research (including the assumptions, paradigms, methodology and methods); (2) to avoid confusion when discussing theoretical debates and approaches; (3) to be able to recognise others', and defend our own, positions; and (4) to help understand research design in greater depth, including which designs may and may not work for specific research issues or goals. This section briefly introduces the key terms used in the philosophy of research including ontology, epistemology, axiology, paradigm and methodology. The subsequent sections (sections 2, 3 and 4) make a clear assertion as to my philosophical standpoint through an exploration of my philosophical assumptions, paradigmatic and methodological perspectives.

Ontology is derived from the Greek words *onto* (being) and *logia* (science) and is typically understood as the science or study of being. A researcher's ontology explains much about what they believe can be researched (Grix, 2010) or what we believe constitutes social reality. i.e. what reality looks like, what makes it up and how these units interact (Blaikie, 2000). In deciding one's ontological position, Denzin and Lincoln (2011) ask: What kind of being is the human being? What is the nature of reality?

Understanding ontological assumptions requires a researcher to ask if social reality is the product of an individual's consciousness (i.e. created by one's own subjective mind), or if it is external to individuals (i.e. of an objective nature) (Cohen et al., 2011).

Whilst Burrell and Morgan (1979) identified ontological assumptions using a nominalist-realist continuum, other researchers have used alternative terms to label these positions (Bryman, 2004; Smith & Heshusius, 1986). Nominalism, constructionism and relativism all propose that there are multiple (subjective) understandings of reality and that none of these should be considered true or false. Individual's constructions of reality are based upon their perceptions and their own and others' actions (Cohen et al., 2011; Bryman, 2004). At the other extreme, realism or objectivism proposes that 'the world is independent of our knowledge of it' (Gray, 2014, p.19) (i.e. it exists 'out there'). Bryman (2004) suggests that objectivism adheres to the fact that entities possess an objective external reality which is independent of an individual's awareness.

My belief is that there is no single reality of the world – a belief that aligns with a subjective as opposed to objective ontology (Sparkes & Smith, 2014). However, whilst having a strong belief that individuals will perceive and understand the same situations and contexts in very different ways, I also recognise the importance of gaining an understanding of an individual's behaviours through both qualitative and quantitative research approaches. This will provide a richness of understanding not possible in approaches that use only one of these styles of research (Gorard & Makopoulou, 2012).

The term *epistemology*, which precedes ontology, derives from the Greek words *episteme* (knowledge) and *logos* (reason), and is concerned with the theory of knowledge (Grix, 2010). It concerns 'the possible ways of gaining knowledge of social reality, whatever it is understood to be. In short, claims about how what is assumed to exist can be known' (Blaikie, 2000, p.8). 'If ontology is about what we may know, then epistemology is about how we come to know what we know' (Grix, 2010, p.63) and is therefore closely aligned with the relationship between the inquirer and the known (Denzin & Lincoln, 2011). The two key standpoints for epistemological assumptions have been termed anti-positivism and positivism (Burrell & Morgan, 1979).

Anti-positivist, or constructivist epistemological assumptions assume that meanings are constructed and not merely discovered, allowing for multiple and often contradictory (but equally valid) accounts and interpretations of the same phenomenon (Gray, 2014) using an involving and interactive style of research (Cohen et al., 2011). This view is linked with the interpretivist paradigm discussed in the following sections. From the opposite epistemological viewpoint, positivism is associated with a stance that assumes knowledge can be gained objectively and tangibly using methods associated with natural science and experimentation, like the positivist paradigm discussed in the following sections (Dieronitou, 2014). In doing so, positivist researchers (aim to) remove their own feelings and values in gaining said objective truths (Gray, 2014).

My epistemological belief is that in order to gain a deep understanding of a particular context, methodological approaches require close interaction between the researcher and participants using a range of tools that most effectively enable a research problem or question to be answered. In studies of physical education and physical activity, depending on the type of research question, knowledge may be best gained through more objective/quantitative means, such as in direct measurement of physical activity, or more subjective/qualitative means, as in informally observing participation and talking to individuals about their experiences. As this research involves several different phases, from pedagogical model development, to curriculum programme design and impact evaluation, each may demand the use of both qualitative and quantitative methods to a greater or lesser extent.

In a broad sense, *axiology* is concerned with the values of educators (including teachers, curriculum developers, policy makers, politicians) and how these inform education (Biesta, 2015). These values, whether intentionally or unintentionally, impact on the knowledge, skills and dispositions of learners, through what is taught (and not taught) and how it is taught (Biesta, 2015). In more specific research terms, axiology is employed to indicate the values that researchers hold and the influences that these may have on the research process (Coe, 2012; Cohen et al., 2011; Ponterotto, 2005).

A person's paradigmatic position (explored in the next section) impacts their approach to values in research. Whilst a positivist aims to remove all values from the investigation, post-positivists aim to contain these biases, but acknowledge that they

are present and may impact on the research (Ponterotto, 2005). However, interpretevists and criticalists argue that values cannot be removed from the research process and inevitably influence all key decisions, even the selection of a topic for a research study. Interpretevists aim to acknowledge, describe and 'bracket' (Ponterotto, 2005) their beliefs, but use them to build a rapport and dialogue with participants. However, 'Criticalists take values a step further than constructivists in that they admittedly hope and expect their value biases to influence the research process and outcome' (Ponterotto, 2005, p.131).

My axiological assumptions (i.e. the values I hold concerning this research) have also had a direct influence on the research participants, as well as how I approached this study, the methods I used and my interpretations of the data. My upbringing, personal and professional influences and subsequent teaching and research experiences (see chapter 1) have led me to inherently believe that physical activity is a positive and necessary behaviour. It is my belief that physical education and physical activity can help individuals to maximise the quality of their lives (see Literature Review section 2) although this is a rather different view to some teachers and young people, who have varying and alternative priorities, interests and approaches (see, for example Armour, 2014; Ennis, 2016; Jewett et al., 1995; Kirk, 2010; Kulinna & Cothran, 2017; O'Sullivan & MacPhail, 2010). I must also acknowledge my axiological stance (what I see as my purpose as a researcher and teacher educator), which is firmly focused on the advancement of educational practice for the benefit of both teachers and young people – a view aligned with critical educational research (Cohen et al., 2011). (Critical Educational research is discussed in section 3).

As a result of these collective values, I was very aware of the influence of these on my behaviours, and subsequently on the participants in this study and I therefore attempted to maintain a level of reflexivity – a critical self-reflection and self-awareness of my background, positioning, assumptions and actions on the research process (Sparkes & Smith, 2014). Whilst being aware that I could never, and would not wish to, fully detach myself from the research participants, my aim was to maintain *methodological naturalism* by (1) ensuring (wherever possible) that research processes were familiar to participants, (2) safeguarding and respecting participants' beliefs, and (3) communicating in ways that were not dissimilar to normal social interaction in order to leave people undisturbed (Avis, 2005). However, in line with a criticalist perspective,

whilst maintaining methodological naturalism, I also hoped that my values in relation to physical activity would have an impact on the teachers I worked with throughout this study (Ponterotto, 2005) in order to challenge the teachers to more effectively support young people to value a physically active life.

Together, a researcher's ontological, epistemological and axiological assumptions inform the paradigm, methodology and methods of a research study (Biesta, 2015; Mack, 2010; Ponterotto, 2005). What a researcher believes can be studied, how they attempt to gain knowledge of the phenomenon in question, and the influence of their values on the research process are crucial in determining one's worldview, and the approaches and tools used to gather and analyse data. Paradigm and Methodology are defined in the following paragraphs.

The term *paradigm* has become a central concept in educational research, but its meaning often differs in separate fields of enquiry and researchers should therefore, as Morgan (2007) argued, outline what they mean when they use this term. It is believed that the popularity of the term paradigm emerged from Thomas Kuhn's (1962) book, *The structure of Scientific Revolutions*, although even he is believed to have used over 20 different ways to describe the term in the one text (Masterman, 1970). Two of Kuhn's descriptions of a paradigm refer to an overall theoretical research framework and to a set of concepts and practices, which at any point in time define a scientific discipline. Later definitions include a 'worldview' (Schwandt, 1989) and 'shared belief systems that influence the kinds of knowledge researchers seek and how they interpret the evidence they collect' (Morgan, 2007, p.50). A definition of a paradigm that particularly resonates is a 'set of beliefs that guides action' (Guba, 1990, p.17). Denzin and Lincoln (2011) concisely surmise that a paradigm is the net that contains a researcher's ontological, epistemological, axiological and methodological premises.

Methodology is concerned with how we go about acquiring knowledge (Hay, 2002). It also refers to the choice and justification of the research strategy adopted (Grix, 2010). Denzin and Lincoln (2011, p.12) ask the question, 'How do we know the world or gain knowledge of it?' Methodology therefore relates to how a researcher approaches the task of practically finding out what they believe can be known. The inter-relationship between what a researcher believes can be researched (their ontological position), what they can know about it (their epistemological position) and how they go about

acquiring it (their methodological approach) largely determine what and how one researches (Grix, 2010; Spencer Foundation Taskforce, 2009).

This section has defined key definitions in the philosophy of research and provided an overview of my research assumptions. It has revealed a subjective and constructivist ontology that acknowledges multiple views of reality in a given environment and of gaining a rich understanding of individuals' perspectives through both quantitative and qualitative means to better understand a research problem or question. As this research comprises different phases (see section 5), it is important to consider the best approaches for each stage. My passionate and inevitably biased axiological position locates physical activity as a positive and necessary behaviour for enhancing the quality of human life. This certainly had an impact on my overarching opinion about what is deemed as important in physical education curricula, and indeed, in young peoples' lives. These assumptions have clearly played an important part in shaping both my paradigmatic and methodological perspectives, and, as I previously indicated, may also have shaped many of the beliefs and approaches of the teachers. The next two sections consider my paradigmatic and methodological perspectives in turn.

Section 2. Paradigmatic Perspective(s)

In the literature, it is most common to see either a two-paradigm (positivist and interpretivist) or three-paradigm typology (positivist, interpretivist and critical) when considering a researcher's beliefs and standpoint (Grix, 2010; Mack, 2010; Cohen et al., 2011; Tinning & Fitzpatrick, 2012; Sparkes & Smith, 2014). However, although not considered in further detail here, a number of sub-divisions or additional paradigms are also apparent (e.g. post-positivist, mixed-method, post-structuralist, post-modernist, complexity). While paradigms are often presented as being in opposition (i.e. versus) they are not exclusively opposed, or necessarily monolithic, as there is much overlap between these frameworks (Grix, 2010; Cohen et al., 2011; Tinning & Fitzpatrick, 2012).

In general terms, a *positivist* believes that there is a real world that can be objectively measured, usually (but not exclusively) with quantitative data and who will adopt an independent observer role in research using approaches typically seen in the natural sciences of physics, biology and medicine. An *interpretivist* considers reality as being constructed by individuals, and aims to illustrate, predominantly (but not always) with

qualitative data, the subjective meanings that people attribute to an experience through a typically 'involved' research approach. A researcher within the *critical* paradigm seeks not only to understand situations more effectively, but also to affect change within them, with the intention of promoting social justice, equity and emancipation, often through mixed methods research (qualitative and quantitative) (Tinning & Fitzpatrick, 2012).

Coe (2012) suggests that there are several ways to relate to the existence of different paradigms. Firstly, a researcher could see the various paradigms as *incommensurable* – that adopting a philosophical standpoint to a particular way of seeing the world necessarily requires the adoption and rejection of certain approaches. Secondly, a *compatibility* perspective suggests that researchers must adopt a stance pertaining to their ontological, epistemological and axiological beliefs, but that such a stance should not constrain the specific paradigm, methodology, questions or methods adopted. A third approach, *pragmatism*, rejects the traditionally opposed objectivist vs constructionist ontology and the positivist vs anti-positivist epistemology 'paradigm wars', proposing a solution to the often problematic and unhelpful nature of these frameworks (Biesta, 2010). 'In this sense, pragmatism is not just another philosophy, but is itself an anti-philosophy – not another paradigm, but a challenge to the whole notion of paradigms' (Coe, 2012, p.8). Whilst still acknowledging that a researcher's beliefs and values will impact on their research, a pragmatic (or practical (Smith and Sparkes, 2014)) perspective locates the importance of the research questions or the research problem as the central factor in the researcher's paradigmatic and methodological approach (Morgan, 2007; Gorard & Makopoulou, 2012). Pragmatism, therefore, argues against the view that researchers must locate themselves and their research approach within a specific paradigm as this would not be supportive of real-world research (Biesta, 2010; Gorard & Makopoulou, 2012).

As a result of my ontological, epistemological and axiological beliefs, I reject the position of paradigms being *incommensurable* and instead find myself drawn to the *compatibility* and *pragmatic* perspectives. Research in physical education and physical activity is a complex socio-cultural practice (Tinning & Fitzpatrick, 2012) and I therefore find the denial of certain methodological approaches because they do not fall within a specific paradigm a limiting and inappropriate direction for research in this field. Paradigmatic divisions are not helpful to in-depth understanding in educational enquiry

(Gorard & Makopoulou, 2012; Hammersley, 2005) and researchers may take fundamental assumptions for granted if they align themselves with only one paradigm (Patton, 1978). I favour the *compatibility* perspective because it allows greater choice of approach (also known as 'paradigm pluralism' (Tashakkori & Teddlie, 2016) in the complex world of educational research. That said, it still does not challenge the sometimes unhelpful nature and tensions of paradigmatic divisions (Hammersley, 2005). As a result, I also consider a *pragmatic* approach supportive to this field of research as well as to this study. Whilst not fully adopting the 'anti-paradigm' view indicated above, the pragmatic perspective does bring an insightful justification for placing the research problem or questions at the centre of the approach, and drawing on a range of methodologies and methods to find solutions or answers to these issues (Tashakkori & Teddlie, 2016; Coe, 2012).

This section has considered the characteristics of what are arguably the three predominant research paradigms. However, my support for the compatibility and pragmatic perspectives has led me to consider the merits of multiple paradigms (compatibility) as well as to the decision to place my research questions at the centre of this study, along with the use of a range of methodologies and methods (pragmatic). This approach provides a guiding framework for the different elements of this research and in my opinion, represents the most appropriate way to confidently answer the research questions. My research is primarily concerned with changing practice, not merely measuring or observing it and is therefore aligned with the critical paradigm (Cohen et al., 2011; Tinning & Fitzpatrick, 2012). This worldview is the topic of the next section. However, this also aligns, because of the different phases of research, with both the interpretive and post positivist paradigms, which are considered subsequently.

Critical Education Paradigm

Critical theorists claim that positivist and interpretivist frameworks merely seek to understand an existing situation, rather than to question or change it (Cohen et al., 2011). The aims of the critical paradigm include emancipation, equity and inclusion in society, yet Bernstein (1970) suggested that although individual teachers might be able to make an impact in a school context, this is unlikely to have an effect on wider humanity, which is a core goal of critical theorists. 'Critical Education' research, a paradigm aligned with critical theory, has an agenda of questioning and challenging specific issues *in education* (rather than in society more broadly) such as: the

relationship between schools and society; equality and power in education; the social construction of curricula and knowledge; and the development and improvement of learning and teaching (Cohen et al., 2011; Taylor & Medina, 2013). A key goal in the Critical Education paradigm is to disrupt the 'status quo' (Cohen et al., 2011, p.36), which aligns very well with the goal of this research in the development of an alternative approach to effectively support physical educators in the promotion of physical activity.

A key strength of the approaches typically used within the critical education paradigm, and so within this study, are that what is deemed most worthwhile, in terms of curricula, can be not only observed, but also questioned, in order to benefit participants, raise their consciousness of the key issues and ensure that all have a voice (in this case students, teachers and researchers) (Cohen et al., 2011; Taylor & Medina, 2013). Central to this study was the development of a pedagogical model with the involvement of practitioners and students, not only with the aim of rooting the model within the field of physical education, but to leave a legacy in the school and on the participants, through a raised consciousness and tangible benefits for teachers and students. In this sense, critical research has the potential to enable myself, the teachers and students to understand the field of research in deeper ways and help us to take action for a better possible future (Devís-Devís, 2006). Critical educational research also enables teachers to be *participants in* rather than *recipients of* curricular developments and innovations (Cohen et al., 2011; Taylor & Medina, 2013). Finally, in critical research in education, the researcher aims to facilitate teachers' design of curricula that are more student-centred, culturally aware and socially responsible (Taylor & Medina, 2013).

However, in line with Bernstein's (1970) early critique (that changes in education will not automatically impact on wider society), there is also a suggestion that critical educational research may not even lead to sustained change in that specific school (Cohen et al., 2011). This is because critical educational research can have 'little effect on the *real* locus of power and decision making' in schools (ibid p.35, original emphasis) which typically lies with the senior leadership team who make local decisions about curriculum implementation. In this sense, much critical education research could be critiqued for focusing on micro-development, rather than macro-development. In acknowledgement, this study aimed to capture the support of the respective schools' senior leadership teams, including the Heads of Physical

Education, and crucially, the Headteachers, in order to influence the beliefs and decisions of these individuals.

In summary, critical educational research, whilst not without its potential limitations, is able to help researchers and participants to question the status quo, raise individuals' consciousness to key issues and take action together for a better possible future. However, whilst critical education provides the key paradigmatic framework for this study, there are characteristics of both the interpretivist and positivist paradigms that have influenced the research because of the chosen research questions and the assumptions and beliefs I have regarding physical education and physical activity. This need for paradigmatic pluralism reflects the multi-phase approach to this research, including exploratory (model and programme development – research questions 1 and 2), descriptive (programme design – research question 2) and explanatory (impact of the programmes – research question 3) elements (Neuman, 2014). My stance in terms of paradigmatic pluralism is the subject of the next sub-section.

Paradigmatic Pluralism – Interpretivism and Post-Positivism

Given this research is concerned with the early stages of pedagogical model development, its emphasis is on exploratory research, with a lesser focus on explanatory inquiry, which aligns with the interpretivist and positivist paradigms to a greater and lesser extent (Neuman, 2014). The interpretive paradigm is linked with the characteristics of exploratory research, with its focus on understanding the emotions and behaviours of individuals within a specific context by requiring the researcher to 'stand in their shoes', 'look through their eyes' and 'feel their pleasure or pain' through a prolonged process of interaction in the field (Taylor & Medina, 2013, p.5). To use Taylor and Medina's (2013) analogy, if researchers were fishermen, an interpretive fisherman would enter the water in order to swim with the fish and establish a rapport in order to understand their experience of being in the water. This research includes a prolonged period of interaction with physical educators and their students as the pedagogical model for Health-Based Physical Education was constructed and implemented in schools and worked to identify the potential impact on young people's physical activity behaviours. The research has gained deep insights into the beliefs and actions of these participants in their natural settings in order to shape possible future 'PE-for-health pedagogies' (Armour & Harris, 2013).

Notwithstanding the exploratory focus of this research, a greater explanatory emphasis was afforded in relation to research question 3, concerning the impact of the pedagogical model on students. Given that one outcome of the success of a pedagogical model to support individuals to value a physically active life will be the participation levels of the students, an indication of the extent to which their physical activity behaviours have changed following the project's intervention will enhance the transferability of this model. This phase of the research aligns with positivist beliefs surrounding how one can evidence that an intervention works, using a scientific method and quantitative analysis (Tinning & Fitzpatrick, 2012). However, as it is very unlikely to be able to establish causal links, truly objective research or achieve absolute and generalisable truths given the close relationships built between myself and the participants, it is more accurate to locate this strand of the thesis with a 'post positivist' paradigm – a milder form of positivism which allows greater interaction between the researcher and participants, claiming a certain level of objectivity as opposed to absolute objectivity (Willis, 2007). This final point is particularly important given the prolonged and sustained interaction with both the teachers and students, and therefore the potential influences on each other's behaviours, throughout this research.

This section has provided an overview of the paradigmatic perspectives and assumptions that underpin this research. It has explored my key ontological, epistemological and axiological assumptions that have led to the location of this research primarily within the critical education paradigm. However, as has been explored, my view that paradigms should be compatible and that research approaches should be guided by research problems and questions have also signified a pragmatic perspective. Whilst I am very aware that some might say I am guilty of 'sitting on the fence' paradigmatically, I stress that I too have questioned my stance a number of times throughout this doctoral study. However, in reasoning my position, I always return to the perspective that by utilising 'multiple paradigms educational researchers can make a major contribution to aligning curricula, teacher education, and classroom teaching and learning practices with the complex and challenging needs of the 21st Century' (Taylor & Medina, 2013, n.p.). Now that my stance as a critical education researcher with paradigm pluralist tendencies is clear, the next section considers the literature aligned with critical educational research, specifically teacher and curriculum change.

<u>Section 3. Teacher and Curriculum Change</u>

This section explores the literature surrounding effective teacher and curriculum change. Given the predominance of the critical education paradigm in this research (as discussed in the previous section), where the goal is to change practice, rather than 'merely' measure it, an important feature of this research is to effectively support teacher change. An understanding of the factors that affect change supported the selection of appropriate 'Methodological Frameworks' (see section 4) and the 'Research Design' (see section 5). Notably, a key reason for my close and sustained engagement with teachers throughout this study was to support their design and implementation of Health-Based Physical Education programmes (research question 2) and achieve the best outcomes for students (research question 3). For these reasons, the teacher and curriculum change literature discussed here supports the secondary aim of the study, alongside the primary aim of developing a pedagogical model. This secondary aim was to support teachers to design, implement and evaluate programmes of Health-Based Physical Education in their schools. This section firstly considers the notion of teacher change and is followed by a critical review of literature linking professional development and teacher change. Next, I consider an alternative sequence of teacher change which reframes the typical approach taken in professional development in order to support teachers to change their practices, beliefs and attitudes.

Teacher change

In line with Bechtel and O'Sullivan (2007), I define teacher change as the process by which a teacher is involved in using new or non-traditional approaches in their practice. These authors clarify that the process could include teachers using new or different pedagogical models, teaching or class management strategies and/or different curricular activities. In this study, teachers were learning how to implement a pedagogical model which included both new and non-traditional approaches to the teaching of health in physical education, as well as different curricular activities which formed the basis of their units of work.

Teacher change is a process in which innovations are both adopted and diffused in practice (Fullan, 2007; Rogers, 2003). In his book 'The new meaning of educational change', Fullan (2007) presents four characteristics pertinent to effective teacher change: 1) need, which considers the fit between the innovation and the needs of the

teacher or school; 2) clarity of the aims of the innovation and the means of achieving these; 3) complexity of implementation for teachers; and 4) quality and practicality of the innovation for the teacher and school. In contrast, Rogers' well documented work 'Diffusion of innovations' (2003) propose five factors related to the rate of adoption of an innovation: 1) relative advantage, which considers the extent to which the innovation is perceived as better than current practice; 2) compatibility, the degree to which it is consistent with individuals' experiences, needs and values; 3) complexity, the level of difficulty in understanding and using the innovation; 4) trialability, the extent to which it can be trialed and experimented with; and 5) observability, the degree to which impact of the innovation are visible to others. Whilst Fullan's notions of 'complexity' and 'need' have synergies with Roger's factors of 'complexity' and 'compatibility', the other factors/characteristics are not so closely aligned. Consequently, whilst these principles provide a basis for which to plan for effective teacher change within this study, the relationships between principles and the relative importance of each is not easily understood.

Fullan (2015) later suggested that educational change includes the stages of initiation, implementation and continuation. He goes on to warn that research on implementation 'is not pleasant' (p.12) as planned changes to practice and curricula rarely succeed as intended. MacDonald (2003) has likened much curriculum change research to a stone hitting the metal roof of a 'chook' (chicken) house i.e. where there is an initial flurry of activity from the chickens due to the noise before they settle back to their normal routines. In this sense, effectively disrupting the 'status quo' (Cohen et al., 2011, p.36) in educational research can be somewhat difficult.

In their recent curricular research in physical education, Goodyear and Casey (2015) identified that maintaining an innovation beyond the honeymoon period (or initial point of implementation) is a challenging and infrequently achieved task. This has led a number of researchers to argue that the long-term outcome of curriculum interventions is 'innovation without change' (Evans, 1985; Sparkes, 1989; Devís-Devís, 2006; Goodyear & Casey, 2015). In order to enhance the likelihood of Health-Based Physical Education being maintained beyond the honeymoon period in the schools involved in this research, a long-term approach was taken. There was an initial period of teacher initiation and professional development, followed by the co-construction of Health-Based Physical Education curricula in both schools, and a significant period of

continuous and collaborative planning, teaching, reflecting and monitoring as well as a final twelve-month follow up on the impact of the curriculum on students. The detailed research design of this study is described in detail in section 5. The next sub-section considers the role of professional development on teacher change.

Professional Development and Teacher Change

A variety of terms have been used within the literature to refer to the process of teachers' professional development. Traditionally, two of the most common terms used in schools are 'continuing professional development' (Armour et al., 2017; Cordingley et al. 2015) and, in the UK, in-service training (INSET) (DfE, 2016). However, recent calls for a greater focus on the impact of these activities on teachers' and pupils' needs over time has led to phrases such as teacher continuing professional development and learning (CPDL) (Cordingley et al., 2015) and career-long professional development (Armour et al., 2012). Whilst professional learning is seen more as a process, professional development is best characterised as a 'planned intervention' (Day et al., 2007, p.430; see also Groundwater-Smith & Mockler, 2009; Hoban, 2002).

As a key element of this study was centred on supporting teachers to design, implement and evaluate programmes of Health-Based Physical Education, the term professional development appears most appropriate. Drawing on the work of Bubb and Earley (2007, p.3) I concur that professional development should be seen as 'all formal and informal learning that enables individuals to improve their practice'. However, it is understood that professional development should not only change teachers' practice, but also their attitudes and beliefs, and importantly the outcomes of students (Guskey, 2002).

Just like the variety of terms used to describe the processes involved in professional development, there are a large number of organisations and individuals who have considered what effective (and ineffective) teacher professional development looks like. Drawing on a range of evidence, the Department for Education (DfE) (2016) recently published a 'Standard for teachers' professional development' which emphasises the importance of the partnership between Headteachers/senior leaders, teachers and the expertise of the providers/facilitators of professional development. Effective professional development, according to DfE (2016), should: 1) focus on improving and evaluating student outcomes, 2) be underpinned by robust expertise and evidence, 3)

include collaboration and challenge, 4) be sustained over time, and 5) require prioritisation by school leadership. This study's research design (see section 5) considered these principles as central to the success of this project. Whilst this standard provides unquestionable focus for schools in terms of professional development practices, it is arguably too simplistic. Consequently, a deeper evaluation of effective professional development is therefore provided below.

Research has shown that the best improvements in the quality of teaching in secondary schools occur when professional development was in-house and focused on directly impacting teachers' practice (Daw & Robinson, 2013; OECD, 2015). This school-based professional development could effectively include sustained opportunities for formal workshops, lesson observations and mentoring (Cordingley et al., 2015; Daw & Robinson, 2013). Furthermore, teachers rated professional development most favourably when appropriate amounts of time were provided for them to consider the implementation of ideas within their own schools (Garet et al., 2001; Desimone et al., 2002; Penuel et al., 2007; Weiss & Pasley, 2006). Consequently, and as I show later, this is the type of professional development provided for the teachers in this study.

The role of collective participation in professional development has also been cited as a key driver for positive impact on teachers' practice (Cordingley et al., 2015; Day et al., 2007; Morgan et al., 2010). Whilst teachers see this as one of the most valued elements of professional development (Day et al., 2007), it is not always possible to build this into programmes. Cordingley et al. (2015) claim that it is essential that professional development programmes involve collaboration and peer support in order to effect positive impact on students, noting the particular benefits associated with coaching, peer observation, shared planning and collaborative action research. Morgan et al. (2010) similarly argue for interaction between educators within formalised professional learning communities. A growing trend in professional development in education and physical education is to develop school-university collaborations, and this has seen particular benefits in supporting teachers to use pedagogical models, including help in translating theory to practice, encouraging reflections on practice and facilitating access to research (Casey, 2014; Goodyear et al., 2016; McCaughtry et al., 2004; McNeill et al., 2004; O'Donovan et al., 2010; Wright et al., 2009).

Despite the evidence base expounding and supporting effective forms of professional development, professional development is still largely understood to be characterised by de-contextualised, short (often only one-day) courses that take place off the school site with no follow up support (Armour, 2010; Armour & Harris, 2013; Armour & Yelling, 2004, 2007; Garet et al., 2001; Muijs & Lindsay, 2008; OECD, 2015; Wright et al., 2009). As a result, professional development is characterised as being 'visited upon teachers' (Groundwater-Smith & Mockler, 2009. Others characterise professional development as 'hit and run' (Loucks-Horsley, 1999), 'pre-packaged' (Darling-Hammond, 2010) and 'spray-on' (Mockler, 2005). Given the emphasis on collective and sustained support identified above, it is disappointing to see a lack of ongoing support being provided in many physical education professional development programmes (Armour & Makopoulou, 2012; Cothran et al., 2006; Harris et al., 2011). For example, in one study aiming to support teachers to implement a fitness education programme, the lack of ongoing support left teachers unable to absorb all of the information presented and feeling overwhelmed (Kulinna, 2008).

In his work 'Professional development and teacher change', Guskey (2002) proposed three key principles that should be considered and addressed when planning professional development programmes with the aim of supporting significant and sustained improvements in education. First is the recognition that change is a gradual and difficult process for teachers. This emphasises the need for time and effort and aligns with previous research in physical education which indicates that 'innovation is work' (Kirk, 1986, p.390) or 'work-plus-work' (Casey, 2010, p.197). Second, is the importance of ensuring that teachers receive regular feedback on student learning progress. This is particularly key as any changes to practice are likely to be discarded if evidence of their positive effects on students are not available (Guskey, 2002). Third is the need to provide continued follow-up, support and pressure. Given these three principles and the fact that sustaining change is an often-neglected focus of professional development, ongoing support for teachers in this study was crucial, whilst appropriate amounts of pressure provided motivation and encouragement to persist with their curriculum change efforts (Guskey, 2002).

Whilst the active involvement of teachers in professional development and curriculum change is an important feature for success (Cordingley et al., 2015; DfE, 2016; Groundwater-Smith & Mockler, 2009), there are some teachers who do not want to be

involved in the curriculum development process (Kirk & MacDonald, 2001; MacPhail, 2007). Instead, many teachers prefer and/or expect to be provided with information and resources to enact within their own curriculum (MacPhail, 2007). However, it is suggested that the expertise of some teachers will set limits on their ability to be co-producers of change, instead constraining their involvement to that of implementing innovations within their local contexts (Kirk & MacDonald, 2001). This is because most teachers are experts in the local conditions of their school and not in subject-matter or pedagogy (Kirk & MacDonald, 2001). This fact was echoed in a recent study investigating sustainable curriculum change using the Cooperative Learning pedagogical model, in that its adaptation into practice in the long-term was dependent on a teacher educator who facilitated the teachers' expertise, driving their social energies and scaffolding their use of action research (Goodyear et al., 2015).

The Sequence of Teacher Change in this Thesis

Guskey (1986, 2002) critiqued the effectiveness of professional development programmes for their frequent failure to take into account (a) the motivating factors for teachers to engage in professional development, and (b) the processes and sequences by which teacher change happen. He argued that teachers are attracted to professional development to extend their knowledge and skills and to enhance their effectiveness on student learning and development. These factors tend to make teachers' expectations quite pragmatic, i.e. they hope to gain specific and practical ideas that will impact their daily practice and outcomes with students (Guskey, 2002). Furthermore, according to Guskey's (1986) sequence of teacher change, many professional development programmes are incorrectly (in his perspective) based on the principle that they should prioritise teacher acceptance and enthusiasm for a particular approach by changing teacher's attitudes and beliefs, which will then support changes to their practice and eventually to positive student outcomes. However, the principles behind Guskey's alternative sequence (Figure 3.1) have been shown to have real impact on teacher change (Bolster, 1983; Darling-Hammond, 1998; Fullan, 1985; Guskey, 1986, 1989, 1995, 2000). In this approach 'change in teacher's attitudes and beliefs is primarily a result, rather than a cause, of change in the learning outcomes of students' (Guskey, 2002, p.386). In other words, real changes to teachers' attitudes and beliefs are unlikely unless there is real evidence of a positive impact on student learning. It is for this reason that Guskey (2002) considers it vital to provide teachers with regular evidence on the impact of teaching on students, as I indicated above, if they are to

make long-term changes to their attitudes and beliefs. This premise was at the heart of the professional development we undertook with the teachers in this study.
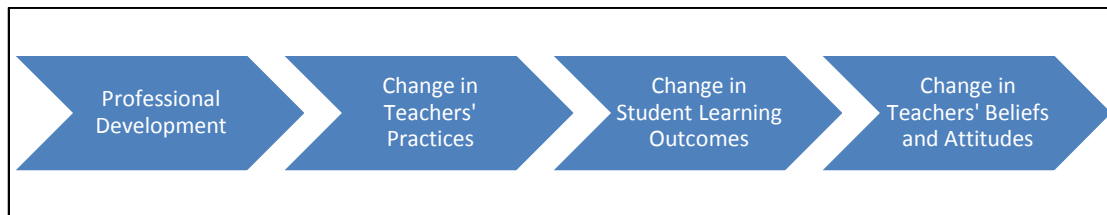
Figure 3.1: Guskey's Sequence of Teacher Change (Adapted from Guskey, 2002)

Bechtel and O'Sullivan (2007) identified the significant roles that teachers' beliefs (e.g. goals of physical education, critical reflection and proactivity) had on their ability to positively effect change. A key finding of this research is in order for professional development programmes to help teachers they must enable them to examine their beliefs related to physical education and garner personal evidence that supports their adoption of 'new' ways of teaching and learning. Whilst this approach (professional development helping teachers to examine their beliefs) contradicts the sequence proposed by Guskey (1986) above, it could be argued that changes in teachers' beliefs will take place at varying levels, from initiation to a new innovation (i.e. before they are able to implement let alone see the impact on their students) to the strengthening of those beliefs if/when an impact is finally seen on students (Guskey, 2002). It was therefore considered essential to support the process of changing teachers' beliefs and practices through both early initiation to Health-Based Physical Education, as well as ensuring regular feedback to teachers on the impact that are having on students. This dual foci on teacher change informed the research design presented in section 5.

This section has provided a critical review of research on teacher change and professional development. It has highlighted a number of principles that could provide real opportunities to positively impact the practice of teachers in this study and to the physical activity behaviours of their students. In particular, the recommendations of Guskey (1986, 2002) provide a rationale the dual importance of research question 3 within this study, in order to both 'test' the pedagogical model for its impact on students as well as to provide teachers with regular evidence of impact in order to initiate long-term changes to their practice and beliefs. My role in introducing teachers to the pedagogical model, supporting them to continue improving their practices and monitoring the impact of this on students is clearly a crucial one to the success of the

study. Many of the recommendations for effective professional development and teacher change also align with the characteristics of the methodological frameworks known as 'practitioner research' and 'participatory action research' and therefore provide a rationale for their selection as this study's main methodologies. The study's methodological frameworks are the focus of the next section.

Section 4. Methodological Frameworks

This section explores the approach known as practitioner research and positions this as the overarching methodological approach taken in this research. An overview of the characteristics and critiques of this approach are provided along with a summary of the five genre of practitioner research. One of the genre (action research / participatory action research) is split, and considered in the next two sections. This allows for a rationale for the action research methodology to be made more generally first, followed by a justification for participatory action research, an aligned methodology with a collaborative focus, as the central framework in this study.

Practitioner Research

As the previous sections have highlighted, this research, centred within the Critical Education paradigm, is focused on researching *with*, not *on* teachers (Cohen et al., 2011). A common umbrella term for this kind of research is 'Practitioner Inquiry' (Cochran-Smith & Lytle, 2009) or 'Practitioner Research' (Cochran-Smith & Lytle, 2007; Casey et al., 2018). Cochran-Smith and Lytle (2009) propose an important but subtle difference in the two terms, suggesting practitioner inquiry has closer connotations with professional development for individuals and groups within a specific context, whereas practitioner research has implications both within and beyond the local context. For the purposes of this research, the term practitioner research has been adopted because of the dual aim of influencing both local and, at a later time, national and international contexts. Whilst there is no definitive agreement on the different modes of practitioner research (for example, both Casey et al., (2018) and Zeichner & Noffke (2001) present different albeit overlapping categorisations), it is suggested that it encompasses at least five genre: action research / participatory action research; teacher research; self-study; the scholarship of teaching; and using practice as site for research (Cochran-Smith & Lytle, 2009). Table 3.1 provides a brief overview of each of these genre.

Table 3.1: Five Genre of Practitioner Research (Adapted from Cochran-Smith & Lytle, 2009, p.39)

Action research / participatory action research in education is commonly used to describe collaborations among school-based teachers and other educators, university-based colleagues and sometimes parents and community activists. The efforts of action researchers centre on altering curriculum, challenging common school practices and working for social change by engaging in a continuous process of problem posing, data gathering, analysis, and action.
Teacher research refers to the inquiries of school teachers and prospective teachers, often in collaboration with university-based colleagues and other educators. Teacher researchers work in inquiry communities to examine their own assumptions, develop local knowledge by posing questions and gathering data. In many versions of teacher research, practitioners work for social justice using inquiry to ensure educational opportunity, access and equity for all students.
Self study is used almost exclusively to refer to inquiries at the higher education level by academics involved in the practice of teacher education, often drawing on biographical, autobiographical and narrative forms of data collection and analysis.
The scholarship of teaching refers to sustained inquiry by teachers and university faculty into teaching practices and their students' learning.
Using practice as a site for research is carried out by university-based researchers who take on the role of teacher for a specific period of time in order to conduct research on the intricate complexities involved in theorising and working out problems of practice.

These five genre are said to share a number of key features (Cochran-Smith & Lytle, 2009; Letts, 2015). These are presented here and serve to illustrate how my research and approach aligns with the key principles of practitioner research.

1. *Practitioner as researcher* – where each of the practitioners simultaneously takes on the role of researcher rather than researched. Central to this research is working alongside practitioners to develop a pedagogical model, co-construct local curricula and reflect on the impact of these programmes on students.

2. *Community and collaboration* is the second feature, reaffirming the important social nature of educational research. In this study, collaborative and two-way interactions are key to the research goals being achieved.

3. The next feature is that of *knowledge, knowers and knowing* – that those participants in inquiry are regarded as knowers, learners and researchers. The knowledge generated in practitioner research may be intended for application within the local context or for informing practice beyond the immediate context. In this research, teachers' varying pedagogical expertise and their knowledge of their local contexts is important in supporting the creation of both school-specific curricula and a pedagogical model that may, in the future, inform practice beyond these immediate schools.

4. *The professional context as a site for study* is the fourth common feature, signalling the fact that the important problems and issues that arise in various educational

contexts are the focus of study. In this study, it is crucial for the pedagogical model and curricula to be developed and evaluated within the professional context of schools, specifically within physical education departments.

5. When practitioners are researchers, there are *blurred boundaries between inquiry and practice*. This prompts a rethinking of the meanings of research and practice, the roles of researchers and practitioners and between theoretical and empirical research. In this research, enabling praxis was a main goal (i.e. facilitating theory-informed practice and practice-informed theory (Macdonald, 2002)), to be achieved through a dual role of both teacher and researcher for the school-based staff involved in this study.

6. The sixth feature is that of *validity and generalisability*. In this study, the goal is to develop a new pedagogical model that could be trusted by future practitioners and would offer a generalisable framework (a 'blueprint' (Metzler, 2011)) for future teaching and learning in this field.

7. *Systematicity* is the penultimate feature, referring to the comprehensive and multiple data sources typically used in practitioner research, as well as unique insider perspectives. In this research, a robust and systematic multi-method approach (see Section 5) is central to the goal of achieving a trustworthy and generalisable pedagogical model.

8. The final shared feature of practitioner research is *publicity, public knowledge and critique*, which concerns the important issues associated with making practitioner knowledge public. Cochran-Smith and Lytle (2009) suggest that most descriptions of practitioner research emphasise making the work public in order for the community to both critique and work together to generate new (albeit personal) understandings. Whilst generalisability is always questionable in site-specific research, new knowledge and insights concerning teaching, learning, relationships and research methodology (to name a few) can have useful implications for the wider community. In this study, a transparent co-constructive approach to the design, implementation and evaluation of a new pedagogical model provides a basis for the research to stand up to critique. The visible co-constructive stages of model development also provide a rarely seen process, which has historically seen researcher-created pedagogical models and only later modification by teachers (see, for example Luguetti et al., 2017).

Whilst these shared features illuminate the key characteristics of practitioner research,

others have been quick to critique this approach and separate it from 'real' research. Ellis and Loughland (2016) drawing on the work of Stenhouse (1975) some 40 years earlier, suggest that challenges to practitioner research can be personal, inter-personal, professional, political and cultural in nature. On a personal level, it is suggested that teachers are some of the most resistant individuals to embrace change (Groundwater-Smith et al., 2003), with many finding critical self-reflection a threatening and difficult process. It is acknowledged that many teachers engaging in this approach will also require research training from so-called 'experts' (McLaughlin et al., 2008), but that these external researchers must also learn to work 'WITH teachers' (Ewing, 2007, p.5, original emphasis) more effectively in successful collaborative projects. On a professional level, teachers are rarely given credit for conducting research into their practice or school (Ellis & Loughland, 2016) and as Stenhouse (1975, p.157) explains, a lack of time will 'probably exclude all but the most energetic teachers from such work'. Politically, teachers can easily find themselves stuck in an externally directed project (Groundwater-Smith & Mockler, 2007) or caught up in issues of power and ownership. From a cultural perspective, the beliefs, attitudes and practices of individuals, notably school senior leaders, can also have a real impact on the success of practitioner research (Ellis & Loughland, 2016). Further, it should be recognised that this approach is not a natural one for most schools (Carter, 2008) and therefore creating a climate of trust, enquiry, risk-taking and collaboration is key (Ewing, 2007).

Building on the personal, inter-personal, professional, political and cultural challenges to practitioner research, Cochran-Smith and Lytle (2009) present three further critiques of this approach. These critiques are provided below along with an 'in contrast...' response in order to balance these criticisms:

- A science critique suggests that practitioner research is neither scientific (and therefore reliable) nor generalisable beyond the local context. In contrast, the use of an external researcher can aid the rigour of practitioner research.
- An ethics critique proposes a potential conflict of interest when teachers take on a research role, meaning that they may not always have the best interests of their students in mind. In contrast, most teacher-researchers who decide to take on the time-consuming approach of practitioner research do so because they believe it will inherently improve the life of their students.
- Finally, the personal/professional development critique provides two challenges to practitioner research. Firstly, when research is centred on professional

development it can reinforce rather than challenge the status quo. In contrast, effective contemporary professional development, when embedded in the school context, has been shown to have a significant influence on changing classroom practices. Secondly, practitioner research can be far too personal, focusing on individuals in a narcissistic or ego-centred sense. In contrast, much commitment is often demonstrated by teachers with the goal of supporting students' development, and greater recognition for this is perhaps warranted.

This section has introduced the concept of practitioner research, providing an overview of key modes of practitioner inquiry, their shared characteristics and critiques. My role as a teacher educator and researcher wishing to create a pedagogical model for the physical education profession that is both evidence-informed and grounded in teacher practice led me to select action research, and specifically participatory action research as the key methodology for answering this project's research questions. The next section introduces action research as a framework for teacher change, before examining the emergence and growth of participatory action research, an aligned methodology, which emphasises the importance of collaborative inquiry.

Action Research

In the Sage Handbook of Action Research, this methodology is defined as:

> a democratic and participative orientation to knowledge creation. It brings together action and reflection, theory and practice, in the pursuit of practical solutions to issues of pressing concern. Action research is a pragmatic co-creation of knowing *with*, not on *about*, people (Bradbury, 2015, p.1, original emphasis).

Action research was first described by Kurt Lewin (McIntyre, 2008) as 'a spiral of steps each of which is composed of a circle of planning, action and fact-finding about the result of the action' (Lewin, 1946, p.38). Most recently, Casey et al., (2018, p.20) have suggested that 'action research is about improving by learning and changing from within'. Finally, in a point that echoes that of Cochran-Smith and Lytle (2009) regarding the impact of practitioner research, Denscombe (2010) proposes that the purpose of action research is to solve a particular problem and to produce guidelines for best practice. Action research is therefore deemed a very appropriate methodology for pursuing solutions to real-life problems and using the evidence to both solve these issues and provide guidance to others. Lewin (1946) claimed that researching one's own practice through action research was a powerful approach for teacher

development and change because if practitioners truly wish to understand something, one of the best ways is to try and change it. This point reinforces the central tenet of action research around promoting teacher understanding and change as it blends knowledge and action (Tandon, 2005).

These and many other depictions of action research, albeit far from being universally accepted, possess a number of fundamental tenets, which Casey et al. (2018, p.21) propose as 'cornerstones' of the methodology. Firstly, the *practitioner* is central to and active in action research. Second, *self-reflection* allows the practitioner to plan, act, reflect and re-plan. Third, the *social situation* in which the research takes place is not neutral – expectations, relationships and practices influence what can and cannot be done. Fourth, *improving practice* should be at the heart of all action research. Fifth, the *ethics* of teaching and learning require practitioners to teach to the very best of their ability and to put the needs of their students first.

Action research is presented as a methodology for teacher action and reflection, as well as for creating practical solutions to curricular issues. Whilst action research could therefore be seen as an ideal methodology for creating opportunities for educational improvement through the development of a pedagogical model for Health-Based Physical Education, the next section justifies the unique opportunities provided by *participatory* action research (a closely aligned approach) as the central methodology in this study. It is important to note that Casey et al. (2018) have argued that action research is a collaborative process and can be conducted by a single person or 'persons'. However, earlier, Kemmis and McTaggart (2008) claimed that participatory action research as a methodology emerged from action research with a specific focus on the role that the communicative and collaborative space can have on changing practice. Participatory action research builds on the belief of many of the founding fathers of action research that it had become a 'technical' rather than a social process (Kemmis & McTaggart, 2008). In fact, without additional support mechanisms (such as the use of a co-researcher), it seemed that action research had lost its dialogue and had become individualistic rather than participatory (see Kemmis, 2006; McTaggart, 1994). The decision to use participatory action research was therefore both deliberate (because of the potential greater social interaction and opportunities for developing praxis) and pragmatic (as I was not able to conduct action research without my own school students, or easily gain access to students in order to conduct a study using

practice as a site for research (Cochran-Smith & Lytle, 2009)).

Participatory Action Research

McIntyre (2008, p.5) defines participatory action research as a 'process by which participants engage in collaborative, action-based projects that reflect their knowledge and mobilize their desires'. It is characterised by:

> the active participation of researchers and participants in the construction of knowledge; the promotion of self- and critical awareness that leads to individual, collective, and/or social change; and an emphasis on a colearning process where researchers and participants plan, implement, and establish a process for disseminating information gathered in the research project (ibid p.5).

Whilst action research is a methodology carried out into one's own practice, in participatory action research, practitioners collectively investigate, understand and change practice. Participatory action research draws on the resources of all participants (Brydon-Miller et al., 2011) to address the needs of a community. Furthermore, it is 'often, but not always, with an academic researcher as a partner in the process' (p.389). My belief, like Cochran-Smith and Lytle (2009, p.86), is that bringing together school practitioners and researchers can create 'constructive disruption' to previously accepted pedagogical practices. McTaggart (1994) further noted how this collaboration has the potential to benefit not only a teacher's own practice, but also the culture and practices of their community, such as the wider physical education departments in this study.

Whilst this research involved the co-construction of a pedagogical model and curricular programmes, Kemmis and McTaggart (2008) warn that it would be naïve to believe that all co-participants will be entirely equal. Indeed, each co-participant will have some particular expertise, which will be helpful to the outcomes of the project. Furthermore, when considering a researcher's role in participatory action research, it is crucial to note that I was not positioned as an 'external agent' providing technical or other guidance to the teachers (Kemmis & McTaggart, 2008, p.319). Instead, my role was 'as someone aiming to establish or support a collaborative enterprise in which people can engage in exploratory action as participants' (p.319). Developing this argument, Cochran-Smith and Lytle (2009) rightly assert that the knowledge that teachers need to help students learn effectively cannot be generated by outsider researchers and somehow imported for use inside schools. Instead, as Levin and Greenwood (2011) argue, the process requires 'cogenerative inquiry' which brings the experience and

training of researchers together with the commitment, expertise and depth of experience of the local stakeholders for the benefit of the project.

Whether or not a researcher needs to be 'requested' as a resource by a community, or whether a researcher can approach a group to invite them to explore an issue is a common question in participatory action research (McIntyre, 2001). Whilst Levin & Greenwood (2011) propose that any research focus in participatory action research should be chosen collaboratively, others argue that what is key in this style of research, is not who selects the research foci, but that the academic researcher engages in reflexivity throughout, continually reflecting on how they inform and shape the other participants' behaviour (McIntyre, 2008; Brydon-Miller et al., 2011). Aligned with this perspective, my overwhelming desire in developing a new pedagogical model was to ensure that its development was participatory, grounded and wherever possible avoided the 'researcher-researched hierarchy' (Brydon-Miller et al., 2011, p.391). However, much like Sabhlok (2007) the collaboration in this study was not organic, or instigated by the research participants. I was not invited to help these teachers and their students – I approached them with the offer to support them to co-construct programmes for physical education that could support young people to value a physically active life (see Section 5).

Whilst there were definitely key times during the research when I felt like an insider (our shared commitment, mutual respect and offering of examples to support each other's thinking), there were also many times when my role as an outsider was apparent (i.e. early in the process of meetings with teachers and when certain requests were made for access to students and staff in order to gather further data during 'busy' times in school). However, since the close-knit collaboration with teachers concluded 12 months or so after their initial implementation of Health-Based Physical Education in their schools, we have had little 'collaboration' beyond the sharing and discussion of findings as they emerged, for clarifying important details and for the occasional 'I hope your physical activity promotion work is going well?' (in both directions) through our professional development and physical education networks. There has been even less collaboration throughout the latter write up process of this thesis, save for checking and qualifying key data during the analysis phase. However, my intention and prior agreement to provide both a comprehensive and abridged summary of the findings related to their school remains and will be an important part of my post-doctoral work in

sharing the outcomes of this research.

The points raised in the previous paragraph are a central part of why I believe that whilst I am (to many) an outsider, 'academic researcher' (Brydon-Miller et al., 2011) or 'academic practitioner' (McIntyre, 2008), the desire for collaboration from the outset, the intent to co-construct and evaluate a pedagogical model and curricular programmes and to ensure that trustworthy findings are available to future practitioners, conform to the characteristics of participatory action research. Throughout the process of collaboration, many examples of enriched perspectives and ideas undoubtedly, as I will report in chapter 5 and 6, benefitted both the teachers' and my own practice and understanding. I also see the pedagogical model as something that could be used as a blueprint for physical educators across the world to use, adapt and extend in their own endeavours in physical activity promotion. Participatory action research *can* lead to important findings which are transferable to other researchers and settings (Brydon-Miller et al., 2011; Cochran-Smith & Lytle, 2009). In the case of this research developing a pedagogical model for Health-Based Physical Education using participatory action research, notwithstanding the need for extensive research in the years to come, 'deepens our collective understanding of important issues and provides strategies for others to draw upon in working to address similar concerns (Brydon-Miller et al., 2011, p.395). As was my aspiration at the outset of this doctoral study, my intention was to directly influence the school communities with which I worked so closely, but also to influence the wider national and international physical education community. I am fully aware that once this doctoral research is completed, that this will only be the starting point for the second endeavour.

Having outlined participatory action research and justified its choice for this study, the next consideration is the process of participatory action research itself. Whilst some practitioners describe the process of participatory action research as a 'spiral of self-reflective cycles' (Kemmis & McTaggart, 2008, p.276), others suggest a greater context-specificity, which means there can be no set formula in one's approach (McIntyre, 2008). However, whilst they acknowledge that the process will be 'fluid, open, and responsive' (Kemmis & McTaggart, 2008, p.277) in most instances of participatory action research, the following features are evident:

> Planning a change; Acting and observing the process and consequences of the change; Reflecting on these processes and consequences; Re-planning; Acting

and observing again; Reflecting again, and so on… (Kemmis & McTaggart, 2008, p.276).

This research took Kemmis and McTaggart's (2008, p.277) process of maintaining a 'fluid, open and responsive' approach, and the notion of spirals or cycles was not an inherent feature of the study. Instead, in helping school practitioners to become teacher-researchers, my role was to support the development of programmes and provide a scaffold, through a variety of research methods and support processes (see Section 5), to support them to reflect on their lesson-by-lesson approach and then consider how to approach their future lessons. As one brief example here, teachers reflected on each lesson using a 'post-lesson teacher reflection' tool which enabled them to reflect on the potential successes and areas for development relating to their implementation of Health-Based Physical Education, achievement of lesson learning outcomes, and the evidence of impact on students. A key requirement was to identify aims (for themselves and students) for the next lesson.

I have argued that by bringing together practitioners and researchers, participatory action research can support constructive disruption that can promote more effective understanding, beliefs and practice at both a school and national/international level. My decision to use participatory action research has been justified as both deliberate (because of the potential greater social interaction and opportunities for developing praxis) and pragmatic (as I was not able to conduct action research with my own school students). Furthermore, whilst the relationship with practitioners is not often 'problem-free', the intention to systematically co-construct and evaluate a pedagogical model and local curricula provided a shared goal that was guided and enhanced by the methodology of participatory action research.

Now that the paradigmatic and methodological concepts within this research are clear, the following section considers the specific settings, participants, research design, stages of pedagogical model development, methods, trustworthiness, ethical considerations and data analysis. As I indicated earlier in this chapter, the research methods are chosen as a result of a researcher's assumptions, paradigmatic and methodological decisions (Gill, 2011; Grix, 2010; Mack, 2010) as well as following the creation of specific research questions. The methods identified in the following section are selected in order to effectively and comprehensively respond to each research question.

Section 5. Research Methods

This section presents an overview of the research design and specific methods of data generation used to respond to the study's research questions. I first provide an overview of the school settings and participants before exploring the phases of this research and the stages of pedagogical model development. Each research tool is justified next, for its specific role in this study, along with several principles related to the development of trustworthy and ethical research. The final section considers the approaches to data analysis taken in this study.

Settings

The sites for this study were two schools in the East of England. Both schools were known to me through my university's school partnership, although to provide specific details about the relationship could expose the school and teacher identities. During this doctoral study I had no other direct involvement with the schools in my role as a teacher educator so as to avoid any potential conflicts of interest. Recruitment of these schools commenced with an open invitation to teachers in the region asking them to express an interest in being involved in a Health-Based Physical Education project that focused on students valuing a physically active life (see Appendix 1 for information letter and consent form for participants). After a more detailed introduction to the planned project and a discussion of expected commitments with several interested schools, these two schools were invited to participate as they demonstrated the strongest characteristics for a successful study. These characteristics included those consistently found to be important in the success of professional development, teacher change and curriculum innovation programmes (Bechtel & O'Sullivan, 2007; Fullan, 2015; Guskey, 2002; Lounsbery et al., 2011; MacPhail, 2007; Rogers, 2003) (see section 3 for a fuller discussion of teacher change). Put simply, they were selected as they appeared to be good contexts for successful curriculum innovation in that they had teacher buy in, support across the organisation from the physical education teachers to the Headteacher and the vision and beliefs of the volunteer teachers appeared to align with the main goals of Health-Based Physical Education. Both schools could therefore be considered both a convenience sample (as they were schools with whom I had relatively easy access) and a purposive sample (as they had intimated a strong commitment to collaboration in a Health-Based Physical Education research project) (Cohen et al., 2011).

School 1 (Maple Academy, a pseudonym) was a large co-educational all-through academy (4-18 years) with 1841 students on roll. Most students were of white British heritage and the proportion with a statement of special educational needs was higher than the national average (School OfSTED Inspection Report, 2012). Physical Education and School Sport has a high profile in the school and is well supported by senior leadership who valued the importance of young people's healthy active lifestyles. The physical education department had a broad curriculum, offering a range of games, competitive, cooperative, aesthetic and challenge contexts, which could be termed a multi-activity curriculum (Kirk, 2010), characterised by largely sport-based activity units taught over relatively short blocks of time. Units of work at Maple Academy were taught in single sex classes over four lessons (one per week), with two different activities making up the typical experience of a student in physical education within a week. The Physical Education extra-curricular programme was very extensive, offering multiple and broad physical activity opportunities for both competitive and recreational participation, led by physical education teachers, other school staff and externally appointed coaches.

School 2 (Delaware School, a pseudonym) was a co-educational middle school (9-13 years) with 369 students on roll. Most students were from minority ethnic backgrounds and the proportion known to be eligible for free school meals and to have a statement of special education needs was above the national average (School OfSTED Inspection Report, 2012). Physical Education and School Sport has a good profile in the school and is supported very positively by the Headteacher who was a former physical education specialist. The department offer a broad range of movement experiences within the curriculum, including games, competitive, cooperative, challenge and aesthetic contexts. As in the case of Maple Academy, Delaware School's physical education offer is characterised by a multi-activity curriculum (Kirk, 2010), with units taught in single sex groups over six to eight lessons (one per week for half of a term) with two different activities taught to students within a week. The Physical Education extra-curricular programme was broad, offering multiple physical activity opportunities for both competitive and recreational participation, led by physical education teachers and a small number of other school staff.

Participants

Teachers

Seven specialist physical education teachers at Maple Academy (four male and three female) (mean ten years teaching experience, ranging from two to 33 years) and two specialist physical education teachers at Delaware School (both male) (mean six years teaching experience, specifically two and ten years) were involved in this study. Teaching experience across both schools varied widely, from two to 33 years (mean nine years teaching experience as a qualified teacher). An overview of the characteristics of the teachers is provided in Table 3.2 below. The selection of teachers across two schools enhanced the trustworthiness of the study's findings and increased the potential of collaborative support for the teachers in each school.

Table 3.2 Teacher Characteristics at Start of Health-Based Physical Education Programmes

Name (pseudonym)	Gender	School	Years Teaching Experience	Years at Current School
Nick	M	Sycamore	13 years	8 years
Amy	F	Sycamore	4 years	4 years
Ed	M	Sycamore	5 years	5 years
Emma	F	Sycamore	10 years	5 years
Niall	M	Sycamore	2 years	2 years
Esther	F	Sycamore	33 years	5 years
Ethan	M	Sycamore	8 years	0 years
Neil	M	Maple	10 years	5 years
Mike	M	Maple	2 years	1 year

Students

263 students (161 male, 102 female) aged 11-14 years (mean 13 years old) from the two schools were involved in the co-constructed Health-Based Physical Education curricula. Sixteen single sex Year 8 classes (four male and four female) experienced Health-Based Physical Education at Maple Academy (n=226, 124 male, 102 female). These sixteen classes formed the entire year 8 student population at Maple Academy and were selected as a sample as all seven teachers taught these students. Teachers taught between one and three classes per week during the Health-Based Physical Education programmes. Two Year 7 boys' classes experienced Health-Based Physical Education at Delaware School (n=37). These two classes formed half of the year 7

student population at Delaware School, and were selected as a sample as the two teachers each taught one of the groups. Both teachers each taught their class once per week during the Health-Based Physical Education programmes.

Researcher

At the start of the study, I was a senior lecturer and had recently been appointed as Course Coordinator for a Physical Education Initial Teacher Education degree course. Prior to this, as outlined in chapter one, I had taught in both secondary and further education sectors.

Critical Friend

My colleague Paul, a senior lecturer and Subject Coordinator for a Physical Education Initial Teacher Education degree course, and a fellow PhD student, was a significant critical friend in this study. Our dual PhD foci sit within a wider Health-Based Physical Education programme of research (see Chapter 1, Wider Research Programme). Paul's major PhD focus was on the impact of the Health-Based Physical Education teacher initiation/professional development programme on teachers' values and practice. His role as a critical friend was one of 'providing an informed critique of processes and practices' (Swaffield, 2005, p.45). Paul interacted with the schools on an equally regular basis, in the teacher initiation, co-construction of programmes and teacher reflection phases. Paul and I also shared some of the data gathering methods used with teachers and students, although the data analyses were completed entirely independently; shaped solely by our unique foci, personal interpretations and our intended original contribution to knowledge. During and between our visits and interactions with the schools, Paul and I would frequently reflect on key incidents, whether that be face-to-face, on the phone or via email. During the teacher initiation, co-construction of programmes and teacher reflection phases of the research, we were typically in regular (weekly) contact about our respective studies and fieldwork, whilst after the taught programmes in schools had finished, this interaction reduced to communication every two or three weeks, on average.

Research Design

This section provides an overview of the research design and structure of this entire study, which was designed in order to answer the three research questions (Kerlinger, 1986). The inclusion of this time-based plan is crucial for clarifying the procedures for

each part of a research study and includes answers to questions such as when, how, who, what and why (Cooper & Schindler, 2003) the research was undertaken. These questions are addressed in this section in order to provide a snapshot of the entire study's design. The subsequent sections, on for example, methods, data analysis and ethics, allude to each of these questions in more detail as the chapter unfolds.

The design and conduct of the empirical elements of this study were phased in order to provide a framework for answering the research questions and to maximise the effectiveness of this pragmatic, critical and participatory action research. There were four main phases to the research, identified below, which should be viewed within the complex landscape of curriculum development. Each phase is separate yet developmental and progressive from the wider project's perspective. This is particularly so in relation to research question 1 from which both an early conceptual framework emerged from the research literature (chapter 4) and a subsequent prototype pedagogical model following all other phases of the research (chapter 6). Research questions 2 and 3 are also considered progressively, predominantly as a result of the extended time spent helping teachers to design and implement curricula in their schools and evaluate the impact on students during, immediately after and 12-months following their experience of the model (chapter 5). The developmental and progressive nature of this participatory action research project is cemented further given that the two school-based interventions that provide the local contexts for this thesis ran consecutively during the autumn (Maple Academy) and subsequent spring (Delaware School) terms. This consecutive sequence allowed for a great deal of planning, acting, reflecting and re-planning (Kemmis & McTaggart, 2008) to take place, and a number of revisions to our understanding of Health-Based Physical Education before the first and second school-based interventions.

Phase 1: Conceptual Framework Development and Teacher Recruitment

Phase 1 commenced in February 2011 and concluded in February 2012. This phase involved the development of a conceptual or theoretical Health-Based Physical Education model through a comprehensive review of literature in the field. The not insignificant process of developing the conceptual framework is detailed in Chapter 4. It is important to note that the conceptual framework is an evidence-informed structure that I developed, with the support of my supervisors and critical friend, prior to any involvement with the teachers in this study. The conceptual framework builds on the

groundwork of Haerens et al. (2011) and is considered as a second step towards the development of a pedagogical model for Health-Based Physical Education. During this period, secondary physical education teachers were invited and subsequently recruited to take part in this study.

Phase 2: Teacher Initiation to and Co-construction of Health-Based Physical Education Pedagogical Model

Phase 2 commenced in April 2012 and concluded in September 2012. For Delaware School, follow-up support was provided between November 2012 and January 2013, after the conclusion of the taught programmes at Maple Academy had finished. This follow-up allowed several lessons learnt during the process of implementing the first programmes to be considered, including, as will be discussed in chapter 5, supporting the teachers at Delaware School to plan the aims of their programmes, teaching using the critical features and the effective achievement of the goals of Health-Based Physical Education. This phase included the goal of introducing the Health-Based Physical Education conceptual framework to teachers, helping them to learn how to use it in practice and how to design appropriate curricula to be taught to students. A second goal was to support teachers to implement the processes of participatory action research, by supporting them to take an active role in reflecting on their practice against the Health-Based Physical Education conceptual framework and making informed decisions about how to make their practice more effective over time.

Drawing on Fullan's (2007) work in educational change, this phase was called 'teacher initiation' into the pedagogical model, although others may term this teacher professional development or learning. This phase consisted of a series of three face-to-face workshops in addition to discussions outside of these formal sessions with teachers, both face-to-face and electronically. As I have indicated in section 3, too often professional development activities are undertaken away from the context of the school, which limits their impact (Armour & Yelling, 2007; OECD, 2015). In addition, much teacher professional development takes the form of sporadic one-day courses, disconnected from previous professional development and typically without any 'real' students (Armour, 2010; Muijs & Lindsay, 2008) – what Darling-Hammond (2010) has termed 'pre-packaged' professional development. In an attempt to overcome these limitations, face-to-face sessions took place in both school and (at the teacher's request) university environments to ensure coherence and relevance to the future

implementation of Health-Based Physical Education. Sessions focused on the rationale for Health-Based Physical Education and designing curricula for students and working to overcome potential barriers to the successful implementation of the programmes. In addition, post-session tasks developed teachers' awareness of how to move from theory to practice through trialling elements of the conceptual framework with their students. An overview of the workshop content and post-session tasks are provided in Figure 3.2 below.

Meeting 1 Content	Meeting 2 Content	Meeting 3 Content
Introduction to the project Teacher reflections on current practice Introduction to Models-Based Practice The 'Foundations' for HBPE Practical Activity Practitioner Research	Review of post-session tasks The 'Teaching and Learning Features' for HBPE HBPE 'Implementation Needs and Modifications' Picture a HBPE lesson Moving forward	Review of post-session tasks Progress on planning HBPE units & lessons Logistics for implementation Data required from teachers and students Reflection on professional development programme
Post-Workshop Tasks	**Post-Workshop Tasks**	**Post-Workshop Tasks**
1) Teach a lesson trying to employ the benchmarks. Ask a colleague to observe you using the checklist. a) Reflect on which benchmarks you did/did not demonstrate b) Identify how you might adapt to include more teacher benchmarks Reflect on the suitability of the benchmarks for achieving the HBPE LOs 2) Trial the 'student' benchmarks with one of your classes. Ask a colleague to observe the students using the checklist. a) Reflect on which benchmarks the students did/did not demonstrate b) Identify how you might adapt to include more student benchmarks c) Reflect on the suitability of the benchmarks for achieving the HBPE LOs 3) Carry out an audit of your PE curriculum and extra-curricular provision using the template provided	1) Continue to hone your skills in achieving both the teacher and student benchmarks 2) Trial the use of a lesson evaluation tool - the 'Written' Post-Lesson Teacher Reflection (PLTR) and/or 'Verbal' PLTR (using a voice recorder) to reflect on your lessons as we are keen to find out which methods you prefer? 3) Draft units of work and lessons for the classes you will teach	1) Review draft units and lessons based upon the session

Figure 3.2 Overview of Teacher Initiation Workshops and Post-Session Tasks

The workshops were loosely structured around Metzler's (2011) proposed framework for pedagogical models – notably 'Foundations', 'Teaching and Learning Features' and 'Implementation Needs and Modifications'. Sessions included tasks to promote active engagement and opportunities, where possible, to see Health-Based Physical Education in action. Supplementing the workshops, teachers were encouraged to engage with post-session tasks which were designed to develop their familiarity with the conceptual framework and take opportunities to trial specific elements linked to effective teaching and learning in Health-Based Physical Education. The activities were planned to be conducted collaboratively by teachers, to develop shared ownership and critical reflections on practice.

The rationale for this approach to teacher initiation is borne out in the professional development literature (Aelterman et al., 2013; Armour & Yelling, 2007; Darling-Hammond, 2010; Penuel et al., 2007) and in successful school-based physical activity interventions that have utilised sustained, applied and context-specific staff professional development opportunities as a tool to raise student activity levels (Lonsdale et al., 2013a; Russ et al., 2015; Sallis et al., 2003; van Sluijs & Kriemler, 2016). All sessions were led by me and a colleague, with some guidance before and after sessions from members of our supervisory team. This team represented an experienced group of facilitators of professional development in broad forms of pedagogy and of physical education specifically (including health-related learning in physical education and models-based practice) with expertise in a range of curriculum interventions, practitioner research and participatory action research.

Whilst I have reported a key aim of this study is to co-construct a pedagogical model for Health-Based Physical Education, the extent to which teachers' expertise and desire to take on this role (Kirk & MacDonald, 2001; MacPhail, 2007) during the teacher initiation phase is questioned. Whilst a large number of elements of the conceptual framework were 'evidence-based' and provided good translation from theory to practice, there were significant opportunities when teachers could have stepped up to consider complementary or alternative strategies that could be used within the pedagogical model. For example, when considering the multiple and diverse ways that teachers could implement each of the conceptual framework's critical features (see Figure 4.6) nearly all teachers failed to add any significant workable

examples. Further, teachers appeared to want/need materials and planning documents to be provided for them, as I indicated in my reflective diary after a workshop with Maple Academy staff: 'What frustrated me during the session was that, despite the work we have done to help them translate the theory to practice, the teachers still wanted to see an example of both a unit of work and lesson plan before they started the process of planning' (Reflective Diary, 6.7.12). In the case of these teachers, I believe that the issue of a lack of co-construction in this phase lies in the subject knowledge of the teachers related to physical activity (Alfrey et al., 2012; Armour & Harris, 2013; Castelli & Williams, 2007) rather than to their values and beliefs about professional development expectations (Fullan, 2007; MacPhail, 2007; Rogers, 2003).

I would therefore suggest that the co-construction of Health-Based Physical Education was an aspiration too far in this early phase. However, as teachers began the processes of planning, teaching and evaluating their practice and as they developed their experience with Health-Based Physical Education, several teachers were in a position to offer some advice and revisions on content for the future pedagogical model. Two key examples reported in chapters 5 and 6 are their recommendation for simplifying the critical features from four teacher and four student behaviours to just four overarching principles as well as the simplification of the five goals within the conceptual framework to four in the pedagogical model reconsidered in chapter 6. Whilst these could be seen as watering down the detail of the model, it should be remembered that a pedagogical model needs flexibility in its implementation within the local context (Casey, 2017; Kirk, 2013) which both of these revisions to the model achieved.

Phase 3: Co-construction of and Implementation of Health-Based Physical Education Units of Work

Following teacher initiation, phase 3 took place in two consecutive periods of time linked to the two schools involved in this study. Maple Academy constructed the Health-Based Physical Education curricula between July and September 2012 and teachers subsequently implemented their programmes between September and October 2012. Delaware School constructed the Health-Based Physical Education curricula between November 2012 and January 2013 and teachers subsequently implemented their programmes between February and April 2013. Each school co-constructed a curricula based around the Health-Based Physical Education conceptual

framework and their knowledge of the local contexts, with myself and Paul acting as key resources (McIntyre, 2001). I specifically saw my role as one of facilitator, raising teachers' consciousness (Cohen et al. 2011) and aiming wherever possible to avoid the high ground, or 'researcher-researched hierarchy' (Brydon-Miller et al., 2011, p.391).

Whilst I admit that this balance was not always maintained in my role as a critical education researcher with the goal of changing practice, I also offer that, in our early interactions planning the curricula, I could have been more persuasive in supporting the schools to devise their programme with even closer congruence to the conceptual framework. Several instances linked to translating theory to practice are reported in chapter 5, including the lack of translation of the critical mover goal into the overarching programme aims, inconsistent use of physical activity diaries and the short lengths of the planned units. Whilst I acknowledge my own shortcomings in this sense, for not helping the schools to aspire to the best programmes, I also recognise the significant barriers in place within the school contexts which made curriculum innovation an extremely difficult process (Fullan, 2015; Goodyear & Casey, 2015; MacDonald, 2003). For example, at Maple School, a postponed workshop in late in the summer term, at the school's request, meant that time to make significant changes to their unit of work was limited. Greater hindsight and experience from Maple Academy's programmes, as well as greater lead-in time to the start of their programmes, enabled much more constructive reviews of Delaware School's planning documentation and a number of specific recommendations that I made to the teachers were adopted swiftly.

Phase 4: Teacher Reflection and Student Impact Evaluation

Phase 4 commenced in the week prior to the first taught Health-Based Physical Education lessons (pre-test T1), continued throughout the unit of work and captured further data the week after the final taught lesson (post-test T2). A final delayed post-test (T3) was conducted with students 12 months after the conclusion of the units of work to assess any impact beyond the 'honeymoon period' (Goodyear & Casey, 2015). For Maple Academy, this was between September (T1) and October (T2) 2012 and then again in October 2013 (T3). For Delaware School, this was between February (T1) and April 2013 (T2) and then again in April 2014 (T3). The aim of the evaluation phase was two-fold: firstly to work with teachers throughout their taught lessons to support the participatory action research process in teaching effective Health-Based

Physical Education lessons and to understand the types of programme that they taught and why. Secondly, to assess the impact of the Health-Based Physical Education programmes on students' physical activity behaviour and learning at three time points (T1-T2-T3).

In relation to the first aim of the evaluation phase, to support the participatory action research process, an important principle was for me to scaffold teachers' completed post-lesson teacher reflections (PLTRs). This tool focused teachers' attention on the success of their lesson in relation to key questions and perceived achievement of the critical features in the lesson (see 'Methods of Data Generation' in next sub-section). My role was to review the PLTR, once received from the teachers after each lesson, and scaffold ways in which practice might be improved in subsequent lessons. A key consideration here was to surface, either from the teachers' reflection or from videoed lesson material, evidence of positive impact of teaching on students, so that teachers could see the effect they were having, which has been proposed as a crucial principle in teacher change theory (Guskey, 1986, 2002).

Pedagogical Model Development

In addition to the four phases of empirical work within this study, the development of the Health-Based Physical Education pedagogical model was an eight-stage process, adapting the stages used by Brewer and Jones (2002) and Cushion et al. (2012) for the development of valid and reliable observation instruments (see Table 3.3 below). Health-Based Physical Education was established following an extensive review of literature (stage 1) on physical activity and physical education, including empirical studies, systematic reviews of literature, and on the theoretical frameworks used in behaviour change research. This resulted in a draft 'Foundations' framework. The growth of the theoretical and empirical data that supports the model did not cease following this initial literature review – on the contrary, as the following stages emerged, I was compelled to revisit and extend the knowledge base for the model, particularly in stages 7 and 8.

Table 3.3. The Eight Stages of Health-Based Physical Education Pedagogical Model Development

Stage	Description
1	Literature review
2	Draft 'Foundations'
3	Draft 'critical features' and subsequent conceptual framework
4	Face test validity of 'critical features'
5	Teacher piloting of 'critical features'
6	Co-construction of Health-Based Physical Education programmes
7	Ongoing revisions during implementation and evaluation of programmes and impact on students
8	Health-Based Physical Education pedagogical model reconsidered

The critical features, which support the fidelity of the model's implementation, were developed in stage 3 to reflect the underlying theories, major theme, learning goals and assumptions of learning and teaching (the model foundations). First, I analysed the benchmarks of eight other models from Metzler's (2011) compendium to develop familiarity, understanding and language/style. In further refining the framework with a self-determination theory focus, I then compared the critical features with a recently developed checklist for observing teacher behaviours that support and thwart the development of self-determined (or intrinsic) motivation (Haerens et al., 2013). In stage 4, eighteen physical education teachers and 300+ university pre-service teachers face tested the draft critical features through discussion and practically-based workshops, which resulted in a number of revisions. These revisions included improved clarity over the learning domain priorities, more detailed versions of the assumptions of teaching and learning and clearer language and additional examples within the critical features to more effectively enable behaviours to be evidenced. The critical features were then piloted in stage 5 by twelve qualified teachers who initially trialled these in isolation, but over several weeks practised ways of implementing all features within a range of lessons. Subsequent interviews with the teachers deduced the suitability of the critical features for the achievement of the model's goals and further modifications were made to them, including a reduction in the total number.

In stage 6, using the further developed conceptual framework, including the revised critical features, nine teachers co-constructed programmes of Health-Based Physical Education for their two school contexts with my support. During the co-construction process, several key decisions (and modifications) were made regarding the learning outcomes and content of the programmes, which further helped to shape the Health-Based Physical Education model framework.

During the teaching of the Health-Based Physical Education programmes in stage 7, a number of instruments (explored later in this section) were used to support the teachers' reflection and evaluation of the model. Following each lesson, teachers were asked to complete a Health-Based Physical Education Post-Lesson Teacher Reflection (adapted from Dyson, 1994) on their perceptions of the success of the lesson against its intended learning outcomes and of perceived fidelity to the model's critical features. A sample of lessons (at least one from the beginning and one from the end of each teacher's unit) were also video recorded and reviewed using a new tool specifically developed to authenticate the implementation of the model (the Health-Based Physical Education Fidelity Tool). Following delivery of the programmes, each teacher was interviewed using the guidelines proposed by Kvale (1996) to evaluate their views of the Health-Based Physical Education model framework and the perceived impact of the programmes on their students. All students completed a questionnaire on their learning, motivation and intentions to be active before and after the Health-Based Physical Education programme. In addition, an identical repeated measures assessment was conducted twelve months after the programme had finished to deduce any impact on students 'beyond the honeymoon period' (Goodyear & Casey, 2015). A smaller mixed-ability sample of students (judged by teachers against the Health-Based Physical Education goals) (n=41) were involved in focus groups immediately following the Health-Based Physical Education programme and twelve months afterwards, in order to garner additional insight into their personal experiences of participating in the programmes.

The final stage (stage 8) in the Health-Based Physical Education pedagogical model development was to present the revised model framework: a) to the teachers and students at Maple Academy and Delaware School, for their final feedback and recommendations based on their 'lived' experiences; and b) for peer review to an international audience of physical education and sport pedagogy professionals. This took place at two conferences. Firstly, the 2015 International Association for Physical Education in Higher Education (AIESEP) conference in Madrid, Spain (Bowler et al., 2015). Secondly, the annual Association for Physical Education (afPE) conference in Burton upon Trent, England (Bowler, 2016). Through further consultation with teachers and students and by presenting at these conferences, I sought the confirmation of suitability and critical feedback from those who had directly experienced Health-Based

Physical Education, as well as international academic scholars (AIESEP) and physical education teachers, advisers and consultants (afPE). Following the presentation of the model framework to teachers and students and at both conferences, several minor modifications were considered in the model presented in the final results chapter. The final revisions to the Health-Based Physical Education pedagogical model were also completed with the guidance of my supervisors during the final thesis write-up period and in drawing on an up-to-date literature review.

Methods of Data Generation

The study employed a wide range of qualitative and quantitative data generation methods, specifically selected for their compatibility with the research questions. Table 3.4 provides a 'questions – methods matrix' (adapted from Wellington, 2000), aligning the specific research methods with each research question whilst Table 3.5 provides an overview of the methods used in the study. Specifically, data were generated by teachers from post-lesson teacher reflections (PLTR) and teacher interviews. Data generated by students included questionnaires and focus groups. I have used a number of additional data generation methods to answer this study's research questions, including literature reviewing, a reflective journal, document analysis and lesson observation. The selection of a range of methods from different 'lenses', as well as the use of inclusion of a number of practitioner researchers serves to provide both methodological and investigator triangulation (Cohen et al., 2011). Further, all methods have been piloted to indicate their feasibility, credibility, trustworthiness and to enhance the effectiveness of my own skills in carrying out specific techniques, such as interviews, focus groups and lesson observation.

Table 3.4: A Questions – Methods Matrix for the Health-Based Physical Education Investigation (Adapted from Wellington, 2000, p.50)

RESEARCH QUESTIONS	METHODS							
	Literature Rev	Reflective Journal	Document Analysis	Post-Lesson Teacher Reflection	Student Questionnaire	Lesson Observation	Teacher Interview	Student Focus Group
RQ1 – What are the major elements of a Health-Based Physical Education pedagogical model?	✓	✓				✓	✓	
RQ2 – What type of programmes do teachers design and implement?		✓	✓	✓		✓	✓	
RQ3 – What is the impact of a programme of Health-Based Physical Education on students?		✓		✓	✓	✓	✓	✓

Literature Review

Stage one of the pedagogical model development included a comprehensive review of literature to further determine the evidence base for Health-Based Physical Education. Literature was identified through a search of the EBSCO databases (in line with recent reviews of research in physical education by Harvey & Jarrett (2014) and Hastie et al., (2011)), which included research from North America, the UK, Europe and Australia. This search was undertaken in two phases. In the first phase, the criteria for selection were the terms 'physical* activ*' and 'physical education' in the article abstract. This identified over 1,800 full text results focused on the relationships of physical activity, physically active lives and physical education. In the second phase, the terms 'motiv*' and 'physical education' in all article fields resulted in over 350 full text results focused on motivation, motivational climate and physical education. After each phase, all results were scanned for relevance and suitability. Following both searches, further literature was added from the references of the original articles. In addition, a number of textbooks on physical activity, health and/or motivation and considered relevant to this research were consulted. All appropriate sources were reviewed and key issues recorded to support the evidence for the foundations, teaching and learning features and implementation needs and modifications of Health-Based Physical Education.

Table 3.5: Overview of the Research Methods

Literature Review	Review of literature to develop Theoretical Foundations, Teaching and Learning Features and Implementation Needs and Modifications of the Health-Based Physical Education pedagogical model.
Reflective Journal	Maintained for all CPD workshops, visits to schools, lesson observations and critical incidents. Piloted use since commencement of PhD.
Document Analysis	Analysis of teachers' Health-Based Physical Education planning documentation.
Post Lesson Teacher Reflection	A structured Post-Lesson Teacher Reflection (PLTR) was completed by teachers after every HBPE lesson. Piloted verbal and written PLTR with teachers during CPD.
Student Questionnaire	Questionnaire (pre-intervention, post-intervention, 12 months post-intervention) to assess students' motivation, knowledge and physical activity levels. Piloted questions with twelve students aged 11/12 of different academic abilities.
Lesson Observation	Sample of video recorded Health-Based Physical Education lessons. Systematic observation to show if the model had been delivered 'as intended', which elements were delivered well/less well and which critical features were most important for student learning, intentions and physical activity levels. Systematic observation tool developed and tested for inter-observer and intra-observer reliability.
Teacher Interview	Individual interviews with all participating teachers before the teacher initiation phase, at the end of the Health-Based Physical Education units and at 12 months post-unit. Interviewing skills piloted with student teachers and qualified teachers.
Student Focus Group	Semi-structured focus group with selection of students from each class who typically demonstrate high, moderate and low levels of physical activity. Piloted student focus group skills and questions with ten students aged 11/12.

Reflective Journal

Throughout the entire research process, I maintained a reflective journal through a process known as participant observation (Cohen et al., 2011). Participant observation is a minimally intrusive form of observation since it requires the researcher to be a collective member of the group, in order that they can gain access to the teachers' behaviours and activities, whilst maintaining a degree of detachment (Cohen et al., 2011). This method of data gathering allowed me to 'get under the skin' (Cohen et al.,

2011, p.465) of and truly understand a situation. During and/or as soon as possible after each teacher initiation session, lesson observation, visit to school or other critical incident, I recorded my observations in an ongoing reflective journal. A process of memoing (Charmaz, 2006) allowed me to record critical incidents, key information relating to the model's main concepts and their relationships during the entire process of its development. This document was crucial to regular and in-depth reflections and provided insights into all three research questions, as well as highlighted situations where an intervention was required by the teacher or researcher (Koshy, 2010). Although reflective journals have been criticised for being highly selective (Cohen et al., 2011) and subjective (Koshy, 2010), their use was primarily to support the range of other methods identified. The reflective journal was an A5 hard-bound book with standard ruled lines. From the start of this PhD process, to the final write-up pre-viva voce, I had handwritten 184 pages of reflections. Once transcribed, this totalled nearly 60 A4 pages of reflections throughout my doctoral studies.

Document Analysis

Document analysis of the two school's planning processes (units of work and lesson plans) was undertaken to deduce the type of programmes and lessons that each school planned to implement. Document analysis is a form of qualitative research where texts are interpreted in order to give voice and meaning to a particular issue (Bowen, 2009). Whilst they provide a basis through which to potentially understand the authors' intentions (Cohen et al., 2011), such as in the enactment of Health-Based Physical Education, they require careful analysis given the issues involved in interpreting various potential meanings of written text as well as issues linked to authorship/ownership (Cohen et al., 2011). Moreover, document analysis is sometimes critiqued for failing to engage with the classroom and learning context. For this reason, as is the case for this study, this method is considered an important tool in supporting the triangulation process (Bowen, 2009) as well as providing the basis for the specific probing of interview questions with teachers. Document analysis in this study included approximately 10 pages of printed plans for each school, totalling 21 pages of text overall.

Post-Lesson Teacher Reflection

A Post-Teaching Reflective Analysis (PTRA) tool (Dyson et al., 2010) was piloted both in verbal and written formats with all of the teachers during the teacher initiation phase

of this study. The decision to offer a verbal evaluation method was based on many curriculum intervention studies that suggest that 'innovation is work' (Kirk, 1986, p.390) or innovation is 'work-plus-work' (Casey, 2010, p.197). For this reason, I was mindful of the fact not to ask the teachers to spend 'extra' time writing down their reflections if they preferred to speak their evaluations whilst making their way to or from lessons. Some teachers preferred to reflect verbally using a voice recorder whilst others preferred to write down their thoughts.

Following the pilot with teachers during the teacher initiation phase, a modified tool, named the Health-Based Physical Education Post-Lesson Teacher Reflection (HBPE-PLTR) (Appendix 2) was developed to give more specific insights into teachers' perceptions of the success (or otherwise) of their Health-Based Physical Education lessons. Specifically, the HBPE-PLTR guided teachers to reflect on how well they believe each of the learning outcomes and critical features were achieved; an essential element of research question two. THE HBPE-PLTR is a feasible yet user-friendly tool to gain teachers' reflections on their lessons. As noted in the 'Research Design' sub-section, the use of the PLTR was central to facilitating the effective participatory action research process with teachers, notably in supporting them to understand the impact of their teaching on students and how to modify their future practice and beliefs (Fullan, 2007; Guskey, 2002; Rogers, 2003). The total number of PLTRs received and reviewed from Maple Academy was 55 (out of a total of 64) providing an 86% completion rate. Variability occurred in completion between staff at Maple Academy, all bar Esther and Niall achieving over 80% completion, with these two around 50%. The received PLTRs from Delaware School totalled ten (out of 12) providing an 83% completion rate. Both teachers missed one lesson reflection during the process.

Student Questionnaire

The student questionnaire was used as a repeated measure to generate data on their learning, motivation, intentions to be active and their activity levels. The questionnaire was completed by students before the Health-Based Physical Education programmes commenced (T1) (see Appendix 3), immediately following the unit of work (T2) and twelve months following the end of their programme (T3) (for T2 and T3 questionnaire, see Appendix 4). Its feasibility and validity was assessed through consultation with each of the teachers in the study and by piloting the questionnaire with twelve students aged eleven and twelve (5 male and 7 female) from a different school. This age group

was selected as they were equal to or younger than the youngest students in this study. The researcher sat with the students whilst they completed the questionnaire to check the clarity and readability of the questions, to check the time taken to complete the questions and to identify if any were too sensitive (Cohen et al., 2011). Each question was either considered from a previously published and validated survey on self-determined motivation or stages of change (Markland & Tobin, 2004; Marcus et al., 1992) or was created for its direct relevance to this study's research questions. Both published surveys have been used in a wide range of physical education and exercise environments with children of a similar age to those in this study and have each found good levels of validity and reliability.

Questionnaires are very effective tools for understanding participants' perceptions, ideas and values (Schmuck, 2006). When containing a mix of closed and open questions and maintaining a guarantee of anonymity, they are also a very effective means of gathering accurate data from a large number of perspectives (Cohen et al., 2011). Questionnaires provide data that can easily be followed up (Koshy, 2010) such as by observation, interview or focus group. Although in many contexts, questionnaire completion rates and reliability of response have been questioned (Cohen et al., 2011), this potential issue was overcome through their completion during school time where all questions were fully explained to students by me prior to completion.

In addition, self-report techniques, such as through questionnaires, are the most common method of assessing physical activity participation because of their low financial cost and low participant burden (Dale et al., 2002). It is also beneficial in self-report instruments when participants provide details not only on the quantity of physical activity, but also the quality (Dale et al., 2002) such as the type and location. This information was crucial for answering research question three and would not be possible through purely physiological methods. However, the limitations of self-report techniques include misinterpretation of the question, difficulty in recalling physical activity behaviour and deliberate misrepresentation (Dale et al., 2002). Self-report instruments may also not always accurately detect elements of frequency, intensity, duration and type of physical activity (Dale et al., 2002). Corder et al. (2008) suggest that questionnaires administered by an interviewer are the most valid. However, where this is not possible, it is recommended to have an adult check completion of the questionnaire. I was present for most student questionnaire collection periods, but,

whenever it was not physically possible for me to administer the survey, the nominated teacher checked their accurate completion.

Teacher Interview

Interviews have been identified as an effective technique for gathering rich and informative data (Koshy, 2010). Interviews were used within this study in conjunction with questionnaires to gain both high numbers of responses (questionnaire) along with depth of response (interview). As such, the data gathered in teacher interviews were predominantly qualitative in nature, and questions were created based on an analysis of questionnaires, PLTRs and my reflective journal. Interviews were a crucial method for establishing teacher views on all three research questions. The interview process followed the seven stages proposed by Kvale (1996): thematising, designing, interviewing, transcribing, analysing, verifying and reporting.

A selection of teacher interview questions were taken from previously published research on H-RPE and modified for the context of the study (e.g. Alfrey et al., 2012; Castelli & Williams, 1997; Harris, 1997). The first interview questions sought information on each teacher's background, current delivery of H-RPE, goals of physical education and H-RPE and their experiences through participation as a student, initial teacher training (ITT) and continuing professional development (CPD) (see Appendix 5). The second interview questions asked teachers to consider the impact of Health-Based Physical Education on their students (see Appendix 6), whilst the third (see Appendix 7) required a focus on student impact beyond the honeymoon period, 12-months after the completion of their Health-Based Physical Education programmes. Across all interviews, the average duration was 37 minutes. The questionnaires were piloted 'on paper' for their suitability and validity with seventy-eight pre-service teachers who had completed a significant period of professional learning in HBPE. Amendments were made before conducting pilot interviews with two qualified teachers of physical education. All participants were asked to consider the suitability of the interview questions in generating evidence to answer the three research questions. This process ensured the feasibility and validity of the pre- and post-intervention teacher interview and skill-set of the researcher to carry out this process.

Student Focus Group

Student focus groups were selected over individual interviews as these have shown to

encourage interaction between the participants and is less intimidating for individuals (Cohen et al., 2011). A group interview also allows for greater discussion around different perspectives, rather than just one typically identified through individual interviews (Harvey et al., 2015). Hill (2005, in Armour & Macdonald, 2012, p.124) suggests that the key difference between research with adults and children is concerned with ability and power. Potential issues associated with students' communicative and language ability were minimised by piloting focus group questions with ten students aged 11-12 years. It was also my intention to reduce concerns over issues of power, particularly at the start of the project where I was nothing more than a stranger to the students. However, I also needed to overcome issues such as students saying what they think I wanted to hear and of some students dominating the conversation. A sample of 8-12 students was selected (Cohen et al. 2011) by the Head of Physical Education in both schools based upon their mixed levels of attainment in relation to the Health-Based Physical Education movers (habitual, motivated, informed, critical). These students completed a focus group with me within two weeks of completing their final Health-Based Physical Education lesson (see Appendix 8) and again 12 months (+/- two weeks) after their programme completed (see Appendix 9). Across all focus groups, the average duration was 28 minutes.

Lesson Observation

The use of observation as a research method in education provides a potentially authentic and first-hand impression of ongoing practices by getting close to everyday situations (Öhman & Quennerstedt, 2012). Depending on a study's research questions and a researcher's assumptions and paradigmatic perspectives, observations are likely to be more or less qualitative or quantitative (Öhman & Quennerstedt, 2012). This study gathered a balance of quantitative and qualitative data through lesson observations, in line with the already highlighted research questions, research phases and my own philosophical stance.

Systematic (or direct) observation is a method for classifying behaviours into categories that can be quantified or analysed in greater detail (McKenzie, 2002). Whilst it has been viewed as a labour intensive research method, the use of observation is seen as a contextually rich technique which is crucial in educational research (van der Mars, 1989). Metzler (2011) suggests that the use of systematic observation is a key way to monitor if a pedagogical model is being implemented as it was intended. In this

study, event recording (van der Mars, 1989) was used to record specific learning and teaching behaviours in lessons linked to important features of the Health-Based Physical Education pedagogical model, using a tool specifically designed for this study – the 'Health-Based Physical Education Fidelity Tool' (see Appendix 10). Whilst direct observations of specific 'quantifiable' behaviours form the basis of the fidelity tool, there are also opportunities to identify other observer notes, in order to explore less structured qualitative observations of the learning environment. To assess fidelity to the conceptual framework, a sample of lessons (at least one from the beginning and one from the end) from each teacher's unit was video recorded and subject to analysis using the fidelity tool. At Maple Academy, a total of 20 lessons (out of 64) (31% of all lessons) were video recorded and analysed with the fidelity tool. At Delaware School, a total of eight lessons (out of 12) (67% of all lessons) were video recorded and analysed with the fidelity tool.

The development of the fidelity tool is best understood through an understanding of the Health-Based Physical Education conceptual framework presented in the next chapter, not least the goals, critical features and assumptions of learning and teaching. The critical features of Health-Based Physical Education were the starting point for creating the 16-item fidelity tool, like the recently developed fidelity tool for Cooperative Learning (Casey et al., 2015). Next, the literature surrounding the goals of Health-Based Physical Education, the underlying theories of the model and the assumptions of learning and teaching were used to create further observable behaviours for the tool. The fidelity tool was implemented in a series of 'model' Health-Based Physical Education lessons taught by myself and Paul to four classes of pre-service teachers to check for face validity and received several modifications before being used in this study, following inter-observer and intra-observer reliability checks, both of which secured > 85% reliability (Casey et al. 2015; Van der Mars, 1989).

The fidelity tool enabled the most common teaching behaviours to be established, indicating the type of programmes that teachers deliver (RQ2). It was also central to identifying the impact of the model by highlighting the most commonly demonstrated student behaviours within lessons (supporting the data generated for RQ3). The use of both video and voice recording hardware to observe a variety of teaching and learning contexts was conducted throughout the teacher initiation phase of this study. Its feasibility of use in both indoor and outdoor lessons significantly improved during this

piloting process. Preliminary analysis of video footage from these sessions, prior to the implementation of Health-Based Physical Education programmes, indicated that the fidelity tool behaviours are clearly observable and suggested that it is a valid instrument to gather data in answering the research questions and to assess the fidelity of Health-Based Physical Education implementation.

Fidelity is the extent to which an intervention or curriculum is implemented in comparison to the original plan and is likely to impact on its success in terms of outcomes (Carroll et al., 2007; O'Donnell, 2008; Zhu et al., 2011). Meyers & Brandt (2015) called implementation fidelity the black box between the planned programme and its outcomes. Monitoring implementation fidelity can enable more effective evaluation of the impact of an intervention (Carroll et al., 2007). However, several researchers (Kirk, 2013; Kloeppel et al., 2013; Siedentop, 2002) guard against the expectation that implementation fidelity will be high and acknowledge the central importance of teachers adapting the model for their local contexts. In this sense, I should not be pre-occupied with high fidelity because this 'is not how dissemination works in schools' (Siedentop, 2002, p.416). Whilst high implementation fidelity is not the 'be all and end all' of models-based practice, it is important to remember that pedagogical models are designed with specific student outcomes in mind, are based upon an underlying theory or theories, and possess a major theme, a number of assumptions and important learning domain priorities that link directly to these intended goals. Metzler (2011, p.41) therefore urges practitioners to understand that 'changes [to a model] should not be made thoughtlessly. Modifications should be planned systematically with the aid of process and achievement assessment information whenever possible'. Furthermore, I agree with Metzler's assertion that the following elements should not be modified: 'underlying theories, assumptions about teaching and learning, domain priorities, and domain interactions' (p.42). The effect of altering or removing these foundations of a pedagogical model is likely to result in a rather different approach to that which was purposefully intended or an incorrect assumption that a model 'doesn't work' when in fact the teacher changed too much of the model's design to enable it to work the way it was intended (Metzler, 2011).

Whilst Metzler (2011) does not include the benchmarks or critical features of a pedagogical model as elements which can be modified, the fidelity research in models-based practice typically use these as central criteria of the evaluation of

implementation (Casey et al., 2015; Dyson et al., 2010; Harvey et al., 2010; Pritchard et al., 2008; Sinelnikov, 2009) perhaps indicating their central importance within model implementation. Furthermore, others have adopted a stance that benchmarks, and in some cases, different essential elements are in fact 'non-negotiable' in implementing a model as it was designed (Goodyear, 2013; Luguetti et al., 2017; Williams & Wainwright, 2016b). However, the critical features are not the only measure of implementation fidelity in these studies, and several have drawn on guidance from O'Donnell (2008) on implementation fidelity in educational settings. This guidance recommends 5 criteria through which to assess the faithfulness of interventions: adherence, duration, quality of delivery, participant responsiveness and programme differentiation (see Figure 3.3). In relation to models-based practice specifically, Hastie and Casey (2014) recommend that three key elements are included in research design and methodology in order to accurately understand how a study was implemented and any subsequent impact: (a) a rich description of the curricular elements of a unit, including how the key features of a model were accounted for through a description of the programme; (b) detailed validation of model implementation, through an itemising of key teacher/student processes from the model and an indication of their presence (or not) within the programme; and (c) a detailed description of the contextual conditions, including teacher expertise, students' previous experiences, duration and facilitators/constraints of the programme.

Criteria for assessing educational implementation fidelity
1. Adherence: the extent to which the components are delivered as intended
2. Duration: the length, number or frequency of sessions implemented
3. Quality of delivery: the manner in which the techniques, processes or methods prescribed in the intended framework are implemented
4. Participant responsiveness: the extent to which participants are engaged in the activities and content of the programme
5. Programme differentiation: whether key features which distinguish the programme from the comparison condition are present/absent during implementation

Figure 3.3 Five Criteria for Assessing Educational Implementation Fidelity (Adapted from O'Donnell, 2008)

In an apparent contradiction to Metzler's (2011) suggestion that the benchmarks or critical features of a pedagogical model could be modified, Hastie and Casey (2014, p.424) recommend that, in the case of the Sport Education pedagogical model, the five elements (defined as critical features in this thesis) 'cannot be compromised', whilst for Cooperative Learning, 'one would expect to see, as a minimum' the key features. In

two recently developed pedagogical models, Luguetti et al., (2017, p.17) and Williams and Wainwright (2016b) present critical features as 'non negotiable' features of their model, in order to most effectively achieve the intended outcomes. Indeed, Kirk (2013) has recommended the term 'non-negotiables' over Metzler's (2011) description of benchmarks. Whilst the debate about whether the benchmarks, critical features or critical elements are negotiable or not, they have formed a key part of the analysis in the following section. My personal view is that the critical features should form a central part of any programme of Health-Based Physical Education, from its planning to implementation and evaluation, in order that a teacher can most effectively achieve the intended goals and support students to value a physically active life. However, the Health-Based Physical Education critical features have an inherent flexibility which offer practitioners evidence-based options yet are not exhaustive or constraining in how they may be achieved (the critical features of Health-Based Physical Education are considered in the next chapter).

This section has provided an overview and justification for the multiple methods of data generation used in this study. These were selected with an eye on the research questions and to the methodology of participatory action research. The next sub-sections consider trustworthiness, ethical considerations and data analysis.

Trustworthiness

Positivists typically expect high standards in terms of the validity, reliability and objectivity of research whereas interpretivist and critical theorists justify this quality in terms of trustworthiness and authenticity (Lincoln & Guba, 1985; Pandey & Patnaik, 2014). Whilst I hoped, as previously explained, to influence the ecological validity of the Health-Based Physical Education pedagogical model by creating a framework that may be transferable to other school settings after this study, for the purpose of this research, the latter terms (trustworthiness and authenticity) are used to frame the issues surrounding the quality of the findings. Trustworthiness is considered below, whilst authenticity is considered in the following section on ethical considerations.

Trustworthiness includes credibility (was the research subject to prolonged immersion in the field?) dependability (did the research include open-ended and emergent enquiry?), transferability (is there sufficient detail for others to compare their own contexts against the findings?) and confirmability (can the findings be tracked to their

source?) (Lincoln & Guba, 1985; Pandey & Patnaik, 2014). This study achieved these characteristics of trustworthiness through a sustained period of close interaction with schools. The research was framed with the intention to co-construct a pedagogical model and local curricula for Health-Based Physical Education with teachers. The empirical data collected has been presented with clarity and detail, allowing for others to make comparisons with their own contexts. The findings, in relation to the programmes taught, the impact on students and the prototype pedagogical model developed are compared, contrasted and justified in relation to real evidence, collected from a variety of stakeholders and sources.

The use of reflection and evaluation through four lenses (Brookfield, 1995) from (a) self-reflection, (b) the students' eyes, (c) the teachers' experiences, and (d) theoretical literature was also planned with an eye on increasing the trustworthiness of the data collected and the subsequent pedagogical model presented in chapter 6. The process of completing this doctoral study has required me to reflect more critically than ever before on my own and others' practice. It has also enforced the need for greater involvement of young people within the research process in order to empower them for the future. Teachers' experiences and viewpoints were central to the pedagogical model and programme development, as well as to evaluating the impact of curricula on students. Finally, the theoretical literature (as could be argued in any doctoral research) has been the one remaining constant, from the development of the Health-Based Physical Education conceptual framework, to evaluation of the local curricula and the development of the pedagogical model. The trustworthiness of this research is enhanced further given the following types of triangulation: methodological (through multi-methods), theoretical (qualitative and quantitative data) and time (through a sustained period in the field) (Cohen et al., 2011).

Ethical Considerations

Authenticity centres on the ethics of research and includes fairness (are the participants fairly represented?), educative (were there benefits to participants?) catalytic (were participants able to identify problems in their context as a result of participation?) and tactical (were participants empowered to improve their situation through involvement in the research?) (Lincoln & Guba, 1985; Pandey & Patnaik, 2014). It is clear that the criteria for authenticity align strongly with the standards and expectations of the critical paradigm identified earlier (Taylor & Medina, 2013) linked to

the centrality of impacting on practice and not merely measuring it. The characteristics of authenticity align effectively with the British Educational Research Association (BERA) Ethical Guidelines (2011) which make particular reference to researchers' responsibility to participants. This research met these guidelines in several ways. Ethical approval for this study was given by the university prior to any contact with participants in the field. Voluntary informed consent was granted by all teachers and parents, and assent given by students (see Appendix 1). The study made clear to all participants that the aim of the study was to work together to develop and field-test new approaches to teaching H-RPE. All participants were given the right to withdraw at any point in the research. No incentives were provided to schools, other than the opportunity to collaborate on new PE-for-health pedagogies. Confidentiality and anonymity were achieved through the use of school and participant pseudonyms, as well as the secure storage of all data on password-protected computers and locked storage.

My intention in this study was to improve the lives of young people through physical education, and support them to lead more fulfilling, healthy and active lives. However, it is impossible to guarantee the absence of harm. Putting ourselves in our participant's shoes, we should ask… 'What *effect* will participating in the research have on my life, my learning, my anonymity and my sense of self?' (p.69, original emphasis). Additionally, we should ask what effect the research will have on a school's daily business and what the immediate benefits are to the school and their students and teachers. As I suggested in the methodology section, this reflexivity (Sparkes & Smith, 2004) was a central feature in my practice as well as my concern for methodological naturalism (Avis, 2005) during all interactions with teachers and students. My intention and prior agreement to provide both a comprehensive report and abridged summary of the findings related to their school remains and will also be an important part of my post-doctoral work in sharing the outcomes of this research.

Data Analysis

The multi-phase and method approach within this study has inevitably impacted on the types and forms of data analysis conducted during this research. This section considers 'transcription and coding' of interviews and focus groups, systematic lesson observation and statistical analysis of students' self-reported physical activity.

Transcription and Coding

Following the voice recording of the teacher interviews and student focus groups, the files were transcribed verbatim by a professional transcription service. At (roughly) monthly points throughout the research process, I personally transcribed my largely hand-written notes from my reflective journal. I also transcribed the qualitative data (observer notes) from the Health-Based Physical Education Fidelity Tool. This data provided key evidence in response to research question 2 (what type of programmes do teachers design and implement?) and research question 3 (what is the impact of Health-Based Physical Education on students?). In relation to the type of programmes designed and implemented (research question 2), the transcribed data were coded to three categories (programme aims, subject matter and teaching and learning approaches) using a process of constant comparison (Lincoln & Guba, 1985; Patton, 2002). In relation to the impact of Health-Based Physical Education on students (research question 3), the transcribed data was similarly coded to the overarching goals of Health-Based Physical Education, categorised as habitual mover, motivated mover, informed mover and critical mover (see the next chapter for an exploration of the Health-Based Physical Education goals). In the case of student impact, the four codes included both positive and negative categories to indicate the encouraging and potentially adverse effects of Health-Based Physical Education. In both coding instances, categories were tabulated (Cohen et al., 2011) for ease of theme construction and to use the words of teachers and students when reporting the findings (Patton, 2002).

Systematic Lesson Observation

Quantitative data from the Health-Based Physical Education Fidelity Tool was tabulated indicating raw scores and percentage achievement of the 16 behaviours by lesson, teacher and school. This provided data to support the teaching and learning features of the school-based programmes (research question 2) and impact on students (research question 3). This data also served to provide a basis for claiming fidelity (or otherwise) to the pedagogical model. Lessons were classified in the following three fidelity categories: (a) high fidelity if the lesson achieved at least 13 out of 16 items (81-100%); (b) moderate fidelity if the lesson achieved between 9 and 12 out of 16 items (56-75%); and (c) low fidelity if the lesson achieved 8 or less out of 16 items (0-50%). These categories were created following the guidance of previous fidelity of implementation research (Borrelli et al., 2005; Stylianou et al., 2016; Toomey

et al., 2017).

Statistical Analysis of Student Self-Reported Physical Activity

A one-way within subjects (or repeated measures) ANOVA (Kruskal-Wallis test) was conducted to compare students' 'self-reported physical activity' (on a ten-point scale) and their 'stage of change' (on a five-point scale) at three time-points (pre-unit, post-unit, post-honeymoon). The non-parametric Kruskal-Wallis test was selected because the data did not fit a normal distribution. Following statistically significant effects, Dunn-Bonferroni post hoc pairwise tests were carried out for the three time points to further confirm the differences in students' perceived physical activity levels and stage of change. All analyses were performed using the SPSS 22.0 software package.

Section 6. Chapter Conclusion

This chapter has presented three key justifications methodologically speaking. First, I provided a rationale and overview of the paradigmatic assumptions and frameworks that have underpinned this programme of research. Second, I justified the methodological approach, namely 'Participatory Action Research' used in this thesis. Third, I provided an overview and rationale for the research design and data gathering methods employed to answer this project's research questions, describing how and why they were used specifically in this study. It is important to recognise that the research paradigms, methodology and methods were guided by a commitment to the development, implementation and initial impact evaluation of a new pedagogical model with the goal to support young people to value a physically active life. However, the research methods also provide opportunities to glean data on the types of programmes taught and the impact that these have had on students. These three areas: pedagogical model development, Health-Based Physical Education programme design and impact of curricula on students form the basis of the next three results chapters (chapters 4-6).

In chapter 4, I present the groundwork completed by Haerens et al. (2011) in arguing for a new pedagogical model for Health-Based Physical Education. I then explore my development of a conceptual framework for Health-Based Physical Education drawing on a further literature review, and the development of several 'foundations' and specific critical features for the model. Chapter 5 explores the types of programme designed and implemented by teachers and the subsequent impact that these have had on

students. In chapter 6, I present the culmination of this doctoral research – an evidence-informed prototype pedagogical model for Health-Based Physical Education.

CHAPTER 4: CONCEPTUAL FRAMEWORK FOR HEALTH-BASED PHYSICAL EDUCATION

This chapter outlines the early stages of the development of the Health-Based Physical Education pedagogical model. The conceptual framework presented in this chapter follows stages 1-3 of the 8-stage process (detailed in chapter 3). This conceptualisation occurred prior to any interaction with the teachers involved in this study. Consequently, this chapter presents a theoretical or evidence-informed conceptual framework for Health-Based Physical Education, rather than a pedagogical model that has been implemented and evaluated. Casey (2017) suggests that until a framework is applied in schools and reviewed for its suitability, it should not be considered a pedagogical model. Casey's argument builds on the conceptions of Jewett and Bain (1985) who refer to the importance of developing a 'conceptual framework', based on theory, prior to the design of specific models. The term conceptual framework is therefore used within this chapter. The framework builds on the groundwork and advocacy of Haerens et al. (2011) in 'Toward the development of a pedagogical model for Health-Based Physical Education', which the authors claim was the most 'preliminary step' (p.333) in this model's creation. The conceptual framework presented in this chapter should be considered, therefore, as a second key step in the development of the Health-Based Physical Education pedagogical model.

In order to operationalise a theory, a conceptual framework should be designed. This conceptual framework provides a structure to describe a number of central principles (such as key concepts, guidelines, specifications, taxonomies/structures and definitions). Jewett and Mullan (1977) previously defined a conceptual framework as a structure that identifies and defines key elements and the relationship between these. Through the development and refinement of a conceptual framework, it is possible to translate theoretical ideas into specific models, which provide 'a design for developing curricula' (Jewett & Bain, 1985, p.15). During and after the process of teaching through the model in local curricula, a conceptual framework can be revisited theoretically and revised through a 'process of reconsideration' (Casey, 2017). This process is the topic of chapter 6, which presents a detailed overview of a pedagogical model for Health-Based Physical Education.

This chapter discusses the initial conceptualisation of Health-Based Physical

Education, before the school-based phase of this research and prior to interaction with the teachers in this study. The next chapter (Chapter 5) examines the local curricula that was designed and implemented based on this conceptual framework and the impact that these programmes had on students. Chapter 6, as I just indicated, presents a pedagogical model for Health-Based Physical Education grounded in both theory and reflections from the local curricula.

In Section 1 of this chapter the principles presented by Haerens et al. (2011) in advocating and starting the groundwork for a new pedagogical model for Health-Based Physical Education are reviewed. Section 2 indicates the steps taken through stages 1-3 (of 8 stages) of model development. In Section 3, a conceptual framework for Health-Based Physical Education is presented and justified before a brief conclusion.

Section 1. Haerens and Colleagues' Vision for Health-Based Physical Education

Drawing on Metzler's (2011) three-part framework, Haerens et al. (2011) proposed a range of principles for Health-Based Physical Education: 'foundations', 'teaching and learning features', and 'implementation needs and modifications'. In starting to think about a pedagogical model for Health-Based Physical Education, Haerens and colleagues also identified three tensions which should be considered in the model's future development, implementation and evaluation. A summary of the key principles and tensions proposed by Haerens et al. (2011) are presented in Figure 4.1 below. This section reports and discusses these issues specifically.

Foundations

The proposed 'foundations' of the pedagogical model identify a rationale for a models-based approach (drawing on Jewett et al., 1995; Lund & Tannehill, 2005; Metzler, 2011; Kirk, 2010) and for Health-Based Physical Education itself (drawing on Pate et al., 2002; Currie et al., 2004; Corbin, 2002; NASPE, 2004). Since Haerens et al.'s (2011) publication, work in the fields of both model-based practice and H-RPE has continued. For example, Dyson, Kulinna and Metzler (2016), Kirk (2013), Casey (2014), Hastie and Casey (2014), among others, have provided further commentary and guidance on the recent and future use of models-based practice in physical education. Similarly, the rationale for an alternative approach to teaching H-RPE has continued to strengthen in

Foundations	Teaching and Learning Features	Implementation Needs and Modifications
• Rationale for a models-based approach to physical education • Rationale for Health-Based Physical Education • Review of H-RPE approaches over the last 40 years • Lessons learnt from a review of H-RPE approaches • Major theory • Major theme • Learning domain priorities	• Promote a positive attitude toward physical activity by focusing on the affective domain • Develop cognitive understanding of the importance of physical activity, lifestyle management and self-management strategies • Students become increasingly independent from the teacher • Prompt students with information on physical activity guidelines and its benefits as well as providing strategies to become more active • Employ motivational strategies to promote enjoyable experiences (autonomy, competence and relatedness strategies) • Optimal challenging tasks, positive feedback, encouragement, clear expectations and communication • Tasks should be delivered and learning evaluated against health and physical activity criteria and not sport skills or fitness outcomes • Opportunities to choose activities that are easily transferable into leisure time	• Reflect on their curriculum value orientations and how these relate to Health-Based Physical Education • Teachers must develop new expertise, skills and teaching styles to teach 'PE for health' • Teachers must understand physical activity concepts, as well as psychological and social principles of adopting a physically active life • Consistency among policies and messages across the school and community
Some tensions surrounding Health-Based Physical Education: • The evidence surrounding which type of activities should form the content of Health-Based Physical Education is unclear from the evidence base (i.e. lifetime, multi-activity, sport-based) • The emphasis given to learning in the affective domain will require different teaching and assessment methods that will need to be developed, applied and evaluated • Sustained transfer of learning beyond the school will require the inclusion of wider communities, although this is not a common feature of school-based physical activity programmes		

Figure 4.1: Summary of Principles and Tensions Presented in 'Toward the Development of a Pedagogical Model for Health-Based Physical Education' (Haerens et al., 2011)

recent years, with increasingly low levels of physical activity participation in many populations (Hallal, et al., 2012; Scholes, 2016, 2017; Sport England, 2017) and widespread acceptance of the centrality of physical education in school-based approaches to activity promotion (Dobbins et al., 2013; Kriemler et al., 2011).

From their selective review of approaches to H-RPE over the last 40 years, Haerens and colleagues proposed a number of principles related to the model's foundations. Drawing on research from the UK, US and Australia, the reviewed studies included The Hindmarsh Experiment (Hervet, 1952), Daily Physical Education (Tinning & Kirk, 1991), Health-Related Exercise (Harris, 2000), Fitness Education (McConnell, 2005), Sports, Play and Active Recreation for Kids [SPARK] (McKenzie et al., 2009) and Coordinated Approach to Child Health [CATCH] (McKenzie et al., 2003). Haerens et al. (2011) learnt several lessons from these approaches and the review of evidence, including: (i) that the mixing of health and other goals of physical education, particularly of sport-based and multi-activity curricula does not work; (ii) the need for an approach that explicitly relates to lifelong engagement in physical activity; (iii) that a predominance with fitness testing and other health 'outcomes' may be counter-intuitive and approaches should focus on the process and not merely the product of being active, healthy or fit; (iv) that a focus on within lesson physical activity levels is insufficient for long-term transfer beyond the school; (v) that learning in multiple domains is important, including helping students to self-manage their lifestyle (cognitive), develop the motivation to be active (affective) and perceive themselves as competent participants (physical). The identification of these important lessons helped to both shape the beginning framework, as outlined by Haerens et al. (2011), and the conceptual framework presented later in this chapter.

Haerens and colleagues presented self-determination theory (Deci & Ryan, 2000) as the major theory underpinning the Health-Based Physical Education pedagogical model (see the fuller discussion of self-determination theory in section 3). In so doing, Haerens et al. (2011, p.330) argued that this choice is derived from the concepts of 'transfer of learning and long-term behaviour change' and the reporting of the potential role that intrinsic motivation has in supporting an active life beyond school. Haerens and colleagues held that valuing would only be achieved if an individual were intrinsically motivated to participate in a given activity. Deci and Ryan (2000) suggest

that such intrinsic motivation occurs when individuals find an activity inherently interesting, meaningful and enjoyable; in other words when individuals are self-motivated. These values, according to Deci and Ryan, are most likely to be seen when the human needs of autonomy, competence and relatedness are satisfied.

A plethora of research pertaining to motivation and behaviour change in physical education, physical activity and health is available, much of which has been drawn on in the development of this conceptual framework. This includes specific reference to empirical studies using self-determination theory as a key driver for changing physical activity behaviours as well as a range of other theories not initially identified by Haerens and colleagues in their inevitably constrained publication. Of particular note, and not mentioned by Haerens and colleagues, are several frequently cited references pertaining to the role of extrinsic motivation as a key motive for starting physical activity and the importance of intrinsic motivation for activity adherence (Gallager & Updegraff, 2011; Lim et al., 2013; McAuley et al., 1991; Ryan et al., 1997). The collective findings from these and other studies indicate the divergent motives that individuals have for participating in physical activity and the importance of considering both intrinsic and extrinsic motivation, particularly given that intrinsic motivation alone cannot support physical activity adherence (Gavin et al., 2014).

Drawing on Siedentop's (1996) earlier notion of valuing, Haerens et al. (2011, p.336) proposed the central theme of the model as students 'valuing a physically active life, so that they learn to value and practise appropriate physical activities that enhance health and well-being for the rest of their lives'. Valuing, according to Siedentop (1996, p.266), occurs when people 'organize their lives so that regular involvement in activity occurs throughout the lifespan'. Central to Siedentop's concept of valuing is that individuals will participate in ways that are literate and critical. In Siedentop's rationale, being literate means that individuals are knowledgeable participants in physical activity, whilst critical participants will understand the benefits and barriers of physical activity participation, and work to overcome these for themselves and others.

One further element of the foundations proposed by Haerens and colleagues was that of the learning domain priorities. Their suggestion, given that valuing a physically active life (Siedentop, 1996) is the model's central theme, is that the affective domain should take priority. As Health-Based Physical Education is concerned with developing

positive attitudes toward physical activity and health, Haerens and colleagues advocated the prominence of this domain, drawing on the lessons learnt in their review of literature (e.g. McKenzie et al., 2009; Verstraete et al., 2007; Whitehead & Fox, 1983). Based on earlier proposals by Harris (2000) and Verstraete et al. (2007), that young people need to develop an understanding of physical activity and to be sufficiently physically competent to participate effectively in physical activity for life, Haerens et al. (2011) acknowledged that physical and cognitive learning outcomes would also be required.

Given the strong agreement, however, that the legitimate learning outcomes of physical education centre around four (not three) domains (Kay, 2003; Bailey et al., 2009; Kirk, 2012; Casey & Goodyear, 2015), the conceptual framework presented later also includes the social domain as a key area of learning, in addition to the affective, cognitive and physical domains proposed by Haerens et al. (2011). This inclusion further supports the important role that social relationships play in physical activity adherence, such as peer and family support (Bauman et al., 2012; van der Horst et al., 2007).

Teaching and Learning Features

The 'teaching and learning features' proposed by Haerens et al. (2011) include a number of recommendations for the design of the learning environment. Building on the importance of the affective domain, Haerens and colleagues suggest that a teacher priority is to promote a positive attitude to physical activity and health, which they suggest may require alternative teaching and learning approaches than those typically used in the subject. Specifically, drawing on the tenets of self-determination theory, Haerens and colleagues suggest that teachers can promote the universal human needs of autonomy, competence and relatedness in a number of ways. Perceptions of autonomy can be developed when students experience 'a sense of volition and psychological freedom' (p.331), whilst competence is perceived when young people experience a sense of effectiveness in mastering tasks. Feelings of relatedness occur when students experience 'connectedness and intimacy' (p.331) with their teacher and peers. Building on these proposals, specific strategies to develop perceptions of autonomy, competence and relatedness are considered in the Health-Based Physical Education theoretical framework presented later in this chapter.

Haerens et al. (2011) further argued that the cognitive domain is a central feature of the model in order to help young people understand the importance of physical activity and of how to manage their lifestyle (see Harris, 2000; McKenzie et al., 2009; Verstraete et al., 2007). They also suggest, drawing on the work of McConnell (2005), that students should be able to manage their lifestyles with increasing independence from the teacher. Specifically, Haerens and colleagues recommended that teachers should prompt students with information relating to the physical activity guidelines, benefits of physical activity, and how to become more active. In the development of the teaching and learning features related to developing learning in the cognitive domain, these and other issues are considered important learning for young people in order to support them to value and participate safely and effectively in physical activity.

In providing appropriate tasks and activities for Health-Based Physical Education, Haerens et al. (2011) recommended (drawing on Harris, 2000; Tinning & Kirk, 1991; and others) that lesson content should be taught and learning evaluated against health and physical activity criteria rather than sport or fitness outcomes. Furthermore, the activities offered should make it possible for students to choose options that are most easily transferred into their leisure time (Haerens et al., 2011). What activities and content to teach in Health-Based Physical Education has been debated and according to Haerens and colleagues represents one of the tensions surrounding Health-Based Physical Education.

However, given their marginalisation in physical education curricula, lifetime activities, including those with a health and physical activity purpose, Haerens et al. (2011) suggest, are considered most appropriate. This is despite there being no scientific evidence to confirm that either sport-based or lifetime-based curricula are more effective in promoting physical activity beyond the school (Haerens et al., 2011). Whilst other, more traditional physical education activities (such as games) should not be excluded it is recommended that, given their continued dominance in most physical education programmes already (UNESCO, 2014; Fairclough et al., 2002) they should not be given priority within Health-Based Physical Education. However, it is also crucial to remember that 'young people do physical activity in different ways' (Corbin, 2002, p. 132) and some will be motivated by some activities more than others, which illustrates the importance of gaining students' perspectives on the choice of activity. A key concern when considering subject matter is therefore the students themselves, as well

as how to teach the activity (regardless of type) in order to promote the major theme and goals of Health-Based Physical Education. That said, and, notwithstanding the importance of the activity type, drawing on the ideas of curriculum and value orientations presented by Jewett et al. (1995), Haerens and colleagues suggest that personal development and social-cultural goals are higher priorities than the subject matter. In other words, teachers should focus on students' personalised and meaningful growth and develop their skills for critical participation in society rather than the specific activity that is used as a vehicle for this development.

Implementation Needs and Modifications

Considering the 'implementation needs and modifications' for Health-Based Physical Education, Haerens et al. (2011) drew on curriculum literature (Cohen & Hill, 2001; Jewett et al., 1995; Kirk, 1986) to propose several areas of teacher expertise and teaching skills, as well as contextual requirements and modifications to the pedagogical model. Haerens and colleagues (2011, p.333) proposed that teachers need to reflect on their curriculum value orientations and how these relate to Health-Based Physical Education. If value orientations, skills and teaching styles are as closely aligned as Haerens and colleagues suggest then unless a teacher fully acknowledges the importance of physical activity for health and of the role of physical education in health promotion, they will be unlikely to (fully) adopt the most appropriate practices to achieve the goals of the model.

According to Haerens and colleagues, many teachers also need to develop new skills and teaching styles to teach Health-Based Physical Education. Those recommended include developing approaches which will most favourably develop students' perceptions of autonomy, competence and relatedness and that will enhance their feelings of enjoyment. In further developing the Health-Based Physical Education model, I have considered these and other strategies that will support young people to truly value a physically active life and identified specific ways in which teachers could work with students both within and beyond lessons towards achieving this goal.

In relation to teacher expertise, Haerens and colleagues suggested that teachers need to understand several theoretical and scientific concepts in order to effectively teach Health-Based Physical Education. They suggested two broad areas of teacher knowledge. Firstly, teachers need a sound technical understanding of concepts

surrounding physical activity, including how young people can participate safely and effectively in different movement forms. Secondly, they require an understanding of psychological and social concepts related to valuing physical activity and leading a healthy active lifestyle. Based on my subsequent review of literature, these and other areas of teacher knowledge are explored in the Health-Based Physical Education conceptual framework.

A further requirement for the successful implementation of Health-Based Physical Education, Haerens and colleagues (2011, p.333) proposed, is 'consistency among policies and the messages given by different institutions involved in the implementation' of the model. They suggest this may be achieved through a whole-school or whole-community approach that includes policy, institutional and curriculum strategies focused on increasing the population's activity levels. This was a key recommendation in their review of Cohen and Hill's (2001) work on educational change. Following my own review of literature, a considerable evidence-base surrounding educational change in schools and in physical education specifically has served to provide additional and insightful factors that could support the effective implementation of Health-Based Physical Education.

Tensions

In their advocacy for Health-Based Physical Education and in their development of an initial framework, Haerens et al. (2011) highlighted three potential 'tensions' that should be considered in the model's development and in any future programmes of research. The first tension concerns what activities should form the content of Health-Based Physical Education curricula. As discussed earlier in this section, there is no scientific evidence to help curricula designers establish which type of activities are most likely to motivate students to be active beyond school. However, my review of literature established some key principles for the types of activity most likely to motivate young people and which will have greatest carry-over into adulthood. However, as indicated in Chapter 2 (section 4), it is important to note that it is not only the activity which needs to be considered by teachers, but also the pedagogical approaches used to promote learning through that activity.

The second tension is that the model's emphasis on the affective domain, because of physical education's typical focus on the physical and cognitive learning domains, will

require the development, application and evaluation of different teaching and assessment methods. Haerens and colleagues suggested that although our understanding of supporting young people's development in the affective domain is the least well known, we can learn from other models that have prioritised this aspect, such as the Cooperative Learning model.

The third tension proposes that sustained transfer of learning beyond physical education and the school gates requires greater inclusion of the wider communities in which each school is located. Unfortunately, Haerens et al. (2011) report that the inclusion of the wider community is not a central feature of most school-based physical activity programmes. My review of literature concurs that whilst this is the case, a number of school-based interventions and systematic reviews of research report the central involvement of the community as a significant factor in the success of these programmes. Suggestions are presented in the following section, which can potentially optimise the involvement of the school, family and wider community in physical activity programmes.

This section has presented the key proposals of Haerens et al. (2011) in order to lay the groundwork for the future development of the Health-Based Physical Education pedagogical model. A number of principles related to the foundations, teaching and learning features, and implementation needs have been explored, as were three tensions that future research needs to consider in developing the profession's understanding of the most effective ways to teach Health-Based Physical Education. The next section provides an overview of the steps taken to develop the conceptual framework prior to its introduction to teachers.

Section 2. Developing the Health-Based Physical Education Conceptual Framework

The conceptual framework for Health-Based Physical Education was established following an extensive review of literature on physical activity and physical education, including empirical studies, systematic reviews of literature, and on the theoretical models used in motivation and behaviour change research. This resulted in a draft framework for the 'foundations' and 'teaching and learning features' that build on the initial groundwork of Haerens et al. (2011) just discussed.

Literature was identified through a search of the EBSCO databases (in line with recent reviews of research in physical education by Harvey & Jarrett (2014) and Hastie et al. (2011)), which included research from North America, the UK, Europe and Australia. This search was undertaken in two phases. In the first phase, the criteria for selection were the terms 'physical* activ*' and 'physical education' in the article abstract. This identified over 1,800 full text results focused on the relationships of physical activity, physically active lives and physical education. In the second phase, the terms 'motiv*' and 'physical education' in all article fields resulted in over 350 full text results focused on motivation, motivational climate and physical education. After each phase, all results were scanned for relevance and suitability. Following both searches further literature was added from the references of the original articles. In addition, a number of textbooks surrounding physical activity, health and/or motivation and considered relevant to this research were consulted. All appropriate sources were reviewed and key issues recorded to support the evidence for the foundations, teaching and learning features and implementation needs and modifications of Health-Based Physical Education.

Once the initial framework was drafted, the critical features, which support the fidelity of the model's implementation, were developed to reflect the underlying theories, major theme, learning goals and assumptions of learning and teaching (i.e. the model's foundations). In further refining the features with a self-determination theory focus, these were compared with a recently developed system for observing teacher behaviours that support and thwart the development of autonomy, competence and relatedness (Haerens et al., 2013). This resulted in several revisions to the critical features, which are reported in the next section.

Section 3. Health-Based Physical Education Conceptual Framework

This section presents a conceptual framework for Health-Based Physical Education that I developed to build on the groundwork of Haerens et al. (2011). It draws on the work of Jewett, Bain and Ennis' (Jewett and Bain, 1985; Jewett et al., 1995) depiction (which includes key concepts, guidelines, specifications, taxonomies/structures and definitions) and utilises Metzler's (2011) framework (foundations, teaching and learning features and implementation needs and modifications), although the latter are not considered at this conceptual stage. It also includes the specific goals for Health-Based

Physical Education, but which are not included in Metzler's framework for describing pedagogical models. The conceptual framework for Health-Based Physical Education is summarised in Figure 4.2 below. It builds on the major theme and major theory proposed by Haerens et al. (2011) including the theoretical perspectives linked to the social ecological model and correlates of physical activity, as well as the identification of five assumptions to support teaching and learning and five goals which depict the intended 'mover' characteristics.

HEALTH-BASED PHYSICAL EDUCATION
Habitual movers | **Enthusiastic** movers | **Confident** movers | **Informed** movers | **Critical** movers

Major Theme
'Valuing a physically active life'

Major Theory – Self-Determination Theory
Autonomy – choice, ownership, flexibility,
Competence – positive feedback, improvement
Relatedness – caring, security, co-operation

Theory – Social Ecological Model
Intrapersonal factors; Interpersonal Processes Organisational Factors;
Community Factors; Public Policy

Theory – Correlates of Physical Activity
Demographic; Psychological; Behavioural; Social; Environmental

Assumptions of Learning &Teaching
1. Value and demonstrate sustained physical activity behaviour
2. Learn in all four domains (affective)
3. Transfer beyond the lesson
4. Autonomy (choice/decision making)
5. Support mechanisms

Goals
1. Habitual movers – choose to lead an active lifestyle and participate in regular physical activity
2. Enthusiastic movers – demonstrate a positive attitude and engage enthusiastically in regular physical activity
3. Confident movers – demonstrate perceived competence in chosen physical activities through effort and progress/improvement
4. Informed movers – understand how and where to engage in physical activity, the effects of an active lifestyle and how to participate safely and effectively
5. Critical movers – understand the barriers to physical activity and become activists (movement promoters) to positively affect their physical activity environment

---

Figure 4.2: Conceptual Framework for Health-Based Physical Education

Foundations

Theory and Rationale

Reviews of research concerning the promotion of physical activity frequently cite the importance of the inclusion and application of theories or models of motivation and behaviour change within an intervention's design (Lai et al., 2014; Lonsdale et al., 2013a; Lubans et al., 2008; Michie & Abraham, 2004). In addition, despite knowledge of the benefits associated with physical activity, most adults and young people are not active enough for health purposes (Currie et al., 2008; Hallal et al., 2012; Scholes, 2016; Sport England, 2017). This suggests that successful interventions (and as a consequence, the design of this conceptual and pedagogical model) require a framework that is not concerned merely with awareness raising or information provision, but one which strives to influence attitudes, behaviours and environmental factors with the aim of increasing levels of physical activity participation.

This section considers some of the most successful theories and models for physical activity promotion and behaviour change from a school and physical education perspective, based on the findings of individual empirical studies, meta-analyses and systematic reviews of literature. Specifically, self-determination theory, the social ecological model and correlates of physical activity are justified. Collectively, these are proposed as the major theories used to support Health-Based Physical Education and are positioned to help it work for its intended purpose (Metzler, 2011). It is crucial that teachers understand the 'big ideas' behind Health-Based Physical Education in order that they can implement the model in the way that it was designed (Metzler, 2011).

Self-Determination Theory: Enhancing young people's motivation has been advanced as a key strategy to increase their physical activity participation in the longer term (Chatzisarantis & Hagger, 2008; Cheon et al., 2012; Haerens et al., 2010; Lonsdale et al., 2013b). Self-determination theory (Deci and Ryan, 2000; Ryan & Deci, 2017) is a complex, empirically based theory of human motivation and personality, particularly concerned with the impact of the social environment on individuals' motivation, development and wellness. Self-determination theory proposes that when individuals want to do something, rather than feeling that they have to do it, they will be more likely to engage and will be more self-determined, intrinsic or autonomous. 'Intrinsically motivated behaviours are those that are freely engaged in out of interest without the necessity of separable consequences' (Deci & Ryan, 2000, p.233).

In apparent contrast to the tenets of self-determination theory, a great deal of research has considered the role of extrinsic (or external forms of) motivation as a key motive for initiating participation in physical activity and the subsequent importance of intrinsic motivation for physical activity adherence (Gallager & Updegraff, 2011; Lim et al., 2013; McAuley et al., 1991; Ryan et al., 1997; Teixeira et al., 2012). Notwithstanding these findings, many self-determination theorists confirm that it is rather risky to offer extrinsic rewards as a key source of motivation as it can encourage participants to focus on the incentive and stop the activity when it is removed (Deci & Ryan, 2000). Crucially, Deci, in an interview with Terry (2013), suggests that if a reward is used to promote a specific behaviour, it should be kept as a non-salient feature of the activity. Another evidence-informed finding from a systematic review of self-determination theory research is that, given the different forms of extrinsic motivation, it is possible to use more autonomous (rather than controlling) forms of extrinsic motivation (Teixeira et al., 2012) to initiate physical activity, which can be more effective than trying to use intrinsic strategies at this early stage.

As I have suggested above, a more advanced understanding of self-determination theory, one which contrasts earlier thoughts that intrinsic and extrinsic motivation were directly opposed (see deCharms, 1968; Harter, 1981), is that there are several types of extrinsic motivation (Deci & Ryan, 2000). Furthermore, the extent to which each is internalised, reflective of one's beliefs or the degree to which it is autonomously pursued (Hagger, 2009) is the crucial factor. Deci and Ryan (2000) posit four types of extrinsic motivation ranging from purely extrinsic contingencies such as rewards or punishments, to integrated forms of extrinsic motivation where external outcomes are also personally aligned with other valued life goals. The four types of external motivation are external, introjected, identified and integrated. In many research studies, the first two form what is termed controlled motivation, whilst the latter two are often combined with intrinsic motivation to indicate autonomous motivation (Van den Berghe et al., 2014). In addition, Vallerand (2007) suggests that it is very unlikely that young people will demonstrate integrated regulation because it necessitates high levels of self-awareness not typically present in youths. This presents another reason for identified regulation, integrated regulation and intrinsic motivation to be combined in order to better initiate autonomous forms of motivation.

Intrinsic motivation and the four types of extrinsic motivation are joined on a self-determination continuum by amotivation (see Figure 4.3). Amotivation indicates a lack of intention to behave or act – quite simply a lack of either intrinsic or extrinsic motivation (Deci & Ryan, 2000) - and a likely result is either not taking part or merely going through the motions without any intention to achieve (Ryan & Deci, 2000). Barkoukis et al. (2008) present four types of amotivation, which support practitioners to identify potential reasons for their students' lack of motivation toward physical activity: (1) a belief that they lack the competence to perform an activity, (2) a belief that the adopted behaviour will not produce the expected outcome, (3) a belief that the task is too complex for them, and (4) a belief that, even with high effort, this will not be sufficient for successful task achievement.

Behaviour	**Non self-determined**					**Self-determined**
Type of motivation	**Amotivation**	**Extrinsic Motivation**				**Intrinsic Motivation**
Level of control		**Controlling**		**Autonomous**		**Autonomous**
Type of regulation	**Non regulation**	**External regulation**	**Introjected regulation**	**Identified regulation**	**Integrated regulation**	**Intrinsic**
Perceived locus of causality	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal
Defining features	No intention to participate in physical activity	Participates for a reward, to avoid punishment or to meet external expectation	Participates to avoid guilt and to attain ego enhancements	Participates because activity is valued and important	Participates because activity is aligned with personal make up	Participates for the enjoyment, satisfaction and interest within an activity

Figure 4.3: The Self-Determination Continuum (Adapted from Deci & Ryan, 2000)

As was briefly alluded to earlier in this chapter, individuals have three shared psychological needs or nutriments, which are essential for individual growth and well-being – the needs for autonomy, competence and relatedness (Deci & Ryan, 2000; Ryan & Deci, 2017. If teachers are able to provide a 'needs-supportive' environment, it has been shown that they will generate higher levels of intrinsic motivation in their students (Deci & Ryan, 2000; Ntoumanis, 2001; Standage et al., 2005; Ward et al., 2008). This is one of the central tenets of teaching and learning in this model (see Teaching and Learning Features for specific approaches linked to these three nutriments). Ntoumanis (2012) presents a concise description of how teachers may promote these three needs.

Autonomy support encourages initiative-taking, autonomous self-regulation, decision making, provides choice relevant to participants' values and goals, and offers a rationale for task engagement.
Support for competence is achieved when teachers offer structure – clear and consistent guidance, optimal challenge and informative feedback that supports perceptions of competence.
Relatedness support occurs when there is positive interpersonal involvement, warmth, support, and interest and knowledge of their participants.

Whilst research consistently finds that the three psychological needs are inextricably linked and many teaching strategies are difficult to assign to just one need, from a physical education perspective, perceptions of competence (and to a lesser extent, relatedness) have been shown to provide the greatest impact on autonomous motivation (DuPont et al., 2009; Ntoumanis, 2001). However, in a sporting context, research has identified that in most cases perceptions of autonomy support have the greatest positive effect on intrinsic motivation (Blanchard et al., 2009; Ntoumanis & Standage, 2009). A suggestion for the difference in relative influence of the three needs for the promotion of autonomous motivation in physical education and sport is that in the latter, participation is optional (unlike physical education) and individuals may therefore have a greater need to experience ownership of their involvement. Whilst these findings suggest teachers and coaches may require different priorities, Deci and Ryan (2000) make clear the important inter-related effect of promoting all three needs in combination.

Self-determination theory research has enjoyed increasing popularity and has shown powerful effects in the context of physical education (Sun & Chen, 2010; Van den Berghe et al., 2014). The findings of reviews confirm the motivational sequence of self-determination theory: creation of a need supportive climate > psychological need satisfaction > autonomous regulation > adaptive behaviour. Whilst we currently know more about the impact of motivation on emotions (i.e. enjoyment, autonomous motivation, mastery goals, perceived competence; see Vella et al., 2016 for a systematic review) than on actual physical activity behaviours, there is good evidence of the link between enjoyment and autonomous motivation in physical education and leisure-time physical activity (Chatzisarantis & Hagger, 2008; Cheon et al., 2012; Hagger et al., 2009; Haerens et al., 2010; Ntoumanis, 2005; Taylor et al., 2010; Teixeira et al., 2012).

128

With its evidenced effects on both positive emotions and physical activity behaviour, self-determination theory is positioned as the central theory of Health-Based Physical Education. Self-determination theory is concerned with the quality of human motivation (not merely the quantity) and the conditions that support and thwart engagement and development (Standage & Ryan, 2012). The teaching and learning strategies provided in the next section therefore consider a range of approaches to support the divergent motives that individuals have for participation in physical activity (Gavin et al., 2014). As discussed above, Gavin et al. (2014) reinforce the likelihood that motivation will reflect both internal and extrinsic elements, but that autonomous motivation will be more effectively developed if teachers promote the needs of autonomy, competence and relatedness. Whilst self-determination theory is concerned with changing behaviours within individuals, I also consider the inter-relationships between individuals and their physical, social and policy environments (Stokols, 1996) as important elements of this conceptual framework.

Social Ecological Model: Contemporary thinking into physical activity behaviour change proposes that a wide range of biological, social, psychological and environmental factors influence movement initiation and maintenance (Atkin et al., 2016; Bauman et al., 2012; Sallis et al., 2000). For this reason, psychosocial theories (such as self-determination theory) alone cannot support behaviour change beyond the individual level (Cochrane & Davey, 2008, Richard et al., 2011; Sallis et al., 2006; Stokols, 1996). Popular theoretical frameworks used in multi-level physical activity programmes often include 'Ecological' or 'Social Ecological' Models (Richard et al., 2011). Social ecological models focus on the inter-relationships that occur between individuals and their physical, social and policy environment (Stokols, 1996). McLeroy et al. (1988, p.355) claim the model draws on Bronfenbrenner's (1979) pioneering ecological systems theory, and in his own words, 'borrows from' the work of Belsky (1980) and Steuart (1985). In one of the first (and most commonly used) ecological models in health promotion, McLeroy et al. (1988) proposed five levels of determinants of health behaviour (intrapersonal, interpersonal, organisational, community and public policy), which can be used to understand positive and negative influences on health. McLeroy et al. (1988, p.355) described these as follows:

(1)   Intrapersonal factors: characteristics of the individual including knowledge, attitudes, personality, behaviour, self-concept and skills.

(2)   Interpersonal processes: formal and informal social networks and social support systems, which include family, friends, teachers and colleagues.

(3)   Organisational factors: institutional culture, characteristics, rules and regulations within settings such as day care, health care, primary and secondary schools, colleges, universities and employment.

(4)   Community factors: relationships among face-to-face groups, social networks, between organisations and groups within a defined area, or a population within a political entity, such as a city, county or constituency.

(5)   Public policy: local and national policies, procedures and laws.

The social ecological model has helped practitioners, researchers and policy makers to understand the complex interaction and multiple levels of influence on health behaviours, including relating to tobacco control, disease prevention, human development and physical activity (Zhang & Solmon, 2013). It is an attractive model for physical activity programmes and interventions because it considers the physical and social environments, communities and policies which impact on individual's behaviours, rather than focusing merely on personal factors (Sallis & Owen, 1999).

Significant support for the tenets of social ecological models are identified within school-based physical activity interventions, which consistently highlight that programmes which incorporate multi-component strategies are the most promising in positively impacting on physical activity behaviour (Atkin et al., 2016; Dobbins et al., 2013; Kriemler et al., 2011). For example, Kriemler and colleagues (2011, p.927) claim that 'combining educational, curricular and environmental elements' are almost exclusively more effective than interventions, which aim only to impact on one area. Furthermore, a more recent review by Biddle et al. (2015, p.297) claims that 'the strongest evidence appears to be for adolescents using multi-component interventions or in the school setting where family components were also included.'

Despite this claim, results from many interventions are often found to be non-conclusive or where increases in physical activity are evidenced, results are often not statistically significant (Biddle et al., 2012; Metcalf et al., 2012). A potential explanation for the modest effect of some programmes is that they may not have adequately targeted the most important determinants and correlates of physical activity in young people (Bauman et al., 2012; Sallis & Owen, 1999). Careful consideration of the

inclusion and exclusion of specific approaches should therefore be considered in behaviour change interventions, requiring a robust understanding of the factors affecting physical activity participation (Atkin et al., 2016) and their direct targeting in the design and implementation of studies. Factors affecting physical activity (correlates) are the subject of the next sub-section.

The review by Kriemler et al. (2011) claims to be the first to show the significant effects that school interventions can have on overall physical activity levels within both in-school and out-of-school settings. What is promising for physical education is that a large number of the studies reviewed by Kriemler and colleagues included physical education interventions. This adds weight to the review presented by Dudley et al. (2011) surrounding the positive effect that physical education and school sport interventions can have on physical activity levels. However, it is largely agreed that whole-school interventions that include a central physical education component are most effective (see the following for more detail on whole-school approaches to physical activity promotion: Cale & Harris, 2006; Pardo et al., 2013; Van Acker et al., 2011).

It appears clear that, aligned with the characteristics of the social ecological model, multi-component interventions linked to physical education, the wider school, community and family may provide the best approach for enacting positive physical activity behaviour change. The social ecological model is an attractive model for physical activity programmes and interventions because it considers the physical and social environments, communities and policies which impact on individuals' behaviours. Next, the body of knowledge surrounding the key factors (or correlates) that are most often found to affect physical activity are outlined, in order that these can be targeted by practitioners in physical activity interventions.

Correlates of Physical Activity: In an associated line of research to social ecological models, the study of 'correlates' has been shown to be crucial to the effective targeting of programmes on the specific variables which are most likely to impact individuals' physical activity behaviours (Biddle et al., 2015; Sallis & Owen, 1999). These variables, as with the social ecological model, present multiple levels of influence on physical activity behaviour. An awareness of the correlates of physical activity for young people will enable practitioners to (a) identify specific variables which cannot be changed or

modified (i.e. sex, age) in order to target particular groups who are at risk of low levels of physical activity and (b) identify correlates that can be changed (i.e. confidence, support for physical activity) in order to use these as foci for any physical activity intervention (Biddle et al., 2015).

From a physical educator's perspective, there are a range of factors that could increase the effectiveness of their Health-Based Physical Education programmes. From a demographic perspective, females, older children and adolescents are key groups with which to prioritise physical activity promotion strategies. From a psychological perspective, the promotion of self-efficacy (or situation specific confidence) is a priority, along with the development of young people's perceived competence, behavioural control and body image. Developing in young people a focus on effort, improvement and personal mastery will also support the adoption of a task goal orientation (Bauman et al., 2012; Biddle et al., 2015; Sallis et al., 2000; Van der Horst et al., 2007).

Behavioural correlates suggest teachers can play a vital role in supporting students to be active immediately before or after school, as well as at weekends by increasing the range and quality of school-community partnerships (Bauman et al., 2012; Biddle et al., 2015). From a social perspective, developing parental, family and teacher support (and peer support in adolescents) for physical activity can be achieved by facilitating their encouragement, involvement and support, such as by providing transportation and mastery-focused encouragement. In addition, seeking greater involvement and encouraging parental physical activity (particularly fathers) may have a positive impact on students' activity levels (Bauman et al., 2012; Biddle et al., 2015).

Finally, a number of environmental correlates may be considered by practitioners, particularly creating an effective school physical activity policy, increasing opportunities to be active during the school day (particularly outside), and increasing access to and proximity of a range of activities, facilities and equipment (Bauman et al., 2012; Biddle et al., 2015). Palmer and Bycura (2014) argue that, in order to be successful, programmes that plan to improve leisure-time activity must address these correlates of physical activity in young people As a result, these are used as a basis for identifying a range of teaching and learning strategies in the next section, which could be used within a Health-Based Physical Education pedagogical model.

This section has considered the major theories that support the Health-Based Physical Education conceptual framework; namely self-determination theory, social ecological model and correlates of physical activity. The remaining Health-Based Physical Education foundations include the major theme, model goals, learning domain priorities and interactions, and assumptions about learning and teaching.

Major Theme

As advocated by Haerens et al. (2011), the major theme for Health-Based Physical Education – 'valuing a physically active life' - draws on the work of Siedentop (1996) and places an unequivocal focus on the promotion of physical activity, rather than on other health, fitness or nutritional outcomes that have been associated with other models (e.g. Health-Optimizing Physical Education by Metzler et al., 2013a, 2013b; Fitness Education by McConnell, 2005). When people value physical activity, they will manage and organise their lives so that they can maintain regular involvement in physical activity throughout their lives. Furthermore, 'Valuing physical activity is most clearly revealed not in what we say or write about it, but in the decisions we make to arrange a daily or weekly schedule so that activity participation is possible even though there are other important or attractive alternatives' (Siedentop, 1996, p.266). Valuing has close links with forms of intrinsic and autonomous motivation identified in Health-Based Physical Education's major theories. However, valuing is a deeper concept than (mere) enjoyment, knowledge and participation. According to Siedentop (1996, p.266, original emphasis):

> Although participation may be the key component in valuing physical activity, we must attend to a second component of valuing: willingness to participate in the sport, fitness, and leisure activity cultures in ways that are literate and critical. By *literate*, I mean that persons are knowledgeable and activist cyclists, volleyball players, hikers, and the like. People should be knowledgeable about sport, fitness, and leisure, and be willing to use that knowledge as activist participants in helping to preserve, protect, and improve the practice of their activity.
> By *critical*, I mean that persons should understand the structural inequities in their local, regional, and national activity cultures that may limit access to activity based on irrelevant attributes such as race, gender, age, handicapping conditions, or socioeconomic status. Individuals should *value* fair access to participation so much that they are willing to work at local, regional, and national levels to make that activity more available to more people.

As the major theme for Health-Based Physical Education, it will be important for teachers to understand that, whilst increased physical activity participation is one desired end-result of the model, it is also essential to support students to be literate

and critical.

Goals of Health-Based Physical Education

The review of literature, as well as my (then) reading of Whitehead's (2010) newly published 'Physical Literacy: Throughout the life course' - with its focus on the development of motivation, confidence, competence, knowledge and understanding in young people - led to the creation of five draft goals for Health-Based Physical Education – focused around developing habitual, enthusiastic, confident, informed and critical participants. However, during on-going work with pre-service teachers, it was suggested that, in sharing these goals with students, it may be effective to provide a clearer depiction of someone who values a physically active life. It was also questioned whether these goals should be cumulative or hierarchical. Whilst I did not wish to prioritise any of these goals individually before consultation with teachers and students, I did feel, like Siedentop (1996), that valuing would be most obviously seen through habitual participation in physical activity, and thus, wished to emphasise this notion in each of the goals. To this end, it was at the British Educational Research Association's Physical Education and Sport Pedagogy Special Interest Group Meeting in 2010 that I began using the word 'mover' as a metaphor for someone who values physical activity – the idea of a 'mover' was used by Hastie (2010) to describe an individual who is regularly physically active in a range of unstructured and structured activities – this provides a fitting representation of the overall aim of Health-Based Physical Education. The five goals of the Health-Based Physical Education conceptual framework are presented in Figure 4.4 below.

Health-Based Physical Education Goals
Students who 'Value a physically active life' will be a:
1. **Habitual mover** – They choose to lead an active lifestyle and participate in regular physical activity
2. **Enthusiastic mover** – They demonstrate a positive attitude and engage enthusiastically in regular physical activity
3. **Confident mover** – They demonstrate perceived competence in chosen physical activities through effort and progress/improvement
4. **Informed mover** – They understand how and where to engage in physical activity, the effects of an active lifestyle and how to participate safely and effectively
5. **Critical mover** – They understand the barriers to physical activity and become activists (movement promoters) to positively affect their physical activity environment

Figure 4.4. Goals of Health-Based Physical Education

A habitual mover is perhaps the overarching goal of Health-Based Physical Education, as individuals who value physical activity will most readily demonstrate this in their

participation habits (Siedentop, 1996). As I have justified, the importance of autonomous motivation for sustained participation in any activity is paramount. I am very aware that intrinsic motivation is likely to be the 'gold standard' for Health-Based Physical Education. That said, for some individuals, other forms of motivation could prove even more important; such as an awareness of the benefits, improvements to body weight/shape, or developing or maintaining friendships - whatever their reason, those who value physical activity will be enthusiastic movers. The literature relating to physical activity adherence frequently points to the importance of perceptions of competence (Bauman et al., 2012; Biddle et al., 2011). As a result, developing confident movers who can participate in chosen forms of physical activity is considered vital. Equally, the importance of educational awareness on behaviour change has been reported in a range of fields (Michie et al., 2011) so the development of informed movers is another key part of Health-Based Physical Education. This cognitive element focuses on how and where to be active, the effects (positive and negative) of physical activity, how to participate safely in a range of activities and how to perform movements effectively (such as in an exercise setting) for maximum benefit (Michie et al., 2011; Reeve et al., 2009). Lastly, valuing physical activity is evidenced by young people who can identify barriers to physical activity participation and develop the means to overcome these, for their own and others' benefit. Thus, critical movers promote physical activity to others and become activists to improve opportunities to be active locally, and perhaps even regionally or nationally (Michie et al., 2011; Siedentop, 1996).

Learning Domain Priorities and Interactions

Given the major theme of Health-Based Physical Education ('valuing a physically active life'), the 'affective' learning domain is viewed as most important. The affective domain is central to optimal development of all three nutriments of self-determination theory (autonomy, competence and relatedness). Nonetheless, despite the importance of this domain, the cognitive, physical and social fields cannot be neglected if young people's perceptions of competence and relatedness are also to be achieved (Deci & Ryan, 2000). These three domains, therefore, assume equal importance in supporting students' development in the affective domain.

Assumptions about Learning and Teaching

The Health-Based Physical Education model proposes five assumptions of teaching

and learning to enable young people to value a physically active life. As Metzler (2011) suggests, if a teacher understands and has a belief system in line with the assumptions behind a model, they will be more likely to implement it successfully and achieve the intended learning outcomes.

Assumption one: Teaching can result in motivated young people who value and demonstrate positive physical activity behaviours. The work of Cox et al. (2008) suggests that perceived competence, autonomy and relatedness are key predictors of middle-school students' leisure time physical activity. Furthermore, Haerens et al. (2010) discovered that university students with more autonomous motivation reported higher levels of physical activity at secondary school and in their early adulthood, further supporting the argument for interventions which aim to enhance students' self-determined motivation.

Assumption two: Changes in physical activity behaviour require extended periods of learning in multiple learning domains. Congruent with Harris's (2000) definition of effective HRE, presented in the literature review, teachers must work to develop students' attitude, knowledge, competence and inter-personal skills within the physical activity environment. As the model's major theme is 'valuing a physically active life', and self-determination theory and the social ecological model are the major theories, learning in all four domains is central (Bailey et al., 2009; Kirk, 2013; Casey & Goodyear, 2015). The affective domain carries greatest importance, similar in many ways to the 'Co-operative Learning' and 'Teaching Personal and Social Responsibility' models (Dyson & Casey, 2016; Hellison, 2011; Metzler, 2011). However, as I just identified, learning in the cognitive domain, such as through understanding the importance of physical activity, how and where to go to take part in a specific activity is also important. As perceived competence has been shown to carry major importance in young people's future intentions to be active (Biddle et al., 2011; Sallis et al., 2000; Welk, 1999), development of the physical domain is also crucial.

In relation to the need for extended periods of time to change physical activity behaviour, recent social psychology interventions suggest that it takes an average of 66 (from 18 to 254) days of repetition to form a new habit (Lally et al., 2010). This is in line with recent inclusion criteria for school-based physical activity interventions demanding a minimum of 12 weeks (Dobbins et al., 2013) and pedagogical calls for

longer units of learning in physical education (Kirk, 2010) to develop deep learning and higher levels of competence. For these reasons, programmes of Health-Based Physical Education should last for at least the duration of one school term (typically 12 weeks).

Assumption three: What is learnt in Health-Based Physical Education must be transferable beyond the lesson into young people's leisure time. For any physical activity to transfer into a leisure-time pursuit, young people must find the activity relevant and meaningful (Chase et al., 2007). Curriculum content should also better reflect young adulthood participation trends through both lifetime and sport-based activities, although there is likely to be an emphasis on the former (Trudeau & Shephard, 2008) given young people are already likely to experience a significant amount of sports-based activities elsewhere in the physical education curriculum (UNESCO, 2014; Fairclough et al., 2002). The importance of links between schools, families and communities is also of crucial importance for transfer, as the previous systematic reviews of school-based interventions have shown.

Assumption four: Teaching using needs-supportive strategies can result in feelings of autonomy, competence and relatedness (intrinsic motivation) in young people. There is a plethora of research which suggests that needs-supporting (rather than needs-thwarting) teaching strategies result in higher levels of intrinsic motivation (Haerens et al., 2013; Teixeira et al., 2012; Van den Berghe et al., 2014). A key element of the conceptual framework is the central focus on students taking responsibility for setting targets for their participation in physical activity (Lim and Wang, 2009; Ward et al., 2008).

Assumption five: Physical activity interventions are best supported by multiple school, family and community strategies. As the correlates of physical activity identify, a number of factors within a young person's life determine their level of physical activity (Sallis et al., 2000; Welk, 1999; Bauman et al., 2012). At different ages, parents, family, teachers and peers take a significant role in influencing decision making, providing a key support mechanism. Health-Based Physical Education should involve these significant others in order to enhance participation and remove potential barriers to physical activity. The model encourages physical education teachers to enlist the support of colleagues (Boyle et al., 2008), parents and friends of their students (Hager

and Beighler, 2006) and the community (Faber et al., 2007; Hastie, 2003).

The foundations of the Health-Based Physical Education conceptual framework provide a theoretical basis for teaching and learning. They have considered three underpinning theories, a major theme, five goals (the 'movers'), an indication of the learning domain priorities, which should elevate the affective sphere, and five assumptions about learning and teaching to support teachers to understand the philosophy behind this pedagogical model in the making. The next section considers the learning and teaching features.

Learning and Teaching Features

The 'Learning and Teaching Features' of the Health-Based Physical Education conceptual framework identify how teacher and student interactions should occur, and in a number of ways, show how concepts from the 'Foundations' can be manifest in practice. At this conceptual framework stage, this section considers only the engagement patterns and critical features of Health-Based Physical Education.

Engagement Patterns

Active engagement in teaching and learning, as well as beyond the lesson is considered central to success in Health-Based Physical Education. This is most likely to include individual, small group and whole-class strategies to effectively support the major theme and goals of Health-Based Physical Education. Specifically, teachers are advised to apply a range of needs-supportive strategies (see Figure 4.5) in order to more optimally promote autonomously motivated and engaged students.

Figure 4.5 shows a range of teacher behaviours that have been shown to create perceptions of relatedness support, competence support and autonomy support for students in physical education (Haerens et al., 2013). Creating a relatedness-supporting environment in which young people feel a sense of belonging can be achieved through teacher empathy, enthusiasm, support and by paying attention to (or asking about) students' needs and interests. A teacher can create perceptions of competence-support before, near the start of, and during lessons. Before or in the early part of lessons, teachers should give an overview of the lesson(s), including a rationale, give clear instructions and guidance, provide variation between or within activities and aim to model student learning through effective demonstrations. During

lessons, teachers can develop perceptions of competence in a number of ways, including providing positive and helpful feedback, offering help and guidance, using students as positive role models and matching activities to students' needs. Support for autonomy can be achieved if teachers offer students choice, apply differentiation strategies, or provide opportunities for independence and problem solving. These will furthermore be most effectively accomplished by attending to students' needs and interests.

Critical Features

The learning and teaching features of Health-Based Physical Education foster young people's positive attitudes to an active lifestyle, which requires a range of motivational (or needs-supportive) strategies on the part of the teacher (Haerens et al., 2010, 2013; Van den Bergh et al., 2014). It is argued that Health-Based Physical Education *implementation* requires the inclusion of specific 'critical features' (or 'non-negotiables' (Goodyear, 2013), 'benchmarks' (Metzler, 2011) or 'givens' (Hastie and Casey, 2014)) such as the goals of the model, learning domain priorities, and specific teacher and student behaviour. Other aspects of Health-Based Physical Education should then be developed and adapted through the actions and reflections of teachers relating to the specific context in which they work (Kirk, 2013).

	Relatedness Support	Competence Support		Autonomy support
		Before/early	During	
… is enthusiastic and eager	✔			
… takes the perspective of students into account, is empathic	✔			
… puts effort and energy into the lesson	✔			
… is physically nearby the students	✔			
… pays attention to what the students are saying	✔			✔
… provides variation between or within exercises		✔		
… gives clear (verbal) instructions		✔		
… demonstrates the tasks himself, is a 'model' for the students		✔		
… gives an overview of the content and structure of the lesson		✔		
… offers the students a rationale for tasks and exercises		✔	✔	
… uses students as positive role models			✔	
… offers help during exercises			✔	
… offers students (apart from instruction) new guidelines, tips and advice during the exercises			✔	
… addresses students by their first name when the opportunity occurs			✔	
… provides positive feedback			✔	
… monitors if the students consequently live up to the (verbal) instructions			✔	
… asks the students questions about their interests, problems, values or wishes	✔		✔	✔
… offers choice to all students				✔
… gives students the opportunity to practice independently and to solve problems on their own, without interfering				✔
… applies differentiation	✔			✔

Figure 4.5: Needs-Supportive Teaching and Learning Behaviours (Adapted from Haerens et al., 2013)

The critical features were developed from a detailed analysis of literature. They provide teachers with 'patterns of teacher and student operations that should happen while they use that model' (Metzler, 2011, p.37). Critical features provide a reminder of 'how to teach' and 'how students will go about learning' in that model. They are an essential element of any pedagogical model, in order to establish if it has been implemented as intended by the designers (Hastie and Casey, 2014). This is particularly important given that some teachers deliver 'watered down' versions (Curtner-Smith et al., 2008) of pedagogical models.

The critical features (Figure 4.6) indicate key teacher and student behaviours that should be evidenced within a Health-Based Physical Education programme. Whilst the frequency of their presence may provide beneficial outcomes linked to the five goals of Health-Based Physical Education (habitual, enthusiastic, confident, informed and critical movers), it is certainly not expected that all behaviours will be observed in every lesson.

The critical features consider a range of important principles that it is felt are key to encouraging young people to value a physically active life, several of which have been highlighted throughout this chapter as each component of the conceptual framework has been presented and justified. The discussion here will therefore focus predominantly on those issues not yet considered (T1, T2, S3). The other critical features have either been discussed earlier (i.e. T2 was discussed in 'engagement patterns' and T4 was discussed in 'major theme') or relate to a student behaviour which will occur as a result of specific teacher behaviours.

A key part of the critical features is to ensure teachers are promoting physical activity both within and beyond the lesson. Whilst the literature review highlighted positive strategies to support in-class physical activity through intensified activities, these may have negative implications on motivation and physical activity behaviours (Cale et al., 2014; Fairclough, 2003; Haerens et al., 2010; Goudas & Biddle, 1993). Therefore, promoting physical activity beyond the lesson is deemed crucial. However, the limited research on this area suggests that only less than two percent of classes involve teachers in promoting physical activity beyond the lesson (Mckenzie et al., 2006; McKenzie and Kahn, 2008; Mckenzie et al., 1997). The inclusion of critical feature T1

(Figure 4.6) will raise the profile of this teaching behaviour in an endeavour to encourage greater out-of-class physical activity.

Teacher behaviours	Student behaviours
T1. Teacher promotes physical activity (PA) -*Demonstrates a passion and energy for PA* -*Encourages students to identify and meet PA targets* -*Maximise opportunities for MVPA* -*Sets 'activity challenges' beyond the lesson* -*Communicates with parents/carers and community bodies*	**S1. Students engage in regular physical activity (PA)** -*Are fully prepared for lessons* -*Actively engage in meaningful MVPA during lessons* -*Evidence progress in PA participation out of lessons*
T2. Teacher supports students to be informed movers -*Refers to current national PA recommendations for age group* -*Highlights how and where to engage in PA* -*Highlights the effects of PA (benefits and risks)* -*Promotes safe and effective practice*	**S2. Students are informed participants in physical activity (PA)** -*Explain PA levels and guidelines for age group* -*Describe how and where to engage in PA locally* -*Can explain the benefits of PA* -*Demonstrate/explain safe and effective practice*
T3. Teacher creates a needs supportive learning environment -*Provides choices in response to needs and interests of students* -*Encourages students to work collaboratively and sensitively* -*Demonstrates empathy towards all students* -*Provides personalised feedback on student progress* -*Provides personalised feedback on student effort*	**S3. Students set and review individual/team physical activity targets** -*Set and review written self-referenced targets* -*Actively contribute to team target setting and review* -*Share individual and team progress at regular intervals* -*Provide peer feedback on progress*
T4. Teacher encourages students to become critical movers -*Identifies barriers to participation* -*Illustrates strategies to overcome barriers* -*Sets 'movement promoter challenges'* -*Supports movement promoters*	**S4. Students promote physical activity (PA)** -*Encourage others to meet and exceed PA guidelines* -*Support peers to engage in PA within lessons* -*Promote PA out of lessons* -*Support others to overcome barriers to participation*

Figure 4.6: Health-Based Physical Education Critical Features

Developing informed movers (see T2, Figure 4.6) is central given the research that a knowledge component, such as 'physical activity education' or 'health messages' within physical education lessons has been deemed an important predictor of physical activity behavior change in young people (Bayne-Smith et al., 2004; Haerens et al., 2006, 2009; Harris, 2000; Lubans et al., 2009). This will support students' understanding of the benefits and ways to improve their own and others' physical activity and health.

Siedentop's (1996) notion of 'literate' also suggests a knowledgeable participant, further endorsing this critical feature for Health-Based Physical Education.

Monitoring one's own and others' physical activity participation (S3, Figure 4.6) is deemed an effective strategy in physical activity promotion (Blais, 2008; Hastie et al., 2012; Kriemler et al., 2010; Webber et al., 2008). Cale and Harris (2009b) also recommend physical activity monitoring in order for both the young person and the teacher to determine how active students are, to raise awareness and understanding within the student and to widen the approach to monitoring that typically focuses on fitness outcomes.

This section has discussed the engagement patterns and critical features associated with Health-Based Physical Education, signalling a variety of approaches to promote a needs-supportive environment and several critical features for teachers and students to guide their lesson behaviour. This detail was the starting point for the work with teachers, with whom I subsequently collaborated in order to continue developing the Health-Based Physical Education framework and to co-construct local curricula in their schools.

Section 4. Chapter Conclusion

This chapter has extrapolated and explored the principles and tensions surrounding Haerens and colleague's (2011) vision for Health-Based Physical Education that provided the initial guide for this pedagogical framework. In the first three stages of pedagogical model development, a literature review was conducted, which led to the development of an initial framework for the foundations of the model. From this point, specific critical features were designed to support teaching and learning within Health-Based Physical Education. If the Haerens et al. (2011) advocacy paper is the first step, this conceptual framework is deemed the second step in the Health-Based Physical Education pedagogical model development. This conceptual framework formed the basis for supporting teachers to understand Health-Based Physical Education and to co-construct programmes within their schools, which is the subject of the next chapter (Chapter 5).

CHAPTER 5: THE TYPE AND IMPACT OF HEALTH-BASED PHYSICAL EDUCATION PROGRAMMES

Drawing on theoretical and empirical research from an extensive review of literature, chapter 4 presented a conceptual framework for Health-Based Physical Education. Building on that work, this chapter is concerned with how teachers translated this conceptual framework into programmes bespoke to their specific school contexts and the impact that these programmes had on the students who experienced these curricula. In relation to the design and implementation of programmes, I specifically analyse what, how and why teachers delivered their units of work as they did. To assess the impact on students, I evaluate the effects of their experiences with Health-Based Physical Education using the model's goals. I do this by drawing directly on student reflections of their Health-Based Physical Education experiences as reported to me in their focus groups as well as through interviews with all teachers.

This chapter is divided into three main sections. The first section highlights what type of curricula were designed and implemented by the teachers in the two schools respectively and focuses on the aims, subject matter and teaching and learning approaches. The second section considers the impact of the Health-Based Physical Education pedagogical model on students, referring specifically to the model's goals. The third section, a shorter summary, provides a conclusion to the chapter in terms of key findings and future implications.

In this chapter, the programmes and impact from the two schools are presented separately and then discussed together in terms of their significance for the development of the Health-Based Physical Education pedagogical model and future students and teachers. However, it is not the intention to make overt comparisons between the schools because they planned, implemented and evaluated their programmes sequentially. Maple Academy implemented their curricula in the autumn term, whilst Delaware School did so the following spring term. The reason for a joint discussion is to draw conclusions about the types of programmes and their potential impact on students. Furthermore, as these form the very first iterations of the Health-Based Physical Education Conceptual Framework, a broader analysis was deemed appropriate.

Section 1: Designing the curriculum: from framework to implementation

This section explores the programme aims, subject matter and teaching and learning approaches of the two schools. This exploration is considered separately by school, followed by an overall discussion which evaluates practice in both schools using the literature.

Maple Academy

Maple Academy planned for their Health-Based Physical Education unit of work to run over a period of 8 weeks. Due to the number of classes and students participating in the unit (8 classes - 4 male only and 4 female only classes, n=226 students), the number of staff (n=7) and the facilities available, lesson content order was not the same for all students. That said, the core programme aims, as discussed in the next subsection, were the same. This class-by-class and teacher-by-teacher approach to Health-Based Physical Education highlights both its flexibility and the need for local adaptation (Kirk, 2013) and the recognition that the teacher is the expert at the point of implementation (Kirk and MacDonald, 2001).

Programme Aims

The programme aims at Maple Academy (Figure 5.1 below, an extract from the school's unit of work) closely aligned with the five goals of Health-Based Physical Education, i.e. the aspiration for each child to be a habitual, enthusiastic, confident, informed and critical mover. Through my documentary analysis it was clear that the aims more specifically matched the first four goals. Reference to a habitual mover was seen in (i) the aims related to supporting students to manage and monitor their own activity levels, (ii) meeting/exceeding the minimum physical activity guidelines, (iii) identifying the characteristics of a healthy active lifestyle, and (iv) transferring learning and skills beyond the lesson and into leisure time. An enthusiastic mover was promoted in (i) the aims linked to demonstrating a positive attitude to physical activity within and beyond lessons, and (ii) in encouraging other students in their participation. The confident mover goal translated into (i) the aim to 'make personal progress against physical activity, exercise, health or fitness goals'. Aims that supported the informed mover goal identified (i) the importance of safe and effective practice in a range of activities, (ii) the effects of different activities/exercise on health and fitness, and (iii) the application of various tactics in running challenges.

145

Maple Academy Health-Based Physical Education Programme Aims
To support students to…
1. Manage and monitor activity levels to meet/exceed the minimum PA guidelines
2. Identify the characteristics of a healthy active lifestyle
3. Demonstrate a positive attitude to physical activity within and beyond the lesson
4. Encourage other students in a positive and supportive learning environment
5. Make personal progress against physical activity, exercise, health or fitness goals
6. Demonstrate safe and effective technique in a range of physical activities
7. Identify the effects of different activities/exercise on health and fitness
8. Apply a range of tactics in running challenges
9. Understand that different people will be motivated by and value different activities
10. Transfer and evidence learning and skills beyond the lesson and into leisure time

Figure 5.1: Maple Academy Health-Based Physical Education Programme Aims (Extract from Unit of Work)

Reference to being a critical mover was less obviously written into the programme aims, but can be seen in the school's aspirations that students should (i) encourage and support other students, and (ii) understand how different people will be motivated by and value different activities. An emphasis on becoming a critical mover was more clearly seen in later lesson learning outcomes (as opposed to the programme aims), where students were asked to consider barriers to physical activity and strategies to overcome these as well as identify specific strategies to encourage their peers and family to be more active. Whilst there was a lack of evidence of the critical mover goal within the unit aims, it was pleasing to see my feedback impact on the greater inclusion of the critical mover goal in later lesson planning.

Subject Matter

Practical lesson subject matter (Figure 5.2 below, an extract from the school's unit of work) included exercise to music (Boxercise™ – two lessons; circuit-based activities – two lessons), lifetime activities (running – three lessons) and individual and team physical activity challenges (including running, tag and exercise games – one lesson). In addition to learning in and through these physical activities, lessons provided opportunities to develop elements of the informed mover and critical mover goals most explicitly.

In the Health-Based Physical Education lessons, school planning documents in addition to my recorded lesson observations indicated that students were introduced to the following learning topics: physical activity guidelines; characteristics of a healthy active lifestyle; benefits of physical activity; the short and long-term effects of physical activity on health and fitness; strategies for tracking physical activity, health and

146

fitness; and typical barriers to physical activity participation and strategies to overcome these. This illustrates a broad emphasis linked to the five goals, although as already suggested, the critical mover goal was less well provided for.

Maple Academy Health-Based Physical Education Subject Matter
Lesson 1. Introduction to Health-Based Physical Education unit, PA guidelines and benefits of an active lifestyle Boxercise™
Lesson 2. Characteristics of a healthy active lifestyle Apply a range of tactics in running challenges Running Challenges
Lesson 3. Effects of physical activity/exercise – short-term Boxercise™
Lesson 4. Effects of physical activity/exercise – long-term Apply a range of tactics in running challenges Running Challenges
Lesson 5. Ways of tracking physical activity, health or fitness Fitness by Chance
Lesson 6. Common barriers to physical activity and strategies to overcome these Apply a range of tactics in running challenges Running Challenges
Lesson 7. Strategies to encourage peers and family to be more active Circuits
Lesson 8. Reflect on key learning throughout the unit Physical Activity Games (including running, tag and exercise games)

Figure 5.2: Maple Academy Health-Based Physical Education Subject Matter (Extract from Unit of Work)
*Each lesson's practical activity was not ordered the same for all students.

The programme aims and subject matter for Health-Based Physical Education at Maple Academy appear to represent a good coverage of the five goals, although there appeared to be greater emphasis on the first four movers – habitual, enthusiastic, confident and informed. These findings will be discussed along with the following findings from Delaware School towards the end of this section.

Delaware School

Delaware School's Health-Based Physical Education unit of work was designed over a period of 6 weeks, with a planned 'Easter Holiday' challenge linked with the World Day for Physical Activity. The unit was taught to 36 students (all male) in two separate classes by two male physical education teachers.

Programme Aims

The programme aims at Delaware School (Figure 5.3 below, an extract from the school's unit of work) closely aligned with the five goals of Health-Based Physical Education (habitual, enthusiastic, confident, informed and critical mover), but particularly with the informed mover characteristics. A habitual mover was promoted in (i) aims linked to working towards, meeting and exceeding the physical activity guidelines for young people, and (ii) monitoring activity levels and setting self-referenced targets for improvement. The aim of improving motivation, confidence and competence in selected activities were most closely linked to the enthusiastic and confident mover goals, although this could have been explored more deeply through the inclusion of developing positive attitudes and an emphasis on progress and effort (both of which form elements of these two goals). The informed mover goal, as just mentioned, took a key focus within the unit, and considered aims related to (i) the benefits of physical activity on physical, social and mental health, (ii) identifying where and how to get involved in selected physical activities, (ii) the effects of different types of physical activity on health and fitness, and (iv) ways to develop specific components of health-related fitness. The final aim supported achievement of the critical mover goal through developing leadership skills in supporting others to be active. This aim could have cited (1) supporting both themselves and others to be active and (2) inclusion of understanding and overcoming barriers, both of which are central to the critical mover goal. This specific feedback was given to teachers at Delaware School during one of my visits, which prompted inclusion in later lesson learning outcomes.

Delaware School Health-Based Physical Education Programme Aims
To support students to…
1. Work towards, meet and exceed the physical activity guidelines for young people
2. Improve their motivation, confidence and competence in selected activities
3. Recognise the benefits of physical activity on physical, social and mental health
4. Monitor and record activity levels and set self-referenced targets for improvement
5. Identify where and how to get involved in selected physical activity opportunities
6. Understand the effects of different types of physical activity on health and fitness
7. Identify strategies to promote components of health-related fitness
8. Develop leadership skills in supporting others to be active

Figure 5.3: Delaware School Health-Based Physical Education Programme Aims (Extract from Unit of Work)

Subject Matter

Practical lesson subject matter (Figure 5.4 below, an extract from the school's unit of work) included a wide variety of options for students to choose from in most lessons.

This meant that lessons usually had multiple activities taking place at the same time, including exercise to music (i.e. Boxercise™, and circuits), lifetime activities (i.e. running and rowing) and games (i.e. 1v1 or 2v2 basketball). The final lesson included student-designed circuits in small groups, which were varied in their content, including strength and cardiovascular exercises as well as sport-specific skills (including those related to cricket, basketball and hockey). These, it should be noted, were selected entirely by students and they had free choice of what equipment to use from the store cupboard. It is also worth noting that whilst the term exercise to music is used above to describe activities such as Boxercise™ and circuits, each lesson included periods of music to support all students' engagement and motivation regardless of the activity they were participating in.

Delaware School Health-Based Physical Education Subject Matter
Lesson 1. Introduction to Health-Based Physical Education unit, PA guidelines and benefits of an active lifestyle Choice: Boxercise™ / Rowing / 1v1 or 2v2 Basketball Students monitor activity levels with pedometer Activity challenge beyond the lesson through physical activity diary
Lesson 2. Recap of PA guidelines. Introduce 'how active are most children?' Discussion on student activity levels during the last week. Students to set self-referenced goal for pedometer steps Choice: Boxercise™ / Circuit / Rowing / Running / 1v1 or 2v2 Basketball Discuss last and agree next weekly activity challenge (activity diary)
Lesson 3. Introduction of heart rate monitors to determine moderate and vigorous physical activity Introduction to heart rate activity zone for aerobic health and fitness development Choice: Boxercise™ / Circuit / Rowing / Running / 1v1 or 2v2 Basketball Discuss last and agree next weekly activity challenge (activity diary). Identification of where and how to be active in local community
Lesson 4. Introduce common barriers to physical activity and strategies to overcome these Choice: Boxercise / Circuit / Rowing / Running / 1v1 or 2v2 Basketball Discuss last and agree next weekly activity challenge (activity diary)
Lesson 5. Strategies to support others to be active (peers and family) Choice: Boxercise / Circuit / Rowing / Running / 1v1 or 2v2 Basketball Discuss last and agree next weekly activity challenge (activity diary)
Lesson 6. Reflect on key learning throughout the unit Personalised skill and health-related circuit Discuss last and agree future activity challenges (activity diary)

Figure 5.4: Delaware School Health-Based Physical Education Subject Matter (Extract from Unit of Work)

In addition to learning in and through these physical activities, school planning documents as well as recorded lesson observations indicated that students were provided with opportunities to develop elements of the informed mover and critical

mover goals specifically. In particular, students were introduced to the following learning topics: physical activity guidelines and current statistics for young people; benefits of physical activity; examples of light, moderate and vigorous physical activity; tracking physical activity (duration, pedometer steps and heart rate); physical activity goal setting; and typical barriers to physical activity participation and strategies to overcome these. This illustrates a broad emphasis linked to the five goals, although as already suggested, the critical mover goal is less well provided for.

The programme aims and subject matter for Health-Based Physical Education at Delaware School appear to represent a good coverage of the five goals, although there appeared to be greater emphasis on the first four movers – habitual, enthusiastic, confident and informed. These findings will be discussed along with the following findings from Maple Academy towards the end of this section.

Teaching and Learning Approaches

This section explores the teaching and learning approaches used to translate the conceptual framework (as enacted in the curriculum) to practice. This is essential because the curricula reported here form the very first iterations of Health-Based Physical Education and is therefore a crucial stepping stone for both the pedagogical model presented in chapter 6 and future practice in Health-Based Physical Education.

As I indicated in chapter 4, the ideas of curriculum and value orientations (presented by Jewett et al. (1995), and taken up by Haerens and colleagues (2011)) suggest that in Health-Based Physical Education, personal development and social-cultural goals are higher priorities than subject matter. In other words, teachers should focus on students' personalised and meaningful growth and on the development of their skills for critical participation in society rather than on the specific activity that is used as a vehicle for this development. Reporting on the implementation of Health-Based Physical Education from a pedagogical perspective that encompasses personal development and social-cultural goals, rather than subject matter, will enable others to better understand and judge the effectiveness of the reported outcomes of the model.

Curriculum fidelity has become a key issue for many researchers in education (Meyers & Brandt, 2015; Morrison & Harms, 2018; O'Donnell, 2008) and models-based practice in physical education (Escarti et al., 2018; Hastie & Casey, 2014; Kloeppel et al., 2013; Ko et al., 2006; Sinelnikov, 2009). This section predominantly uses the Health-Based

Physical Education Fidelity Tool as a framework around which to judge the extent to which the local curricula were implemented as intended by the conceptual framework and as an opportunity to describe the contextual features of the two programmes. Furthermore, I also draw on my interactions with teachers during their programmes as well as completed post-lesson teacher reflections. As outlined in chapter 3, lessons were classified using the fidelity tool in the following three fidelity categories: (a) high fidelity if the lesson achieved at least 13 out of 16 items (81-100%); (b) moderate fidelity if the lesson achieved between 9 and 12 out of 16 items (56-75%); and (c) low fidelity if the lesson achieved 8 or less out of 16 items (0-50%). These categories were created following the guidance of previous fidelity of implementation research (Borrelli et al., 2005; Stylianou et al., 2016; Toomey et al., 2017).

Maple Academy

Based on analysis of a sample of lessons using the Health-Based Physical Education fidelity tool, I observed teachers from Maple Academy implement the model with a moderate-high level of congruence (see Table 5.1). Across the analysed lessons in the unit of work, 13 out of 16 criteria (81%) were demonstrated; although there was only one lesson where learning outcomes explicitly linked to the Health-Based Physical Education goals about students being 'movers'. The range in video recorded lessons was between 9 and 13 criteria observed, with most teachers demonstrating moderate fidelity (i.e. the observation of 9-12 criteria).

The following 9 features were observed in every analysed lesson and can therefore be considered as strong features of the school's programme: appropriate health-related learning linked to physical activity; student engagement in meaningful MVPA; student choice; peer support; teacher empathy; personalised student feedback to support progress and effort; student evidence of out of class activity; and teacher emphasis of safe participation. The following 3 behaviours were observed in 60-80% of observed lessons: students set and work towards personal physical activity targets; teacher signposts physical activity beyond the lesson; and teacher encourages students to promote physical activity to others. The following 3 remaining behaviours were not observed during the analysed lessons: home-school communication to support student physical activity; student evidence of supporting others to be active; and students show a critical understanding of physical activity issues. It is important to remember that not all lessons were observed (the minimum was two per teacher - at least one from the

beginning and one from the end of the unit) and therefore model fidelity may have been higher if these behaviours were evident in other lessons.

In relation to the observation of lesson learning outcomes, and as mentioned above, only one observed lesson at Maple Academy made explicit reference to the Health-Based Physical Education movers (habitual, enthusiastic, confident, informed, critical). However, all observed lessons did present examples of students developing the characteristics of the first four movers, which emphasises teachers' greater attention on the habitual, enthusiastic, confident and informed mover goals. Whilst lesson observation evidence suggests students started to develop the characteristics of four movers, the lack of explicit learning outcomes linked to these goals is a point for future discussion.

Table 5.1: The Percentage of Observed Lessons at Maple Academy and Delaware School Where Each Criteria Was Coded as Observed

Criteria	Description	Maple Academy	Delaware School
	LOs explicitly linked to goals of HBPE	20	100
	a). Evidence of habitual movers	100	100
	b). Evidence of enthusiastic movers	100	100
1	c). Evidence of confident movers	100	100
	d). Evidence of informed movers	100	100
	e). Evidence of critical movers	0	62.5
2	Health-related learning in relation to PA	100	100
3	Students set and work towards personal PA targets	80	100
4	Students engage in meaningful MVPA	100	100
5	Choice of learning activities	100	87.5
6	Peer support	100	87.5
7	Teacher empathy towards students	100	100
8	Feedback supports student progress	100	100
9	Feedback supports student effort	100	100
10	Home-school communication to support students' PA	0	100
11	Teacher signposts PA beyond the lesson	80	25
12	Students evidence out of class PA	100	87.5
13	Teacher emphasises safe participation	100	100
14	Teacher encourages students to promote PA to others	60	0
15	Students evidence supporting others' PA	0	0
16	Students evidence critical understanding of PA issues	0	37.5

No observed lesson provided specific lesson learning outcomes linked to becoming a critical mover although, as noted above, a number of lessons (60%) involved teachers encouraging students to promote physical activity to others. There is also much evidence reported in the second section of this chapter, which suggests that students were developing many of the critical mover characteristics. Despite evidence of student progress against some elements of the critical mover goal, there were sparse

examples of students supporting others to be active and therefore no recorded lessons included evidence of students achieving this challenge.

Delaware School

Teachers at Delaware School demonstrated a high level of fidelity against the criteria within the Health-Based Physical Education fidelity tool (see Table 5.1). Throughout the unit of work, 14 out of 16 criteria (88%) were observed. The range across all observed lessons was between 10 and 14, with a more or less equal split of moderate and high fidelity evidenced in each lesson. Nine criteria were observed in all observed lessons: lesson learning outcomes explicitly linked to the Health-Based Physical Education goals; appropriate health-related learning linked to physical activity; students set and work towards personal physical activity targets; student engagement in meaningful MVPA; teacher empathy; personalised student feedback to support progress and effort; home-school communication to support student physical activity; and teacher emphasis of safe participation. Several criteria were observed in nearly all lessons: choice of learning activities (not observed in one teacher's first lesson); peer support (not observed in one teacher's first lesson); and students evidence out of class physical activity (not observed in one teacher's lesson). Of the remaining criteria, two had low fidelity (teacher signposts physical activity beyond the lesson and students show a critical understanding of physical activity issues) and two were not observed in any lessons (teacher encourages students to promote physical activity to others and student evidence of supporting others to be active).

As a result of Maple Academy's lack of explicit focus on the 'movers', I supported teachers at Delaware School to demonstrate closer links between the Health-Based Physical Education goals and their translation into lesson learning outcomes. Specifically, I met with both teachers to using the 'movers' language with students and to use the terminology (such as that linked with the informed mover goal - understand 'how and where' to engage in physical activity, 'the effects' of an active lifestyle and how to participate 'safely and effectively'). Following this, all observed lessons made reference to the Health-Based Physical Education mover goals and lesson evidence also suggests that students demonstrated characteristics of all five goals, particularly the first four (habitual, enthusiastic, confident and informed mover). However, over 60% of observed lessons also saw students evidencing characteristics of a critical mover (see section 2 for a discussion of the impact of Health-Based Physical

Education on students). Translation from model goals to lesson learning outcomes was therefore a strong feature at Delaware School.

This section considered the two schools' teaching and learning approaches. In summary, whilst teachers at Maple Academy demonstrated a moderate-high level of fidelity, teachers at Delaware School evidenced high fidelity. Although differences occurred in which criteria were evidenced, only one criterion separated the level of fidelity between schools (13 and 14 out of 16). These findings are explored, along with the programme aims and subject matter next.

Discussion of Health-Based Physical Education Programmes

This discussion brings together the key themes from the two Health-Based Physical Education programmes and discusses these findings in relation to previous research. As noted earlier, whilst there are similarities and differences in the two schools' practice and therefore their interpretation of the conceptual framework, it is not my intention to make direct comparisons due to the sequential implementation of programmes. However, it is useful to engage in a joint discussion of the programmes so as to be able to draw conclusions about the types of programmes the schools created and their potential impact on students. Furthermore, as these form the very first iterations of the Health-Based Physical Education Conceptual Framework, a broader analysis was deemed more appropriate as it affords the reader the potential to learn from the successes and tribulations of two schools. This discussion firstly considers the planned aims of each programme, before considering the subject matter and physical activities used as a vehicle for Health-Based Physical Education and, finally, the pedagogical approaches applied within the units of work.

The Planned Aims of each Programme

Both schools designed the aims for their programmes based upon the five goals of Health-Based Physical Education. I believe, from interviews with all teachers, that a key factor in supporting these links was the quality, content and structure of the teacher initiation sessions, which enabled them to understand and express these goals effectively. For example, Amy (post-unit interview) expressed that "the way you introduced the movers and then brought them to life in action was really useful to our planning and teaching". As identified above, the first four movers (habitual, enthusiastic, confident and informed) were explicitly and comprehensively considered in the programme aims. In relation to a habitual mover, both schools planned for their

154

students to develop ways to manage and monitor their own activity levels in order to meet and exceed the physical activity guidelines for young people (Chief Medical Officers, 2011). This is a crucial aim for Health-Based Physical Education programmes given that only around one in five young people meet the minimum recommendation of 60 minutes physical activity per day (Currie et al., 2008; Sallis et al., 2016; Scholes, 2016) and that valuing a physically active life (Siedentop, 1996) is the pedagogical model's central theme. The aims of both programmes included reference to the physical activity guidelines, which is also crucial given that only 10% of 12-15 year olds know the physical activity guidelines in England (Roth & Stamatakis, 2010) and most adults underestimate the minimum expectation (Townsend et al., 2012; Knox, Musson & Adams, 2015). Furthermore, both schools planned to focus on helping students to participate in, monitor and set self-referenced goals for physical activity participation beyond the lesson. Monitoring and target setting have been recommended to support the process of physical activity promotion by several authors (Blais, 2008; Harris, 2000; Harris & Cale, 2018; Hastie et al., 2012; Kriemler et al., 2010; Webber et al., 2008).

Several aims of both school programmes aligned with the informed mover goal. Maple Academy included three aims linked to students' cognitive development, whilst no less than four (of eight) aims at Delaware School were associated with becoming an informed mover. These findings concur with previous research suggesting that students' cognitive development is a key priority in physical activity interventions (Bayne-Smith et al., 2004; Haerens et al., 2006, 2009; Harris & Cale, 2018). Both schools included aims focused on developing students' understanding of the effects of participation in physical activity on health and fitness outcomes. In addition, Maple Academy identified the importance of developing safe and effective practice in a range of activities and the application of various tactics in running challenges. At Delaware School, aims included understanding how and where to be active as well as separate aims linked to the effect of various physical activities on physical, social and mental health and on how to develop specific components of health-related fitness. These aims show a clear focus on educating young people about the effects of physical activity and how to participate safely and effectively in movement forms (Harris, 2000; Harris & Cale, 2018). However, Tinning (2010) has warned that knowledge is not enough to change health behaviour, urging that it is naïve to think that knowing will translate to doing. As Harris (2000) rightly emphasised, learning in all domains is crucial for effective H-RPE practice. Furthermore, whilst fitness knowledge is only one

element of these school's aims, this focus may not be the most appropriate for the promotion of physical activity (Harrris & Leggett, 2015a).

Despite the recommendation of the Health-Based Physical Education conceptual framework that the affective domain should take priority (Deci & Ryan, 2000), very few aims in either programme were linked to the enthusiastic and confident mover goals. Programme aims asked that students demonstrate positive attitudes, motivation and confidence within and beyond lessons but these were linked with only two of Maple Academy's ten aims and only one of Delaware School's eight aims. These findings are in line with the suggestions of Cale and Harris (2009b) who advocate that the affective and cognitive domains are the most important but are typically given the least attention in H-RPE.

Despite my advice and recommendations to both schools, that the affective domain could feature more prominently in their programme aims, no significant changes to the unit of work documents were made at either school. However, in acknowledging my feedback, both schools did increasingly emphasise the affective domain in lesson learning outcomes and in the design of lesson activities and tasks. I believe, supported by reflections in my diary, that an important reason the units of work were not revised was because of the busyness of life in both schools. I was very aware of the demands that the teachers' involvement in this study had on their workload. i.e. innovation is 'work-plus-work' (Casey, 2009, p.278). I reflected that at Maple Academy, "Our postponed meeting led to a delayed start to revising our plans for the programme and meant that opportunities to revise the unit aims that we had briefly discussed were limited due to the summer break and the early implementation of their programme only a couple of weeks into the new academic year" (Reflective Journal, 5.9.12). This meant that the programme aims, as a collectively agreed set of aspirations for the unit, were not as clear as they could have been, to both the staff and students.

Specific aims linked to the critical mover goal were apparent in both programmes, although as was noted in the affective domain, they were very few in number. Only two of Maple Academy's aims, and only one at Delaware School, were linked to the critical mover goal. Maple Academy identified aims to encourage other students in a positive and supportive learning climate and to understand how different people will be motivated by and value different activities. At Maple Academy, greater clarity surrounding the critical mover goal was seen in lesson learning outcomes that focused

on students' awareness of barriers to physical activity, ways to overcome these and the identification of specific strategies to encourage their peers and family to be more active. At Delaware School, the single aim of developing leadership skills in supporting others to be active is closely aligned with the aims at Maple Academy. Given the major theme of Health-Based Physical Education (valuing a physically active life) draws on Siedentop's (1996) notion of literate and critical participation, the lack of emphasis on becoming a critical mover is potentially limiting. However, as Almond and Myers (2017) suggest that teachers should consider the gradual movement from dependence to independence in young peoples' learning paths, it may have been that teachers believed this goal was too 'advanced' for many of their students, or in fact for the teachers (Casey, 2014, 2017; Goodyear & Casey, 2015; McCaughtry et al. 2004). For example, when I asked Neil (Head of Physical Education at Delaware School) if and how the critical mover goal might take a greater emphasis in the programme aims, he stated that they planned to implement this goal in a future unit of work. This suggests they may have thought the goal too complex for students and/or they did not yet feel competent to implement the full conceptual framework. Another option is that learning to teach in a new way (Dyson & Casey, 2016) was challenging for both the staff and students.

Before moving on to discuss the subject matter of the Health-Based Physical Education programmes, it is important to note the following differences in the two approaches to planning their respective programme's aims. Whilst Delaware planned their Health-Based Physical Education programme by first designing their programme aims and secondly the subject matter and activities, at Maple Academy it was clear that the programme goals came after they had planned and designed their lesson content. In fact, the first step in creating their Health-Based Physical Education curricula was to select the activities that were to form the basis of their eight lessons. This is not an uncommon approach used by teachers in planning a multi-activity curriculum (Kirk, 2010; Penney & Chandler, 2000; Siedentop, 2002), where the activity is selected first and the learning outcomes (and progression in these across years) take a lower priority. The emphasis on curriculum activities and content without putting the needs of the learner at the core has also been identified by Armour and Harris (2013) as a common pedagogical limitation in this area. However, guidance on curriculum planning and models-based practice is that the first step should always be to consider 'what the teacher wants students to learn' (Metzler, 2011, p.42) in order that appropriate activities and models or approaches can then be selected as the

vehicle to achieve said learning (Arthur & Capel, 2015; DCSF, 2009; Metzler, 2011). Whilst I cannot be certain of the process that the teachers at Delaware School would have taken, my reflections on Maple Academy's approach to this issue enabled me to present the importance of starting with the programme aims with Delaware School more effectively.

These choices, i.e. activity first and programme second (or vice versa), form a lens through which the teaching of Health-Based Physical Education can be viewed in this thesis. In considering Armour's (2011) construction of pedagogy as learners and learning, teachers and teaching and knowledge in context, it can be argued that both schools made very different choices about what knowledge was most valuable in their context. Maple Academy positioned existing knowledge as most important and built their programme around it. In contrast, Delaware School placed knowledge about moving at the heart of their curriculum and chose activities that could best help their students learn about moving. Any potential impact associated with the process of planning aims and subject matter will be considered in the second section of this chapter on the impact of Health-Based Physical Education on students.

Subject Matter

The practical subject matter of both Health-Based Physical Education programmes, as identified from my analysis of each school's planning documents, drew on three main types of physical activity (which perhaps says more about the commonality of subject matter choices in physical education than this thesis can hope to discuss). Exercise to music was a key part of the curricula, with both schools using Boxercise™ and circuit-based activities as the predominant vehicles for learning about healthy, active lifestyles. Lifetime activities included running (in both programmes) and indoor rowing (at Delaware School). Whilst Maple Academy opted for a lesson that included individual and team physical activity challenges (including running, tag and exercise 'games'), Delaware included the option of a specific invasion game (1v1 or 2v2 basketball). Collectively, the units of work show a balanced approach to the practical subject matter, neither focusing exclusively on lifetime activities, or exercise, or 'games'. This 'balanced' approach is in line with many of the recommendations in the literature (Harris, 2000; Lund & Tannehill, 2010; Trudeau & Shephard, 2008). Further, in adopting the recommendation from the conceptual framework that lifetime and health-focused activities are most appropriate for Health-Based Physical Education, both schools upheld this approach.

However, whilst not a dominant part of either programme, some lesson activities could be traced to common H-RPE ideologies such as 'fitness', 'games or sports', or 'fitness for sport' (Alfrey & Gard, 2014; Alfrey et al., 2012; Green, 2009; Harris, 1994, 1997; Harris & Leggett, 2015a, 2015b; Puhse et al., 2011). These lessons included components of skill-related and health-related fitness and/or used games as the vehicle for learning. Despite a strong physical activity focus at Delaware, a greater fitness for life and sport focus was notable in the final lesson of the unit where students selected their own activities to devise a circuit, including typical strength and cardiovascular circuit exercises as well as sport-specific skills linked to cricket, basketball and indoor hockey. At Maple Academy, one lesson on circuits included both health-related and skill-related fitness stations.

Whilst it is clear that the schools offered a balance of activities to their students, there was an apparent tension between maintaining one or two consistent activities within the unit and providing student choice in the equivalent of what could be called a 'multi-activity health-based curricula'. In this sense, both schools, because of the number of activities offered within the unit, could be accused of transferring their 'multi-activity sport-based curricula' (Green, 2009; Kirk, 2010; Siedentop, 2002) philosophy of physical education into their Health-Based Physical Education units. Ensuring a variety of activities for students' interest and enjoyment against a sustained activity that is likely to generate greater perceptions of competence will be a future conundrum for teachers of Health-Based Physical Education.

In addition to learning in and through a range of practical activities, lessons provided the most opportunities to develop elements of the informed mover and critical mover goals. Both schools introduced the physical activity guidelines for young people (Chief Medical Officers, 2011), but it was only after my observation and feedback on the first lesson (and PLTR) at Delaware School that students were also encouraged to discuss the current statistics surrounding young people's participation trends. Specifically, following receipt of both Neil and Mike's PLTRs, I sent an email to them stating that

> "It was great to see the PA guidelines being emphasised with your groups. Next week, you might want to build on this with some data on the fact that only 1 in 5 young people (less in secondary aged students) meet the guidelines of at least one hour per day. You have the stats in the pack that I brought in for you a couple of weeks ago" (Mark Bowler email message to Delaware School staff, 28.2.13).

159

The effects of physical activity were a key element in both schools' plans, whilst at Maple Academy specific attention was paid to both the short and long-term effects of physical activity on health and fitness. This may support students' cognitive understanding, which has been shown to link with physical activity levels (Bayne-Smith et al., 2004; Haerens, 2006, 2009; Lubans et al., 2009). However, recent evidence suggests that messages emphasising the affective benefits of physical activity are more likely to increase adolescent's activity levels than emphasising the physical or health benefits (Sirriyeh et al., 2010).

Both schools included the key skills of students monitoring their own physical activity against the national guidelines. Whilst Maple Academy encouraged students to sum daily minutes of physical activity in a relatively simplistic manner, because of the lessons learnt during the first programmes, Delaware specifically decided to discuss a variety of ways of monitoring physical activity with their students, including duration, activity steps (with pedometers in lessons), heart rate, as well as enabling students to capture their activity through an activity diary (out of lessons). The issue of supporting pupils to monitor their activity levels came up during a mid-unit review meeting with teachers at Maple Academy and therefore prompted a greater emphasis on pupil monitoring at Delaware School. Whilst we discussed the option of including a physical activity diary for the remainder of the unit at Maple Academy, we agreed to continue with other monitoring options, knowing that this may be a limitation. I noted in my reflective diary that "Whilst this may be less effective for students [at Maple Academy] I think that for both teachers and students this is probably best being left for use in the future at Delaware School" (Researcher Field Journal, 19.10.12). This is in line with the conceptual framework's recommendations to 'encourage students to identify and meet physical activity targets' and 'sets activity challenges' beyond the lesson, as part of the 'Teacher promotes physical activity' critical feature. Physical activity self-monitoring is a recommended strategy in activity promotion (Blais, 2008; Harris & Cale, 2018; Hastie et al., 2012; Kriemler et al., 2010; Webber et al., 2008), particularly if completion is linked with teacher recognition or 'team points' (Hastie et al., 2012). Unfortunately, in a post-unit interview with Mike at Delaware School, despite their use during the unit, he acknowledged the limitation of not reinforcing the physical activity diary more effectively, suggesting that its completion was "variable" and certainly "dwindled as the unit progressed" (post unit interview). As I noted at the time, "Mike believed that this was simply because [physical activity] diaries were a new feature of their teaching and

they sometimes forgot to discuss these with students during lessons" (Researcher Field Journal, 28.10.12). Whilst the reliability of self-reported physical activity has been questioned, Harris and Cale (2018) suggest that it is more important pedagogically to support students' learning through the process of monitoring, rather than worrying about the lack of precision of the method.

In line with the conceptual framework's critical features, and the importance of critical participation in Siedentop's (1996) notion of 'valuing', another common element at both schools was the decision to support students' understanding of the typical barriers to physical activity and strategies to overcome these. At Maple Academy, this learning was aligned with movement promoter challenges observed in several lessons, where students were challenged to encourage a peer or family member (and collect some appropriate evidence) to be more active. Whilst no observed lesson at Delaware School included such a movement promoter challenge, both the teachers and students indicated that this had occurred during the unit, although encouraging others to be active was deemed very difficult by a number of students (see section 2).

Teaching and Learning Approaches

Data from the Health-Based Physical Education fidelity tool revealed a moderate to high level of congruence with the recommended teaching and learning approaches identified in the conceptual framework. As noted earlier, across all observed lessons at Maple Academy, 13 out of 16 criteria (81%) were demonstrated, although the range was between nine and 13 criteria. At Delaware School, 14 out of 16 criteria (88%) were demonstrated, although the range was between ten and 14 criteria. Several researchers (Kirk, 2013; Kloeppel et al., 2013; Siedentop, 2002) guard against the expectation that implementation fidelity will be high and acknowledge the central importance of teachers adapting the model for their local contexts. This local adaptation was certainly apparent in both schools, not least in the similarities and differences in teaching and learning approaches observed.

The schools evidently found it easier to achieve fidelity in some areas, as I previously indicated in relation to the high congruence in several criteria. One criteria, 'health-related learning linked to physical activity' was evident in all observed lessons in both schools. This finding is pleasing given the conceptual framework's emphasis on learning about physical activity, and the research suggesting a 'fitness for sport' emphasis is more likely in most teachers (Harris & Leggett, 2015a). Additionally, this

unequivocal focus on physical activity stands Health-Based Physical Education apart from other pedagogical models proposed by Metzler et al. (2013a, 2013b) and McConnell (2015) who recommend diverse physical activity, health, fitness and nutritional outcomes.

Another strong feature in both schools was the high fidelity to student choice of learning activities, teacher empathy towards students, and feedback which promoted student effort and progress. These teaching behaviours align with recommendations in the conceptual framework that teachers should promote a needs-supportive environment in order to generate higher levels of intrinsic motivation in their students (Deci & Ryan, 2000; Ntoumanis, 2001; Standage et al., 2005; Ward et al., 2008). The comment by Nick (head of physical education) at Maple Academy is representative of teachers' views that "the opportunities to see and then apply needs-supportive behaviours in our teaching between workshops was really effective" (email conversation following review of his post-lesson teacher reflection, 10.10.12).

Using Figure 3.5 (chapter 3) on needs-supportive behaviours, a combined view of the approaches schools used to promote a needs-supportive climate illustrate the following: Autonomy was promoted by providing choice of activity across the unit or within lessons, paying attention to the needs of the students as well as providing choice of task difficulty (differentiation); Competence support was promoted by providing variation between and within activities, giving clear verbal instructions, gives an overview and structure of the lesson and offers students help and guidance during physical activity. Relatedness support was promoted through the teachers' enthusiasm and eagerness, paying attention to and showing an interest in students' needs and applying differentiation. Whilst we currently know more about the impact of needs-support on emotions than on actual physical activity behaviours, there is good evidence of the link between enjoyment and autonomous motivation in physical education and leisure-time physical activity (Chatzisarantis & Hagger, 2008; Cheon et al., 2012; Hagger et al., 2009; Haerens et al., 2010; Ntoumanis, 2005; Taylor et al., 2010; Teixeira et al., 2012). These highly effective needs-supportive behaviours therefore have strong potential to influence young peoples' physical activity behaviours.

Given that studies have shown that physical educators prompt students to be active beyond the lesson in less than two percent of classes (McKenzie et al., 1997;

McKenzie & Kahn, 2008), the finding that 80 percent of observed classes at Maple Academy and 25 percent at Delaware School signposted physical activity beyond the lesson is a relatively strong feature of their teaching and learning practice. Further, the differences in signposting are not just related to the two schools – differences were evident across nearly all teachers, emphasising flexibility within the conceptual framework and room for local adaptation (Kirk, 2013; Metzler, 2011). Differences between teachers are also a likely result of their 'everyday philosophies' (Green, 2000), which pose strong and enduring tendencies that are also resistant to change. It was clear that whilst some teachers promoted school clubs very effectively, others rarely did so. Furthermore, whilst some detailed information to students through their noticeboard, other teachers were not observed sharing these external physical activity opportunities.

In support of the evidence from lesson observations, teachers' post-lesson teacher reflections (PLTRs) broadly confirm the findings regarding teaching and learning approaches and, in most cases, indicate a process of deeper reflection by teachers. Given that teachers completed these after every taught lesson, the finding that teachers demonstrated a high level of congruence to the conceptual framework is supported. Whilst the weekly process of evaluating their own practice and the perceived success of their lessons showed variability, over time the pattern of lesson reflections indicated an increase in responses for 'what went well?' and a decrease in responses for 'what did not go so well?'. Furthermore, teachers' perception that they demonstrated the critical features also showed in broad terms an increase in quality of teaching and learning. In this sense, as I indicated in Chapter 3 (section 4, Participatory Action Research) my role, which was to provide scaffolds through the PLTR for teachers to reflect on and review their practice, appears to have been successful. It was clear from all teachers that the process of reflecting deeply on lessons was not a common feature of their practice and that for almost all teachers, this was a process that supported them to implement Health-Based Physical Education as it was designed and continue to review and adapt their practice. Two representative comments from teachers during our interviews are provided below. Whilst the first is the strongest evidence for the effectiveness of the PLTR to support their teaching of Health-Based Physical Education, it is also representative of all but two teachers, who did not find the process supportive. The second comment therefore provides a more atypical response by the teachers in this study.

"One thing I found really useful, hand on heart, it has probably made me the most reflective of what I've been doing in a unit of work… the reflective thing was definitely the standout for me, having that time to do that. You know what it's like, you just don't have the time and even just that two minutes at the end of a lesson to just review got you thinking about right so next week make sure I'm hitting that or that's the focus for next week" (Ed post unit interview).

"I hated them…they were time consuming. Although saying that, when you first start teaching you do it all the time, but normally when I finish a lesson it's a one moment thought – that didn't work that well and I need to change that, I must do that one again at some point because it was really effective – and it's sort of quite short, snappy thoughts, whereas you had to go through and sort of think in words being thrown at you which I found quite time consuming. It was not great for me" (Esther post unit interview).

On the one hand, Ed (above) indicated that, save for the teacher initiation to Health-Based Physical Education phase, the deliberate and frequent evaluation of his practice was the most beneficial element of his experience in the study. Most other teachers, whilst acknowledging the time-consuming nature of the process, agreed with Amy who suggested that "doing the reflective tasks [the PLTR] helped me think of new ideas and how to improve my next lesson" (Amy post unit interview). It was only the minority (two teachers from the nine) who felt that the process was both time-consuming and unhelpful to their practice. For these teachers, their perceptions were contrary to research which recommends the process of formalising and scaffolding the reflection process for teachers to support them to implement a new pedagogy, as well as to sustain their interest and motivation (DfE, 2016; Goodyear & Casey, 2015; Guskey, 2002). However, given the experience of Bechtel and O'Sullivan (2007) who indicated that the teachers' beliefs, such as their goals for physical education, their level of critical reflection and their willingness to change their practices, play a crucial role on the success of new pedagogies, it is understandable that not all teachers would engage enthusiastically with all elements of this study.

The final comment on the issue of teachers' reflective practice using the PLTR, is that one of the reasons for their dislike for the process is undoubtedly concerned, in Esther's case (above), with a lack of time – "they were time consuming" (Esther post unit interview). It is important to place this into the context of teacher change, as it is clear that the research on transferring an innovation from theory to practice does not always make for pleasant reading (Fullan, 2015). The process of teacher change requires time and effort, as it is understood that innovation takes place in addition to normal work (Casey, 2010; Fullan, 2007; Guskey, 2002; Kirk, 1986; Rogers, 2003). If

teachers are 'time poor' and do not see the benefit to their practice, innovations are less likely to be successful.

Whilst both schools implemented a number of effective teaching and learning approaches, a key weakness in both settings was the lack of support for multiple school, community and family components within their practice. Multi-component school-based physical activity interventions are consistently shown to provide the best results in terms of physical activity participation (Dobbins et al., 2013; Kriemler et al., 2011; Public Health England, Youth Sport Trust and Association of Colleges Sport, 2015). However, whilst Delaware facilitated year group assemblies linked to physical activity and facilitated core physical activity messages to form tutors in order to scaffold student participation this was not a central feature at Maple Academy. Equally, a lack of community and family involvement in both schools was deemed to limit the effect of Health-Based Physical Education on students. It could be argued that because the focus of participatory action research is on lesson content and pedagogy that these wider school, community and family initiatives were limited by the lack time and energy attributed to them. Further, given the greater work in planning for wider components to promote physical activity, these were perhaps deemed too complex at this stage (Fullan, 2007; Rogers, 2003).

This section has considered the teaching and learning approaches used within the two school programmes. In summary, both schools achieved moderate-high fidelity to the Health-Based Physical Education conceptual framework, and largely drew effectively on the process of post-lesson reflections to support their practice. Key strengths across the programmes appear to be effective health-related learning in lessons, with a close link to physical activity and not typical conceptions of fitness for sports performance that have frequently been reported (Alfrey et al., 2012; Cale & Leggett, 2015a, 2015b). The creation of a needs-supportive environment was achieved in both schools, with a variety of different approaches used to achieve the student perceptions of autonomy, competence and relatedness. Another point of discussion in this section was regarding physical activity prompting, which was a strength at Maple Academy, but an inconsistent approach at Delaware School. However, given studies have established that the vast majority of teachers do not prompt physical activity beyond the lesson, the results reported here are positive and warrant further research in the field.

Section 1 has presented and discussed the programme aims, subject matter and teaching and learning approaches at the two schools. Section 2 details the impact that the Health-Based Physical Education pedagogical model had on students.

Section 2: Impact of Health-Based Physical Education on Students

This section considers the impact that Health-Based Physical Education had on the students involved in this research, to support them to 'value a physically active life' (Siedentop, 1996). This impact is presented and discussed in relation to the influence on students during, immediately after and twelve months after (i.e. post-honeymoon) their experiences of Health-Based Physical Education and therefore provides a crucial first look at the potential impact of this pedagogical model on participants. Given that the previous section reported moderate-high fidelity to the conceptual framework in both schools, it is suggested that any changes in student response and behaviour can be attributed (at least in part) to their experiences of Health-Based Physical Education. The triangulation of methods and participants to gauge impact on students also strengthens these claims. The data draws predominantly from the three main methods employed within this research: student surveys (pre-unit, post-unit and post-honeymoon), student focus groups (post-unit and post-honeymoon) and teacher interviews (post-unit and post-honeymoon). Therefore, despite the expected heightened teacher and student awareness of physical activity, and their inevitable subjectivity, I believe the different methods and sources of evidence generate a level of trustworthiness in the results.

The results are reported using the goals of Health-Based Physical Education as a framework, given these are the intended outcomes for the model. However, one difference between section one and two of this chapter is the change from five to four movers which, following agreement by all teachers involved in the study, was made to the pedagogical model (see chapter 6 for a fuller discussion). This modification sees the combination of the enthusiastic mover and confident mover goals into one aim that seeks to develop a 'motivated mover'. As a result, this section is structured broadly around the four goals – habitual mover, motivated mover, informed mover and critical mover. As in the previous section, the data concerning the impact on students is reported separately by school, followed by a discussion of the key themes that show both commonality and difference in the schools.

Habitual Mover

This section considers the impact of Health-Based Physical Education on students' achievement of the habitual mover goal. Descriptive statistics and qualitative data from student focus group and teacher interview are presented for Delaware School because of the relatively small student sample size (n=37 boys). However, the large student sample size at Maple Academy (n=226, 124 boys, 102 girls) has allowed for the analysis of inferential statistics and qualitative data predominantly from student focus group and teacher interview.

Maple Academy

Self-Reported Physical Activity

A one-way within subjects (or repeated measures) ANOVA (Kruskal-Wallis test) was conducted to compare students' self-reported physical activity on a ten-point scale from (1) 'never' to (10) '15+ times per week' at three time-points (pre-unit, post-unit, post-honeymoon). There was a significant difference ($p = < .001$) between time-points for students' self-reported physical activity (means: pre-unit = 4.88 (±2.20), post-unit = 5.68 (±2.11), post-honeymoon = 5.43 (±1.44)). Dunn-Bonferroni post hoc pairwise tests were carried out for the three time points. There was a significant difference ($p = < .001$) between pre-unit and post-unit and a significant difference ($p = < .001$) between pre-unit and post-honeymoon self-reported physical activity.

Analysis by gender indicated that there was a significant difference ($p = < .001$) between time points for girls' self-reported physical activity (means: pre-unit = 4.44 (±1.92), post-unit = 5.24 (±1.74), post-honeymoon = 5.15 (±1.35)). Dunn-Bonferroni post hoc pairwise tests were carried out for the three time points. There was a significant difference ($p = .001$) between pre-unit and post-unit and a significant difference ($p = < .001$) between pre-unit and post-honeymoon. There was no significant difference between girls' post-unit and post-honeymoon self-reported physical activity. There was a significant difference ($p = .01$) between time points for boys' self-reported physical activity (means: pre-unit = 5.24 (±2.35), post-unit = 6.03 (±2.31), post-honeymoon = 5.66 (±1.48)). Dunn-Bonferroni post hoc pairwise tests were carried out for the three time points. There was a significant difference ($p = .02$) between pre-unit and post-unit and a positive moderate (non significant) difference between pre-unit and post-honeymoon. There was no significant difference between post-unit and post-honeymoon self-reported physical activity. Overall, these results indicate a statistically significant positive difference in girls' and boys' perceptions of their physical activity

167

levels from before to immediately after their experience of Health-Based Physical Education (+18.0%), as well as, for girls only, from before to one-year after their unit of work had finished (+16.0%). Whilst post-honeymoon perceptions for boys were not statistically different from pre-unit perceptions, a moderate positive difference was still observed (8.0%). Descriptive statistics for self-reported physical activity levels are summarised in Table 5.2.

Table 5.2: Maple Academy Mean (±SD) Student Self-Reported Physical Activity During the Three Time Points

	Pre-Unit (1)	**Post-Unit (2)**	**Post-Honeymoon (3)**
Boys	5.24 (±2.35)	6.03 (±2.31)	5.66 (±1.48)
Girls	4.44 (±1.92)	5.24 (±1.74)	5.15 (±1.35)
All	4.88 (±2.20)	5.68 (±2.11)	5.43 (±1.44)

Figure 5.5 shows the increase in mean self-reported physical activity levels from pre-unit to post-honeymoon. The data shows a very similar trend in students' self-reported physical activity levels across boys and girls, but with girls demonstrating less decline than boys in reported physical activity between post-unit and post-honeymoon time points. Overall, students perceived they were more active immediately after and one year later than before their experience of Health-Based Physical Education.
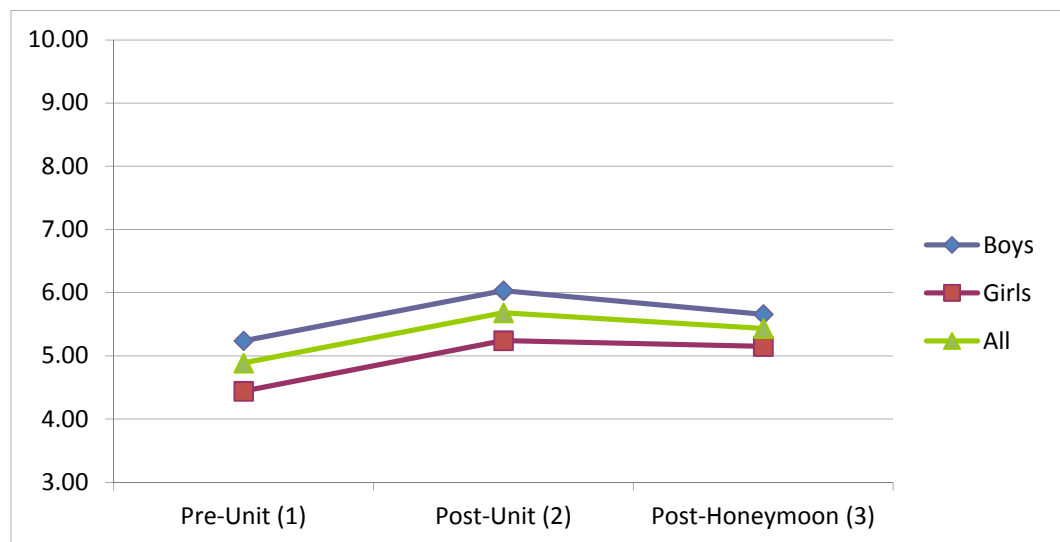
Figure 5.5: Maple Academy Mean Student Self-Reported Physical Activity During the Three Time Points

Self-Reported Stage of Change

A one-way within subjects (or repeated measures) ANOVA (Kruskal-Wallis test) was

conducted to compare students' stage of change on a five-point scale from (1) 'precontemplation' to (5) 'maintenance' at three time-points (pre-unit, post-unit, post-honeymoon). There was a significant difference (p = .01) between time-points for students self-reported stage of change (means: pre-unit = 3.98 (±1.27), post-unit = 4.37 (±0.86), post-honeymoon = 4.27 (±0.97)). Dunn-Bonferroni post hoc pairwise tests were carried out for the three time points. There was a significant difference (p = .01) between pre-unit and post-unit and a considerable difference between pre-unit and post-honeymoon ratings, although the latter was only statistically significant at a lower confidence interval (p < .10, p = .06). There was no significant difference between post-unit and post-honeymoon ratings for stage of change.

Analysis by gender indicated that there was a significant difference (p = .01) between time points for girls' self-reported stage of change (means: pre-unit = 3.80 (±1.26), post-unit = 4.29 (±0.86), post-honeymoon = 4.21 (±0.99)). Dunn-Bonferroni post hoc pairwise tests were carried out for the three time points. There was a significant difference (p = .02) between pre-unit and post-unit and a significant difference (p = .05) between pre-unit and post-honeymoon. There was no significant difference between girls' post-unit and post-honeymoon ratings for stage of change. There was no significant difference between time-points for boys' self-reported stage of change although a positive moderate increase is evidenced (means: pre-unit = 4.12 (±1.27), post-unit = 4.43 (±0.85), post-honeymoon = 4.32 (±0.95). Overall, these results indicate a statistically significant positive difference in girls' perceptions of their physical activity stage of change from before to immediately after their experience of Health-Based Physical Education (+12.9%) as well as a statistically significant difference from before to one-year after their unit of work had finished (+10.8%). For boys, a moderate perceived increase in physical activity is apparent before to immediately after their unit of work (+7.5%) and a small increase when comparing before to one-year after their unit of work had finished (+4.9%). Descriptive statistics for self-reported stage of change are summarised in Table 5.3.

Table 5.3: Maple Academy Mean (±SD) Student Stage of Change Score During the Three Time Points

	Pre-Unit (1)	Post-Unit (2)	Post-Honeymoon (3)
Boys	4.12 (±1.27)	4.43 (±0.85)	4.32 (±0.95)
Girls	3.80 (±1.26)	4.29 (±0.86)	4.21 (±0.99)
All	3.98 (±1.27)	4.37 (±0.86)	4.27 (±0.97)

Figure 5.6 below shows the increase in mean self-reported stage of change score from pre-unit to post-honeymoon. The data shows a similar trend in students' self-reported stage of change across boys and girls, but with girls demonstrating both a greater improvement between pre-unit and post-unit and less decline than boys between post-unit and post-honeymoon time points. Overall, students' self-reported stage of change suggests they perceived that their participation in physical activity, their readiness for change and their intentions to be active increased as a result of their experience in Health-Based Physical Education.
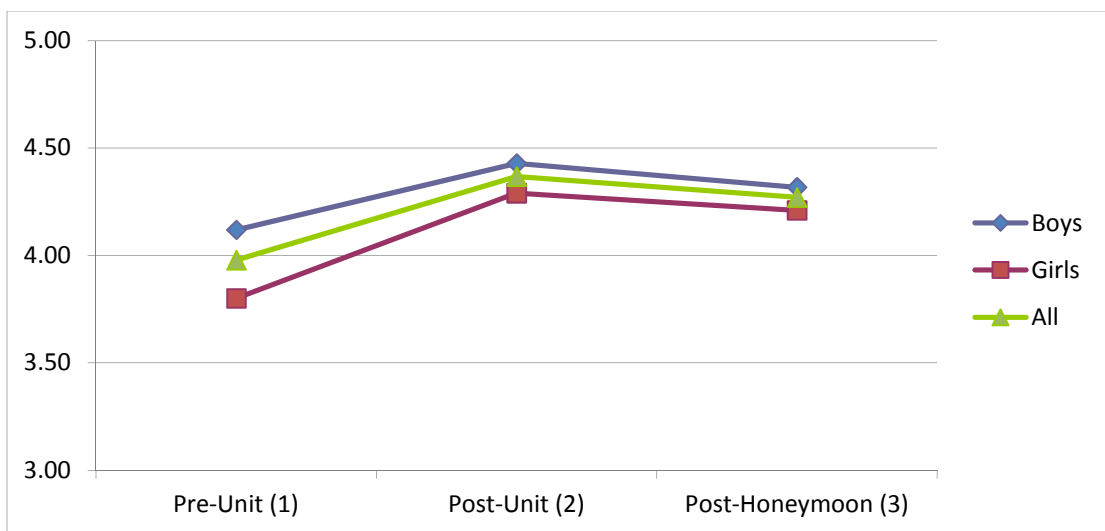
Figure 5.6: Maple Academy Mean (±SD) Student Stage of Change Score During the Three Time Points

The statistically significant quantitative trends in self-reported physical activity and stage of change were furthermore echoed by comments raised by both students and teachers in their interactions with me during interviews and focus groups. Almost all students in the post-unit and post-honeymoon focus groups indicated they were doing either 'slightly more' or 'much more' physical activity than before they started their Health-Based Physical Education unit and most identified that they would like to be more active in the next six months. "I am now walking all or some of the way to school on most days" (Male participant in post-unit focus group) is a comment that summarises the statements of several students who reported greater active travel to school and on weekends.

During our interviews teachers also relayed to me a number of instances of students participating in forms of physical activity, both in and out of school. Nick, the Head of

Physical Education expressed that "it was quite powerful to see hands going up and kids who don't really say boo to a goose, all of a sudden, say yeah, I've done that" [completed some physical activity during the last week] (Nick post-unit interview). Ed (staff post-unit focus group) excitedly reported that they had seen "massive improvement in students' ability to consider physical activity outside the classroom. Students have been coming up to me around school and sharing their stories!" One such story is provided (in Ed's words) below:

> "There were some students… that had set up an ad hoc running club that went running on a Wednesday and me sort of stopping them and saying, what are you doing, why are you here? Oh we are just running we are just doing the nature trail. Why? Because it's for our sixty minutes. That was like five lads I think it was that got together and know that there are staff on site so they'll be able to do that and just gone and done it… That's like an amazing shift in anything that we've ever seen before" (Ed, post-unit interview).

In relation to this school's multi-gym, Amy (post-unit reflection) reported that "Both boys and girls have gone mad for the fitness room – up to 30 students turning up each night after school". This is partially mirrored by students who reported the use of the fitness room was "popular across the year [group]", although participants are "mostly boys" (female participant in post-unit focus group).

Nick told me that a key reason for the reported increases in student physical activity: "I think the whole promotion of physical activity outside the classroom is something now that it's almost second nature now" (Nick post-unit interview). However, I had previously observed from my visits to school that practice at Maple Academy was already very good in terms of promoting the comprehensive extra-curricular programme. Perhaps the change could be better attributed to the fact that staff were now more effectively "promoting physical activity rather than sport" (Niall post-unit interview). Another potential explanation may be that giving students the opportunity to talk about their leisure activities may in fact 'rub off' on their peers: "Well I think the fact that they've talked about it and they've heard what other people do outside of school… makes more people hopefully want to engage and continue to engage" (Esther post-unit interview).

Delaware School

Self-Reported Physical Activity

Students were surveyed on three occasions (pre-unit, post-unit and post-honeymoon) and asked to self-report their frequency of physical activity participation on a ten-point

scale from (1) 'never' to (10) '15+ times per week'. Descriptive statistics (Table 5.4) indicate a mean increase from both pre-unit to post-unit (6.67 ±2.29 to 7.36 ±1.66) and pre-unit to post-honeymoon (6.67 ±2.29 to 7.31 ±1.80) with only a very marginal decrease between post-unit and post-honeymoon time points. This translates to an average change of participation in at least 20-30 minutes of physical activity from seven-eight times per week (6) to nine-ten times per week (7). Importantly, the large standard deviations indicate a large variation in self-reported physical activity.

Table 5.4: Delaware School Mean (±SD) Student Self-Reported Physical Activity During the Three Time Points

	Pre-Unit (1)	**Post-Unit (2)**	**Post-Honeymoon (3)**
Boys	6.67 (±2.29)	7.36 (±1.66)	7.31 (±1.80)

Figure 5.7 below shows the increase in mean self-reported physical activity levels from pre-unit to post-honeymoon. Overall, students perceived they were more active immediately after and one year later than before their experience of Health-Based Physical Education.
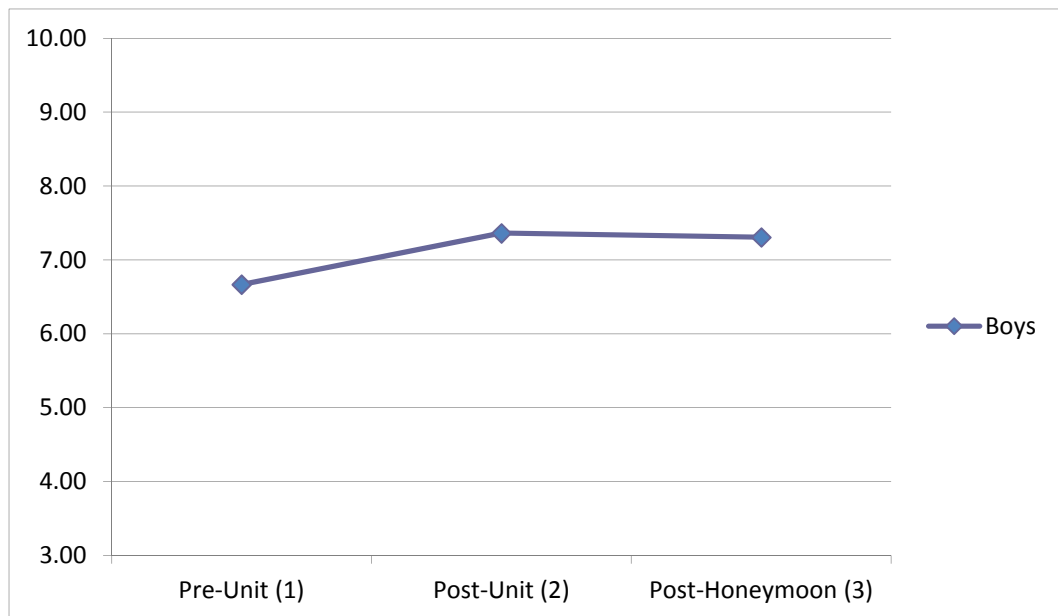
Figure 5.7: Delaware School Mean Student Self-Reported Physical Activity During the Three Time Points

Students were surveyed on three occasions (pre-unit, post-unit and post-honeymoon) and asked to locate their current level of physical activity participation and their intention to be active on a five-point 'stage of change' ladder. Specifically, the stages included (1) Precontemplation, (2) Contemplation, (3) Preparation, (4) Action, and (5)

Maintenance. Descriptive statistics (Table 5.5) indicate a mean increase from both pre-unit to post-unit (4.08 ±1.25 to 4.50 ±0.74) and pre-unit to post-honeymoon (4.08 ±1.25 to 4.44 ±0.91) with only a very marginal decrease between post-unit and post-honeymoon time points. Once again, the large standard deviations suggest a large variation in self-reported stage of change.

Table 5.5: Delaware School Mean (±SD) Student Stage of Change Score During the Three Time Points

	Pre-Unit (1)	Post-Unit (2)	Post-Honeymoon (3)
Boys	4.08 (±1.25)	4.50 (±0.74)	4.44 (±0.91)

Figure 5.8 below shows the increase in mean self-reported stage of change score from pre-unit to post-honeymoon. The data shows a marked increase between pre-unit and post-unit scores and largely maintained scores post-honeymoon. Overall, students' self-reported stage of change suggests they perceived that their participation in physical activity, their readiness for change and their intentions to be active increased as a result of their experience in Health-Based Physical Education.
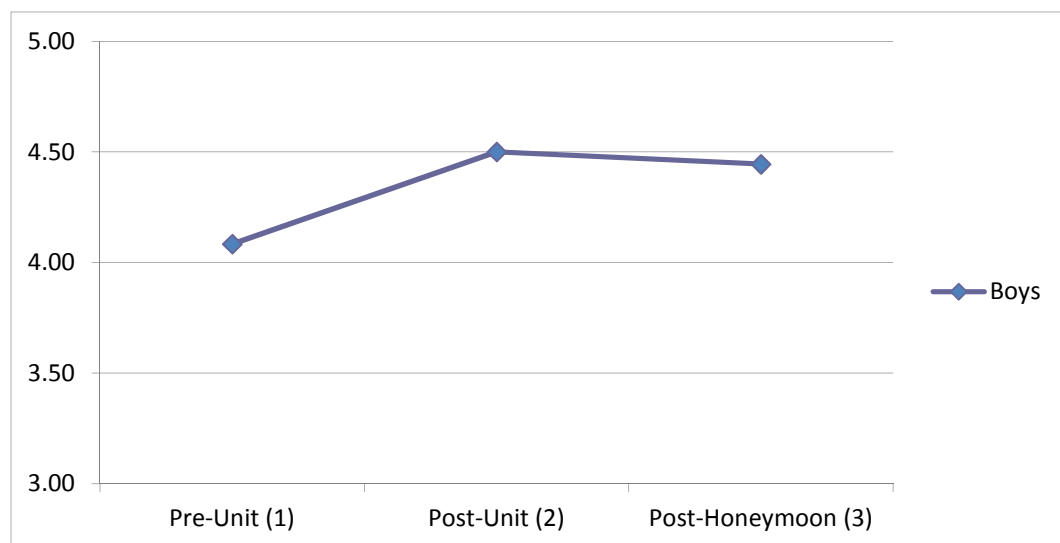
Figure 5.8: Delaware School Mean (±SD) Student Stage of Change Score During the Three Time Points

The self-reported trends in physical activity were confirmed during my visits (and in the case of teachers, through frequent emails) that I had with both students and teachers. Almost all students in the post-unit and post-honeymoon focus groups indicated they were doing either 'slightly more' or 'much more' physical activity than before they started their Health-Based Physical Education unit. In a post-unit focus group, one boy

captured the feelings of nearly all students in saying "I want to increase [my activity] because now I know the importance of being active, like it's really important". In a similar way, students felt that the Health-Based Physical Education lessons themselves were also very active: "I think that in the time that I've been here, that's the most active I've ever been in PE [physical education] lessons" (male participant in post-honeymoon focus group).

Teachers at Delaware School reported "signposting a lot more about the clubs and opportunities to be active outside of school" (Neil post-unit interview). They had seen attendance increase at extra-curricular clubs as well as a greater frequency of student reports of physical activity engagement in their leisure time in their physical activity diaries. This was seen to be particularly evident in the school's perceived 'lower attaining' class: "That's the group I've seen the biggest progress in because I think we've got students there now who had such success in that unit, have now taken it on into other areas" (Neil post-unit interview). In relation to student reports of high levels of in-class physical activity reported above, a probable reason was summarised succinctly by the Head of Physical Education: "We came up with the idea that we would do blocks of work [physical activity]… So they'd be [vigorously] active and then there would be a rest period and during that rest period, we would just focus on one aspect of the information side of it" (Neil, post-unit interview).

Discussion

Based on the habitual mover goal – i.e. to 'lead an active lifestyle and participate in regular physical activity', the data indicates a very positive effect on students. At Maple Academy, where the sample size permitted inferential statistics to be used, a significant perceived increase in physical activity was apparent for boys and girls from pre-unit to post-unit. For girls, the pre-unit to post-honeymoon period also indicated a statistically significant positive change. The reported increases in student activity levels from pre-unit to post-honeymoon are a very positive indication of the potential effect of Health-Based Physical Education on students' physical activity behaviours. These findings are strengthened by the fact that this time-period (over a year) would typically see a decline in young people's activity levels. For example, Scholes (2016) reported that young people's overall achievement of the physical activity guidelines in England between the ages of 8-10 and 13-15 decline rapidly from 26% to 12% (boys decline from 26% to 15% whilst girls decline from 26% to 9% in these age groups). Given that physical activity levels typically drop year-on-year (Scholes, 2016), student and teacher

reports of increased physical activity participation provides good support for the value of Health-Based Physical Education.

The findings for students' self-reported physical activity levels post-honeymoon are particularly pleasing, as reviews of school-based physical activity interventions typically find that programmes have little impact six months post intervention (Lai et al., 2013). Furthermore, in the case of this research, the pre-unit survey was completed in September (at the end of the summer), whilst the post-unit survey was completed in the December (winter) where it could be expected that individuals will often be less active (Tucker & Gilliland, 2007). This point adds even greater weight to the support of Health-Based Physical Education in promoting healthy, active lifestyles.

The examples of physical activity provided by students and teachers seemed to align with the three main categories of physical activity: greater everyday activities (such as active travel), more active recreation/play and increased exercise/sport (Chief Medical officers, 2011). No single category appeared to develop more than others, as a large number of teacher and student examples linked to all three types. This finding confirms the importance of a broad range of lifetime and exercise activities for Health-Based Physical Education, as well as the promotion of both structured (i.e. exercise) and unstructured (i.e. physical activity) forms of movement.

A number of reasons for students' uptake of a variety of forms of physical activity beyond the lesson are evident. Whilst it is clear that Maple Academy had a greater emphasis on promoting physical activity beyond the lesson than on within-lesson activity levels, Delaware School provided a balance on both areas. This tension is regularly reported in the literature (Dudley et al., 2011; Haerens et al., 2011; Slingerland & Borghouts, 2011). Students also frequently said that: "They [teachers] always said like go and join some clubs, like out of school" (female participant in post-unit focus group 2). The frequency of students sharing evidence of their physical activity is also a potential sign that raising the profile of physical activity participation, and spending time within lessons discussing personal levels of participation can positively support out of class physical activity. This was taken across both schools with physical activity prompts and by raising students' awareness of the physical activity guidelines and their importance by producing whole-school posters and running a whole-school assembly. There was also a strong sense that many students valued the importance of physical activity, given their comments in interviews that they "know

the importance of being active, like it's really important" (male participant in post-unit focus group 2). Taken together, it appears that the suggestions from the conceptual framework, of raising the profile of physical activity, taking time in lessons to discuss physical activity out of class, supporting their knowledge development and helping them to value a physically active life is very pertinent to raised physical activity levels. These tenets draw on the literature supporting many of the critical features.

Motivated Mover

Maple Academy

Students at Maple Academy appear to have enjoyed their experiences in Health-Based Physical Education. In commenting on how much they enjoyed this programme in comparison to other physical education units of work, almost all students indicated to me that it was "more enjoyable" (post-unit focus groups) than other physical education lessons. The reasons for students preferring and enjoying their Health-Based Physical Education unit more than other units were varied, including (1) the fact that certain activities were different to their normal lessons, (2) they found an interest in the subject matter, (3) they provided variety, (4) they provided choice, and (5) opportunities for peer support and interaction. Their specific perspectives on these issues are identified below:

"It didn't feel like we were doing PE" (female participant in post-unit focus group 1).

"I enjoyed running because it was like – it wasn't boring, just like running round a track" (male participant in post-unit focus group 2)

"I found that running was kind of my thing and I really enjoyed it" (female participant in post-honeymoon focus group).

"I enjoyed the variety" (male participant in post-unit focus group 2).

"More enjoyable because we got some choice" (male participant in post-honeymoon focus group).

"You'd have a friend next to you to work out with you and they can support you" (female participant in post-honeymoon focus group).

"Because it was like to music and it was like you do it in groups" (female participant in post-unit focus group 1).

"It has boosted my confidence and motivated me to get fit" (female participant in post-unit focus group 2).

"We were able to think of our own ways to do it. We weren't just told that you have to do this. We were able to make up like our own exercise programme" (male participant in post-unit focus group 2).

Despite the vast majority of students expressing a preference for Health-Based Physical Education over other activity areas, this view was not unanimous. A minority of students indicated either no preference or a preference for other activities within the physical education curriculum. Any 'no preference' responses seemed to dictate that students made no material distinction between activity areas, although this was rare. The preference for other activities included (1) liking just one activity within a unit, (2) feeling more confident and competent in other activities, (3) the apparent irrelevance of some Health-Based Physical Education activities, (4) the fact that they were indoors, and (5) the fact that other activities had a double lesson, whilst Health-Based Physical Education was located in a single lesson.

"I just treated it like a normal PE lesson and tried my best in it" (male participant in post-unit focus group 2).

"I like doing a unit [of work] on one thing" (male participant in post-unit focus group 1).

"I like netball because I enjoy it and I feel that's one of the sports that like I'm actually good at" (female participant in post-honeymoon focus group).

"It was just – it's like a new activity and maybe other sports you're really good at then you do it all the time so you're used to it" (female participant in post-honeymoon focus group).

"Because I'm never going to use it [Boxercise™] again in my life" (male participant in post-unit focus group 1).

"I prefer everything inside" (female participant in post-unit focus group 2).

"I prefer the normal one [PE lesson] because HBPE is around single lessons… you spend like half of it him telling you what to do" (male participant in post-unit focus group 1).

Picking up on the student point above concerning the location of activities (i.e. indoors or outdoors), it was brought home to me very early within the unit of work that "The difference in the girls' enthusiasm between indoor and outdoor lessons is remarkable" (Researcher Field Journal, 3.11.12). These feelings had been monitored whilst observing the body language of the female students, after the routinely asked question "Are we inside or outside today?" that I observed on a large number of occasions. Teacher interviews confirmed this preference by many students, although it appears to be a largely female-related theme.

Teacher interviews confirmed generally high levels of student motivation towards physical activity, and in a number of cases, higher levels than they would normally see in physical education. The quotes below summarise Maple Academy teachers' feelings concerning the impact they felt Health-Based Physical Education had on student motivation:

"I would say near a hundred per cent of the students enjoyed taking part in the activities we did" (Emma post-honeymoon interview).

"I've been so impressed with their enthusiasm for PE really. That is definitely going to have something to do with the fact that we've spent the first eight weeks of the year on the HBPE unit" (Ed post-unit interview).

"Giving kids that traditionally are not very good at the hand eye coordination or that don't get the team sports, they're enthused in that HBPE lesson for other reasons... I think that's the most positive thing that we've had from it… because they feel like they can achieve in that lesson, whereas maybe in the more traditional sports, they can't" (Amy post-honeymoon interview).

"I've never seen a bunch of boys be so excited running round a field" (Ethan post-honeymoon interview).

However, just as some students suggested an indifferent response to Health-Based Physical Education when compared to other physical education activities, so did a small number of staff. Despite a number of students expressing real enjoyment of the team running activities, one teacher reflected:

> "However we dressed them up to them they were still running activities. I don't necessarily think that's a negative because running is running and if we're trying to encourage them to do the moderate [to] vigorous activity, we want them to be aware that yes running sometimes is a little bit uncomfortable because it's pushing yourself" (Ed post-unit interview).

It seemed that some staff were aware of the balance between lifetime activities and reduced enjoyment from pushing yourself, but that they felt the benefits outweighed the limitations in this instance. Staff also intimated that the generically designed lessons had potential motivational issues when teaching the same lesson plan to boys and girls groups: "There were some times I saw what activities you had to deliver, read the lesson plan and I thought, 'How am I going to do this with year nine girls?'" (Emma post-unit interview). Whilst teachers had flexibility in how lessons were taught, they had agreed to follow the same list of activities and broadly the same tasks and teaching approaches. As student comments above indicated, not all lessons led to student enjoyment or satisfaction.

Delaware School

Almost all students at Delaware School demonstrated high levels of motivation and engagement in their Health-Based Physical Education lessons. The most positive response I obtained from a student was: "That was the best unit that we have done" (male participant in post-honeymoon focus group 2) whilst another reflected on their very recent experience with strong emotion: "It inspires me. It inspires me" (male participant in post-unit focus group. Multiple reasons for enjoying their Health-Based Physical Education lessons were cited by students: (1) the fact that certain activities were different to their normal lessons, (2) they provided variety and choice, (3) opportunities for peer support and interaction, and (4) the environmental focus on personal progress. Their specific perspectives on these issues are identified below:

> "HBPE, because you're doing different stuff like each week" (male participant in post-unit focus group 1).
>
> "He [the teacher] let us pick our own activities" (male participant in post-unit focus group 2).
>
> "Because if it was like against each other, after every single PE lesson it'd be like, "I'm better than you," and stuff like that. But when you're competing against yourself, you're all equal and it's your own best score" (male participant in post-honeymoon focus group).
>
> "I was more confident because he [the teacher] tells you that you don't need to beat anybody else's score, just worry about your own" (male participant in post-unit focus group 1).

Despite the positive recollections of Health-Based Physical Education, a small minority of students indicated that they preferred their normal physical education lessons. Contrary to many points raised about the choice and variety of activities being a real benefit to Health-Based Physical Education, two students in the focus groups felt that, although there was choice, the design of the curriculum was such that "we did the same activities" every week (male participant in post-unit focus group 1). One indifferent student also indicated that one way in which the unit could have been better would have been to "make the HBPE lessons just ten minutes longer… so we get more time to be active" (male participant in post-honeymoon focus group).

Neil reinforced the high levels of student engagement, proudly reporting

> "we'd had observations from senior management, and I think both of us came out with 'outstandings'. And I think the biggest aspect of that was just the kids'

engagement, the kids' ownership of the lesson, their understanding of what they were doing and, really, their enjoyment" (Neil post-unit interview).

Mike recollected a key indicator of greater motivation linked to changing room behaviour and engagement where he now frequently saw students: "almost running into the changing rooms to be ready" (Mike post-unit interview). In offering a potential explanation for this greater level of student motivation, Neil suggested:

> "I think going back to the idea that it wasn't always about attainment, it was more about progressions, individual progression, I think that allowed certain individuals to really fly in the lesson that in previous activities wouldn't have done" (Neil post-unit interview).

Discussion

The evidence pertaining to the motivated mover goal indicates several positive outcomes – notably linked to the need to 'demonstrate a positive attitude and perceived competence in chosen physical activities through high levels of effort and individual challenge'. Student responses to their preference for Health-Based Physical Education over their 'normal' physical education lessons was apparent for most individuals within the focus groups. However, varied affective responses were evident, and in some cases conflicting opinions were expressed. At one extreme, students indicated that their Health-Based Physical Education unit was the best they had taken part in, whilst others indicated the inspirational effect of lessons on their attitude to physical activity. However, a minority of students indicated in interviews that they enjoyed their Health-Based Physical Education experience less than their normal physical education lessons, with several at Maple Academy citing the fact that the activities were not meaningful to them and that they would never use them in the future.

These responses support the importance of ensuring teachers' philosophies are in line with the conceptual framework's assumptions about learning and teaching, particularly assumption three: 'what is learnt in Health-Based Physical Education must be transferable beyond the lesson into young people's leisure time' (see Chase et al., 2007). This is crucial given that, at Maple Academy, the same lesson plans and activities were taught to boys' and girls' groups and may not have appealed to all students. The importance of reinforcing this assumption and the importance of meaningful participation (Beni et al., 2017; Kretchmar, 2006) will be considered in the next chapter where a revised pedagogical model is presented. A variety of other factors also impacted on students' enjoyment (or otherwise) of Health-Based Physical

Education. These included the teaching and learning environment, the practical activity(ies), the location (inside vs outside) and length of lesson. These issues are considered in the following paragraphs.

The creation of an environment that fostered autonomy, relatedness and competence was one of the single most important factors identified in the high levels of student enjoyment, most specifically at Delaware School. Students frequently rated the following environmental factors as key to their enjoyment: an emphasis on personal progress and not making comparisons against other students; opportunities for choice; the use of cooperative pairs and teams; support from the teacher and peers; and inclusive and differentiated learning activities. This mirrors the literature cited in the conceptual framework's learning and teaching features concerning the creation of a needs-supportive environment (Deci & Ryan, 2000; Haerens et al., 2010, 2013; Van den Berghe et al., 2014).

The Health-Based Physical Education activities were received by students in various ways. Whilst most enjoyed the move to lifetime, exercise and health-focused activities, others preferred traditional activities linked to games, dance and gymnastics, for example. This mirrors the literature suggesting that, in lieu of the fact that we have no scientific evidence to say a particular type of physical activity or sport is best for promoting activity beyond schools (Haerens et al., 2011), teachers should provide a balance of different activities (Cale & Harris, 2009b; Trudeau & Shephard, 2008). Another planning issue for prospective teachers of Health-Based Physical Education will also be how they can select appropriate activities within a unit of work that will garner the interest and enjoyment of *all* students. This will inevitably require autonomy support from teachers before programmes begin in order to select the main activity(ies) based on students' interests, as well as ongoing choices during lesson-specific activities (Haerens et al., 2013; Deci & Ryan, 2000; Ward et al., 2008).

The view that Health-Based Physical Education should include health-focused and lifetime-oriented activities was a key rationale in the conceptual framework presented in chapter 4. However, given students' indifferent opinions on activities, there should be a balance between activities that individuals enjoy both as young people and as adults (Trudeau & Shephard, 2008). This might mean broadening the activities taught within Health-Based Physical Education beyond health-focused and lifetime activities. That said, because curricula are typically dominated by games-based activities (Fairclough

et al., 2002; UNESCO, 2014) and students will therefore experience multiple games during their school career, these should not form a major part of Health-Based Physical Education.

A significant factor associated with many female students' enjoyment (or otherwise) related to the location of the activity and not the activity per se. Students at Maple Academy repeatedly cited their preferences for activities based on their location (i.e. a preference for indoor activities) rather than considering the nature and type of the activity in question. The preference for indoor activities was unanimous amongst girls in the focus groups at Maple Academy. This data confirmed the fact that 'Providing indoor opportunities during the cold and wet months may foster regular physical activity behaviours year round' (Tucker & Gilliland, 2007, p.909). A key consideration in the pedagogical model will therefore be not merely the types of activities offered but their location.

Finally, another issue related to students' preference for other activities, was that it was not always as a result of the activity specifically. Several students at Maple Academy indicated to me the reason they enjoyed their 'normal' physical education lessons more was because the lesson length was longer (Health-Based Physical Education was taught in the students' single physical education lesson each week, whilst a second unit of work was taught through the 'double' lesson). Several students at Delaware School also indicated to me that they could learn more and be more active in their Health-Based Physical Education lessons if the lesson was just 'a little bit longer'. Given that all physical education lessons at Delaware School were the same duration, this certainly shows an insightful perspective from some students. It highlights the point made by Kirk (2010 and others, that the timetable and the spaces we use in physical education set parameters for what and how things might be learnt. Given the goal of the Health-Based Physical Education pedagogical model is to essentially support students' transfer of learning into their leisure-time, one might wonder how relevant to 'leisure' current school practices surrounding time and space are for nurturing optimal transfer for students. Certainly, in adopting a whole-school physical activity focus (such as through the multi-component strategies emphasised in the conceptual framework) alongside units of Health-Based Physical Education, more opportunities may be afforded before, during and after school, as well as greater engagement with the family and community.

Informed Mover

Maple Academy

The data on student learning through Health-Based Physical Education revealed a broad range of knowledge associated with physical activity and health. In my focus groups, students most frequently cited the required amount of physical activity as "an hour a day". Whilst this is largely an accurate indication of the guideline, teachers rarely indicated that one hour was the minimum and that students should build up to several hours per day (Chief Medical officers, 2011). This message (at least 60 minutes) was also missed in the design of posters, which focused on just '60 minutes' of physical activity per day. Student surveys support the finding that students understood the importance of 60 minutes (or more) of physical activity, identifying that 95% of students stated that the physical activity guidelines were "60 minutes" or "at least 60 minutes" of physical activity. This compared with just 42% of students who were aware of the one-hour recommendation in the pre-unit survey. In relation to the intensity of physical activity required by the current guidelines (i.e. MVPA), students could readily report the need for "Anything above a brisk walk" (male participant in post-honeymoon focus group) and were confident in providing examples of moderate and vigorous forms of activity.

Teachers unanimously confirmed their frequent reference to the importance of attaining 60 minutes of physical activity per day. The Head of Physical Education suggested to me that they consistently "banged on about it" (Nick post-unit interview). The message was communicated in lessons, homework tasks and "posters around the school" (Amy post-unit interview). In achieving the physical activity guidelines, teachers consistently believed that there had been clear learning about how the recommendation could be achieved:

> "I think a lot of kids are now informed about okay, we'll walk to school, bike to school. You can do Zumba. You can come and do hula hooping. You can go to the multi-gym. It's not just about being good at sport. So I think that's changed a lot" (Amy post-unit interview).

Following their experience of Health-Based Physical Education, students were also in a strong position to identify how and where to be active. During focus group interviews, students listed a very broad range of activities that they could participate in at school and locally, including running, football, fitness room activities, walking the dog, dance, badminton, walking to school, Zumba™ and biking to town. Students also appeared to understand the difference between structured and unstructured forms of physical

activity:

"It's just easy. Like you can even do it [physical activity] in your house (male participant in post-unit focus group 2).

"It could be anything couldn't it?... even just walking to school rather than getting a lift" (male participant in post-unit focus group 2).

Some students were also aware of the fact that the physical education staffroom had "flyers on the PE board" (female participant in post-honeymoon focus group), although clarification with the other participants suggested that this was not widespread knowledge and was dependent on which teacher you had been taught by.

In explaining the effects of physical activity, it was very apparent that student understanding was mixed. The most common responses to the question 'why should we do physical activity?' were "So you don't get fat" (female participant in post-unit focus group 1), "Can it prevent you from getting sicknesses like diabetes and stuff?" (male participant in post-unit focus group 1) and "You can grow bigger muscles" (male participant in post-unit focus group 1). These responses had a typically fitness and health promotion and disease prevention focus. However, whilst disease prevention and development of fitness were the most common responses by students, a large proportion of students made closer links between physical activity and lifelong health and well-being, including:

"Live a longer and happier life" (female participant in post-unit focus group 2).

"They [the teachers] don't want us to just do this for just losing weight. It is more like to just be healthy" (female participant in post-unit focus group 2).

"To maintain a healthy lifestyle" (male participant in post-honeymoon focus group).

Despite almost complete agreement amongst the teachers at Maple Academy, during an interview, one teacher questioned the detail of their physical activity message: "I don't think in terms of my teaching I got across why we want sixty minutes and what the benefits are… I don't think we went into depth" (Niall post-unit interview). Although this final point is just one teacher's perspective, it would seem to align with the varied student responses in relation to the effects of physical activity and is perhaps (at least partly) a result of differences in the way in which the teachers taught Health-Based Physical Education. In a joint issue related to the physical activity guidelines, little or no

184

emphasis was seen in relation to the second and third recommendations, linked to vigorous activity on three days and to the reduction of sedentary activities (Chief Medical Officers, 2011).

During my focus groups with students they also demonstrated a good understanding of safe practice in physical activity and a sound awareness of how to ensure their exercise practice was effective. In relation to safe practice, students understood the need for a warm-up, correct technique in activities such as running, Boxercise™ and circuits to prevent injury and the importance of safety equipment such as clothing and specifically gloves and pads when boxing. In Boxercise™ students were aware of the need to punch "in a certain way [student shows punch with straight arm and wrist] so you don't hurt your wrist" (female participant in post-unit focus group 1). In all forms of physical activity, students also reinforced that you should always "pace yourself" (female participant in post-unit focus group 1). The importance of "warming up before so you don't hurt your legs [when running], like by stretching the muscles" was also frequently reinforced by students. It was also recognised that, "Like warming up, you have to warm down as well so you don't like strain your muscles" (two female participants in post-unit focus group 2). Whilst some students could identify ways to ensure their exercise practice was effective in order to maximise its benefits and health gains, this was less well understood and reported.

Delaware School

Students at Delaware School similarly demonstrated a broad and mixed understanding in relation to physical activity and health. Their understanding of the physical activity guidelines was generally very good. "You should do one hour of activity a day minimum" was the most common response to my questions in the focus groups. Data from the pre-unit and post-unit surveys also indicated an increase in students' awareness of the main physical activity guideline. Before their unit less than 20% of students were aware of the need to do (at least) 60 minutes, whereas post-unit, 97% of students correctly cited this figure. Furthermore, the range of opportunities identified to meet the recommended guidelines was exhaustive, with a number of examples from all three categories from the Chief Medical officers (2011) of everyday activities (e.g. active travel, taking the stairs, activity breaks, reduced sitting), active recreation/play (e.g. playing with friends, playing outside, reduced TV/computer screen time) and exercise/sport (e.g. football, cricket, gym, swimming, basketball, jogging). It was also recognised that these could be done in "school clubs", "sports centres", the

"playground", "at home", at the "swimming pool" and "travelling in between" (various male participants in post-unit focus group 2).

The potential effects of physical activity reported by students at Delaware School were diverse. Common responses linked to health promotion and disease prevention, as reflected in the following comment: "say you're obese, if you do sport every day for like a year, you'll become skinny again just because of the physical activity" (male participant in post-honeymoon focus group). The improvement of fitness was another common response to the effects of physical activity, including "It keeps you fit and healthy", you "get stronger" and can "get bigger" (various male participants in post-unit focus group 1). In addition to the previous focus on health promotion and fitness, a number of students understood the main benefit of Health-Based Physical Education – "so you'll be more active" (male participant in post-unit focus group 2). A final potential benefit reported by students linked to developing wider life skills, including "learn[ing] never to give up" (male participant in post-unit focus group 1), helping "you feel better about yourself" and "improved self-esteem" (two male participants in post-honeymoon focus group 2).

Finally, students expressed in focus groups a sound understanding of how to participate in physical activity safely, providing examples linked to all activities covered within their unit, plus a range of additional recommendations:

"Ensure you warm up your body and mind"

"When you're running, you should look forward so you know where you are going"

"In boxercise always wear gloves and pads"

"In rowing make sure you have your feet tied up and your back straight"

"Always wear bright clothes when you ride your bike so cars can see you"

"Look at your space"
(various male participants in post-unit focus group 1)

In relation to effective physical activity practice, such as in understanding how to maximise gains from participation in given activities, responses were fewer in number and in less depth. However, two specific points made in relation to effective practice when exercising were to "stretch your hands all the way out and back, and your legs" when rowing, and "When you do press-ups, you put your nose to the floor then go back

up". This indicated some students' (at least fundamental) awareness of working muscles through a full range of motion in order to maximise the benefits.

The teachers at Delaware School mentioned the achievement of the informed mover goal very little during our interviews, despite lesson observations clearly identifying a unit focus on the development of habitual and informed movers. That said, Neil acknowledged the detailed work he believed the teachers had done to enhance this goal:

> "I felt we really did do that in our HBPE, that we actually did speak to them in length at the beginning about their health and the importance of being active and the knock-on effect later in life, and tried to give them that serious element of it; that they've got to take ownership of it" (Neil post-unit interview).

Neil's comment supports the broad range of views indicated by students above. However, a final point of issue related to the informed mover goal was the approach taken at Delaware School to ensure time was devoted to developing the key cognitive elements of the conceptual framework. From the third week, both teachers adopted an approach whereby students would "be [vigorously] active and then there would be a rest period and during that rest period, we would just focus on one aspect of the information side of it" (Neil, post-unit interview). This issue of the teaching approach used to develop informed movers will be discussed in the next sub-section.

Discussion

The data on what and how the students learnt during the unit reveal that it is possible to achieve the core elements of an informed mover as presented in the conceptual framework – notably 'understand how and where to engage in physical activity, the effects of an active lifestyle and how to participate safely and effectively'. This discussion follows up on the physical activity guidelines, how and where to be active, teaching and learning approaches and the effects of physical activity specifically.

Student questionnaires evidenced a tremendous increase in students' understanding of the main physical activity guideline from pre-unit to post-unit. An understanding of the need for at least 60 minutes of moderate to vigorous physical activity per day (Chief Medical Officers, 2011) increased from 42% to 95% of students at Maple Academy. At Delaware School, student responses showed an increase from less than 20% to 97% of students. Given only 10% of 12-15 year olds know the physical activity guidelines in England (Roth & Stamatakis, 2010) and most adults underestimate the minimum

expectation (Townsend et al., 2012; Knox, Musson & Adams, 2015), these findings are a positive indicator of the use of Health-Based Physical Education to develop physical activity specific knowledges. One area for development in both schools is to ensure that the message that 'at least' 60 minutes of MVPA should be performed every day, rather than indicating 60 minutes as the gold standard. Finally, schools may wish to draw on the remaining two physical activity recommendations for young people in ensuring a comprehensive awareness of the national guidelines (Chief Medical Officers, 2011).

Student focus groups evidenced a considerable understanding of how and where to be active in order to meet the aforementioned physical activity guidelines. Students were able to list a wide variety of activities linked to the three main categories of greater everyday activities (such as active travel), more active recreation/play and increased exercise/sport (Chief Medical officers, 2011). Of particular interest was the number of students who suggested multiple forms of everyday activities and active travel, which is a key approach to Health-Based Physical Education in supporting students to find meaningful activities that they will value for life (Siedentop, 1996). How and where to be physically active are also lesser-cited areas of knowledge development in young people through H-RPE (Cale & Harris, 2009b). There were also multiple comments from students, which demonstrated their understanding of what constitutes moderate and vigorous physical activity, as well as confirmation of their understanding that physical activity does not need to be high intensity, make you sweaty or involve only exercise or sport-based activities to be beneficial.

My lesson observations and interactions with teachers indicated that Delaware School approached the informed mover goal by mixing periods of high intensity physical activity with opportunities for class discussion around informed mover concepts. This ensured there was time in lessons to progress students' understanding whilst contributing to students' daily physical activity levels. Whilst this approach might be applauded for balancing physical activity and cognitive learning, the long-term effect of vigorous or intensified lessons could be less than desirable as these approaches rarely consider the educational and motivational context of lessons (Fairclough, 2003; Goudas & Biddle, 1993; Haerens et al., 2010; Lonsdale et al., 2013). A consideration for Delaware School, therefore, is how to balance physical education's role in developing students' 'in-class' and 'out-of-class' activity (Slingerland & Borghouts, 2011) in order to maintain high levels of motivation and subject knowledge

development. Teachers at Maple Academy were less structured in developing cognitive mover concepts and freely admitted placing greater focus on student activity than on developing their physical activity knowledge. The challenge for these teachers may be to utilise other teaching and learning approaches, particularly if Health-Based Physical Education continues to be taught in the single-period (rather than double-period) lesson.

Students in this study emphasised a broad range of effects of participation in physical activity. These could be categorised as: (1) health-promotion and disease prevention (e.g. "so you don't get fat", or "to prevent you from getting sicknesses like diabetes and stuff"), (2) fitness (e.g. "to get stronger"), (3) physical activity and healthy, active lifestyles (e.g. "so you'll be more active"), and (4) life skills (e.g. "learning never to give up", or "to feel better about yourself"). The research on students' health-related knowledge suggests a greater focus on the first two areas, and is often characterised with limiting conceptions and a preoccupation with physical health and appearance (Harris & Leggett, 2015a, 2015b; Harris et al., 2016; Hooper et al., 2017). However, the inclusion of benefits linked with healthy, active lifestyles and wider life skills is promising, given that the affective benefits of physical activity are more likely to increase adolescents' activity levels than emphasising the physical or health benefits (Sirriyeh et al., 2010). It should be noted that given the content of the Health-Based Physical Education lessons was closely monitored, it is assumed that much of the knowledge on the effects of physical activity has been acquired in other units of work, or from other sources beyond physical education and even the school (Harris et al., 2016; Hooper et al., 2017).

Critical Mover

Maple Academy

Students at Maple Academy, as noted above, were able to highlight for me the key barriers to physical activity. Identified barriers to greater physical activity in all focus groups included time, money, health, other interests beyond physical activity (particularly technology), as well as personal factors such as lack of interest, confidence and misconceptions of participation. Common points raised by students concerning physical activity misconceptions, which could therefore be seen as barriers, included:

> "I think some people, like a lot of the girls… are more worried about sweating and getting their hair messy" (female participant in post-unit focus group 2).
>
> "I think they think it's really like a lot of effort" (male participant in post-unit focus group 2).
>
> "I think that some people think that it'll be boring and they won't really enjoy it" (female participant in post-unit focus group 2).

One student made a thoughtful point in relation to reasons why some people may not participate in physical activity: "If you're not very confident, you won't want to go to a new activity" (male participant, post-unit focus group 1). Considering the opposite viewpoint (why some people are active, rather than why they are not), one student intuitively claimed "some people just find it [physical activity] more fun and they're better at it" (female participant in post-unit focus group 1). Another student adopted this critical stance and considered how some people use their health or illness as an excuse not to be (more) active:

> "Some people like use their health problems, like asthma, even though I've got asthma, and I still try. But people are like, "I've got asthma, I might faint" or "I've got diabetes and if I work too hard, I might faint"" (female participant in post-unit focus group 2).

This point was echoed by a teacher who referred to a large number of inactive girls:

> "they'll have an excuse be it what they want to do is too expensive or the parents can't get them to them. But they are on the whole their excuses - there are other things they could do but they're not things that they feel they want to do" (Esther post-unit interview).

Technology was also seen as a major barrier to physical activity: "They're just playing on Xbox and PlayStation" (male participant in post-honeymoon focus group). Students seemed very aware of the negative impact TV and gaming can have on physical activity levels.

Students were aware of a number of strategies that could be applied to help individuals overcome their barriers to physical activity. Drawing on the fun and enjoyment element, a student suggested to me that they could "Find a sport that she likes" (female participant in post-unit focus group 1). Another recommended that they could "Make her see the benefits of it" (female participant in post-unit focus group 1) in a point related to developing their knowledge and understanding of important reasons to be active. A further point, linked to the issue identified above on confidence, was raised

concerning boys and girls exercising together:

> "She wouldn't go [to the school multi-gym] because the amount of boys that went and not enough girls. So I think if there was like a separate girls and boys time then she would go" (female participant in post-unit focus group 2).

Finally, in response to my question 'How would you help someone who said that they don't have enough time or cannot afford to be active?' two students suggested "I might make a club that they could do in their school time" and "Make it free, or just kick a ball round in the garden" (female and male participants in post-honeymoon focus group). These statements show an understanding of some ways in which typical barriers to physical activity might be overcome.

Whilst a minority, it was clear that a number of students had also successfully adopted the role of 'movement promoter'. However, there was variation in their success and acknowledgement of the challenges associated with engaging others in physical activity:

Mark: "How did you find encouraging other people to be active?" Student: "Difficult" (male participant in post-unit focus group 2).

"I try and get my mum and dad on the Wii Fit but they never do" (male participant in post-unit focus group 2).

"I got my mum into netball… Yeah, she'll come out in the street with me and she'll run around and pass the ball" (female participant in post-unit focus group 2).

"I went to the multi-gym and I told my friend about it and he came with me and started going to it" (male participant in post-honeymoon focus group).

Two students, whose responses were greeted with nods across the focus group, acknowledged that whilst they had not managed to promote physical activity to others, they remembered that "Our teacher said get your parents to do an hour of exercise as well" and that they should try to "Involve a friend or family member" (male participants in post-unit focus group 1). This echoes the data reported earlier which indicated that 60% of observed lessons included instances of teachers encouraging students to promote physical activity to others.

Many teachers' beliefs align with student reflections on becoming a critical mover. A comment from one of the teachers highlighted that "I have also seen on two occasions

students setting up their own running clubs after school in order to achieve their minutes. This is special!! The message is getting through!" (Ed mid-unit reflection). A female member of staff also alluded to a group of female students who set up their own walking group at lunchtime. Another group of students lobbied for a lunch-time trampolining club with the physical education department, which was achieved after they attained the required minimum number of students for the club to run. These examples show the beginnings of a number of critical movers, who are ready and willing to work with others to positively affect their physical activity environment. Although in the minority, teachers referred to a number of students who had adopted movement promoter roles with their friends and family:

"I think they were enthused to get other people involved. And parents have come up to me in parents' evening and rugby [matches], 'Oi, why have you got me going out walking the dog?' and stuff like that" (Nick, post-unit interview).

"I know that some of our students have had conversations with their parents, "Mum did you know we should be doing this?" And actually the child showing concern for their parent's health, which is really powerful" (Emma post-unit interview).

However, teachers highlighted several reasons why they felt the movement promoter role had not been more widely adopted by the students: "The critical one [goal] is probably the hardest" (Ed post-unit interview). This may be because students are focused on becoming a habitual mover and "don't give it [the critical mover goal] a lot of thought" (Emma post-honeymoon interview) or because teachers only referred to promoting activity to others "on a couple of occasions" (Ethan post-unit interview).

Delaware School
Students reported a number of common barriers to physical activity, including "Tiredness", "You're not healthy and fit", "You might be disabled", "You don't always have time" as well as several family barriers, including "chores", "curfew and other family commitments (various male participants in post-unit focus group 1). In addition, "Transport" was identified as a further barrier for some who "Might live far away" (male participant in post-honeymoon focus group 1) and "Money" was also stressed in relation to some people's income and the cost of activities. For the majority of students at Delaware School, commitment to "Mosque" was also raised as a potential barrier by students. Mike (post-honeymoon interview) supported this potential obstacle to being active after-school informing me that: "We have the issue with Mosque as a cultural barrier. They have to be at Mosque at four fifteen, some of the children. They have to be washed, cleaned and ready, so it's tough when our clubs finish at four".

Students showed a good understanding of strategies to support others to be active. Although money was identified as a potential barrier, students showed clear awareness that whilst it may be an issue for certain (expensive) activities, it needn't be a barrier to being active overall as they could go to the school's "free clubs" (male participant in post-honeymoon focus group 1), "at home, improvise with the equipment you have… or just try walking, jogging or cycling more" (male participant in post-unit focus group 1). Many other responses provided strategies that would help to overcome a number of the previously identified barriers:

"I would like encourage them to do it and like make the task easier for them" (male participant in post-unit focus group 1).

"I'd make the task more interesting so they'll do it" (male participant in post-unit focus group 1).

"Run to Mosque" (male participant in post-unit focus group 1).

"Instead of playing your computer games… you can be outside on a home day, playing football and cricket instead of just wasting your time with a pad and a console" (male participant in post-unit focus group 1).

"Make your own circuit up" (male participant in post-unit focus group 1).

"Before mosque you can do some activities and get to mosque in an active way… or after mosque you can play a little" (male participant in post-unit focus group 2).

"Have a [physical activity] timetable" (male participant in post-unit focus group 2).

"Make a club for all years to try out at lunchtimes" (male participants in post-honeymoon focus group 1).

"Yes, do different types of ones [clubs], like different types of sports" (male participants in post-honeymoon focus group 1).

"Make the [physical education] lessons just ten minutes longer… so we get more time to be active" (male participant in post-honeymoon focus group 2).

These student comments reveal a clear awareness of both common barriers and strategies that could be used in overcoming them, suggesting that teachers' attention to this goal of Health-Based Physical Education was broadly effective.

Whilst the previous section identified that none of the observed lessons at Delaware School included instances of teachers encouraging students to promote physical activity to others, students and teachers stressed that this had been done on a number

of occasions. A small number of students reported positive steps in promoting physical activity to others, although it was not always clear if these actions were taken for the benefit of the student or their family member. The three examples below emphasise the fact that, despite supporting others to be active, the reasons may not have been purely selfless, and in all cases involved the student in promoting their own activity rather than helping their sibling to choose an activity they would like to do:

> "I take my brother to have a jog with me" (male participant in post-honeymoon focus group 2).
>
> "My brother in year eight, he doesn't like doing sport that much because he thinks he's not good at it. And I made him come along and play football, get involved in all the sports that me and my mates do" (male participant in post-unit focus group 2).
>
> "I taught my little sister to play cricket with me" (male participant in post-unit focus group 1).

Discussion

The data on supporting students to become critical movers reveals that it is possible to achieve the core elements of a critical mover as presented in the conceptual framework – notably 'understand the barriers to physical activity and become activists (movement promoters) to positively affect their physical activity environment'. This discussion follows up on two key results previously raised: barriers to physical activity and strategies to overcome these, and movement promoters.

The barriers to physical activity and the potential strategies to overcome these reported by students were both extensive and diverse, demonstrating a critical knowledge and understanding of the factors that can affect individuals' participation in physical activity. These barriers have been widely reported in the literature (Brunton et al., 2003; CDC, 2017; National Health Service, 2017), and serve as a list of potentially negative influences for students. Whilst not all of the barriers highlighted earlier by students are considered correlates of physical inactivity (Bauman et al., 2012; Biddle et al., 2015; Sallis et al., 2000) (such as time, money, health, and many more), the categories commonly used in identifying them have close alignment. For example, the students discussed barriers and strategies surrounding gender (linked to demographic correlates), confidence, competence and body image (psychological correlates), school/community activity participation and sedentary after school and weekends (behavioural correlates), family, peer and teacher support (social correlates) and

access to facilities (environmental correlates). Whilst it was clear that teachers had supported students to identify many barriers and strategies, a large number were not officially cited by teachers, and therefore indicates that young people may be much more critically aware in this area than many people believe.

Although a large number of students provided examples in their focus groups of barriers to becoming physically active and ways to overcome these, most students did not achieve the schools' challenge of successfully increasing a friend or family member's activity levels. "It's difficult to encourage others" and "I tried but it didn't work" were frequent responses from students. These two comments mirror the challenges inherent in physical activity behaviour change (Kelly & Barker, 2016) and the need for specific skills and strategies in order to successfully change an individual's motivation (Aelterman et al., 2013). One potential approach for teachers could be to help students understand the factors affecting physical activity participation (correlates and determinants) (Bauman et al., 2012; Biddle et al., 2015). Another consideration would be to work with students to develop strategies to promote physical activity for peers and family at each stage of change, such as moving from pre-contemplation to contemplation, or from action to maintenance (DiClemente & Prochaska, 1998). Developing critical movers who are able to successfully promote physical activity to others will be an important focus in future developments of the model and in designing and teaching local curricula.

Section 3. Chapter Conclusion

This chapter has presented the aims, subject matter and teaching and learning approaches used in the Health-Based Physical Education programmes at Maple Academy and Delaware School as well as an evaluation of the impact that these curricula had on students. In section 1, wholly appropriate aims linked to the Health-Based Physical Education goals were established, although an obvious limitation was the lack of detail concerning how the teachers intended for students to achieve the critical mover goal. Subject matter for the programmes included a range of health-related learning focused around physical activity, as well as, to a lesser extent, fitness and sport. The physical activities included several forms of exercise, lifetime activities and games. Teaching and learning approaches were largely in line with the recommendations within the Health-Based Physical Education conceptual framework, including moderate-high fidelity, with particularly effective development of a needs-

supportive environment and appropriate prompting of physical activity beyond the lesson.

Analysis of the data in section 2 revealed that there had been a positive impact on the students in relation to all four Health-Based Physical Education goals, and that students demonstrated a number of the characteristics of the habitual mover, motivated mover, informed mover and critical mover goals, as presented in the conceptual framework in chapter 4.

In relation to the habitual mover goal, data confirmed a statistically significant increase in Maple Academy students' self-reported activity levels from pre-unit to post-unit (and to post-honeymoon for girls). Positive trends (although not statistically significant) on students perceived stage of change were also evident. Whilst the sample of students at Delaware was too small for inferential statistics to be used, the results concerning the mean self-report scores pre-unit, post-unit and post-honeymoon are very closely aligned to those at Maple Academy and are therefore very positive. Student and teacher comments claimed multiple cases of increased physical activity behaviours in students, with key examples associated with all three categories of physical activity: greater everyday activities (such as active travel), more active recreation/play and increased exercise/sport (Chief Medical Officers, 2011).

In relation to the motivated mover goal, teachers and students emphasised to me that the majority of students enjoyed their Health-Based Physical Education unit of work, and in many cases preferred these lessons over their normal physical education lessons. The fact that the unit and activities were 'different', and that they were interested in the type of activities undertaken (i.e. lifetime, exercise, games) were key to student motivation. Furthermore, students also valued the choice inherent within lesson, the support and interaction in lessons as well as the focus on personal progress and effort over comparison with other students. These points, each acknowledged by a number of students, are specific features and intended teacher behaviours of the conceptual framework. For example, the conceptual framework prioritises a needs-supportive environment through greater autonomy, relatedness and competence supportive approaches (Deci & Ryan, 2000; Haerens et al., 2013). Despite the majority of students enjoying their Health-Based Physical Education lessons, a minority indicated a preference for their normal lessons because: they prefer just one activity within a unit; they have higher confidence and competence in other

activities; the relevance of some Health-Based Physical Education activities was not always perceived as relevant; most girls prefer indoor activities; and the lesson length was too short.

The informed mover goal was clearly translated from theory (the conceptual framework) to practice (these lessons) as the breadth and depth of student learning was substantial. Students evidenced a very good awareness of the required '60 minutes' of physical activity per day, although not all referred to the need for "*at least* 60 minutes*". Whilst student knowledge of this first physical activity recommendation was good, there was less awareness of the second and third guidelines (Chief Medical Officers, 2011). Students' awareness of how and where to be active and safe exercise practice appeared to be good. The range of effects of physical activity has established a varied understanding, with student examples ranging from health promotion, to fitness promotion, to the creation of a healthy, active lifestyle and to wider life skills. Helping students learn how to monitor and set goals for their own physical activity participation is a recommendation for further exploration by teachers.

Becoming a critical mover, according to teachers, was the most difficult goal to achieve in students. That said, section 1 evidenced the fact that this goal was also given less emphasis in planning and teaching, which may be a direct reason that students did not achieve the goal comprehensively. The data evidenced students' detailed awareness and understanding of common barriers to physical activity, as well as frequent 'excuses', which they argued could usually be overcome with a little effort. The range of strategies to overcome these barriers was also substantial, showing a critical awareness of these issues. Whilst these strategies tended to focus on, relatively speaking, simplistic barriers and strategies, future emphasis in the pedagogical model may also ask students to consider how to challenge socio-cultural barriers to physical activity, such as gender, race, special educational needs and disabilities, social class, as these consistently remain key areas of inequality. Lastly, whilst students' awareness of barriers and strategies were sound, their success in actually making a positive difference to somebody else's lifestyle was achieved by only a minority. Future teaching and learning through the Health-Based Physical Education pedagogical model may therefore need to consider how to support young people to develop the skills needed to be movement promoters and activists.

These findings are promising and suggest that teachers were successful in translating

the Health-Based Physical Education conceptual framework into practice and that this has real potential and scope for future implementation in schools, along with further development and refinement of the model. The results may prove more successful in future research with teachers and students who have prior experience with the pedagogical model, as learning to teach and learn within new pedagogical models and approaches takes considerable time (Casey, 2010; Casey & MacPhail, 2018; Fullan, 2007). It should be remembered that we (the teachers and I) were only just learning to teach Health-Based Physical Education and many were also very used to alternative approaches to H-RPE, which were different in approach and content. A final outcome of this fieldwork has been the opportunity to take stock of the conceptual framework presented in Chapter 4 and consider the most effective elements of a more comprehensive pedagogical model. The next chapter (Chapter 6) provides a comprehensive overview and rationale for a pedagogical model for Health-Based Physical Education with 'valuing a physically active life' as its major theme.

CHAPTER 6: HEALTH-BASED PHYSICAL EDUCATION RECONSIDERED – A PEDAGOGICAL MODEL FOR VALUING A PHYSICALLY ACTIVE LIFE

This chapter is presented as the culmination of this doctoral research, in that it introduces and details a new pedagogical model for Health-Based Physical Education, as no other pedagogical model forefronts 'valuing a physically active life' as its primary goal. The chapter builds on Chapter 4 which presented a research-informed conceptual framework for Health-Based Physical Education developed in stages 1-3 of this study (see Table 3.2 in Methodology Chapter). The conceptual framework was subsequently used by two schools (in stages 4-7) to design and implement a local Health-Based Physical Education curriculum and evaluate its impact on students (Chapter 5). Stage 8 of this pedagogical model's development is presented in this chapter.

The Health-Based Physical Education pedagogical model framework detailed here is grounded in a considerable theoretical and empirical evidence-base; from published research and data from this study. In addition, my ongoing personal reflections, coupled with teacher reflections, on Health-Based Physical Education have created insightful craft knowledge that may support practitioners (current and future) to use this model in the field. Whilst the pedagogical model is justified comprehensively, it should be noted that this is the first complete overview of Health-Based Physical Education. It should therefore be seen as a 'prototype' (Lee & Kim, 2014; Luguetti et al., 2017; Oliver & Kirk, 2015; Kirk & MacDoanld, 2001) that will require long-term development and is unlikely to ever be the 'finished article' (Casey, 2017, p.60), given the advances in research and practice, particularly in the growing field of physical activity education.

The structure of this chapter broadly follows Metzler's (2011) framework for describing pedagogical models (i.e. foundations, teaching and learning features and implementation needs and modifications). For ease of understanding, sections are ordered using a letter to determine each of the three main sections: Foundations (F) are considered in Section 1; Learning and Teaching Features (L&T) are the focus of Section 2; and Implementation Needs and Modifications (I&M) form Section 3. During the process of detailing the pedagogical model, I justify the inclusion of key elements with the support of published research evidence as well as from reflections on this

study. In addition, I highlight and defend the revisions made to Health-Based Physical Education since the conceptual framework was developed, using data from this study and recently published literature. In detailing the pedagogical model, some parts of this chapter provide an element of repetition from previous chapters i.e. a number of key elements of Health-Based Physical Education have already been discussed and justified in the Literature Review (chapter 2), the Conceptual framework chapter (chapter 4) and the work with teachers and students (chapter 5). However, the recurrence of themes and justifications is also an indication that the conceptual framework was an effective foundation for the pedagogical model. I justify this return to previously identified concepts because I wanted to provide the strongest rationale and comprehensive justification, in one location, to support this new model.

To aid the discussions in this chapter, I have provided a tabulated overview of the Health-Based Physical Education pedagogical framework in Table 6.1. It is important to note at this time that while I have taken the time to revisit the numerous theories and studies that underpin Health-Based Physical Education, it is not for the purpose of ensuring that teachers understand them all comprehensively. Instead, much in the same way that play theory and social independence theory underpin the pedagogical models Sport Education and Cooperative Learning respectively, the theoretical foundations of Health-Based Physical Education are there to guide specific approaches, strategies and behaviours – the key thing is therefore to be able to apply the theory in practice. For example, self-determination theory provides the theoretical underpinning to support the creation of a needs-supportive environment and to consider the teachers' approach to intrinsic and extrinsic motivation. The social-ecological model provides the basis for teachers to create multi-component whole-school approaches to physical activity promotion which will support their work in physical education. Finally, understanding the key correlates of physical activity will enable practitioners to (a) identify specific variables which *cannot* be changed or modified (i.e. sex, age) in order to target particular groups who are at risk of low levels of physical activity and (b) identify correlates that *can* be changed (i.e. confidence, support for physical activity) in order to use these as foci for any physical activity intervention.

Section 1. Foundations

F1. Rationale

This section considers the question, 'why do we need a pedagogical model for Health-

Based Physical Education with 'valuing a physically active life' as its major theme?' In considering this question, I now discuss a rationale for: (a) a greater focus on physical activity as a resource for life, (b) more effective approaches to teaching physical activity and health, and (c) a models-based approach to the teaching of physical education.

(a) Physical Activity is a Resource for Life, Yet the World has Stopped Moving

It is now widely agreed that physical activity is beneficial to individuals for a number of reasons. Although much literature focuses on the physical benefits of physical activity, or the dangers of its absence (i.e. chronic diseases such as cardiovascular disease, respiratory disease, cancer and diabetes), the evidence base highlights a broad range of benefits which also incorporate social, psychological, personal, educational and financial advantages (Bailey et al., 2013; Donnelly et al., 2016; Janssen & LeBlanc, 2010; National Institute for Health and Care Excellence (NICE), 2009, 2015; Stensel et al., 2008) (see Chapter 2, section 2).

It is agreed globally that young people should participate in at least one hour of moderate to vigorous physical activity every day to accrue the benefits identified above (Chief Medical Officers, 2011; Kahlmeier et al., 2015; WHO, 2010). Unfortunately, according to multiple sources, the vast majority (around 80%) of young people around the world do not meet the recommended levels of physical activity and levels typically decline throughout childhood and adolescence (see for example, Currie et al., 2008; Sallis et al., 2016; Scholes, 2016). This has led to a number of calls for greater attention to the issue, for example, on the grounds that:

> Physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). This follows high blood pressure (13%), tobacco use (9%) and high blood glucose (6%). Overweight and obesity are responsible for 5% of global mortality (WHO, 2010, p.10).

> Physical inactivity is the Cinderella of NCD [non-communicable disease] risk factors, defined as "poverty of policy attention and resourcing proportionate to its importance" (Bull & Bauman, 2011, p.14).

Table 6.1: Health-Based Physical Education Pedagogical Framework

Foundations (F)	Learning & Teaching Features (L&T)	Implementation Needs & Modifications (I&M)
F1. Rationale (a) Physical activity is a resource for life, yet the world has stopped moving (b) Current approaches to physical activity and health in schools and physical education (c) Models-based practice as one alternative for physical education and Health-Based Physical Education *F2. Underlying theories (theoretical integration)* (a) Self-determination theory (b) Social-ecological model (c) Correlates of physical activity *F3. Major theme* -'Valuing a physically active life' -'Valuing a physically active life, so that students learn to value and practise physical activity for their health and well-being, joy, social interaction, challenge, competence and personally relevant learning experiences' *F4. Model goals* 1. Habitual mover – Lead an active lifestyle through regular participation in physical activity 2. Motivated mover – Demonstrate a positive attitude and perceived competence in chosen physical activities through high levels of effort and individual challenge 3. Informed mover – Explain how and where to engage in interested physical activities, the effects of an active lifestyle and how to participate safely and effectively to achieve their personal goals 4. Critical movers – Evaluate sociocultural barriers to physical activity involvement and become activists (movement promoters) to positively affect their own and others physical activity environment	*L&TT1. Control* ◄────────────────────► Teacher control - interactive learning & teaching - Student control 1. Content selection: Who determines what is taught in the unit? 2. Managerial control: Who is mostly responsible for classroom management? 3. Task presentation: How do students receive task information? 4. Engagement patterns: How are student engagement patterns (involving space, groups, structure) determined? 5. Instructional interactions: Who initiates the communication during learning tasks? 6. Pacing: Who controls the starting and stopping of practice? 7. Task progression: Who decides when to change the learning tasks? *L&T2. Inclusiveness* Physical activity is an entitlement for all – it can offer far-reaching benefits, which make it a positive resource for improving the quality of life of all participants Health-Based Physical Education should therefore be both inclusive and promote an awareness of inclusion, equity and difference, by adopting the following six principles: 1. Physical activity is for all 2. Physical activity is for life 3. Everyone can benefit from physical activity 4. Everyone has the right to positive physical activity experiences 5. Everyone can be good at physical activity 6. Excellence is maintaining an active way of life	*I&M1. Teacher expertise* Content knowledge: Health-enhancing physical activities, lifetime and exercise. Cognitive and scientific physical activity concepts Pedagogical knowledge: Awareness of the most effective ways for students to learn and how to differentiate effectively Pedagogical content knowledge: 'Effective 'PE-for-health pedagogies' – underlying theories and translation into needs-supportive and multi-level approaches *I&M2. Key teaching skills* Critically reflective of previous and current H-RPE practices Personal skills: compassion, open-mindedness, patience, determination, creativity, enthusiasm, empathy, flexibility, listening, building positive relationships *I&M3. Contextual requirements* 1. Student developmental requirements 2. Teacher's own knowledge of the entire Health-Based Physical Education model framework and specific areas of expertise 3. Lesson content and the subject matter for learning 4. Duration of units of work 5. Facilities, equipment and resources *I&M4. Contextual modifications* 1. Subject matter 2. Content progression and differentiation 3. Timing and time allocation 4. Learning and teaching approaches

F5. Learning domain priorities and interactions

1. Affective
2. Physical   Social   Cognitive

F6. Assumptions about learning and teaching

1. Teachers must prioritise a 'physical activity for life' (rather than a fitness, sport or performance) approach (although exercise and/or fitness may form part of some programmes)
2. Changes in physical activity behaviour require extended periods of learning in multiple learning domains (affective, cognitive, physical and social)
3. What is learnt in Health-Based Physical Education must be meaningful (social, fun/delightful, challenging, develop competence, contain personally relevant learning), drawing from and be transferable into young people's leisure time
4. Learning and teaching approaches must support *all* students' perceptions of autonomy, competence and relatedness to develop their intrinsic motivation for physical activity
5. Health-Based Physical Education should draw on multiple school, family and community strategies (including physical education, activity before and after school, activity during school, school staff involvement, and family and community engagement)

F7. Student developmental requirements

Student readiness for Health-Based Physical Education:
Consider students' levels of (a) verbal and written comprehension, (b) decision making and responsibility, (c) social and emotional maturity, (d) competence and knowledge

Student receptivity to Health-Based Physical Education:
Consider students' preferences for either (a) competitive or collaborative learning, (b) participation or avoidance tactics to learning, and (c) independent or dependent learning

F8. Validation

1. An evidence-informed pedagogical model framework
2. Evaluation of the very first Health-Based Physical Education programmes indicates success in achieving habitual, motivated, informed and critical movers

L&T3. Learning task engagement

Engagement:
Autonomy / Competence / Relatedness Support

Learning tasks:
Habitual/motivated mover - Physical activity buddies, physical activity team challenge; post-lesson physical activity challenge; physical activity diary

Informed/critical mover – Questioning strategies; teacher presentation; movement promoter challenge; student-family engagement; student-community engagement; staff physical activity engagement

L&T4. Critical Features

Think 'PINC':

1. Teacher promotes meaningful physical activity (PA)
2. Teacher supports students to be informed movers
3. Teacher creates a needs-supportive environment
4. Teacher encourages students to become critical movers

L&T5. Assessment

Habitual mover (physical domain)
Motivated mover (affective domain)
Informed mover (cognitive domain)
Critical mover (social/cognitive domains)

Criterion-referenced assessment or ipsative assessment most likely to promote a needs-supportive environment

Physical: Use tools to monitor PA and add educational value through self-report, heart-rate monitoring, pedometer, accelerometer, or direct observation. Usephysical educationand extra-curricular attendance

Affective: Students' emotions, interest and effort through attitudinal scales

Cognitive: questioning, observation, written tasks

Social: observations, activity record, photographic evidence

5. Learning tasks
6. Specific teacher and student roles and responsibilities
7. Assessment for and of learning
8. Engagement patterns with other staff, community and families
9. Links between units of work and physical activity opportunities before, during and after school

The pandemic of physical inactivity should be a public health priority (Kohl et al., 2012, p.294).

The potential benefits of physical activity to health are huge. If a medication existed which had a similar effect, it would be regarded as a 'wonder drug' or 'miracle cure' (Chief Medical Officer, 2010, p.21).

The diverse benefits associated with physical activity, the current prevalence of physical inactivity, and worryingly the decline of activity levels throughout childhood and adolescence, provide strong rationale for greater attention to this issue. If 'The world has stopped moving' (Nike, Inc. 2012) then surely schools and physical education teachers have a role to play in helping young people to value and participate in a physically active life? The next section considers approaches to teaching about physical activity and health in schools and physical education.

(b) Approaches to Teaching Physical Activity and Health in Schools and Physical Education

Schools, and physical education in particular, have been cited as important contexts for young people to learn about and develop healthy active lifestyles (Cale & Harris, 2006, 2009; Corbin, 2002; De Meester et al., 2009; Dobbins et al., 2013; Haerens et al., 2011; Harris & Cale, 2018; Kriemler et al., 2011; McKenzie & Lounsbery, 2009; van Sluijs et al., 2007). A key goal of physical education is to develop a lifelong habit of participation in physical activity (afPE, 2015; Australian Curriculum, Assessment and Reporting Authority (ACARA), 2012; Department for Education, 2013; Society for Health and Physical Educators (SHAPE America), 2013; Trost, 2006; Whitehead, 2010). However, and despite the wealth of support for physical education's role in the promotion of healthy active lifestyles, there is widespread agreement that this core goal has not been achieved (Cale et al., 2016; Haerens et al., 2011; Harris & Leggett, 2015a; Kirk, 2010; McKenzie & Lounsbery, 2009; Trost, 2006). Whilst schools and physical education alone cannot take full responsibility for the lack of physical activity undertaken by both young people and adults, they are an important element within the joint responsibilities of families, medicine, physical activity, health and sporting bodies, to name but a few (Kohl et al., 2012).

A number of reasons for the failure of physical education to achieve what many people view as its *raison d'être* have been advocated. Kirk (2006) argues that the subject's multiple aspirations have left it 'ambivalent' about its role in this regard. It is also accepted that many physical education programmes are dominated by multi-activity

sports-based curricula and that these pose a problem for the achievement of physical activity promotion goals (Green, 2009; Kirk, 2010; Siedentop, 2002). If physical education is dominated by technique-focused pedagogy, then it is perhaps not surprising that the teaching of H-RPE often reflects a 'fitness', 'fitness for sport' or 'fitness for performance' philosophy (Green, 2009; Harris & Leggett, 2015a, 2015b; Puhse et al., 2011). Further, this is frequently with a significant *fitness* testing focus, which it is argued may be a 'misdirected' endeavour in *physical activity* promotion (Cale & Harris, 2009a, 2009b; Cale et al., 2014; Hopple & Graham, 1995; Keating, 2003; Keating et al., 2002; Silverman et al., 2008; Wrench & Garrett, 2008). After all, 'no child needs to be measured to be helped to enjoy being physically active' (Cale & Harris, 2009b, p.143).

Recent attention in this area has been given to so-called effective 'PE-for-health pedagogies' (Armour & Harris, 2013) that aim to place young people (rather than the activity) at the centre of teaching and learning in order to more effectively achieve the goal of nurturing greater physical activity participation. Puhse et al. (2011) have argued for clearer frameworks for teaching health in physical education, whilst Haerens et al. (2011) have proposed a need for teachers to develop new knowledge and skills, based on an understanding of motivation, behaviour change and transfer of learning, in order to help young people to 'value a physically active life'. Whilst there are a number of approaches to teaching health within physical education (see for example, Cale & Harris, 2006; Haerens et al., 2011; Harris & Cale, 2018; McConnell, 2015; McKenzie et al., 2016; Metzler et al., 2013a, 2013b), a focus on helping young people to go further than 'knowing about' and 'participating in' physical activity, and instead 'valuing' its place within their lives is a persuasive one. Furthermore, whilst there are two other published models that focus on developing health and fitness through physical education (Fitness Education by McConnell, 2015) and across the whole school (Health Optimizing Physical Education by Metzler et al., 2013a, 2013b), neither of these prioritise valuing a physically active life as its central theme, and instead focus on fitness, health, diet and physical activity.

(c) Models-Based Practice in Physical Education

As an alternative to the multi-activity curriculum approach highlighted above, Metzler (2011) suggests that pedagogical models are the fourth movement in the development of 'ways to teach' our subject. The first three movements ('the physical education method', 'teaching strategies and styles' and 'teaching skills') are useful for short-term

learning activities and outcomes, as has been promoted in most previous approaches to the teaching of physical education, including health within physical education. However, given that approaches to teaching H-RPE have not been wholly successful to date, the potential for a pedagogical model for Health-Based Physical Education with a focus on physical activity promotion is significant - even 'compelling' for more effective 'PE-for-health pedagogies' (Armour & Harris, 2013, p.212-213). Pedagogical models provide an alternative approach to curriculum design that move away from a one-size-fits-all multi-activity curriculum that aspires to achieve multiple aims with one dominant approach. Rather, they provide a flexible yet evidence-informed framework that can be used to design local curricula to achieve specific outcomes. For a further rationale for a models-based approach, see Chapter 2, section 5.

F2. Underlying Theories

Despite knowledge of the benefits associated with physical activity, most adults and young people are not active enough for health purposes (Currie et al., 2008; Hallal et al., 2012; Scholes, 2016; Sport England, 2017). This suggests that successful interventions (and as a consequence, the design of this pedagogical model) require a framework that is not concerned merely with awareness raising or information provision, but one which strives to influence attitudes, behaviours and environmental factors with the aim of increasing levels of physical activity participation. Given that physical activity behaviour is complex and the limited success of many interventions and physical activity promotion efforts, there have been a number of calls for theoretical integration within approaches to physical activity promotion (Daley & Duda, 2006; Hagger, 2009; Hagger & Chatzisarantis, 2014; Zhang & Solmon, 2013). This theoretical integration may help researchers to understand 'the bigger picture' (Hagger, 2009, p.190) by drawing on the strengths of different theories rather than considering just one framework in isolation. Health-Based Physical Education adopts this argument in justifying the underlying theories that will support teachers with this pedagogical model.

Specifically, self-determination theory, the social ecological model and the research surrounding correlates of physical activity are proposed as the major theories to support Health-Based Physical Education and are positioned to help it work for its intended purpose (Metzler, 2011). It is crucial that teachers understand the 'big ideas' behind Health-Based Physical Education in order that they can implement the model in the way that it was designed (Metzler, 2011). For a detailed review of these theories,

see Chapter 4, section 3.

(a) Self-Determination Theory

Self-determination theory (Deci and Ryan, 2000; Ryan & Deci, 2017) is a complex, empirically based theory of human motivation and personality, particularly concerned with the impact of the social environment on individuals' motivation, development and wellness. Self-determination theory proposes that when individuals want to do something, rather than feeling that they have to do it, they will be more likely to engage and will be more self-determined, intrinsic or autonomous. 'Intrinsically motivated behaviours are those that are freely engaged in out of interest without the necessity of separable consequences' (Deci & Ryan, 2000, p.233). Intrinsic motivation aligns very well with the notion of encouraging young people to freely engage in physical activity and is therefore a central theory for Health-Based Physical Education.

A great deal of research, however, has considered the role of extrinsic motivation as a key motive for *initiating* participation in physical activity and the subsequent importance of intrinsic motivation for physical activity *adherence* (Gallager & Updegraff, 2011; Lim et al., 2013; McAuley et al., 1991; Ryan et al., 1997; Teixeira et al., 2012). Notwithstanding these findings, many self-determination theorists confirm that it is rather risky to offer extrinsic rewards as a key source of motivation as they can encourage participants to focus on the incentive and stop the activity when they are removed (Deci & Ryan, 2000). Crucially, Deci, in an interview with Terry (2013), suggests that if a reward is used to promote a specific behaviour, it should be kept as a non-salient feature of the activity. Evidence shows that it is possible to use more autonomous (rather than controlling) forms of extrinsic motivation (Teixeira et al., 2012) to initiate physical activity, which can be more effective than trying to use intrinsic strategies at this early stage. However, teachers using the Health-Based Physical Education pedagogical model should be aware that if students are not currently leading an active lifestyle, they might initially wish to use extrinsic motivation to initiate participation.

According to self-determination theory, individuals have three shared psychological needs, which are essential for individual growth and well-being i.e. the needs for autonomy, competence and relatedness (Deci & Ryan, 2000; Ryan & Deci, 2017). If teachers are able to provide a 'needs-supportive' environment, it has been shown that they will generate higher levels of intrinsic motivation in their students (Deci & Ryan,

2000; Ntoumanis, 2001; Standage et al., 2005; Ward et al., 2008). This is one of the central tenets of teaching and learning in this model (see section L&T3. Learning Task Engagement for specific approaches linked to these three needs). Ntoumanis (2012) presents a concise description of how teachers may promote these three needs.

> **Autonomy** support encourages initiative-taking, autonomous self-regulation, decision making, provides choice relevant to participants' values and goals, and offers a rationale for task engagement.
> **Competence** support is achieved when teachers offer structure – clear and consistent guidance, optimal challenge and informative feedback that supports perceptions of competence.
> **Relatedness** support occurs when there is positive interpersonal involvement, warmth, support, and interest and knowledge of their participants.

Whilst, self-determination theory is concerned with changing behaviours within individuals using motivational theory, research also considers the importance of affecting the inter-relationships between individuals and their physical, social and policy environments (Stokols, 1996). These inter-relationships are the focus of the second underlying theory for Health-Based Physical Education, drawing on the field of social ecological models.

(b) Social Ecological Model

Popular theoretical frameworks used in multi-level physical activity and health programmes often include 'Ecological' or 'Social Ecological' Models (Richard et al., 2011) that focus on the inter-relationships between individuals and their physical, social and policy environment (Stokols, 1996). In one of the first (and most commonly used) ecological models in health promotion, McLeroy et al. (1988, p.355) proposed five levels of determinants of health behaviour (intrapersonal, interpersonal, organisational, community and public policy), which can be used to understand positive and negative influences on physical activity and health:

(1) Intrapersonal factors: characteristics of the individual including knowledge, attitudes, personality, behaviour, self-concept and skills.

(2) Interpersonal processes: formal and informal social networks and social support systems, which include family, friends, teachers and colleagues.

(3) Organisational factors: institutional culture, characteristics, rules and regulations within settings such as day care, health care, primary and secondary schools, colleges, universities and employment.

(4) Community factors: relationships among face-to-face groups, social networks, between organisations and groups within a defined area, or a population within a

political entity, such as a city, county or constituency.

(5) Public policy: local and national policies, procedures and laws.

Significant support for social ecological models has come from a number of school-based physical activity interventions, which consistently highlight that programmes which incorporate multi-component strategies are the most promising in positively impacting physical activity behaviour (Atkin et al., 2016; Dobbins et al., 2013; Kriemler et al., 2011). For example, Kriemler and colleagues (2011) claim that programmes which combine curricular (i.e. physical education), wider education (i.e. cross-curricular or whole school) and environmental components (i.e. the social, built and natural environments and access to facilities) are almost exclusively more effective than interventions which aim to impact only one area. Furthermore, a more recent review by Biddle et al. (2015, p.297) claims that 'the strongest evidence appears to be for adolescents using multi-component interventions or in the school setting where family components were also included.' This suggests that teachers involved in Health-Based Physical Education might be better served by integrating their physical education programmes more effectively with other components of school life as well as with their students' families.

Many school-based physical activity promotion studies have found that physical education is central to programme success (Cale and Harris, 2006; Dudley et al., 2011; Harris & Cale, 2018; Kriemler et al., 2011; Pardo et al., 2013; Van Acker et al., 2011). However, and in keeping with the social ecological model, physical educators should consider the five levels of determinants presented earlier by McLeroy et al. (1988), which have close alignment with the framework for a Comprehensive School Physical Activity Programme (CSPAP) (Centers for Disease Control and Prevention (CDC), 2013; Hunt & Metzler, 2017). A CSPAP is a school-based multi-component approach to physical activity promotion with five components: (1) quality physical education as the foundation, (2) physical activity before and after school, (3) physical activity during school, (4) staff involvement, and (5) family and community engagement.

The social ecological model and CSPAP framework included in the underlying theories of Health-Based Physical Education are positioned to provide teachers with an understanding of how they might encourage greater physical activity beyond their subject and inform a range of teaching and learning strategies (which are further explored in the next section). However, it should be remembered that in some cases

school-based approaches to physical activity have had only modest effects (Biddle et al., 2012; Metcalf et al., 2012) and therefore the careful targeting of the most important factors affecting physical activity participation in young people is key for physical educators (Atkin et al., 2016). These factors, often termed correlates or determinants of physical activity are the subject of the next sub-section.

(c) Correlates of Physical Activity

In an associated line of research to social ecological models, the study of 'correlates' has been shown to be crucial to the effective targeting of programmes on the specific variables which are most likely to impact individuals' physical activity behaviours (Biddle et al., 2015; Sallis & Owen, 1999). These variables, as with the social ecological model, present multiple levels of influence on physical activity behaviour. An awareness of the correlates of physical activity for young people will enable practitioners to (a) identify specific variables which *cannot* be changed or modified (i.e. sex, age) in order to target particular groups who are at risk of low levels of physical activity and (b) identify correlates that *can* be changed (i.e. confidence, support for physical activity) in order to use these as foci for any physical activity intervention (Biddle et al., 2015).

From a physical educator's perspective, there are a range of factors that could increase the effectiveness of their Health-Based Physical Education programmes. From a demographic perspective, females, older children and adolescents are key groups with which to prioritise physical activity promotion strategies. From a psychological perspective, the promotion of self-efficacy (or situation specific confidence) is a priority, along with the development of young people's perceived competence, behavioural control and body image. Developing in young people a focus on effort, improvement and personal mastery will also support the adoption of a task goal orientation (Bauman et al., 2012; Biddle et al., 2015; Sallis et al., 2000; Van der Horst et al., 2007).

Behavioural correlates suggest teachers can play a vital role in supporting students to be active immediately before or after school, as well as at weekends by increasing the range and quality of school-community partnerships (Bauman et al., 2012; Biddle et al., 2015). From a social perspective, developing parental, family and teacher support (and peer support in adolescents) for physical activity can be achieved by facilitating their encouragement, involvement and support, such as by providing transportation and

mastery-focused encouragement. In addition, seeking greater involvement and encouraging parental physical activity (particularly fathers) may have a positive impact on students' activity levels (Bauman et al., 2012; Biddle et al., 2015). Finally, a number of environmental correlates may be considered by practitioners, particularly creating an effective school physical activity policy, increasing opportunities to be active during the school day (particularly outside), and increasing access to and proximity of a range of activities, facilities and equipment (Bauman et al., 2012; Biddle et al., 2015). Palmer and Bycura (2014) argue that, in order to be successful, programmes that plan to improve leisure-time activity must address these correlates of physical activity in young people. As a result, these are used as a basis for identifying a range of teaching and learning strategies in the next section, which could be used within a Health-Based Physical Education pedagogical model.

This section has so far considered both the rationale for Health-Based Physical Education and the underlying theories that support its framework and features. There is clearly a need for alternative approaches to teaching H-RPE, not least because of the current inactivity pandemic, current approaches which often show misguided attempts to promote physical activity, and the growing evidence base for the impact of pedagogical models in physical education. The remaining Health-Based Physical Education foundations include the major theme, model goals, learning domain priorities and interactions, assumptions about learning and teaching, student developmental requirements and model validation.

F3. Major Theme

The major theme for Health-Based Physical Education (as shown in Table 6.1 above) – 'valuing a physically active life' - places an unequivocal focus on the promotion of physical activity. Valuing is based on the strong evidence base used to provide a unique focus for this pedagogical model (Deci & Ryan, 2000; International Physical Literacy Association, 2017; Siedentop, 1996; Society for Health and Physical Educators (SHAPE America), 2013). Siedentop (1996) has previously cited the importance of valuing, noting that this will be manifest not just in participation habits but in participation that is both literate and critical. Literate suggests a knowledgeable participant in physical activity, whilst critical participation involves individuals understanding and overcoming barriers to movement for themselves and others.

Building on the notion of valuing proposed by Siedentop, and the previously explored

conceptual framework (see Chapter 4), Chen (1998) discovered that the values that young people hold in relation to the subject and its learning goals have a direct impact on the quality and meaningfulness of their experiences. Further, students' perceptions of meaningfulness can vary depending on gender, age and socio-economic status (Chen, 1998). Meaningful experiences are those which hold 'personal significance' for individuals (Kretchmar, 2007, p.382). Beni et al. (2017, p.292) suggest 'Individuals therefore ascribe meaningfulness by making sense of past, present, and future experiences (including interactions with self and others, artifacts, content, and pedagogies)'. Kretchmar (2006) and Beni et al. (2017) suggest five qualities for the creation of meaningful experiences in physical education that can support the values that young people attribute to the subject as well as to physical activity – (1) social interaction, (2) fun / delight, (3) challenge, (4) motor competence, and (5) personally relevant learning. These qualities are of real importance to teachers, given that individuals who sustain physical activity tend to do so for intrinsic reasons, such as personal meaningfulness, satisfaction, challenge and joy, rather than for extrinsic motives such as health, disease prevention or weight loss (Teixeira et al., 2012). As a result, a fuller exploration of the major theme for Health-Based Physical Education suggests:

> 'valuing a physically active life, so that students learn to value and practise physical activity for their health and well-being, joy, social interaction, challenge, competence and personally relevant learning experiences'.

F4. Model Goals

The development of the Health-Based Physical Education conceptual framework led to the formation of five goals for Health-Based Physical Education, focused around habitual, enthusiastic, confident, informed and critical movers. The five goals of the model are presented in Table 6.2. These goals were adopted by teachers during the co-construction of Health-Based Physical Education programmes in stage 6 of the model's development. However, following the conclusion of the Health-Based Physical Education programmes, and during interviews with teachers and students, it was highlighted by some that the goals were too complex. Further, it was agreed that many students do not participate in physical activity for enjoyment, instead citing health, weight-loss, fitness and other goals. This suggestion is supported by the literature which indicates that young people have diverse reasons for their participation, only one of which includes enjoyment or fun. In order to simplify the goals and highlight the importance of intrinsic motivation to 'valuing', goals two and three (enthusiastic and

confident mover) were combined to create a single goal – a motivated mover (see Table 6.2).

A *habitual mover* is the overarching goal of Health-Based Physical Education, because individuals who value physical activity will most readily demonstrate this in their participation habits (Siedentop, 1996). It is expected that students will make progress towards meeting the physical activity guidelines, or if the minimum guideline is met, towards the agreed goals between the student and teacher. These may relate to, for example: (1) increased moderate to vigorous physical activity, up to several hours per day, (2) the number of instances of vigorous activity, or (3) the reduction of sedentary time (Chief Medical Officers, 2011). Alternatively, for those who regularly participate in moderate to vigorous physical activity, goals may refer to wider exercise, health, fitness or sport-based outcomes.

Table 6.2: Development of the Health-Based Physical Education Goals

Health-Based Physical Education Conceptual Framework Goals	Health-Based Physical Education Pedagogical Model Goals
Students who 'Value a physically active life' will be a:	
1. Habitual mover– They choose to lead an active lifestyle and participate in regular physical activity	1. Habitual mover – Lead an active lifestyle through regular participation in physical activity
2. Enthusiastic mover – They demonstrate a positive attitude and engage enthusiastically in regular physical activity	2. Motivated mover – Demonstrate a positive attitude and perceived competence in chosen physical activities through high levels of effort and individual challenge
3. Confident mover – They demonstrate perceived competence in chosen physical activities through effort and progress/improvement	
4. Informed mover – They understand how and where to engage in physical activity, the effects of an active lifestyle and how to participate safely and effectively	3. Informed mover – Explain how and where to engage in interested physical activities, the effects of an active lifestyle and how to participate safely and effectively to achieve their personal goals
5. Critical mover – They understand the barriers to physical activity and become activists (movement promoters) to positively affect their physical activity environment	4. Critical mover – Evaluate socio-cultural barriers to physical activity involvement and become an activist (movement promoters) to positively affect their own and others' physical activity environment

As the underlying theories have shown, for a *motivated mover*, the development of autonomous forms of motivation is crucial for sustained participation. The research indicates that intrinsic motivation is very much the 'gold standard' for Health-Based Physical Education. That said, for some individuals, other forms of motivation such as awareness of the benefits, improvements to body weight/shape, or developing or maintaining friendships could prove to be even more important. Whatever their reason,

those who value physical activity are more likely to be motivated movers. In addition, the literature relating to physical activity adherence frequently points to the importance of perceptions of competence (Bauman et al., 2012; Biddle et al., 2011) and consequently developing movers who can participate in chosen forms of physical activity effectively is considered to be significant.

The importance of educational awareness in behaviour change has been reported in a range of fields (CDC, 2017; Harris, 2000; Harris & Cale, 2018; Michie et al., 2011) so the development of *informed movers* is another key goal of Health-Based Physical Education. This cognitive element of the pedagogical model focuses on how and where to be active, the effects (positive and negative, short and long term) of physical activity, how to participate safely in a range of activities and how to perform movements effectively (such as in an exercise setting) for maximum benefit (CDC, 2017; Harris, 2000; Harris & Cale, 2018; Michie et al., 2011; Reeve et al., 2009).

Given that the informed mover goal was less well achieved within the Health-Based Physical Education programmes in this study, it is essential to mention the importance of emphasising the affective benefits (e.g. enjoyment, friendship development, emotional well-being and mood) of physical activity as many young people seem more engaged by these factors (Bellows-Riecken et al., 2013; Cope et al., 2018; Harris & Cale, 2018; Martins et al., 2015; Sirriyeh et al., 2010). In addition, the benefits associated with physical activity (i.e. physical, emotional, personal, social, academic/intellectual and financial) would seem to align with the need for a wide range of motives to be understood by young people. Finally, an effective (and aptly named) categorisation tool - SLOTH (sleep, leisure, occupation, transportation and home-based activities) - to support young people to understand the ways in which they are active or inactive is also recommended (Cawley, 2004; Pratt et al., 2004) when supporting the development of informed movers.

With input and guidance from a national working group in England, a progressive pathway of student health-related learning outcomes were produced (Harris, 2000) which have since been recently updated (Harris & Cale, 2018). These outcomes include four categories which provide an excellent framework for teachers to develop informed movers: safety issues, exercise effects, health benefits and activity promotion and can be taught through Health-Based Physical Education, in other areas of physical education, or in other school subjects such as science or personal, social, health and

economic (PSHE) education.

Lastly, valuing physical activity is evidenced by young people who can identify socio-cultural barriers to physical activity participation and develop the means to overcome these, for their own and others' benefit. *Critical movers* promote physical activity and become activists to improve opportunities to be active locally, and perhaps even regionally, nationally or internationally (Michie et al., 2011; Siedentop, 1996). A key reflection since the creation of the Health-Based Physical Education conceptual framework is the need for greater socio-cultural awareness in teachers and young people through an appreciation of equality, difference and social justice in physical activity (see Dowling, Fitzgerald & Flintoff, 2012; Enright & O'Sullivan, 2010; Evans & Davies, 2017; Robinson & Randall, 2016; Stidder & Hayes, 2013). In developing critical movers, teachers can support young people to become more proactive in supporting positive physical activity outcomes in commonly marginalised groups (including gender, race, special educational needs and disabilities, overweight/obesity, social class, sexuality and religion). In doing so, teachers may need to support students to develop the skills to advocate and support others to be active and to manage the pressures and wider influences that can discourage physical activity, including peers, family, media and wider culture. In this sense, students will need a broad socio-cultural awareness and relevant leadership skills to develop into outstanding critical movers.

F5. Learning Domain Priorities and Interactions

Given the major theme of the Health-Based Physical Education pedagogical model is 'valuing a physically active life', the affective learning domain is viewed as the most pertinent. As Health-Based Physical Education is concerned with developing positive attitudes to physical activity and the affective domain is central to the effective development of all three nutriments of self-determination theory (autonomy, competence and relatedness), the promotion of meaningful, challenging and enjoyable learning is crucial to this pedagogical model (Beni et al., 2017; International Physical Literacy Association, 2017; Kretchmar, 2006; Siedentop, 1996; Teixeira et al., 2012).

In order to support physical activity behaviour change, young people also need to develop knowledge and understanding, perceived competence and develop social relations through the cognitive, physical and social domains. The importance of understanding a wide range of health-related learning outcomes is thus central to physical activity behaviour change (CDC, 2017; Harris, 2000; Harris & Cale, 2018;

Michie et al., 2011). In addition, participation habits are often reliant on perceptions of confidence and competence (Ryan & Deci, 2017) which are dependent on students' personalised and progressive physical development. The social domain also plays a key role given that personal relationships are crucial in physical activity adherence, such as through peer, family and teacher support (Bauman et al., 2012; van der Horst et al., 2007).

F6. Assumptions about Learning and Teaching

The Health-Based Physical Education pedagogical model outlines five assumptions of learning and teaching to enable young people to value a physically active life. As Metzler (2011) suggests, if a teacher understands and has a belief system in line with the assumptions behind a model, they will be more likely to implement it successfully and achieve the intended learning outcomes. If a teacher does not hold the values associated with these assumptions then an alternative model or approach should be selected. During stages six to eight of the pedagogical model's development (see Chapter 3), reflection on practice and new literature led to several changes to them (see Table 6.3 below). The paragraphs that follow the table summarise the five assumptions of the prototype Health-Based Physical Education articulated in this thesis.

Assumption one: The evidence reported in chapter 5 and the published literature confirm that a mix of physical activity, exercise, fitness, sport and performance foci is common practice in H-RPE, but that this has largely failed to achieve the goal of helping young people to be physically active (Cale & Harris, 2009a, 2009b; Cale et al., 2014; Green, 2009; Harris & Leggett, 2015a, 2015b; Hopple & Graham, 1995; Keating, 2003; Keating et al., 2002; Puhse et al., 2011; Silverman et al., 2008; Wrench & Garrett, 2008). As a result, a new assumption was created and elevated to the first belief in order to make a clear standpoint to teachers about the priority subject matter for Health-Based Physical Education. Whilst it has previously been agreed that personal development and social cultural development are more important than subject matter in this area (Haerens et al., 2011; Jewett & Bain, 1995), this assumption will make a clear distinction about the context for learning.

It has been proposed that H-RPE lesson content and subject matter should reflect child, adolescent and young adulthood participation trends and include a range of lifetime and sports-based activities (Cale & Harris, 2009b; Trudeau & Shephard, 2008).

However, I argue that Health-Based Physical Education should primarily focus on the former given that young people are already likely to experience a significant amount of sports-based activities elsewhere in the physical education curriculum (Department for Education, 2013; Fairclough et al., 2002; UNESCO, 2014). As already highlighted, evidence has also shown that mixing health, fitness and sport goals has not supported greater physical activity participation in young people.

Table 6.3: Development of the Health-Based Physical Education Assumptions about Learning and Teaching

Health-Based Physical Education Conceptual Framework Assumptions	Health-Based Physical Education Pedagogical Model Assumptions
	1. Teachers must prioritise a 'physical activity for life' (rather than a fitness, sport or performance) approach (although exercise and/or fitness may form part of some programmes)
Teaching can result in motivated young people who value and demonstrate positive physical activity behaviours	
Changes in physical activity behaviour require extended periods of learning in multiple learning domains	2. Changes in physical activity behaviour require extended periods of learning in multiple learning domains (affective, cognitive, physical and social)
What is learnt in Health-Based Physical Education must be transferable beyond the lesson into young people's leisure time	3. What is learnt in Health-Based Physical Education must be meaningful (social, fun/delightful, challenging, develop competence, contain personally relevant learning), and draw from and be transferable into young people's leisure time
Teaching using needs-supportive strategies can result in feelings of autonomy, competence and relatedness (intrinsic motivation) in young people	4. Learning and teaching approaches must support *all* students' perceptions of autonomy, competence and relatedness to develop their intrinsic motivation for physical activity
Physical activity interventions are best supported by multiple school, family and community strategies	5. Health-Based Physical Education should draw on multiple school, family and community strategies (including physical education, activity before and after school, activity during school, school staff involvement, and family and community engagement)

Assumption two: As has been justified in the learning domain priorities and interactions above, development in all domains is central to effective learning, with the affective domain proving most important to achievement of the goal of valuing a physically active life. In addition, evidence consistently demonstrates that behaviour change takes time. Contemporary social psychology interventions suggest that it takes around 66 (from 18 to 254) days of repetition to form a new habit (Lally et al., 2010). This is in line with recent inclusion criteria for school-based physical activity

interventions requiring a minimum of 12 weeks (Dobbins et al., 2013) and pedagogical calls for longer units of learning in physical education (Kirk, 2010) to develop deep learning and higher levels of competence. For these reasons, programmes of Health-Based Physical Education should last for at least the duration of one school term (typically 12 weeks). More recently, a systematic review of physical activity intervention follow-up studies (Lai et al., 2014) found that the most successful programmes were likely to last for at least six months (in line with the recommendations of Prochaska et al. 2008) but would be much more likely to maintain a long-term impact if designed over twelve months or more. Therefore, whilst a twelve-week Health-Based Physical Education programme is proposed, a longer period of engagement may well be achieved if links are made to concurrent, previous and subsequent units of work, as well as across subjects and the whole school, for at least one school year.

Assumption three: Whilst the third assumption in the Health-Based Physical Education conceptual framework highlighted the importance of transferring learning into young people's leisure time, current thinking is that lessons should equally 'draw from' their participation interests, as recognised by other authors (e.g. Enright & O'Sullivan, 2010; Oliver & Kirk, 2015). Doing this will enable Health-Based Physical Education curricula to consider what young people find meaningful. This approach will require teachers to draw more frequently on their students' voices, as advocated by O'Sullivan and MacPhail (2010), firstly before Health-Based Physical Education programmes commence in order to shape their content, and secondly, during and following units, in order to assess and support further meaningful transfer beyond the school gates.

Assumption four: A key focus for teachers should be how they can incorporate student autonomy into their Health-Based Physical Education programmes, before, during and after the unit of work. A key finding in this study was that it is not only the activity that should be considered when offering choice, but the location (i.e. indoor or outdoor) as this was shown to affect a large number of female students. Competence will be perceived by young people who believe they are making progress and when assessment is focused on their own efforts or progress and carried out in a private environment wherever possible (Ryan & Deci, 2017). Support for relatedness will occur when the teacher creates a positive and genuine environment for the students to support each other's physical activity journeys and as a baseline for their interaction with students. Given the number and range of differences in students, teachers will

need to consider complex approaches to meeting these three needs.

Assumption five: Physical activity interventions are best supported by multiple school, family and community strategies. At different ages, parents, family, teachers and peers take a significant role in influencing young people's decision making, providing a potentially influential support mechanism (Bauman et al., 2012; Sallis et al., 2000; Welk, 1999). Health-Based Physical Education recognises these significant others in order to enhance participation and remove potential barriers to physical activity. In doing so, teachers will need to consider the impact of the wider school, family and community. A whole of school and community approach is therefore recognised as a way of supporting and reinforcing teaching and learning within physical education. This may include the involvement of other school staff, physical activity before/after school, physical activity during school, and engagement with the community and family (Allar et al., 2017; Dobbins et al., 2013; Harris & Cale, 2018; Hunt & Metzler, 2017; Kriemler et al., 2011; Langley & Kulinna, 2018; McMullen et al., 2015; Russ et al., 2015). Links to each of these potentially influential others should be made before, during and after specific programmes of Health-Based Physical Education are taught within physical education.

Given that whole school engagement, particularly links with the family, was not a central feature of the two Health-Based Physical Education programmes reported in chapter 5, and the recent growth in research pointing to successful outcomes following positive parental support, this element has the potential to have a very powerful influence on young people (Allar et al., 2017; Bauman et al., 2012; Biddle et al., 2015; Dobbins et al., 2013; Greca et al., 2016; Kaseva et al., 2017; Kriemler et al., 2011). Designing Health-Based Physical Education programmes will therefore require teachers to consider how they will liaise, educate, and seek support and feedback from parents. Given the importance of sustained periods of time to effect behaviour change, physical education alone cannot ensure physically active lifestyles – drawing on others who can support 'out-of-class' movement, such as the students' families, is therefore a crucial assumption of this pedagogical model.

F7. Student Developmental Requirements

Students play an important role in the 'selection, implementation and success' (Metzler, 2011) of a pedagogical model. Teachers using the Health-Based Physical Education pedagogical model should therefore consider both *student readiness for learning* and

student receptivity to the model (Metzler, 2011). In considering student readiness, teachers should ensure that lesson subject matter is matched appropriately to students' levels of (a) written and verbal comprehension, (b) decision making and responsibility, (c) social/emotional maturity, and (d) prerequisite knowledge and competence. As was evidenced in the findings of students' preferences for either Health-Based Physical Education or other areas of the curriculum (see chapter 5), student receptivity to the model could be based on their preference for either (a) competitive or collaborative learning, (b) participation or avoidance tactics to learning, and (c) independent or dependent learning (Metzler, 2011). Future work will need to more fully consider the student characteristics that teachers will need to consider before selecting and implementing this pedagogical model, although these perspectives provide a good starting point for considering students' readiness and potential receptiveness to this pedagogical model.

F8. Validation

Validation for Health-Based Physical Education has, so far, been predominantly based on the research that has guided the conceptual framework (chapter 4) and pedagogical model (this chapter) frameworks. From the outset of the creation of the pedagogical model it was the intention to be 'grounded in a robustly designed and systematic program of research' (Haerens et al., 2011, p.336). The model presented here is the outcome of much robust research and design and also presents an evaluation of the very first planned and taught school programmes of Health-Based Physical Education via this pedagogical model. The data presented and appraised in chapter 5 indicates a positive impact on students in relation to the goals of Health-Based Physical Education, supporting the notion of habitual, motivated, informed and critical movers. However, the journey for true validation of the model will start following the submission of this thesis, where it is expected that work will commence to further refine the model, trial it with teachers and students in different contexts, and evaluate its effectiveness is helping young people to value a physically active life. Future proposals for a step-wise research agenda for teaching H-RPE include further enhancing quality and rigor by ensuring research is practice-referenced, programmatic and interdisciplinary (Kirk & Haerens, 2014). These issues will be revisited in chapter 7.

<u>Section 2. Learning and Teaching Features</u>

The 'Learning and Teaching Features' of Health-Based Physical Education identify how teacher and student interactions should occur, and in a number of ways, show

how concepts from the 'Foundations' can be manifest in practice. This section considers the following elements of learning and teaching: control, inclusiveness, learning task engagement, critical features and assessment.

L&T1. Control

Metzler (2011) suggests that the pattern of interactions between teacher and students can be located on a continuum between teacher control and student control, with forms of interactive teaching and learning in the centre. The research surrounding motivation and correlates of physical activity suggests teachers should provide opportunities for multiple interactive and student-led activities in order to develop perceptions of autonomy and relatedness (Deci & Ryan, 2000) and target key correlates in the psychological, behaviour and social categories (Bauman et al., 2012; Biddle et al., 2011). To feel autonomous, choice, relevance and ownership must be perceived by students, whilst feeling that the teacher is supportive, interested in them and approachable are key to perceptions of relatedness (Deci & Ryan, 2000). The pattern of control before, during, and between lessons therefore needs to be considered by any teacher using this pedagogical model.

A crucial point identified in the results presented in chapter 5 was that it appeared that some students, as identified in F7, were either not 'ready' for, or were 'unreceptive' to, Health-Based Physical Education. Student developmental requirements were not ready or had other preferences for learning than those used within their Health-Based Physical Education programmes. This is supported by research that suggests that both students and teachers take time to learn and teach in student-centred ways (Casey & MacPhail, 2018; Goodyear & Dudley, 2015; Hastie et al., 2011; McMahon & MacPhail, 2007; Rovegno, 1998). Therefore, teachers will need to consider how control of learning and teaching might change with specific groups of students.

Metzler (2011, p.33) suggests that control within a pedagogical model will be determined by seven key operations:

1. Content selection: Who determines what is taught in the unit?
2. Managerial control: Who is mostly responsible for classroom management?
3. Task presentation: How do students receive task information?
4. Engagement patterns: How are student engagement patterns (involving space, groups, structure) determined?
5. Instructional interactions: Who initiates the communication during learning tasks?

6. Pacing: Who controls the starting and stopping of practice?

7. Task progression: Who decides when to change the learning tasks?

As teachers go about planning for the use of the Health-Based Physical Education pedagogical model, they will need to consider how to create a needs-supportive environment in their lessons. In doing so, they may need to consider if each of the seven principles above will be controlled entirely by the teacher, by the students or through a balance of interactions. Whilst student control and interactive teaching would seem most promising for developing autonomously motivated young people in physical education, teachers will need to apply different approaches for each of the classes they teach (based on, for example, experience, age, maturity and competence). It may be that teachers allow students to choose the activity to be learnt during a unit (i.e. resistance exercise) but that if this is their first experience of this activity, that the teacher will take greater control of classroom management and task presentation. This approach calls for a 'Teacher as Activator' role more than always being 'Teacher as Facilitator' (Goodyear and Dudley, 2015) as the role in activating learning may involve both teacher directed and student directed opportunities.

L&T2. Inclusiveness

Inclusion describes the process by which a school attempts to respond to all students as individuals, carefully considering, for example, its curricula organisation and provision (Sebba, 1996). Given the literature pertaining to the correlates of physical activity and current trends in participation for specific populations (e.g. gender, age, ethnicity, religion, disability), it is crucial that teachers are both aware and able to portray inclusiveness. 'Equality of opportunity and inclusiveness should focus on celebrating difference whilst creating systems in which students are treated equally, but differently' (Vickerman, 2010, p.169). Teachers thus need to understand the barriers that specific students face and support them to overcome these. The specific learning outcomes for a Health-Based Physical Education unit of work and the activity(ies) used as a vehicle for learning, will also be dependent on a teacher's reflection on the needs and interests of the group.

In line with the concept of inclusion in education and physical education, Cale and Harris (2018, p.78) cite six inclusive principles relating to healthy active lifestyles (see Figure 6.1, points 1-6). These principles form a key part of Health-Based Physical Education's inclusive philosophy, building on the suggestion that physical activity can

be inclusive, in that it may also enhance individuals' awareness of inclusion, equity and difference.

Health-Based Physical Education
'Valuing a Physically Active Life'

Physical activity is an entitlement for all – it can offer far-reaching benefits, which make it a positive resource for improving the quality of life of all participants.

Health-Based Physical Education should therefore be both inclusive and promote an awareness of inclusion, equity and difference, by adopting the following six principles:

      1). Physical activity is for all
      2). Physical activity is for life
      3). Everyone can benefit from physical activity
      4). Everyone has the right to positive physical activity experiences
      5). Everyone can be good at physical activity
      6). Excellence is maintaining an active way of life

Figure 6.1: A Health-Based Physical Education Inclusive Philosophy

L&T3. Learning Task Engagement

Once a teacher has decided to use Health-Based Physical Education, they must consider how they will teach it to most effectively meet the pedagogical model's goals. 'He or she can then select learning activities that will provide students with the kind of engagement needed to achieve those outcomes' (Gurvitch & Metzler, 2013, p.37). In this respect, it is suggested that many teachers will need to develop new teaching skills based on an understanding of motivation, behaviour change and transfer of learning (Haerens et al., 2011). Whether or not these are 'new' to teachers, it is central to the achievement of the pedagogical model's goals that they develop approaches that support students' achievement of the three psychological needs for autonomy, competence and relatedness.

Students' active engagement in their learning, both during and beyond the lesson is considered central to success in Health-Based Physical Education. This is most likely to include individual, paired, small group and whole-class strategies to effectively support the major theme and goals of Health-Based Physical Education. Teachers are encouraged to apply a range of needs-supportive strategies in order to promote autonomously motivated and engaged students. Figure 6.2 (adapted from Haerens et al., 2013) builds on the proposals for needs-supportive teaching presented in chapter 4, drawing on a number of empirically supported recommendations and previously

developed coding systems (e.g. Edmunds et al., 2008; Reeve et al., 2004; Reeve & Jang, 2006; Tessier et al., 2008; Vansteenkiste et al., 2005). It presents a comprehensive framework for creating a needs-supportive learning climate that has undergone initial analysis to confirm the relationships of specific teaching behaviours.

Figure 6.2 shows a range of teacher behaviours that have been shown to create perceptions of relatedness support, competence support and autonomy support for students in physical education. Creating a relatedness-supporting environment in which young people feel a sense of belonging can be achieved through teacher empathy, enthusiasm, support and by paying attention to (or asking about) students' needs and interests. A teacher can create perceptions of competence-support before, near the start of, and during lessons. Before or in the early part of lessons, teachers should give an overview of the lesson(s), including a rationale, give clear instructions and guidance, provide variation between or within activities and aim to model student learning through effective demonstrations. During lessons, teachers can develop perceptions of competence in a number of ways, including providing positive and helpful feedback, offering help and guidance, using students as positive role models and matching activities to students' needs. Support for autonomy can be achieved if teachers offer students choice, apply differentiation strategies, or provide opportunities for independence and problem solving. These will furthermore be most effectively accomplished by attending to students' needs and interests.

The development of learning tasks for Health-Based Physical Education will undoubtedly increase over time, as the pedagogical model is trialled and evaluated in different school contexts. However, successful learning tasks implemented in these first programmes of Health-Based Physical Education designed and taught in schools have shown to be highly effective in supporting achievement of the model's goals and critical features. Habitual and motivated movers have been supported with grouping strategies that have drawn on *'physical activity buddies'* or a *'physical activity team challenge'* (such as 'steps to Tokyo' or links to national and international activity, health or sport events). Post-lesson *'physical activity challenges'* have also proven to be effective in prompting students to be active beyond lessons, particularly if linked with teacher recognition, physical activity diary completion or team points, in line with recent evidence by Hastie et al. (2012). *'Physical activity diaries'*, where used effectively, have also been shown to enhance students' activity levels and intrinsic motivation. Informed and critical movers have been supported with a variety of effective *'questioning*

strategies', *'teacher presentation'* of a variety of physical activity information, and *'movement promoter challenges'*. In line with the recommendations of Bauman et al. (2012) and Biddle et al. (2011), these might be facilitated in the future with tasks linked to *'student-family and student-community interaction'* and activities that allow students to identify *'staff physical activity engagement'*.

	Relatedness support	Competence Support		Autonomy support
		Before/early	During	
… is enthusiastic and eager	✔			
… takes the perspective of students into account, is empathic	✔			
… puts effort and energy into the lesson	✔			
… is physically nearby the students	✔			
… pays attention to what the students are saying	✔			✔
… provides variation between or within exercises		✔		
… gives clear (verbal) instructions		✔		
… demonstrates the tasks himself, is a 'model' for the students		✔		
… gives an overview of the content and structure of the lesson		✔		
… offers the students a rationale for tasks and exercises		✔	✔	
… uses students as positive role models			✔	
… offers help during exercises			✔	
… offers students (apart from instruction) new guidelines, tips and advice during the exercises			✔	
… addresses students by their first name when the opportunity occurs			✔	
… provides positive feedback			✔	
… monitors if the students consequently live up to the (verbal) instructions			✔	
… asks the students questions about their interests, problems, values or wishes	✔		✔	✔
… offers choice to all students				✔
… gives students the opportunity to practice independently and to solve problems on their own				✔
… applies differentiation	✔			✔

Figure 6.2: Needs-Supportive Teaching and Learning Behaviours (Adapted from Haerens et al., 2013)
Note. Smaller ticks indicate a lesser (albeit positive) relationships.

L&T4. Critical Features

The critical features presented in chapter 4 have been revised and reduced in number following interactions with teachers and students. They provide teachers with 'patterns of teacher and student operations that should happen while they use that model' (Metzler, 2011, p.37). Critical features offer a reminder of 'how to teach' and 'how students will go about learning' within that model. They are an essential element of any pedagogical model in order to establish if it has been implemented as intended by the designers (Hastie and Casey, 2014). This is particularly important given that some teachers deliver 'watered down' versions (Curtner-Smith et al., 2008) of pedagogical models yet expect to achieve many or all of the proposed outcomes.

The critical features (Figure 6.3) indicate key teacher and student behaviours that should be evidenced within a Health-Based Physical Education programme. Whilst the frequency of their presence may provide beneficial outcomes linked to the four goals of Health-Based Physical Education programmes (habitual, motivated, informed and critical movers), it is not expected that all four features will be observed in every lesson. That said, by reducing the similar behaviours in the previously presented critical features (chapter 4) and removing some of the less effective actions, they now provide a more realistic framework for teachers. This is in line with recent studies that found a list of both 'teacher benchmarks' and 'student benchmarks' to be too unwieldy (Goodyear, 2013; Gurvitch et al., 2008), with these researchers adopting five and four general critical features respectively. Launder (2001) has also suggested that some pedagogical models are so complex that only the equivalent of 'test pilots' can drive them. In this sense, a key aspiration for this Health-Based Physical Education model is to ensure it is not so unnecessarily complex to preclude physical education teachers from implementing it effectively. Reflections on the Health-Based Physical Education programmes taught in schools also indicate an over-emphasis on the critical features over the model's goals. Thus, a reduction in number may support teachers to implement these more effectively.

Figure 6.3 identifies the four Health-Based Physical Education Critical Features, which can be easily remembered using the acronym *Think 'PINC'!* First, teachers should promote meaningful physical activity both within and beyond the lesson. Second, teachers should support students to be informed movers. Third, teacher should create

a <u>n</u>eeds-supportive learning environment. Fourth, teachers should encourage students to become <u>c</u>ritical movers. Each critical feature could be achieved within a lesson or unit of work in a number of ways, and to support teachers, several examples are provided. The examples are not intended to be exhaustive or constraining for teachers but provide a useful starting point.

Health-Based Physical Education Critical Features
(Think 'PINC'!)

1. Teacher <u>p</u>romotes meaningful physical activity (PA)
❑ *Demonstrates a passion and energy for PA*
❑ *Encourages students to set and achieve personalised PA targets*
❑ *Maximise opportunities for meaningful MVPA*
❑ *Sets 'activity challenges' beyond the lesson*
❑ *Supports students to set and monitor active lifestyle goals*
❑ *Communicates with parents/carers and community bodies*

2. Teacher supports students to be <u>i</u>nformed movers
❑ *Refers to current national PA recommendations for age*
❑ *Refers to current national PA levels*
❑ *Highlights how and where to engage in PA*
❑ *Highlights the effects of PA (benefits and risks)*
❑ *Promotes safe and effective practice*

3. Teacher creates a <u>n</u>eeds-supportive environment
❑ *Provides choices in response to needs and interests of students*
❑ *Encourages students to sensitively support peers*
❑ *Demonstrates empathy towards all students*
❑ *Provides personalised feedback on student progress and/or effort*
❑ *Facilitates peer-to-peer feedback on effort and/or improvement*

4. Teacher encourages students to become <u>c</u>ritical movers
❑ *Sets 'movement promoter challenges'*
❑ *Students identify barriers to participation*
❑ *Students identify strategies to overcome barriers*
❑ *Students support peers/family to participate in PA beyond the lesson*

Figure 6.3: Health-Based Physical Education Critical Features

As the language of the critical features indicates, there is close integration between these and the Health-Based Physical Education model goals. Critical feature one (promoting meaningful physical activity during and beyond the lesson) is central to this pedagogical model, particularly given weak achievement of these aims is common in physical education practice and that physical activity signposting or prompting occurs in as few as two percent of lessons (Hepples & Stratton, 2007; McKenzie et al., 1997, 2006; McKenzie & Kahn, 2008; Stratton et al., 2009). An excellent summary of strategies to promote physical activity within and beyond lessons has been synthesised

by Slingerland (2014, p.66). However, alongside critical feature one, features two, three and four are crucial to effective motivation, knowledge and understanding and meaningful experiences in Health-Based Physical Education. These critical features should also not be seen as hierarchical.

L&T5. Assessment

Assessment of student progress in learning to 'value a physically active life' can be achieved by evaluating progress against the four movers – habitual mover (physical domain), motivated mover (affective domain), informed mover (cognitive domain) and critical mover (social/cognitive domains). Assessment of these goals should furthermore be conducted formatively (assessment *for* learning) in order to promote continued progress and summatively (assessment *of* learning) in order to establish actual attainment at the end of a lesson or unit of work (Newton & Bowler, 2015). This could be done using predetermined criteria (criterion-referenced assessment) for each goal of Health-Based Physical Education, and/or using comparisons against students' previous behaviour/performance (ipsative assessment). A need-supportive environment will not be achieved if the focus of assessment is on comparison between students (norm-referenced assessment). Assessments may be individual, paired or group-based and they can be completed physically, verbally or in written-form, and completed within or beyond lessons.

From a physical or behavioural learning domain perspective, physical activity participation can be monitored using self-report, heart rate monitoring, pedometers/accelerometers or via direct observation (Trost, 2007). Each of these methods allows for an assessment of physical activity levels, whilst also potentially supporting students' learning about their healthy active lifestyle (Harris & Cale, 2018). Students' attendance and engagement in physical education lessons or at extra-curricular clubs can also indicate changes in physical activity behaviours and should therefore be monitored by school staff. Providing evidence for effectively monitoring students' physical activity levels and promoting self-determined motivation, a recent novel study by Fullmer et al. (2018) claims that the more students recorded their activity levels, the more intrinsically motivated they were, and the less motivated they were by guilt or obligation. Fullmer et al. (2018) also suggest that the use of physical activity diaries may be even more effective if presented in a needs-supportive environment such as by supporting group-based completion, which may promote

student perceptions of relatedness. In addition, given that many young people prefer electronically-based monitoring (Hutchesson et al., 2015), students might be offered the choice of method, supporting their need for autonomy. Whilst physical activity diaries, or journaling, may prove effective in engaging students affectively, teachers should remember that their reliability in accurately establishing young people's activity levels is questionable (Trost, 2007). However, pedagogically, increasing students' understanding, awareness and engagement in monitoring their activity levels is arguably more important than gauging highly accurate records of their physical activity, especially when considering the major theme of Health-Based Physical Education is 'valuing a physically active life'. Furthermore, teachers should question the uncritical use of wearable technology to track activity and health indicators (and encourage their students to do likewise) as this has recently been called into question with young people (Goodyear et al., 2017; Kerner & Goodyear, 2017).

From an affective domain perspective, it will be crucial for teachers to determine the success of their teaching on students' attitude, engagement and motivation. The attainment of a positive learning environment can be assessed by observing students' emotions, interest or effort within lessons, or in their participation in break/lunchtime or extra-curricular activities. Teachers may also use attitudinal scales to assess the impact of lessons on motivation, such as through the use of an 'exit card' or 'exit task'. The cognitive domain can be assessed through questioning students in class, observing them in action so that they can show their level of understanding of safe or effective practice, or through written tasks completed within or beyond the lesson (Harris & Cale, 2018). Finally, the social domain demands a number of inter-personal, leadership and physical activity advocacy skills that are crucial for becoming a critical mover in Health-Based Physical Education. These may be evidenced through observations of students working together, supporting others to make progress or to set goals, or through evidence of their role in engaging others to be more active, such as via signed activity records or a family 'healthy selfie' photograph.

Section 3. Implementation Needs and Modifications

Before a teacher can implement the Health-Based Physical Education pedagogical model, they will need to consider the 'needs' of their students and the model. They will also need to consider the other contextual requirements and modifications that may be required based upon their knowledge of the local setting. Crucially, and as highlighted

by Curtner-Smith et al. (2008) and Metzler (2011), modifications should be systematically planned in order that teachers do not merely 'water down' important elements of the pedagogical model. Teachers should be aware that several foundation elements of the model should not be modified, as this may cause it to become something different from what it was originally designed and is likely to impact on the achievement of the goals (Metzler, 2011). The elements that should not be modified are the underlying theories, assumptions about learning and teaching and learning domain priorities and interactions. This section considers the required teacher expertise, key teaching skills, contextual requirements and contextual modifications in order to support practitioners to effectively implement Health-Based Physical Education.

I&M1. Teacher Expertise

A teacher who is effectively using the Health-Based Physical Education pedagogical model will require expertise in 'content knowledge' (Shulman, 1987) related to teaching health-enhancing physical activities, including knowledge relevant to a range of lifetime and exercise activities. Content knowledge also includes all the cognitive and scientific aspects surrounding physical activity and health that are relevant to the successful pursuit of a physically active lifestyle. This includes, for example, knowledge of the physical activity guidelines, current levels of physical activity, benefits and issues associated with physical activity, how and where to be active locally, common barriers and strategies to overcome these, as well as of safe and effective exercise practice. An understanding of the Health-Based Physical Education underlying theories is also beneficial to better inform the teaching and learning approaches that the teachers will use. Given that teachers have generally had little continuing professional development to support the teaching of H-RPE (Castelli & Williams, 2007; Alfrey et al., 2012), developing their content knowledge may be a priority.

In addition to content knowledge, teachers must demonstrate very good 'pedagogical knowledge', linked to the most effective ways that students learn, make progress and know how to differentiate learning effectively (Shulman, 1987). However, of central importance to Health-Based Physical Education, is that teachers will need highly effective 'pedagogical content knowledge', identified as 'that special amalgam of content and pedagogy that is uniquely the province of teachers' (Shulman, 1987, p.8). This is aligned closely with the concept of 'PE-for-health pedagogies' (Armour & Harris,

2013) – a rather specific set of approaches that can have a significant impact on physical activity behaviours. However, given that physical educators are rarely prepared through initial or continuing teacher education programmes to consider physical activity behaviour change approaches, or how to promote physical activity within and beyond lessons (McKenzie 2007), this may be a stumbling block for the effective delivery of Health-Based Physical Education. In order to demonstrate effective pedagogical content knowledge for Health-Based Physical Education, teachers will need to be familiar with the underlying theories (self-determination theory, social ecological model, correlates of physical activity) and how these can support personalised, needs-supportive, multi-level approaches to physical activity promotion.

I&M2. Key Teaching Skills

In order to teach Health-Based Physical Education effectively and support students to value a physically active life, teachers must, in addition to applying the pedagogical approaches highlighted earlier, be open to alternative approaches, be critically reflective of previous and current H-RPE practices, and perhaps most importantly, be ready to overcome the biggest barrier to change – teachers themselves. It is clear that effective 'PE-for-health pedagogies (Armour & Harris, 2013) are not a quick fix and will require complex approaches that will take time to develop and embed. The key skills required by teachers to achieve these are likely to be linked to positive personality traits, such as compassion, open-mindedness, patience, determination and creativity, or to other personal skills, such as enthusiasm, empathy, flexibility, listening to st'dents' needs and interests and the ability to build positive relationships with others.

I&M3. Contextual Requirements

No pedagogical model will work in all contexts (Metzler, 2011). Teachers should therefore consider a range of contextual needs that the Health-Based Physical Education pedagogical model may require. These include student characteristics, teacher knowledge and expertise, lesson content, length of units of work, equipment, resources and facilities (Metzler, 2011). Teachers should therefore review and reflect on the student developmental requirements (readiness and receptiveness) (F6), and their own knowledge and expertise of the entire Health-Based Physical Education model framework and specific areas of expertise (I&M1). In addition, they should consider lesson content and the subject matter for learning (F4 assumption 1, I&M1), the duration of units of work (F4 assumption 2) and appropriate facilities, equipment

and resources to ensure the model's major theme (F2), goals (F3) and critical features (L&T4) can be achieved.

I&M4. Contextual Modifications

Notwithstanding their comprehensive framework, pedagogical models are also flexible, and provide space for 'local adaptation' (Kirk, 2013), or 'manoeuvre' (Kirk et al., 2018) by 'balancing the challenge of external prescription from outside the school with teacher and pupil agency' (Kirk et al., 2018, p.219). There is therefore significant flexibility for teachers, who have the role of planning, with the support of students, a considerable number of unit elements. These include: (1) subject matter, (2) content progression and differentiation, (3) timing and time allocation, (4) learning and teaching approaches, (5) learning tasks, (6) specific teacher and student roles and responsibilities, (7) assessment for and of learning, (8) engagement patterns with other staff, community and families, and (9) links between units of work, within other subjects and physical activity opportunities before, during and after school.

Section 4. Chapter Conclusion

This Health-Based Physical Education pedagogical model draws on three major underlying theories: self-determination theory, the social ecological model and correlates of physical activity, to determine suitable learning and teaching approaches that have been shown to impact positively on young people's motivation and physical activity behaviours. A major theme 'valuing a physically active life' is proposed, along with four model goals linked to students becoming habitual, motivated, informed and critical movers. If teachers are to effectively use the Health-Based Physical Education model and achieve its goals, their philosophy should align broadly with the model's assumptions of learning and teaching. These assumptions will also support teachers to implement four critical features in lessons throughout the unit which are believed to possess the ingredients to support the achievement of the goals. There are several requirements and 'needs' for the model, yet also opportunities for teachers and students to take ownership and knowledge of the local context into account to bring a greater richness to their experiences of Health-Based Physical Education.

This chapter has presented a detailed overview of the Health-Based Physical Education pedagogical model framework which is grounded in a considerable theoretical and empirical evidence-base. In addition, ongoing personal and teacher

reflections on Health-Based Physical Education have created insightful craft knowledge that may support future practitioners in this field. It is argued that this Health-Based Physical Education model could provide one framework which demonstrates 'effective PE-for-health pedagogies' (Armour & Harris, 2013) and lead to a shift in H-RPE practice that could begin to have greater positive impact on the physical activity levels of young people. Whilst the pedagogical model is justified comprehensively, it should be noted that this is the first complete overview of it and therefore it should be seen as a 'prototype'. The process of developing a pedagogical model for Health-Based Physical Education is summarised in the next and final chapter, along with the strengths and limitations of this study and a signposting to future programmes of research.

CHAPTER 7: CONCLUSION

"When the research's over, don't turn out the lights"
(Willinsky, 2006, p.439).

The quotation above has a couple of meanings for me as I conclude this thesis. Firstly, the research process is not over until it is shared with others. Secondly, as I indicate below, because one piece of research is finished and that job is complete, further research will always be needed. Research to corroborate or generalise findings, to refine any limitations in the research process or pursue new or alternative lines of enquiry. Consequently, as this doctoral process nears an end, I am very aware that my job is really just starting.

The initial purpose of this concluding chapter is to revisit the aims of this research and my research questions. Next, I highlight the contribution that this body of research makes to the field of H-RPE. In drawing this process to a conclusion, some limitations of this research are discussed. Finally, I identify future research needs and make recommendations in this area, for my own and others' attention, in an effort to prompt a significant change to predominant and enduring H-RPE practices.

The Research Aims and Research Questions

This doctoral investigation built on the groundwork of Haerens and colleagues (2011) who proposed the development of a new pedagogical model for Health-Based Physical Education. The primary aim of the study was to develop a comprehensive evidence-informed pedagogical framework that is grounded in the research. A secondary aim was to support teachers in the design, implementation and evaluation of programmes of Health-Based Physical Education so that we could, firstly, assess the potential impact of the model on student outcomes, and secondly learn lessons, which might further develop the pedagogical model framework. Specifically, this research sought to answer the following research questions:

1. What are the major elements of a Health-Based Physical Education pedagogical model that has the major goal of encouraging young people to 'value a physically active life'?

2. What type of programmes do teachers design and implement in order to encourage young people to 'value a physically active life'?

3. What is the impact of a programme of Health-Based Physical Education on students' achievement of the model's goals?

Research Question 1. What are the major elements of a Health-Based Physical Education pedagogical model that has the major goal of encouraging young people to 'value a physically active life'?

The model is grounded in a considerable body of theoretical and empirical evidence, from published research and data gathered from this study. In addition, ongoing personal, teacher and student reflections on Health-Based Physical Education have allowed for the creation of some useful craft knowledge that may support future practitioners who wish to use the model. Whilst the pedagogical model is justified comprehensively, it is important to remember that this is the first complete articulation of the Health-Based Physical Education pedagogical model and, as such, should be seen as a 'prototype' (Lee & Kim, 2014; Luguetti et al., 2017; MacDonald & Kirk, 2001; Oliver & Kirk, 2015) that will require long-term development and which is unlikely to ever be the 'finished article' (Casey, 2017, p.60).

The Health-Based Physical Education pedagogical model draws on three key underlying theories – self-determination theory, social ecological model and correlates of physical activity. These theoretical underpinnings inform the major theme, the goals, assumptions, and the learning and teaching features that are the characteristics of the model. The major theme – valuing a physically active life - draws on both Siedentop's (1996) notion of 'valuing' and research purporting greater meaningfulness and personal significance in physical education (Beni et al., 2017; Kretchmar, 2006). The overarching theme of Health-Based Physical Education is therefore:

> 'Valuing a physically active life, so that students learn to value and practise physical activity for their health and well-being, joy, social interaction, challenge, competence and personally relevant learning experiences'.

Building on this major theme, four goals for Health-Based Physical Education are presented, with the aim of developing habitual, motivated, informed and critical 'movers'. It is argued that achievement of these goals requires a prioritisation of the affective domain in learning, teaching and assessment practices. Five key assumptions are provided to guide teachers as to the philosophy of the model, which it is believed need to align with the teachers' beliefs if they are to implement the model as intended

and subsequently achieve the goals of Health-Based Physical Education.

The Health-Based Physical Education pedagogical model recommends needs-supportive engagement patterns between teachers and students, as well as between students, through fostering the development of autonomy, competence and relatedness. These three needs should underpin learning tasks, which will support the achievement of the four goals of the model. The critical features of Health-Based Physical Education serve to guide teachers practice on a lesson-by-lesson basis, supporting them to (a) promote physical activity within and beyond the lesson, (b) ensure the development of informed movers, (c) create a needs-supportive environment and, (d) encourage critical movers that can positively affect the physical activity environment for themselves and others.

Implementing the Health-Based Physical Education pedagogical model will require a range of specific expertise relating to content, pedagogical and pedagogical content knowledge. Further, a range of key teaching skills that will more effectively enable the model to achieve its goals are recommended. Notwithstanding these model 'requirements', teachers will have significant flexibility in applying the model based upon their varying contexts. The Health-Based Physical Education model framework supports teachers in considering how this might best be achieved for their specific school.

Research Question 2. What type of programmes do teachers design and implement in order to encourage young people to 'value a physically active life'?
Programme aims: The planned programme aims at both schools were based upon the original five goals of Health-Based Physical Education as presented in the conceptual framework. Whilst two goals (habitual and informed movers) were most comprehensively translated into programme aims, the enthusiastic, confident and critical goals featured in only one or two aims in each school programme. Despite the conceptual framework's recommendation to prioritise the affective domain, this was not expressed in a significant way in the programme aims. Further, whilst the schools argued that they wished to take a greater focus on the habitual and informed movers in this first experience of the model, and de-emphasise the critical mover, teachers should be reminded that it is central to the concept of valuing that young people participate in ways that are literate *and* critical (Siedentop, 1996). Finally, in considering the process

of planning programme aims, teachers should be reminded to start with what they want students to learn, and then identify appropriate teaching approaches and subject matter (and not the other way round).

Subject matter (activities): The practical subject matter across both schools incorporated, in keeping with the published research, a balance of exercise to music (Boxercise™, circuits), lifetime activities (running) and games and team challenges (invasion and tag/exercise games). Lifetime and health-focused activities were apparent in most lessons. However, whilst not a dominant aspect of either programme, one or two lessons in each school had much more alignment with a fitness for sport ideology than with a physical activity for life approach. The main activity involved in this 'fitness focus' was circuits, which were used with a focus on sport (skill-related fitness components) or fitness (health-related fitness components).

Subject matter (health-related learning): The cognitive subject matter provided a broad and appropriate base of learning about physical activity. Students learnt the physical activity guidelines and current young people statistics, benefits of physical activity, examples of light, moderate and vigorous physical activity, monitoring and setting their own physical activity goals, as well as identifying barriers and strategies to overcome these.

Teaching and learning approaches: Data from the fidelity tool revealed a moderate-high congruence with the teaching and learning approaches for Health-Based Physical Education. In particular, teachers demonstrated high fidelity to health-related learning for physical activity, providing high levels of student choice of learning activities, teacher empathy towards students and feedback which promoted student effort and progress. Whilst signposting, or prompting, physical activity beyond the lesson was inconsistent across the two schools, much good practice was gleaned to support effective transfer of learning from lessons to the community.

Research Question 3. What is the impact of a programme of Health-Based Physical Education on students' achievement of the model's goals?
Habitual mover: The impact of the Health-Based Physical Education pedagogical model on students appears to be considerable. Student and teacher perceptions suggested that most of the young people involved in this study were more active after

their experiences with Health-Based Physical Education than they were before. For some students, particularly girls, an increase in activity levels was maintained one year after their Health-Based Physical Education programme. The statistical significance of these findings adds weight to the highly positive qualitative data gathered in teacher interviews and student focus groups. There was a suggestion from teachers that Health-Based Physical Education may have had the greatest impact on students who were typically 'lower attaining', but this was not borne out in other evidence. Certainly, the data concerning the statistically different self-reported physical activity levels for girls suggests that Health-Based Physical Education may have had a greater impact on these students.

Motivated mover: There was strong and triangulated evidence that students enjoyed their Health-Based Physical Education experiences, and in many cases, preferred them over their normal physical education lessons. Students enjoyed the fact that the unit was rather 'different' to most, and were interested in the activities (i.e. lifetime, exercise and games). Students perceived and expressed a preference for a needs-supportive environment, most notably the inherent choice within lessons and the focus on personal progress and not comparison with others. These findings were not unanimous as a minority indicated a preference for their normal physical education lessons as these included just one activity per unit, they have higher confidence and competence in other activities and some of the Health-Based Physical Education were less relevant to individuals.

Informed mover: Student learning through the Health-Based Physical Education pedagogical model was deemed good. Students understanding of the main '60 minute' physical activity guideline increased from 42% to 95% at Maple Academy and from 20% to 97% at Delaware School. However, not all students saw this figure as the minimum (i.e. *at least* 60 minutes) and awareness of the second and third recommendations of the physical activity guidelines was limited to a minority of students. Students' understanding of different ways to be active was a real strength of both programmes as students could reflect on all key types of movement – everyday activities (such as active travel), recreation/play and exercise/sport. It was clear that students understood multiple and diverse ways to meet the physical activity guidelines, including those that might be deemed light, moderate or vigorous activities. Students' awareness of safe practice was good in the activities being participated in, although

how to maximise the benefits of exercise through more effective exercise practice was less well demonstrated by students or teachers. One inconsistent result was the level of students' understanding of how to monitor and set targets for their own physical activity participation, which were varied. There was also some inconsistency of students' understanding of the effects of physical activity, as these typically included health promotion, illness prevention, fitness, active lifestyle and wider life skills benefits. However, given that much of what students learn about health comes from outside school, in order to move away from the focus on the physical, teachers may need to consider their own understanding of the diverse benefits of physical activity.

Critical mover: Despite teachers acknowledging the difficulty of the critical mover goal to achieve in all students, a number of examples of very good student awareness in this area were apparent. Students' understanding of key barriers to physical activity and ways in which individuals might overcome these was very good. Student awareness of other common 'excuses' by some individuals was also clear, as well as the fact that these could typically be overcome with just a little effort. This awareness shows the making of some effective 'critical movers' is therefore unquestioned. The key area noted by students as most difficult to achieve was to support a friend or family member to be (more) active. Implications for practice in terms of supporting young people to be effective 'movement promoters' is therefore an area for development.

Contribution to the Field

This research has resulted in the creation of a new pedagogical model for Health-Based Physical Education as no other model forefronts 'valuing a physically active life' as its major theme. The model offers one potential 'PE-for-health pedagogy' (Armour & Harris, 2013) to overcome the perceived limitations of current forms of H-RPE in the UK and abroad. This study has also explored the process of the design, implementation and evaluation of the very first programmes of Health-Based Physical Education taught in schools that were aligned to this innovative pedagogical model framework. This work represents a significant body of original research that, it is hoped, will serve to support both the teachers and students involved in this study, and in the future, other teachers and their students as they endeavour to use Health Based Physical Education.

Through the eight stages of pedagogical model development described in this study, I

have made the often-implicit elements of model development explicit. By doing so, I have presented unique insights into the long-term, complex and challenging fieldwork required in this endeavour. The stages used in this study may therefore prove useful to other researchers or teacher-researchers in the development of other new pedagogical models or curriculum interventions, particularly in relation to the co-construction of school curricula.

Limitations of the Research

In considering the limitations of this research, I am reminded that this study was completed independently, with the support of a small team of supervisors and drew on the contexts of just two schools, their physical education teachers and students. As a result, the pedagogical model and the programmes planned, implemented and evaluated may have looked very different if the research had been conducted by a larger team of researchers and with a larger group of practitioners. That said, whilst the transferability of the results should therefore not be taken for granted, the growing evidence-base for the model has ensured that it is cutting-edge whilst also being grounded in school cultures.

A second limitation of the study lies in its methodological design. The study relied on qualitative data generation techniques, which have provided a wealth of information on teacher and student perceptions. However, the true test of success for Health-Based Physical Education will require more objective assessments of students' physical activity levels and behaviours, to see if their perceptions and intentions to be active are enacted, in the short and long-term. Whilst the data gathered on students' 'self-reported physical activity' and 'stage of change' was subject to statistical testing, this was essentially a test of how much students' perceptions had changed and not an objective assessment of their actual physical activity behaviours. As a core goal of this critical educational research was to change practices and not merely to measure them, it could be argued that the teachers' and students' heightened awareness of physical activity is one key reason why many perceived them to be more active after the Health-Based Physical Education programmes compared to before.

A third limitation is related to the willingness of teachers to engage in an innovative approach to health-related learning in physical education and to the teacher's relative dependence on the extensive and long-term form of professional development. As I

indicated within Chapter 3, section 5, when detailing the 'Settings', I suggested that Maple Academy and Delaware School presented the 'strongest characteristics for a successful study'. Both contexts appeared to be good sites for successful teacher change and curriculum innovation, from the physical education teachers themselves to the support of the headteacher and senior leaders. Both schools were therefore considered as a convenience sample (as they were schools with whom I had relatively easy access) and a purposive sample (as they had intimated a strong commitment to collaboration in a Health-Based Physical Education research project) (Cohen et al., 2011). Furthermore, given the nature of the professional development programme, it is arguably not a feasible or cost-effective process. Whilst there are opportunities for the approach to be scaled up, such as through greater teacher-teacher support networks, the method taken within this study was much more small scale.

A fourth limitation presented in this study is the teacher's limited implementation of some elements of evidence-informed practice linked to physical activity participation. Despite calls for extended periods of time for students to learn new material in physical education (from 12 weeks to a year or more) this was not a strong feature in either school, whose programmes were limited by their current practice of teaching units over 4-6 lessons. Secondly, although teaching and learning approaches within their physical education lessons were largely highly appropriate, in neither school were specific steps taken to promote physical activity messages across the school (such as with multi-component school-based approaches, including CSPAP) and/or make significant links with community partners or the students' families.

Future Research and Recommendations

The first recommendation for Health-Based Physical Education will be to garner wider support and critique for its use as one potential approach to physical activity promotion through physical education. This could take the form of several expert meetings with practitioners and researchers currently working in H-RPE, such as through the creation of a series of conference symposia. This will support the continued development of the pedagogical model framework, ensuring it is evidence-informed whilst able to be effectively translated from theory to practice.

The ongoing development of the Health-Based Physical Education model and the generation of empirical data on its use and potential impact will require implementation

in a wide variety of school contexts. These studies will need to consider, as Kirk and Haerens (2014) have recommended, a step-wise research agenda ensuring that studies are practice-referenced, programmatic and interdisciplinary. Practice-referenced implies that research is located in schools and involves working *with* rather than *on* teachers and students. A programmatic approach proposes the systematic development of knowledge relating to a specific research topic, using a series of closely interlinked studies. Interdisciplinary research is not fragmented into different research domains but draws on the best of each discipline such as from psychology, sociology, physiology, pedagogy and from a wealth of research methodologies.

Building on the specific findings in this study, future work must consider how both the pedagogical model and the designed programmes might best support specific groups of students in achieving each of the Health-Based Physical Education goals. For example, this study found that choice, ownership and creativity were not productive for all students (particularly some boys). The choice, type and location of activities are key factors in determining student enthusiasm and confidence (most notably in girls). There were also a number of students who preferred more traditional types of physical education lesson. These specific considerations are central to the model's continued success with a diverse range of students.

It is clear that there is a lack of widespread professional development opportunities that might support teachers in promoting long-term physical activity participation. In fact, most common opportunities for physical educators are short-courses linked to a range of sports, such as athletics, games, trampolining or swimming. Whilst studies have begun to consider effective ways to support teachers to develop needs-supportive teaching behaviours in physical education (see for example Aelterman et al., 2013) these are not linked with PE-for-health pedagogies. These two elements must therefore be developed hand-in-hand (i.e. greater research on how to support teachers to implement a needs-supportive environment and more H-RPE and 'PE-for-health' professional development opportunities for teachers).

There are very few pedagogical model research studies that have tracked beyond the initial period of implementation (Casey & MacPhail, 2018; Kirk, 2013). This area should therefore become a medium-term priority, to evaluate the long-term effects of Health-Based Physical Education on teachers' philosophies and practice and on students'

experiences, attitudes and behaviours.

Looking Back and Looking Forward…

Looking back on this PhD process, it has been a true apprenticeship for me, as my 'journey' as a researcher has been significant. In particular, the opportunity to develop a conceptual framework and latterly a prototype pedagogical model, through close interactions with teachers and their students has been an eye-opening and worthwhile experience for me personally, let alone for the future of the pedagogical model. I have learnt a lot through the process of designing a professional development programme, working with teachers to co-construct curricula and then supporting them to implement and evaluate Health-Based Physical Education effectively. Furthermore, my interactions with students has provided a number of points of clarity about their important role in shaping curricula. Through this process I have also been privileged to work with several leading international scholars in physical education, models-based practice, health-related learning in physical education, self-determination theory and physical activity promotion who have shaped my understanding in so many ways.

As I begin to consider the 'what next?' question in relation to my future research plans, I am drawn to the comments of Armour and Harris (2013, p.212) who rightly remind us that:

> No matter how rich, complex, and evidence-based a new framework, policy, model, or resource is, it will fail to achieve what it promises if PE teachers are not persuaded to change their pedagogies and practices.

In providing an example for this crucial reminder, Armour and Harris refer to McQuaig's comments (in Puhse et al., 2011) on the failure of the Australian Health and Physical Education subject to embrace new programmes and initiatives. In short, McQuaig suggests that 'what stands for best practice in Australian PE spends more time on teachers' bookshelves than in the vibrancy of their classrooms' (Puhse et al., 2011, p.10).

Given that Health-Based Physical Education has the potential to suffer similar weaknesses to those identified by McQuaig, I am cognisant of the need to help improve teachers' pedagogies and practices and to avoid my own and others' contributions to the field spending more time on bookshelves than in use in teachers' classrooms. It is therefore my intention to ensure that dissemination from this and

future research aims to influence policy and practice. This will be done through a collaborative programme of publication in academic and professional journals, as well as in other sources more widely read by physical educators (e.g. School Sport Magazine). The use of online platforms may also be helpful in creating opportunities to more widely share evidence-informed practice – this might include dissemination on websites or on Twitter through the handle @Health_Based_PE, where there is currently a thriving community of practitioners using this platform for informal professional development and sharing of practice. In relation to professional development, the creation of face-to-face, blended and online events, such as the recent internationally acclaimed Massive Open Online Course (MOOC) on 'Outstanding Physical Education' which had several thousand practitioners from around the world connected though a shared interest in this area. Advocacy for changes to policy is needed at several levels – from the national subject association (Association for Physical Education) and other national bodies (e.g. Youth Sport Trust, SSEHS Active), in research organisations (e.g. BERA, AIESEP, ICSSPE), initial teacher education forums (e.g. afPE PEITTE group, BERA PESP group) and governmental networks (e.g. Westminster Briefings, All-Part Commission on Physical Activity). This is a complex task, and there is already significant and effective work going on to influence policy and practice. However, those advocating for change must be ready to collaborate to enable progress… I don't think I'll be 'turning out the lights' for a while!

REFERENCES

Active Schools (2018) *Active Schools*. Available at: https://www.activeschoolsus.org (Accessed: 22 April 2018).

Aelterman, N., Vansteenkiste, M., Van Keer, H., De Meyer, J., Van den Berghe, L. & Haerens, L. (2013) 'Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings', *Teaching and Teacher Education*, 29, pp.64-75.

Aggerholm, K., Standal, Ø., Barker, D. & Larsson, H. (2018) 'On practising in physical education: outline for a pedagogical model', *Physical Education and Sport Pedagogy*, 23(2), pp.197-208.

Ainsworth, B., Haskell, W., Whitt, M., Irwin, M., Swartz, A., Strath, S., O'Brien, W., Bassett, D., Schmitz, K., Emplaincourt, P., Jacobs, D & Leon, A. (2000) 'Compendium of physical activities: an update of activity codes and MET intensities', *Medicine and Science in Sports and Exercise*, 32, S489-S504.

Alfrey, L. & Cale, L. (2013) 'Physical education and health: moving forwards or "going round in circles"?', *Physical Education Matters*, 8(3), pp.70-74.

Alfrey, L. & Gard, M. (2014) 'A crack where the light gets in: a study of health and physical education teachers' perspectives on fitness testing as a context for learning about health', *Asia-Pacific Journal of Health, Sport and Physical Education,* 5(1), pp.3-18.

Alfrey, L., Cale, L. & Webb, L. (2012) 'Physical education teachers' continuing professional development in health-related exercise', *Physical Education and Sport Pedagogy*, 17(5) pp.477-491.

All-Party Commission on Physical Activity (2014) *Tackling Physical Inactivity – A coordinated approach*. Available at: https://parliamentarycommissiononphysicalactivity.files.wordpress.com/2014/04/apcopa-final.pdf (Accessed: 22 April 2018).

Allar, I., Elliott, E., Jones, E., Kristjansson, A., Taliaferro, A. & Bulger, S. (2017) 'Involving families and communities in CSPAP development using asset mapping', *Journal of Physical Education, Recreation & Dance*, 88(5), pp.7-14.

Allensworth, D. & Kolbe, L. (1987) 'The comprehensive school health program: exploring an expanded concept', *The Journal of School Health*, 57(10), pp.409-412.

Almond, L. & Myers, L. (2017) 'Physical literacy and the primacy of movement', *Physical Education Matters*, 12(1), pp.19-21.

American College of Sports Medicine (2013) *ACMS's guidelines for exercise testing and prescription*. 9th edn. Baltimore, MD: Lippincott Williams & Wilkins.

American College of Sports Medicine [ACSM] (2006) *ACSM's Guidelines for Exercise Testing and Prescription*. 7th edn. Baltimore, MD: Lippincott Williams & Wilkins.

Antonovsky, A. (1979) *Health, stress, and coping.* San Francisco: Jossey-Bass.

Antonovsky, A. (1990) 'Studying health vs studying disease'. Paper presented at the *Congress for Clinical Psychology and Psychotherapy*, Berlin, 19 February.

Antonovsky, A. (1996) 'The salutogenic model as a theory to guide health promotion', *Health Promotion International*, 11(1), pp.11-18.

Armour, K. (2010) 'The physical education profession and its professional responsibility…or…why '12 weeks paid holiday' will never be enough', *Physical Education and Sport Pedagogy*, 15(1), pp.1-13.

Armour, K. (ed.) (2011) *Sport Pedagogy: An Introduction for Teaching and Coaching*. England: Pearson Education Ltd.

Armour, K. (ed.) (2014) *Pedagogical cases in Physical Education and youth sport*. London: Routledge.

Armour, K. & Harris, J. (2013) 'Making the case for developing new PE-for-Health pedagogies', *Quest*, 65(2), pp.201-219.

Armour, K. & Macdonald, D. (2012) 'What is your research question – and why?', in Armour, K & Macdonald, D. (eds.) *Research Methods in Physical Education and Youth Sport*. London: Routledge, pp.3-15.

Armour, K. & Makopoulou, K. (2012) 'Great expectations: Teacher learning in a national professional development programme', *Teaching and Teacher Education*, 28(3), pp.336-346.

Armour, K., Makopoulou, K. & Chambers, F. (2012) 'Progression in PE teachers' career-long professional learning: Conceptual and practical concerns', *European Physical Education Review*, 18(1), pp.62–77.

Armour, K., Quennerstedt, M., Chambers, F. & Makopoulou, K. (2017) 'What is effective CPD for contemporary physical education teachers: A Deweyan Framework', *Sport, Education and Society*, 22(7), pp.799-811.

Armour, K. & Yelling, M. (2004) 'Continuing professional development for experienced physical education teachers: towards effective provision', *Sport, Education and Society*, 9(1), pp.95-114.

Armour, K. & Yelling, M. (2007) 'Effective professional development for physical education teachers: the role of informal, collaborative learning', *Journal of Teaching in Physical Education*, 26, pp.177-200.

Armstrong, N. (2012) 'Young people are fit and active – fact or fiction?', *Journal of Sport and Health Science*, 1(3), pp.131-140.

Arthur, J. & Capel, S. (2015) 'How planning and evaluation support effective learning and teaching', in Capel, S. & Whitehead, M. (eds.) *Learning to Teach Physical Education in the Secondary School: A Companion to School Experience*. 4th edn. London: Routledge, pp.31-48.

Arthur, J., Waring, M., Coe, R. & Hedges, L. (eds.) (2012) *Research methods and methodologies in education*. 2nd edn. London: Sage.

Association for Physical Education (2015) *Association for Physical Education Health Position Paper*. Available at: http://www.afpe.org.uk/physical-education/wp-content/uploads/afPE_Health_Position_Paper_Web_Version.pdf (Accessed 22 April 2018).

Atkin, A., Van Sluijs, E., Dollman, J., Taylor, W. & Stanley, R. (2016) 'Identifying correlates and determinants of physical activity in youth: how can we advance the field?', *Preventive Medicine*, 87, pp.167-169.

Attard. K. & Armour, K. (2006) 'Reflecting on reflection: a case study of one teacher's early-career professional learning', *Physical Education and Sport Pedagogy*, 11(3), pp.209-229.

Australian Curriculum and Reporting Authority (2015) *Health and Physical Education*. Available at: http://www.australiancurriculum.edu.au/health-and-physical-education/curriculum/f-10?layout=1 (Accessed: 22 April 2018).

Australian Curriculum, Assessment and Reporting Authority [ACARA] (2012) *The shape of the Australian curriculum: Health and Physical Education*. Available at: http://docs.acara.edu.au/resources/Shape_of_the_Australian_Curriculum_Health_and_Physical_Education.pdf (Accessed: 22 April 2018).

Avis, M. (2005) 'Is there an epistemology for qualitative research?', in Holloway, I. (ed.) *Qualitative research in health care*. Milton Keynes: Open University Press, pp.3-17.

Ax, J., Ponte, P. & Brouwer, N. (2008a) 'Action research in initial teacher education: an explorative study', *Educational Action Research*, 16(1), pp.55-72.

Ax, J., Ponte, P., Mattison, M. & Rönnerman, K. (2008b) 'Reflection on Enabling Praxis', in Kemmis, S. & Smith, T. (eds.) *Enabling Praxis, Challenges for Education*. Rotterdam, The Netherlands: Sense Publishers, pp.243-261.

Bailey, R., Armour, K., Kirk, D., Jess, M., Pickup, I., Sandford, R., & the BERA

Physical Education and Sport Pedagogy Special Interest Group. (2009) 'The educational benefits claimed for physical education and school sport: an academic review', *Physical Education and Sport Pedagogy*, 24, pp.1-27.

Bailey, R., Cope, E., Parnell, D. & Reeves, M. (2016) 'The Human Capital Model: Realising the benefits of sport and physical activity', in Doll-Tepper, G., Koenen, K. & Bailey, R. (eds.) *Sport, Education and Social Policy*. London: Routledge, pp.135-159.

Bailey, R., Hillman, C., Arent, S. & Petitpas, A. (2013) 'Physical activity: an underestimated investment in human capital?', *Journal of Physical Activity and Health*, 10, pp.289-308.

Baquet, G., Berthoin, S. & Van Praagh, E. (2002) 'Are intensified physical education sessions able to elicit heart rate at a sufficient level to promote aerobic fitness in adolescents?', *Research Quarterly for Exercise and Sport*, 73, pp.282-288.

Barker, D., Aggerholm, K., Standal, Ø. & Larsson, H. (2018) 'Developing the practising model in physical education: an expository outline focusing on movement capability', *Physical Education and Sport Pedagogy*, 23(2), pp.209-221.

Barkoukis, V., Tsorbatzoudis, H., Grouios, G. & Sideridis, G. (2008) 'The assessment of intrinsic and extrinsic motivation and amotivation: validity and reliability of the Greek version of the Academic Motivation Scale', *Assessment in Education: Principles, Policy & Practice*, 15(1), pp.39-55.

Bauman, A., Reis, R., Sallis, J., Wells, J., Loos, R. & Martin, B. (2012) 'Correlates of physical activity: why are some people physically active and others not?', *Lancet*, 380(9838), pp.258-271.

Bauman, A., Sallis, J., Dzewaltowski, D. & Owen, N. (2002) 'Toward a better understanding of the influences on physical activity: the role of determinants, correlates, causal variables, mediators, moderators, and confounders', *American Journal of Preventive Medicine*, 23(suppl. 2), pp.5-14.

Bayne-Smith, M., Fardy, P., Azzollini, A., Magel, J., Schmitz, K. & Agin, D. (2004) 'Improvements in heart health behaviors and reduction in coronary artery disease risk factors in urban teenage girls through a school-based intervention: the PATH program', *American Journal of Public Health*, 94(9), pp.1538-1543.

Bechtel, P. & O'Sullivan, M. (2007) 'Enhancers and inhibitors of teacher change among secondary physical educators', *Journal of Teaching in Physical Education*, 26(3),

pp.221-235.

Bellows-Riecken, K., Mark, R. & Rhodes, R. (2013) 'Qualitative elicitation of affective beliefs related to physical activity', *Psychology of Sport & Exercise*, 14(5), pp.786-792.

Belsky, J. (1980) 'Child maltreatment: an ecological integration', *American Psychologist*, 34(4), pp.320-335.

Benden, M., Blake, J., Wendel, M. & Huber, J. (2011) 'The impact of stand-biased desks in classrooms on calorie expenditure in children', *American Journal of Public Health*, 101(8), pp.1433-1436.

Beni, S., Fletcher, T. & Ni Chroinin, D. (2017) 'Meaningful experiences in physical education and youth sport: a review of the literature', *Quest*, 69(3), pp.291-312.

Bernstein, B. (1970) 'Education cannot compensate for society', *New Society*, 15(387), pp.344-357.

Biddle, S., Atkin, A., Cavill, N. & Foster, C. (2011) 'Correlates of physical activity in youth: a review of quantitative systematic reviews', *International Review of Sport and Exercise Psychology*, 4(1), pp.25-49.

Biddle, S., Brehm, W., Verheijden, M. & Hopman-Rock, M. (2012) 'Population physical activity behaviour change: a review for the European College of Sport Science', *European Journal of Sport Science*, 12(4), pp.367-383.

Biddle, S., Gorely, T. & Stensel, D. (2004). 'Health-enhancing physical activity and sedentary behaviour in children and adolescents', *Journal of Sports Sciences*, 22(8), pp.679-701.

Biddle, S., Mutrie, N. & Gorely, T. (2015) *Psychology of Physical Activity: Determinants, well-being and interventions*. 3rd edn. London: Routledge.

Biesta, G. (2010). 'Pragmatism and the philosophical foundations of mixed methods research', in Tashakkori, A. & Teddlie, C. (eds.) *Sage handbook of mixed methods in social & behavioral research*. 2nd edn. Thousand Oaks, CA: Sage, pp.95-118.

Biesta, G. (2015) 'On the two cultures of educational research, and how we might move ahead: reconsidering the ontology, axiology and praxeology of education', *European Educational Research Journal*, 14(1), pp.11-22.

Blaikie, N. (2000) *Designing Social Research*. Cambridge: Polity Press.

Blais, M. (2008) 'A health passport to promote children's regular practice of physical activity outside of school', *Journal of Teaching in Physical Education*, 27, pp.416-433.

Blanchard, C., Amiot, C., Perrault, S., Vallerand, R. & Provencher, P. (2009) 'Cohesiveness, coach's interpersonal style and psychological needs: their effects on self-determination and athletes' subjective well-being', *Psychology of Sport and Exercise*, 10(5), pp.545-551.

Blumenthal, J., Babyak, M., Doraiswamy, P., Watkins, L., Hoffman, B., Barbour K., Herman, S., Craighead, W., Brosse, A., Waugh, R., Hinderliter, A. & Sherwood, A. (2007) 'Exercise and pharmacotherapy in the treatment of major depressive disorder', *Psychosomatic Medicine*, 69(7), pp.587-96.

Bolster, A. (1983) 'Toward a more effective model of research on teaching', *Harvard Educational Review, 53*(3), pp.294-308.

Borrelli, B., Sepinwall, D., Ernst, D., Bellg, A., Czajkowski, S., Breger, R., DeFrancesco, C., Levesque, C., Sharp, D., Ogedegbe, G., Resnick, B. & Orwig, D. (2005) 'A new tool to assess treatment fidelity and evaluation of treatment fidelity across 10 years of health behaviour research', *Journal of Consulting and Clinical Psychology*, 73(5), pp.852-860.

Bowen, G. (2009) 'Document analysis as a qualitative research method', *Qualitative Research Journal*, 9(2), pp.27-40.

Bowler, M. (2016) 'Promoting Healthy Active Lifestyles in Schools - Developing a Model for Health-Based Physical Education'. Paper presented at the *Association for Physical Education (afPE) Annual Physical Education Conference*, St Georges Park, 5-6 July.

Bowler, M., Sammon, P., Kirk, D., Haerens, L., Cale, L. & Casey, A. (2015) 'Developing a 'prototype' Health-Based Physical Education pedagogical model'. Paper presented at the *International Association for Physical Education in Higher Education (AIESEP) Annual Conference*, Universidad Europea, Madrid, Spain, 8-11 July. Available at: http://aiesep.org/wp-content/uploads/2014/11/PROCEEDINGS-OF-THE-AIESEP-CONFERENCE-MADRID-Final-Verssion.pdf pp.97-98.

Boyle, S., Jones, G. & Walters, S. (2008) 'Physical activity among adolescents and barriers to delivering physical education in Cornwall and Lancashire, UK: A qualitative study of heads of PE and heads of schools', *BMC Public Health*, 8, 273. Available at: http://www.biomedcentral.com/1471-2458/8/273 (Accessed: 22 April 2018).

Bradbury, H. (ed.) (2015) *The Sage Handbook of Action Research*: *Participative Inquiry and Practice*. 3rd edn. London: Sage.

Brewer, C. & Jones, R. (2002) 'A five-stage process for establishing contextually valid systematic observation instruments: The case of rugby union', *The Sport Psychologist*, 16, pp.139-161.

British Educational Research Association (2011) *Ethical guidelines for educational research*. Available at: https://www.bera.ac.uk/wp-content/uploads/2014/02/BERA-Ethical-Guidelines-2011.pdf (Accessed: 24 April 2018).

British Heart Foundation (2016) *One in ten Brits admit to doing no physical activity in the last ten years*. Available at: https://www.bhf.org.uk/news-from-the-bhf/news-archive/2016/january/one-in-ten-brits-admit-to-doing-no-physical-activity-in-the-last-ten-years (Accessed: 22 April 2018).

Bronfenbrenner, U. (1979) *The Ecology of Human Development*. Cambridge, MA: Harvard University Press.

Brookfield, S. (1995) *Becoming a critically reflective teacher*. San Francisco: Jossey-Bass.

Brunton, G., Harden, A., Rees, R., Kavanagh, J., Oliver, S. & Oakley, A. (2003) *Children and Physical Activity: A systematic review of barriers and facilitators*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Brydon-Miller, M., Kral, M., Maguire, P., Noffke, S. & Sabhlok, A. (2011) 'Jazz and the banyan tree: roots and riffs on participatory action research', in Denzin, N. & Lincoln, Y. (eds.) *The Sage Handbook of Qualitative Research*. 4th edn. London: Sage. pp.387-400.

Brydon-Miller, M. & Maguire, P. (2009). 'Participatory action research: contributions to the development of practitioner inquiry in education', *Educational Action Research*, *17*(1), pp.79–93.

Bryman, A. (2004) *Social Research Methods*. 2nd edn. Oxford: Oxford University Press.

Bubb, S. & Earley, P. (2007) *Leading and managing continuing professional development*. 2nd edn. London: Sage.

Buckley, J., Hedge, A., Yates, T., Copeland, R., Loosemore, M., Hamer, M., Bradley, G. & Dunstan, D. (2015) 'The sedentary office: an expert statement on the growing case for

change towards better health and productivity', *British Journal of Sports Medicine*, 49(21), pp.1357-1362.

Bull, F. & Bauman, A. (2011) 'Physical inactivity: the "Cinderella" risk factor for noncommunicable disease prevention', *Journal of Health Communication,* 16(sup2), pp.13-26.

Burrell, G. & Morgan, G. (1979) *Sociological Paradigms and Organizational Analysis*. London: Heinemann Educational.

Cabane, C. & Clark, A. (2011) *Childhood sporting activities and adult labour-market outcomes*. CES Working Papers. Paris, France: Centre d'Economie de la Sorbonne.

Cale, L. (2017) 'Teaching about active lifestyles', in Ennis, C. (eds.) *Routledge Handbook of Physical Education Pedagogies*. London: Routledge, pp.399-412.

Cale, L. & Harris, J. (2006) 'School-based physical activity interventions: effectiveness, trends, issues, implications and recommendations for practice', *Sport, Education and Society*, 11(4), pp.401-420.

Cale, L. & Harris, J. (2009a) 'Fitness testing in physical education - a misdirected effort in promoting healthy lifestyles and physical activity?', *Physical Education and Sport Pedagogy*, 14(1), pp.89-108.

Cale, L. & Harris, J. (2009b) *Getting the buggers fit*. 2nd edn. London: Continuum.

Cale, L. & Harris, J. (2011) 'Learning about health through physical education and youth sport', in Armour, K. (ed.) *Sport Pedagogy: An introduction for teaching and coaching.* Harlow: Pearson Education Limited, pp.53-64.

Cale, L. & Harris, J. (2013a) 'Every Child (of Every Size) Matters' in Physical Education! Physical Education's Role in Childhood Obesity', *Sport, Education and Society*, 18(4), pp.433-452.

Cale, L. & Harris, J. (2013b) 'Physical education and health: considerations and issues', in Capel, S. & Whitehead, M. (eds.) *Debates in Physical Education*. London: Routledge, pp.74-88.

Cale, L. & Harris, J. (eds.) (2005) *Exercise and Young People. Issues, Implications and Initiatives*. Basingstoke: Palgrave Macmillan.

Cale, L., Harris, J. & Chen, M. (2014) 'Monitoring health, activity and fitness in physical education: its current and future state of health', *Sport, Education and Society*, 19(4), pp.376-397.

Cale, L., Harris, J. & Duncombe, R. (2016) 'Promoting physical activity in secondary schools: growing expectations, "same old" issues?', *European Physical Education Review*, 22(4), pp.526-544.

Cale, L., Harris, J. & Leggett, G. (2002) 'Making a difference? Lessons learned from a health-related exercise resource', *Bulletin of Physical Education*, 38(2), pp.145-160.

Campos, P., Saguy, A., Ernsberger, P., Oliver, E. & Gaesser, G. (2006) 'The epidemiology of overweight and obesity: Public health crisis or moral panic?', *International Journal of Epidemiology*, 35(1), pp.55-60.

Canadian Society for Exercise Physiology (2012) *Canadian Physical Activity Guidelines, Canadian Sedentary Behaviour Guidelines: Your Plan to Get Active Every Day*. Available at: http://www.csep.ca/CMFiles/Guidelines/CSEP_Guidelines_Handbook.pdf (Accessed: 22 April 2018).

Canadian Society for Exercise Physiology (2016) *Canadian Physical Activity Guidelines –*

Background Information. Available at: http://www.csep.ca/view.asp?ccid=522 (Accessed: 22 April 2018).

Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J. & Balain, S. (2007) 'A conceptual framework for implementation fidelity', *Implementation Science*, 2(40). Available at: https://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-2-40 (Accessed: 22 April 2018).

Carter, M. (2008) 'The road less travelled: reflections on professional learning, school leadership and research', *Journal of Educational Leadership, Policy and Practice,* 23(1), pp.78-82.

Casey, A. (2010) *Practitioner research in physical education: Teacher transformation through pedagogical and curricular change*. Unpublished PhD thesis. Leeds Metropolitan University.

Casey, A. (2014) 'Models-based practice: great white hope or white elephant?' *Physical Education and Sport Pedagogy*, 19(1), pp.18-34.

Casey, A. (2017) 'Models-based practice', in Ennis, C. (eds.) *Routledge Handbook of Physical Education Pedagogies*. London: Routledge, pp.54-67.

Casey, A. & Goodyear, V. (2015) 'Can cooperative learning achieve the four learning outcomes of physical education? A review of literature', *Quest*, 67(1), pp.56-72.

Casey, A. & MacPhail, A. (2018) 'Adopting a models-based approach to teaching physical education', *Physical Education and Sport Pedagogy*, 23(3), pp.294-310.

Casey, A., Fletcher, T., Schaefer, L. & Gleddie, D. (2018) *Conducting Practitioner Research in Physical Education and Youth Sport: Reflecting on Practice*. London: Routledge.

Casey, A., Goodyear, V. & Dyson, B. (2015) 'Model fidelity and students' responses to an authenticated unit of cooperative learning', *Journal of Teaching in Physical Education*, 34(4), pp.642-660.

Caspersen, C., Powell, K. & Christenson, G. (1985) 'Physical activity, exercise, and physical fitness: definitions for health-related research', *Public Health Reports*, 100(2), pp.126-131.

Castelli, D. & Williams, L. (2007) 'Health-related fitness and physical education teachers' content knowledge', *Journal of Teaching in Physical Education*, 26, pp.3-19.

Cawley, J. (2004) 'An economic framework for understanding physical activity and eating behaviors', *American Journal of Preventive Medicine*, 23(suppl. 3), pp.117-25.

Centers for Disease Control and Prevention (2010) *The association between school-based physical activity, including physical education, and academic performance*. Available at: https://www.cdc.gov/healthyyouth/health_and_academics/pdf/pa-pe_paper.pdf (Accessed: 22 April 2018).

Centers for Disease Control and Prevention (2013) *Comprehensive school physical activity programs: a guide for schools*. Available at: http://www.cdc.gov/healthyschools/physicalactivity/pdf/13_242620-A_CSPAP_SchoolPhysActivityPrograms_Final_508_12192013.pdf (Accessed: 22 April 2018).

Centers for Disease Control and Prevention (2017) *Overcoming barriers to physical activity*. Available at: https://www.cdc.gov/physicalactivity/basics/adding-pa/barriers.html (Accessed: 22 April 2018).

Centers for Disease Control and Prevention (2017) *School Health Index: A Self-Assessment*

and Planning Guide. Middle School/High School. Available at:
https://www.cdc.gov/healthyschools/shi/index.htm (Accessed: 22 April 2018).

Chalkley, A., Milton, K. & Foster, C. (2015) *Change4Life Evidence Review: rapid evidence review on the effect of physical activity participation among children aged 5 – 11 years.* Available at: https://www.gov.uk/government/publications/change4life-evidence-review-on-physical-activity-in-children (Accessed: 22 April 2018).

Chase, M., Vealey, R., Galli, N., Evers, J., Klug, J. & Reichert, K. (2007) 'What's in it for me? An intervention to increase physical activity among adolescents in physical education', *Journal of Physical Education, Recreation and Dance*, 78(1), pp.34-39.

Chatzisarantis, N. & Hagger, M. (2008) 'Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation', *Psychological Health*, 24, pp.29-48.

Chen, A. (1998) 'Meaningfulness in physical education: a description of high school students' conceptions', *Journal of Teaching in Physical Education*, 17, pp.285–306.

Cheon, S., Reeve, J. & Moon, I. (2012) 'Experimentally based, longitudinally designed, teacher-focused intervention to help physical education teachers be more autonomy supportive toward their students', *Journal of Sport and Exercise Psychology*, 34, pp.365-396.

Chief Medical Officer (2010) *2009 Annual Report of the Chief Medical Officer.* London: Department of Health.

Chief Medical Officers (2011) *Start Active, Stay Active: a report on physical activity for health from the four home countries' Chief Medical Officers.* Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_128209 (Accessed: 22 April 2018).

Choi, J., Lee, M., Lee, J-K., Kang, D. & Choi, J-Y. (2017) 'Correlates associated with participation in physical activity among adults: a systematic review of reviews and update', *BMC Public Health*, 17(356). Available at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-017-4255-2 (Accessed: 22 April 2018).

Chow, B., McKenzie, T. & Louie, L. (2008) 'Children's physical activity and environmental influences during elementary school physical education', *Journal of Teaching in Physical Education*, 27(1), pp.38-50.

Cochran-Smith, M. & Lytle, S. (2007) 'Everything's ethics', in Campbell, A. & Groundwater-Smith, S. (eds.) *An ethical approach to practitioner research: Dealing with issues and dilemmas in action research.* London: Routledge, pp.24-41.

Cochran-Smith, M. & Lytle, S. (2009) *Inquiry as Stance: Practitioner Research for the Next Generation.* New York: Teachers College Press.

Cochrane, T. & Davey, R. (2008) 'Increasing uptake of physical activity: a social ecological approach', *Journal of the Royal Society for the Promotion of Health*, 128(1), pp.31-40.

Coe, R. (2012) 'The nature of educational research', in Arthur, J., Waring, M., Coe, R. & Hedges, L. (eds.) *Research methods and methodologies in education.* 2nd edn. London: Sage, pp.5-14.

Cohen, D. & Hill, H. (2001) *Learning policy: when state education reform works.*

London: Yale University Press.

Cohen, L., Manion, L. & Morrison, K. (2011) *Research Methods in Education.* 7th edn.

London: Routledge.

Colquhoun, D. (1990) 'Images of Healthism in Health-Based Physical Education', in Kirk, D. & Tinning, R. (eds.) *Physical Education, Curriculum and Culture: Critical Issues in the Contemporary Crisis*. London: Falmer Press, pp.225–251.

Conolly, A. (2016) 'Children's body mass index, overweight and obesity', in Fuller, E., Mindell, J. & Prior, G. (eds.) *Health Survey for England 2015*. London: NHS Digital. Available at: http://www.content.digital.nhs.uk/catalogue/PUB22610/HSE2015-Child-obe.pdf (Accessed: 22 April 2018).

Cooney, G., Dwan, K., Greig, C., Lawlor, D., Rimer, J., Waugh, F., McMurdo, M. & Mead, G. (2013) 'Exercise for depression', *Cochrane Database of Systematic Reviews*, 12(9). doi: 10.1002/14651858.CD004366.pub6

Cooper, D. & Schindler, P. (2003) *Business Research Methods*. 8th edn. Boston: McGraw-Hill Irwin.

Cope, E., Bailey, R., Parnell, D. & Kirk, B. (2018) 'What Young Children Identify as the Outcomes of their Participation in Sport and Physical Activity', *Health Behavior and Policy*, 5(1), pp.103-113.

Corbin, C. (2002) 'Physical activity for everyone: what every physical educator should know about promoting lifelong physical activity', *Journal of Teaching in Physical Education*, 21(2), pp.128-44.

Corbin, C. & Lindsey, R. (2007) *Fitness for Life*. 5th edn. Champaign, IL: Human Kinetics.

Corder, K., Ekulund, U., Steele, R., Wareham, N. & Brage, S. (2008) 'Assessment of physical activity in youth', *Journal of Applied Physiology*, 101(1), pp.977-987.

Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L. & Coe, R. (2015) *Developing Great Teaching: Lessons from the international reviews into effective professional development*. London: Teacher Development Trust.

Cothran, D., McCaughtry, N., Kulinna, P. & Martin, J. (2006) 'Top-down public health curricular change: the experience of physical education teachers in the United States', *Journal of In-Service Education*, 32(4), pp.533-547.

Cox, A., Smith, A. & Williams, L. (2008) 'Change in physical education motivation and physical activity behavior during middle school', *Journal of Adolescent Health*, 43(5), pp.506-513.

Crawford, R. (1980) 'Healthism and the medicalization of everyday life', *International Journal of Health Services*, 10(3), pp.365-388.

Crawford, R. (1986) 'A cultural account of "health": Control, release, and the social body', in McKinley, J. (ed.) *Issues in the political economy of health care*. London: Tavistock, pp.60-103.

Currie, C., Gabhainn, S., Godeau, E., Roberts, C., Smith, R., Currie, D., Picket, W., Richter, M., Morgan, A. & Barnekow, V. (2008) 'Inequalities in Young People's Health HBSC International Report from the 2015/2016 Survey', *Health Policy for Children and Adolescents, No.5*. Scotland: World Health Organization.

Currie, C., Roberts, C., Morgan, A., Smith, R., Settertobulte, W., Samdal, O. & Barnekow, V. (2004) *Health Behaviour in School-Aged children (HBSC) study: International report from the 2001/2002 survey, Report No. 4*. Copenhagen, Denmark: World Health Organization.

Curtner-Smith, M., Hastie, P. & Kinchin, G. (2008) 'Influence of occupational socialization on

beginning teachers' interpretation and delivery of sport education', *Sport, Education and Society*, 13(1), pp.97-117.

Cushion, C., Harvey, S., Muir, B. & Nelson, L. (2012) 'Developing the Coach Analysis and Intervention System (CAIS): establishing validity and reliability of a computerised systematic observation instrument', *Journal of Sports Sciences*, 30(2), pp.201-216.

Dale, D., Welk, G. & Matthews, C. (2002) 'Methods for Assessing Physical Activity and Challenges for Research', in Welk, G. (ed.) *Physical Activity Assessments for Health-Related Research*. Champaign, IL: Human Kinetics.

Daley, A. & Duda, J. (2006) 'Self-determination, stage of readiness to change for exercise, and frequency of physical activity in young people', *European Journal of Sport Science*, 6(4), pp.231-243.

Daley, A. & Duda, J. (2006) 'Self-determination, stage of readiness to change for exercise, and frequency of physical activity in young people', *European Journal of Sport Science*, 6(4), pp.231-243.

Darling-Hammond, L. (1998) 'Teacher Learning That Supports Student Learning', E*ducational Leadership*, 55(5), pp.6-11.

Darling-Hammond, L. (2010) 'Teacher education and the American future', *Journal of Teacher Education*, 61(1-2), pp.35-47.

Daw, P. & Robinson, C. (2013) *To the next level: improving secondary school teaching to outstanding*. London: CfBT Education Trust.

Day, C., Sammons, P., Stobart, G., Kington, A. & Gu, Q. (2007) *Teachers matter: connecting lives, work and effectiveness.* Maidenhead, Berkshire: Open University Press.

Day, C. & Townsend, A. (2009) 'Practitioner action research: building and sustaining success through networked communities', in Noffke, S. & Somekh, B. (eds.) *The Sage Handbook of Educational Action Research*. London: Sage, pp.178-189.

De Meester, F., Van Lenthe, F., Spittaels, H., Lien, N. & De Bourdeaudhuij, I. (2009) 'Interventions for promoting physical activity among European teenagers: a systematic review', *International Journal of Behavioural Nutrition and Physical Activity*, 6(82). doi: 10.1186/1479-5868-6-82

deCharms, R. (1968) *Personal causation: The internal affective determinants of behavior*. New York: Academic Press.

Deci, E. & Ryan, R. (2000) 'The 'what' and 'why' of goal pursuits: human needs and self-determination of behaviour', *Psychological Inquiry*, 11(4), pp.227-268.

Deci, E. & Ryan, R. (2014) 'Autonomy and need satisfaction in close relationships: Relationships Motivation Theory', in Weinstein, N. (ed.) *Human motivation and interpersonal relationships*. New York: Springer, pp.53-73.

Denscombe, M. (2010) *Good Research Guide: For small-scale social research projects.* 4th edn. Berkshire: Open University Press.

Denzin, N. & Lincoln, Y. (2011) 'Introduction: The discipline and practice of qualitative research', in Denzin, N. & Lincoln, Y. (eds.) *The Sage Handbook of Qualitative Research*. 4th edn. London: Sage Publications Inc., pp.1-20.

Department for Children, Schools and Families (2009) *Schemes of Work: PE at key stages 3 and 4*. Available at: http://webarchive.nationalarchives.gov.uk/20100512154642/http://www.standards.dfes.gov.uk/schemes2/Secondary_PE/sequencing?view=get (Accessed: 22 April 2018).

Department for Education (2016) *Standard for teachers' professional development*. Available at: https://www.gov.uk/government/publications/standard-for-teachers-professional-development (Accessed: 30 November 2018).

Department for Children, Schools and Families / Qualifications and Curriculum Authority (DfCSF/QCA) (2007) *The National Curriculum. Statutory requirements for key stages 3 and 4.* London: DfCSF/QCA.

Department for Culture, Media and Sport and Sport England (2012) *Creating a sporting habit for life: a new youth sport strategy*. London: Department for Culture, Media and Sport and Sport England.

Department for Education (2013) *Evidence on physical education and sport in schools*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/226505/Evidence_on_physical_education_and_sport_in_schools.pdf (Accessed: 22 April 2018).

Department for Education (2014) The *National Curriculum in England: framework for key stages 1 to 4*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/381344/Master_final_national_curriculum_28_Nov.pdf (Accessed: 22 April 2018).

Department for Education (2015) *The PE and sport premium: an investigation in primary schools*. Available at: https://www.gov.uk/government/publications/pe-and-sport-premium-an-investigation-in-primary-schools (Accessed: 22 April 2018).

Department for Health (2009) *Change4life*. Available at: https://www.nhs.uk/change4life (Accessed: 22 April 2018).

Department of Health (2004) *At least five a week: evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer*. Available at: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4080994 (Accessed: 22 April 2018).

Department of Health (2009) *Be active, be healthy. A strategy to get the nation moving*. London: Department of Health.

Department of Health & Department for Education and Skills (2005) *National Healthy School Status: a guide for schools*. Available at: http://www.ttrb3.org.uk/wp-content/uploads/2012/10/national_healthy_schools_status_guide.pdf (Accessed: 22 April 2018).

Desimone, L., Porter, A., Garet, M., Yoon, K. & Birman, B. (2002) 'Effects of Professional Development on Teachers' Instruction: Results from a Three-year Longitudinal Study', *Educational Evaluation and Policy Analysis*, 24(2), pp.81-112.

Devís-Devís, J. (2006) 'Socially critical research perspectives in Physical Education', in Kirk, D., Macdonald, D. & O'Sullivan, M. (eds.) *The Handbook in Physical Education*. London: Sage, pp.37-58.

DiClemente, C. & Prochaska, J. (1998) 'Toward a comprehensive, transtheoretical model of change: Stages of change and addictive behaviors', in Miller, W. & Heather, N. (eds.) *Applied clinical psychology. Treating addictive behaviors*. New York, NY: Plenum Press, pp. 3-24.

DiCola, G. (2006) 'Identifying jobs: core and soft skills employability', in DiCola, G. (ed.)

Beyond the scoreboard: Youth employment opportunities and skills development in the sports sector. Geneva: International Labour Organization.

Dieronitou, I. (2014) 'The ontological and epistemological foundations of qualitative and quantitative approaches to research', *International Journal of Economics, Commerce and Management*, 11(10), pp.1-17.

Dishman, R., Motl, R., Saunders, R., Felton, G., Ward, D. & Dowda, M. (2004) 'Self-efficacy partially mediates the effect of a school-based physical-activity intervention among adolescent girls', *Preventive Medicine*, 38(5), pp.628-636.

Dobbins, M., Husson, H., DeCorby, K. & LaRocca, R. (2013) 'School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18', *Cochrane Database of Systematic Reviews*, Issue 2. DOI: 10.1002/14651858.CD007651.pub2

Domangue, E. & Solmon, M. (2013) 'Motivational responses to fitness testing by award status and gender', *Research Quarterly for Exercise and Sport*, 81(3), pp.310-318.

Donnelly, J., Hillman, C., Etnier, J., Lee, S., Tomporowski, P., Lambourne, K. & Szabo-Reed, A. (2016) 'Physical activity, fitness, cognitive function, and academic achievement in children: a systematic review', *Medicine and Science in Sports and Exercise*, 48(6), pp.1197-222.

Dowling, F., Fitzgerald, H. & Flintoff, A. (Eds.) (2012) *Equity and Difference in Physical Education, Youth Sport and Health: A narrative approach*. London: Routledge.

Dudley, D., Okely, A., Pearson, P. & Cotton, W. (2011) 'A systematic review of the effectiveness of physical education and school sport interventions targeting physical activity, movement skills and enjoyment of physical activity', *European Physical Education Review*, 17(3), pp.353-378.

DuPont, J., Carlier, G., Gérald, P. & Delens, C. (2009) 'Teacher-student negotiation and its relation to physical education students' motivational processes: an approach based on self-determination theory', *European Physical Education Review*, 15(1), pp.21-46.

Dworkin, J., Larson, R. & Hansen, D. (2003) 'Adolescents' accounts of growth experiences in youth activities', *Journal of Youth and Adolescence*, 32(1), pp.17–26.

Dyson, B. (1994) *A case study of two alternative elementary physical education programs*. Unpublished PhD Thesis, Ohio State University.

Dyson, B. & Casey, A. (2016) *Cooperative Learning in Physical Education and Physical Activity: A Practical Introduction*. London: Routledge.

Dyson, B., Kulinna, P. & Metzler, M. (2016) 'Introduction to the special issue: models based practice in physical education', *Journal of Teaching in Physical Education*, 35(4), pp.297-298.

Dyson, B., Linehan, N. & Hastie, P. (2010) 'The ecology of cooperative learning in elementary physical education classes', *Journal of Teaching in Physical Education*, 29(2), pp.113-130.

Dyson, B., Stylianou, M., Kulinna, P., McMullen, J., Ni Chronin, D., Hirvensalo, M., Tammelin, T. & Hanke, U. (2015) 'International perspectives on and outcomes from health promoting schools', *International Association of Physical Education in Higher Education (AIESEP) Annual Conference*. Universidad Europea, Madrid, Spain, 8-11 July, pp.487-497. Available at: http://aiesep.org/scientific-meetings/proceedings/ (Accessed: 22 April 2018).

Edmunds, J., Ntoumanis, N. & Duda, J. (2008) 'Testing a self-determination theory-based

teachings style intervention in the exercise domain', *European Journal of Social Psychology*, 38(2), pp.375-388.

Eime, R., Harvey, J., Sawyer, N., Craike, M., Symons, C., Polman, R. & Payne, W. (2013) 'Understanding the contexts of adolescent female participation in sport and physical activity', *Research Quarterly for Exercise and Sport*, 84(2), pp.157-166.

Ekelund, U., Steene-Johannessen, J., Brown, W., Wang-Fagerland, M., Owen, N., Powell, K., Bauman, A. & Lee, I-M. (2016) 'Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women', *The Lancet*, 388(10051), pp.1302-1310.

Elbourn, J. (2008) *Aerobics and Circuits for Secondary Schools*. Leeds: Coachwise.

Elbourn, J. & James, A. (2013) *Fitness Room Activities for Secondary Schools – A Guide to Promoting Learning about Healthy Active Lifestyles*. Leeds: Coachwise.

Elliot, D. & Campbell, T. (2013) '"Really on the ball": exploring the implications of teachers' PE-CPD experience', *Sport, Education and Society*, 20(3), pp.381-397.

Ellis, N. & Loughland, T. (2016) 'The challenges of practitioner research: a comparative study of Singapore and NSW', *Australian Journal of Teacher Education*, 41(2), pp.122-136.

Ennis, C., Solmon, M., Satina, B., Loftus, S., Mensch, J. & McCauley, M. (1999) 'Creating a sense of family in urban schools using the sport for peace curriculum', *Research Quarterly for Exercise and Sport*, 70(3), pp.273-85.

Enright, E. & O'Sullivan, M. (2010) '"Can I do it in my pyjamas?" Negotiating a physical education curriculum with teenage girls', *European Physical Education Review*, 16(3), p.203-222.

Erwin, H., Beighle, A., Carson, R. & Castelli, D. (2013) 'Comprehensive school-based physical activity promotion: a review', *Quest*, 65, pp.412-428.

Escartí, A., Gutiérrez, M. & Pascual, C. (2010) 'Implementation of the Personal and Social Responsibility model to improve self-efficacy during physical education classes for primary school children', *International Journal of Psychology and Psychological Therapy*, 10(3), pp.387–402.

Escartí, A., Wright, P., Pascual, C. & Gutiérrez, M. (2015) 'Tool for assessing Responsibility-based Education (TARE) 2.0: Instrument Revisions, Inter-rater Reliability, and Correlations between Observed Teaching Strategies and Student Behaviours', *Universal Journal of Psychology*, 3(2), pp.55-63.

Eurofit (1988) *Handbook for the eurofit tests of physical fitness*. Rome: Committee for the Development of Sport, Council of Europe.

Evans, J. (1985) *Teaching in Transition: The Challenge of Mixed Ability Groupings*. Maidenhead: Open University Press.

Evans, J. (2014) 'Equity and inclusion in physical education PLC', *European Physical Education Review*, 20(3), pp.319-334.

Evans, J. & Davies, B. (2017) 'In pursuit of equity and inclusion: populism, politics and the future of educational research in physical education, health and sport', *Sport, Education and Society*, 22(5), pp.684-694.

Evans, J. & Rich, E. (2011) 'Body policies and body pedagogies: every child matters in totally pedagogised schools?', *Journal of Education Policy*, 26(2), pp.311-329.

Evans, J., Rich, E. & Davies, B. (2004) 'The emperor's new clothes: fat, thin, and overweight.

The social fabrication of risk and ill health', *Journal of Teaching in Physical Education*, 23(4), pp.369-388.

Evans, J., Rich, E., Davies, B. & Allwood, R. (2008) *Education, disordered eating and obesity discourse: Fat fabrications.* London: Routledge.

Ewing, B. (1998) 'Athletes and work', *Economics Letters*, 59(1), pp.113-117.

Ewing, R. (2007) 'Designing quality teaching action learning projects'. Paper presented at the *Quality Teaching Action Learning Planning Conference.* Sydney, Australia, 29-30 March.

Faber, L., Kulinna, P. & Darst, P. (2007) 'Strategies for physical activity promotion beyond the physical education classroom', *Journal of Physical Education, Recreation & Dance*, 78(9), pp.27-31.

Fairclough, S. (2003) 'Physical activity, perceived competence and enjoyment during high school physical education', *European Journal of Physical Education*, 8, pp.5-18.

Fairclough, S. & Stratton, G. (2005a) 'Improving health-enhancing physical activity in girls' physical education', *Health Education Research*, 20(4), pp.448-457.

Fairclough, S. & Stratton, G. (2005b) 'Physical activity levels in middle and high school physical education: a review', *Pediatric Exercise Science*, 17(3), pp.217-236.

Fairclough, S. & Stratton, G. (2006) 'A review of physical activity levels during elementary school physical education', *Journal of Teaching Physical Education*, 25(2), pp.239-257.

Fairclough, S., Stratton, G. & Baldwin, H. (2002) 'The contribution of secondary school physical education to lifetime physical activity', *European Physical Education Review*, 8, pp.69-84.

Fernández-Balboa, J. & Brubaker, N. (2012) 'Positioning yourself as a researcher: Four dimensions for self-reflection', in Armour, K & Macdonald, D. (eds.) *Research Methods in Physical Education and Youth Sport*. London: Routledge, pp.29-39.

Fernandez-Rio, J. (2016) 'Health-based physical education: a model for educators', *Journal of Physical Education, Recreation & Dance*, 87(8), pp.5-7.

Flintoff, A. & Fitzgerald, H. (2012) 'Theorizing difference and (in)equality in physical education, youth sport and health', in Dowling, F., Fitzgerald, H. & Flintoff, A. (eds.) *Equity and Difference in Physical Education, Youth Sport and Health: A Narrative Approach*. London: Routledge, pp.11-36.

Fox, K. & Harris, J. (2003) 'Promoting physical activity through schools', in McKenna, J. & Riddoch, C. (eds.) *Perspectives on Health and Exercise*. Basingstoke: Palgrave Macmillan, pp.181-201.

Fox, K., Cooper, A. & McKenna, J. (2004) 'The school and promotion of children's health-enhancing physical activity: perspectives from the United Kingdom', *Journal of Teaching in Physical Education*, 23, pp.338-358.

Fullan, M. (1985) 'Change process and strategies at the local level', *The Elementary School Journal*, 85, pp.391-421.

Fullan, M. (2007) *The new meaning of educational change*. 4th edn. London: Routledge.

Fullan, M. (2015) *The New Meaning of Educational Change*. 5th edn. London: Routledge.

Fullmer, M., Wilkinson, C., Prusak, K., Eggett, D. & Pennington, T. (2018) 'Adolescent physical activity and motivational profiles while keeping a physical activity record', *Journal of Teaching in Physical Education*, 37(1), pp.1-11.

Future Foundation (2015) *The Class of 2035. Promoting a Brighter and More Active Future for the Youth of Tomorrow*. London: Future Foundation.

Gallagher, K. & Updegraff, J. (2011) 'When 'fit' leads to fit, and when 'fit' leads to fat: how message framing and intrinsic vs. extrinsic exercise outcomes interact in promoting physical activity', *Psychology & Health*, 26(7), pp.819-834.

Gard, M. (2004) 'An elephant in the room and a bridge too far, or physical education and the 'obesity epidemic'', in Evans, J., Davies, B. & Wright, J. (eds.) *Body knowledge and control: Studies in the sociology of physical education and health*. London: Routledge, pp.68-82.

Gard, M. (2010) *The End of the Obesity Epidemic*. London: Routledge.

Gard, M. & Wright, J. (2001) 'Managing uncertainty: obesity discourses and physical education in a risk society', *Studies in Philosophy and Education*, 20, pp.235-549.

Gard, M. & Wright, J. (2005) *The Obesity Epidemic: Science, Ideology and Morality*. London: Routledge.

Garet, M., Porter, A., Desimone, L., Birman, B. & Yoon, K. (2001) 'What Makes Professional Development Effective? Results From a National Sample of Teachers', *American Educational Research Journal*, 38(4), pp.915-945.

Gavin, J., Keough, M., Abravanel, M., Moudrakovski, T. & Mcbrearty, M. (2014) 'Motivations for participation in physical activity across the lifespan', *International Journal of Wellbeing*, 4(1), pp.46-61.

Gill, D. (2011) 'Beyond the qualitative–quantitative dichotomy: notes from a non-qualitative researcher', *Qualitative Research in Sport, Exercise and Health*, 3(3), pp. 305–312.

Giroux, H. (2004) 'Public pedagogy and the politics of neo-liberalism: making the political more pedagogical', *Policy Futures in Education*, 2, pp.494–503.

Goodyear, V. (2013) *Participatory action research: challenging the dominant practice architectures of physical education*. PhD thesis. University of Bedfordshire. Available at: http://uobrep.openrepository.com/uobrep/handle/10547/297585 (Accessed: 22 April 2018).

Goodyear, V. & Casey, A. (2015) 'Innovation with change: developing a community of practice to help teachers move beyond the 'honey-moon' of pedagogical renovation', *Physical Education and Sport Pedagogy*, 20(2), pp.186-203.

Goodyear, V., Casey, A. & Kirk, D. (2016) 'Practice architectures and sustainable curriculum renewal', *Journal of Curriculum Studies*, 49(2), pp.235-254.

Goodyear, V. & Dudley, D. (2015) ''I'm a Facilitator of Learning!" Understanding What Teachers and Students Do Within Student-Centered Physical Education Models', *Quest*, 67(3), pp.274-289.

Goodyear, V., Kerner, C. & Quennerstedt, M. (2017) 'Young people's uses of wearable healthy lifestyle technologies: surveillance, self-surveillance and resistance', *Sport, Education and Society*. doi: 10.1080/13573322.2017.1375907

Gordon, B. (2011) 'Teaching personal and social responsibility in New Zealand secondary school physical education', *New Zealand Physical Educator*, 44(1), pp.18-21.

Goudas, M. & Biddle, S. (1993) 'Pupil perceptions of enjoyment in physical education', *Physical Education Review*, 16, pp.145-150.

Gould, D. & Carson, S. (2008) 'Life skills development through sport: current status and future directions', *International Review of Sport and Exercise* Psychology, 1(1), pp.58-

78.

Gray, D. (2014) *Doing research in the real world*. 3rd edn. London: Sage Publications Ltd.

Greca, J., Arruda, G., Coledam, D., Pires, R., Teixeira, M. & Oliveira, A. (2016) 'Student and parental perception about physical activity in children and adolescents', *Revista Andaluza de Medicina del Deporte*, 9(1), pp.12-16.

Green, K. (2000) 'Exploring the everyday 'philosophies' of Physical Education teachers from a sociological perspective', *Sport Education and Society*, 5(2), pp.109-129.

Green, K. (2002) 'Physical education, lifelong participation and the work of Ken Roberts', *Sport, Education and Society*, 7(2), pp.167-182.

Green, K. (2003) *Physical education teachers on physical education: A sociological study of philosophies and ideologies*. Chester: Chester Academic Press.

Green, K. (2009) 'Exploring the everyday 'philosophies' of physical education teachers from a sociological perspective', in Bailey, R. & Kirk, D. (eds.) *The Routledge Physical Education Reader*. London: Routledge, pp.183-206.

Green, K. (2012) 'Mission impossible? Reflecting upon the relationship between physical education, youth sport and lifelong participation', *Sport, Education and Society*, 19(4), pp.357-375.

Grix, J. (2010) *The Foundations of Research*. 2nd edn. Basingstoke: Palgrave Macmillan.

Groundwater-Smith, S. & Mockler, N. (2007) 'Ethics in practitioner research: an issue of quality', *Research Papers in Education*, 22(2), pp.199-211.

Groundwater-Smith, S. & Mockler, N. (2009) *Teacher professional learning in an age of compliance*. Dordrecht: Springer.

Groundwater-Smith, S., Ewing, R. & Le Comu, R. (2003) *Teaching: challenges and dilemmas*. South Bank, Victoria: Thomson Learning.

Guba, E. (1990) 'The alternative paradigm dialog', in Guba, E. (ed.) *The paradigm dialog*. Newbury Park, CA: Sage, pp.17-30.

Gurvitch, R. & Metzler, M. (2013) 'Aligning learning activities with instructional models', *Journal of Physical Education, Recreation & Dance*, 84(3), pp.30-37.

Gurvitch, R., Blankenship, B., Metzler, M. & Lund, J. (2008) 'Chapter 3: student teachers' implementation of model-based instruction: facilitators and inhibitors', *Journal of Teaching in Physical Education*, 28, pp.466-486.

Guskey, T. (1986) 'Staff development and the process of teacher change', *Educational Researcher*, 15(5), pp.5-12.

Guskey, T. (1989) 'Attitude and perceptual change in teachers', *International Journal of Educational Research*, 13(4), pp.439-453.

Guskey, T. (1995) 'Professional Development in Education: In Search of the Optimal Mix', in Guskey, T. & Huberman, M. (eds.) *Professional Development in Education: New Paradigms and Practices*. New York: Teachers College Press, pp.114–131.

Guskey, T. R. (2000) *Evaluating professional development*. Thousand Oaks, CA: Corwin Press.

Guskey, T. (2002) 'Professional development and teacher change', *Teachers and Teaching: Theory and Practice*, 8(3), pp.381-391.

Haerens, L. & Tallir, I. (2012) 'Experimental research methods in physical education and

sports', in Armour, K. & Macdonald, D. (eds.) *Research methods in physical education and youth sport*. London: Routledge, pp.149-162.

Haerens, L., Aelterman, N., Van den Berghe, L., De Meyer, J., Soenens, B. & Vansteenkiste, M. (2013) 'Observing physical education teachers' need-supportive interactions in classroom settings', *Journal of Sport and Exercise Psychology*, 35, pp.3-17.

Haerens, L., Deforche, B., Maes, L., Cardon, G., Stevens, V. & De Bourdeaudhuij, I. (2006) 'Evaluation of a 2-year physical activity and healthy eating intervention in middle school children', *Health Education Research*, 2(6), pp.911-921.

Haerens, L., Kirk, D., Cardon, G. & De Bourdeaudhuij, I. (2011) 'Toward the development of a pedagogical model for health-based physical education', *Quest*, 63, pp.321-338.

Haerens, L., Kirk, D., Cardon, G., De Bourdeaudhuij, I. & Vansteenkiste, M. (2010) 'Motivational profiles for secondary school physical education and its relationship to the adoption of a physically active lifestyle among university students', *European Physical Education Review*, 16(2), pp.117-139.

Haerens, L., Maes, L., Vereecken, C., De Henauw, S., Moreno, L. & De Bourdeaudhuij, I. (2009) 'Effectiveness of a computer tailored physical activity intervention in adolescents compared to a generic advice', *Patient Education & Counseling*, 77(1), pp.38-41.

Hager, L. & Beighler, A. (2006) 'Promoting physical activity through physical education: increasing parental involvement', *Teaching Elementary Physical Education*, 17(1), pp.28-31.

Hagger, M. (2009) 'Theoretical integration in health psychology; unifying ideas and complementary explanations', *British Journal of Health Psychology*, 14(2), pp.189-194.

Hagger, M. & Chatzisaranatis, N. (2014) 'An integrated behavior change model for physical activity', *Exercise and Sport Sciences Reviews*, 42(2), pp.62-69.

Hagger, M., Chatzisarantis, N., Hein, V., Soós, I., Karsai, I., Lintunen, T. & Leemans, S. (2009) 'Teacher, peer and parent autonomy support in physical education and leisure-time physical activity: a trans-contextual model of motivation in four nations', *Psychology and Health*, 24(6), pp.689-711.

Halim, I. & Omar, A. (2011) 'A review on health effects associated with prolonged standing in the industrial workplaces', *International Journal of Recent Research and Applied Studies*, 8(1), pp.14-21.

Hallal, P., Andersen, L., Bull, F., Guthold, R., Haskell, W. & Ekelund, U. (2012) 'Global physical activity levels: surveillance progress, pitfalls, and prospects', *The Lancet*, 380, pp.247-257.

Hammersley, M. (2005) 'Countering the new "orthodoxy" in educational research: a response to Phil Hodkinson', *British Educational Research Journal*, 31(2), pp.139-155.

Hammond-Diedrich, K. & Walsh, D. (2006) 'Empowering youth through a responsibility-based cross-age program: an investigation into impact and possibilities', *Physical Educator,* 63(3), pp.134-142.

Hardman, A. & Stensel, D. (2009) *Physical activity and health: the evidence explained*. 2nd edn. London: Routledge.

Harris, J. (1994) 'Health-related exercise in the national curriculum: results of a pilot study in secondary schools', *British Journal of Physical Education*, 25, pp.15-19.

Harris, J. (1997) *Physical education: a picture of health? The implementation of health-related exercise in the National Curriculum in secondary schools in England*.

Unpublished PhD thesis. Loughborough University.

Harris, J. (2000) *Health-Related Exercise in the National Curriculum: Key stages 1 to 4.* Leeds: Human Kinetics.

Harris, J. (2005) 'Health-related exercise and physical education', in Green, K. & Hardman, K. (eds.) *Physical Education: Essential issues.* London: Sage, pp.78-97.

Harris, J. (2013) 'AfPE's position on health', *Physical Education Matters*, 8(1), pp.82-87.

Harris, J. (2014) 'Physical education teacher education students' knowledge, perceptions and experiences of promoting healthy, active lifestyles in secondary schools', *Physical Education and Sport Pedagogy*, 19(5), pp.466-480.

Harris, J. & Cale, L. (2006) 'A review of children's fitness testing', *European Physical Education Review*, 12(2), pp.201-225.

Harris, J. & Cale, L. (2018) *Promoting active lifestyles in schools*. Champaign, IL: Human Kinetics.

Harris, J., Cale, L., Duncombe, R. & Musson, H. (2016) 'Young people's knowledge and understanding of health, fitness and physical activity: issues, divides and dilemmas', *Sport, Education and Society*, 23(5), pp.407-420.

Harris, J., Cale, L. & Musson, H. (2011) 'The effects of a professional development programme on primary school teachers' perceptions of physical education', *Professional Development in Education*, 37(2), pp.291-305.

Harris, J. & Elbourn, J. (2002) *Warming up, cooling down*. 2nd edn. Champaign, IL: Human Kinetics.

Harris, J. & Leggett, G. (2015a) 'Influences on the expression of health within physical education curricula in secondary schools in England and Wales', *Sport, Education and Society*, 20(7), pp.908-923.

Harris, J. & Leggett, G. (2015b) 'Testing, training and tensions: the expression of health within physical education curricula in secondary schools in England and Wales', *Sport, Education and Society*, 20(4), pp.423-441.

Harter, S. (1981) 'A new self-report scale of intrinsic vs. extrinsic orientation in the classroom: motivational and informational components', *Developmental Psychology*, 17, pp.300–312.

Harvey, S. & Jarrett, K. (2014) 'A review of the game-centered approaches to teaching and coaching literature since 2006', *Physical Education and Sport Pedagogy*, 19(3), pp.278-300.

Harvey, S., Cushion, C. & Massa-Gonzalez, A. (2010) 'Learning a new method: teaching games for understanding in the coaches' eyes', *Physical Education and Sport Pedagogy*, 15, pp.361-382.

Hastie, P. (2003) *Teaching for Lifetime Physical Activity through High School Physical Education.* London: Pearson Education.

Hastie, P. (2010) 'Putting pedagogy back into sport pedagogy research: a case for more applied research in physical education'. Paper presented at the *British Educational Research Association Physical Education and Sport Pedagogy Special Interest Group (BERA PESP SIG)*. Invisible College, University of Warwick, 31 August.

Hastie, P. & Buchanan, A. (2000) 'Teaching responsibility through sport education: prospects of a coalition', *Research Quarterly for Exercise and Sport*, 71(4), pp.25-35.

Hastie, P. & Casey, A. (2014) 'Fidelity in models-based practice research in sport pedagogy: a guide for future investigations', *Journal of Teaching in Physical Education*, 33, pp.422-431.

Hastie, P., de Ojeda, D. & Calderón, A. (2011) 'A review of research on sport education: 2004 to the present', *Physical Education & Sport Pedagogy*, 16(2), pp.103-132.

Hastie, P., Van der Mars, H., Layne, T. & Wadsworth, D. (2012) 'The effects of prompts and a group-oriented contingency on out-of-school physical activity in elementary school-aged students', *Journal of Teaching in Physical Education*, 31, pp.131-145.

Hay, C. (2002) *Political Analysis*. Basingstoke: Palgrave Macmillan.

Heidorn, B., Weaver, R. & Beighle, A. (2016) 'Physical activity and physical education: a combined approach', *Journal of Physical Education, Recreation & Dance*, 87(4), pp.6-7.

Hellison, D. (2011) *Teaching Responsibility through Physical Activity*. 3rd ed. Champaign, IL: Human Kinetics.

Hellison, D. & Walsh, D. (2002) 'Responsibility-based youth program evaluation: investigating the investigations', *Quest,* 54, pp.292-307.

Hepples, J. & Stratton, G. (2007) 'The Physical Activity Signposting Scheme (PASS): The A-CLASS project', *Education and Health*, 25(3), pp.43-47.

Hervet, R. (1952) 'Vanves: son experience, ses perspectives [Vanves: its experience and its perspectives]', *Revue de l'Institut Nationals des Sports*, 24, pp.4-6.

HM Government (2015) *Sporting Future: a new strategy for an active nation*. Available at: https://www.gov.uk/government/publications/sporting-future-a-new-strategy-for-an-active-nation (Accessed: 22 April 2018).

HM Treasury (2018) *Soft drinks levy comes into effect*. Available at: https://www.gov.uk/government/news/soft-drinks-industry-levy-comes-into-effect (Accessed: 22 April 2018).

Hoban, G. (2002) *Teacher learning for educational change: A systems thinking approach*.

Buckingham: Open University Press.

Hollis, J., Sutherland, R., Williams, A., Campbell, E., Nathan, N., Wolfenden, L., Morgan, P., Lubans, D., Gillham, K. & Wiggers, J. (2017) 'A systematic review and meta-analysis of moderate-to-vigorous physical activity levels in secondary school physical education lessons', *International Journal of Behavioural Nutrition and Physical Activity*, 14(52). doi: 10.1186/s12966-017-0504-0

Holt, N. (ed.) (2008) *Positive youth development through sport*. London: Routledge.

Hooper, O., Harris, J. & Cale, L. (2017) 'Having their say: young people on healthy, active lifestyles', *Physical Education Matters*, 12(3), pp.51-52.

Hopple, C. & Graham, G. (1995) 'What children think, feel and know about physical fitness testing', *Journal of Teaching in Physical Education*, 14(4), pp.408-417.

Huber, M., Knottnerus, J., Green, L., Van der Horst, H., Jadad, A., Kromhout, D., Leonard, B., Lorig, K., Loureiro, M., Van der Meer, J., Schnabel, P., Smith, R., Van Weel, C. & Smid, H. (2011) 'How should we define health?', *British Medical Journal*, 343. doi: 10.1136/bmj.d4163

Hunt, K. & Metzler, M. (2017) 'Adoption of comprehensive school physical activity programs: a literature review', *Physical Educator*, 74(2), pp.315-340.

Hutchesson, M., Rollo, M., Callister, R. & Collins, C. (2015) 'Self-monitoring of dietary intake by young women: online food records completed on computer or smartphone are as accurate as paper-based food records but more acceptable', *Journal of the Academy of Nutrition and Dietetics*, 115, pp.87-94.

Ignico, A., Corson, A. & Vidoni, C. (2006) 'The effects of an intervention strategy on children's heart rates and skill performance', *Early Child Development and Care*, 176(7), pp.753-761.

Institute of Medicine (2013) *Educating the student body: Taking physical activity and Physical Education to school*. Available at: http://iom.nationalacademies.org/reports/2013/educating-the-student-body-taking-physical-activity-and-physical-education-to-school.aspx (Accessed: 23 April 2018).

International Physical Literacy Association (2017) *Definition of Physical Literacy*. Available at: https://www.physical-literacy.org.uk/ (Accessed: 22 April 2018).

Jaakkola, T., Sääkslahti, A., Yli-Piipari, S., Manninen, M., Watt, A. & Liukkonen, J. (2013) 'Student motivation associated with fitness testing in the physical education context', *Journal of Teaching in Physical Education*, 32(3), pp.270-286.

Janssen, I. & LeBlanc, A. (2010) 'Systematic review of the health benefits of physical activity and fitness in school-aged children and youth', *International Journal of Behavioral Nutrition and Physical Activity*, 7(40). doi: 10.1186/1479-5868-7-40

Jewett, A. & Bain, L. (1985) *The curriculum process in physical education*. Dubuque, IA: Brown & Benchmark.

Jewett, A. & Mullan, M. (1977) *Curriculum design: Purposes and processes in physical education teaching-learning*. Washington, DC: AAHPERD.

Jewett, A., Bain, L. & Ennis, C. (1995) *The curriculum process in physical education*. 2nd edn. Dubuque, IA: Brown & Benchmark.

Johnson, B. & Christensen, L. (2012) *Educational research: Quantitative, qualitative and mixed approaches*. 4th edn. CA: Sage.

Johnson, R. & Onwuegbuzie, A. (2004) 'Mixed methods research: a research paradigm whose time has come', *Educational Researcher,* 33(7), pp.14-26.

Johnson, R., Onwuegbuzie, A. & Turner, L. (2007) 'Toward a definition of mixed methods research', *Journal of Mixed Methods Research*, 1(2), pp.112-133.

Jones, I., Brown, L. & Holloway, I. (2013) *Qualitative research in sport and physical activity*. London: Sage.

Joyce, B. & Weil, M. (1980) *Models of Teaching*. 2nd edn. London: Prentice-Hall International.

Jun, T-W. (2014) 'Foreword', in Chin, M-K. & Edington, C. (eds.) *Physical Education and Health: Global Perspectives and Best* Practice. Urbana, IL: Sagemore Publishing LLC, p.vii.

Kahlmeier, S., Wijnhoven, T., Alpiger, P., Schweizer, C., Beda, J. & Martin, B. (2015) 'National physical recommendations: systematic overview and analysis of the situation in European countries', *BMC Public Health*, 15(133). doi: 10.1186/s12889-015-1412-3

Kapoor, D. & Jordan, S. (2009) *Education, participatory action research and social change: international perspectives*. New York, USA: Palgrave Macmillian.

Kaseva, K., Hintsa, T., Lipsanen, J., Pulkki-Råback, L., Hintsanen, M., Yang, X., Hirvensalo, M., Hutri-Kähönen, N., Raitakari, O., Keltikangas-Järvinen, L. & Tammelin, T. (2017) 'Parental physical activity associates with offspring's physical activity until middle age:

a 30-year study', *Journal of Physical Activity and Health*, 14(7), pp.520-525.

Kasser, T. & Ryan, R. (1996) 'Further examining the American dream: differential correlates of intrinsic and extrinsic goals', *Personality and Social Psychology Bulletin*, 22(3), pp.280-287.

Kay, W. (2003) 'Lesson planning with the NCPE 2000 - the revised unit of work', *Bulletin of PE*, 39(1), pp.31-42.

Keating, X. (2003) 'The current often implemented fitness tests in physical education programs: problems and future directions', *Quest*, 55, pp.141-160.

Keating, X., Silverman, S. & Kulinna, P. (2002) 'Preservice physical education teacher attitudes toward fitness tests and the factors influencing their attitudes', *Journal of Teaching in Physical Education*, 21, pp.193-207.

Kelder, S., Karp, G., Scruggs, P. & Brown, H. (2014) 'Chapter 1 Setting the stage: coordinated approaches to school health and physical education', *Journal of Teaching in Physical Education*, 33, pp.440-448.

Kelly, M. & Barker, M. (2016) 'Why is changing health-related behaviour so difficult?', *Public Health*, 136, pp.109-116.

Kemmis, S. (1982) *Action Research Reader*. 2nd edn. Victoria: Deakin University Press.

Kemmis, S. (2006) 'Participatory action research and the public sphere', *Educational Action Research*, 14(4), pp.459-476.

Kemmis, S. (2009) 'Action research as a practice-based-practice', *Educational Action Research*, 17(3), pp.463-474.

Kemmis, S. (2010) 'What is to be done? The place of action research', *Educational Action Research*, 18(4), pp.417-427.

Kemmis, S. & Grootenboer, P. (2008) 'Situating praxis in practice: Practice architectures and the cultural, social and material conditions for practice', in Kemmis, S. & Smith, T. (eds.) *Enabling praxis: Challenges for education*. Rotterdam: Sense Publishers, pp.37-62.

Kemmis, S. & McTaggart, R. (2008) 'Participatory action research: communicative action and the public sphere', in Denzin, N. & Lincoln, Y. (eds.) *Strategies of Qualitative Inquiry*. 3rd edn. Thousand Oaks, CA: Sage, pp.271-330.

Kemmis, S. & Smith, T. (2008a) 'Praxis and praxis development: about this book', in Kemmis, S. & Smith, T. (eds.) *Enabling Praxis, Challenges for Education*. Rotterdam: Sense Publishers, pp.3-14.

Kemmis, S. & Smith, T. (2008b) 'Conclusions and challenges: enabling praxis', in Kemmis, S. & Smith, T. (eds.) *Enabling Praxis, Challenges for Education*. Rotterdam: Sense Publishers, pp.263-286.

Kemmis, S. & Smith, T. (2008c) *Enabling Praxis, Challenges for Education*. Rotterdam: Sense Publishers.

Kerlinger, F. (1986) *Foundations of Behavioral Research*. 3rd edn. Fort Worth: Holt Rinehart & Winston.

Kerner, C. & Goodyear, V. (2017) 'The motivational impact of wearable healthy lifestyle technologies: a self-determination perspective on FitBits with adolescents', *American Journal of Health Education*, 48(5), pp.287-297.

Kesaniemi, A., Riddoch, C., Reeder, B., Blair, S. & Sorensen, T. (2010) 'Advancing the future

of physical activity guidelines in Canada: an independent expert panel interpretation of the evidence', *International Journal of Behavioral Nutrition and Physical Activity*, 7(41). doi: 10.1186/1479-5868-7-41

Kirk, D. (1986) 'Health related fitness as an innovation in the physical education curriculum', in Evans, J. (eds.) *Physical education, sport and schooling: Studies in the sociology of physical education*. Lewes: Falmer, pp.167–181.

Kirk, D. (2006) 'The 'obesity crisis' and school physical education', *Sport, Education and Society*, 11, pp.121-133.

Kirk, D. (2010) *Physical Education Futures*. London: Routledge.

Kirk, D. (2012) 'What is the future for physical education in the 21st century?' in Capel, S. & Whitehead, M. (eds.) *Debates in physical education*. London: Routledge, pp.220-231.

Kirk, D. (2013) 'Education value and models-based practice in physical education', *Educational Philosophy and Theory,* 45, pp.973-986.

Kirk, D. and Colquhoun, D. (1989) 'Healthism and daily physical education', *British Journal of Sociology of Education*, 10(4), pp.417-434.

Kirk, D. & Haerens, L. (2014) 'New research programmes in physical education and sport pedagogy', *Sport, Education and Society*, 19(7), pp.899-911.

Kirk, D., Lamb, C., Oliver, K., Ewing-Day, R., Fleming, C., Loch, A. & Smedley, V. (2018) 'Balancing prescription with teacher and pupil agency: spaces for manoeuvre within a pedagogical model for working with adolescent girls', *The Curriculum Journal*, 29(2), pp.219-237.

Kirk, D. & Macdonald, D. (2001) 'Teacher voice and ownership of curriculum change', *Journal of Curriculum Studies*, 33(5), pp.551-567.

Kloeppel, T., Kulinna, P., Stylianou, M. & Van der Mars, H. (2013) 'Teacher fidelity to one physical education curricular model', *Journal of Teaching in Physical Education*, 32(2), pp.186-204.

Knox, E., Musson, H. & Adams, E. (2015) 'Knowledge of physical activity recommendations in adults employed in England: associations with individual and workplace-related predictors', *International Journal of Behavioral Nutrition and Physical Activity*, 12(69). doi: 10.1186/s12966-015-0231-3

Kohl, H., Craig, C., Lambert, E., Inoue, S., Alkandari, J., Leetongin, G. & Kahlmeier, S. (2012) 'The pandemic of physical inactivity: global action for public health', *The Lancet*, 380, pp.294-305.

Koshy, V. (2010) *Action research for improving educational practice: A step-by-step guide*. London: Sage.

Kretchmar, R. (2006) 'Ten more reasons for quality physical education', *Journal of Physical Education, Recreation & Dance*, 77(9), pp.6–9.

Kretchmar, R. (2007) 'What to do with meaning? A research conundrum for the 21st century', *Quest*, 59, pp.373–383.

Kriemler, S., Meyer, U., Martin, E., Van Sluijs, E., Anderson, L. & Martin, B. (2011) 'Effect of school-based interventions on physical activity and fitness in children and adolescents: a review of reviews and systematic update', *British Journal of Sports Medicine*, 45, pp.923-930.

Kriemler, S., Zahner, L., Schindler, C., Meyer, U., Hartmann, T., Hebestreit, H., Brunner-La Roca, H., Van Mechelen, W. & Puder, J. (2010) 'Effect of school based physical activity

programme (KISS) on fitness and adiposity in primary schoolchildren: cluster randomised controlled trial', *British Medical Journal,* 340:c785. doi: 10.1136/bmj.c785

Kuhn, T. (1962) *The Structure of Scientific Revolutions*. Chicago: The University of Chicago College Press.

Kulinna, P. (2008) 'Models for curriculum and pedagogy in elementary school physical education', *The Elementary School Journal*, 108(3), pp.219-227.

Kulinna, P. & Cothran, D. (2017) 'Teacher beliefs and efficacy', in Ennis, C. (ed.) *Routledge Handbook of Physical Education Pedagogies*. London: Routledge.

Kvale, S. (1996) *Interviews*. London: Sage.

Lai, S., Costigan, S., Morgan, P., Lubans, D., Stodden, D., Salmon, J. & Barnett, L. (2014) 'Do school-based interventions focusing on physical activity, fitness, or fundamental movement skill competency produce a sustained impact in these outcomes in children and adolescents? A systematic review of follow-up studies', *Sports Medicine*, 44, pp.67-79.

Lally, P., Van Jaarsveld, C., Potts, H. & Wardle, J. (2010) 'How are habits formed: modelling habit formation in the real world', *European Journal of Social Psychology*, 40(6), pp.998-1009.

Lander, N., Eather, N., Morgan, P., Salmon, J. & Barnett, L. (2017) 'Characteristics of teacher training in school-based physical education interventions to improve fundamental movement skills and/or physical activity: a systematic review', *Sports Medicine*, 47(1), pp.135-161.

Landi, D., Fitzpatrick, K. & McGlashan, H. (2016) 'Models based practices in physical education: a sociocritical reflection', *Journal of Teaching in Physical Education*, 35(4), pp.400-411.

Langford, R., Bonell, C., Jones, H., Pouliou, T., Murphy, S., Waters, E., Komro, K., Gibbs, L., Magnus, D. & Campbell, R. (2014) 'The WHO health promoting school framework for improving the health and well-being of students and their academic achievement', *Cochrane Database of Systematic Reviews*, 4. Art. No.: CD008958. doi: 10.1002/14651858.CD008958.pub 2

Langley, K. & Kulinna, P. (2018) 'Developing a staff physical activity program at your school: implementing the lesser-used component of the CSPAP Model', *Journal of Physical Education, Recreation & Dance*, 89(2), pp.49-55.

Launder, A. (2001) *Play Practice*. Champaign, IL: Human Kinetics.

Lee, C. & Kim. C. (2014) 'The second prototype of the development of a technological pedagogical content knowledge based instructional design model: an implementation study in a technology integration course', *Contemporary Issues in Technology and Teacher Education*, 14(3), pp.297-326.

Lee, I-M., Shiroma, E., Lobelo, F., Puska, P., Blair, S. & Katzmarzyk, P. (2012) 'Effects of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy', *The Lancet*, 380(9838), pp.219-229.

Letts, W. (2013) 'Reflective practice', in Churchill, R., Ferguson, P., Godinho, S., Johnson, N., Keddie, A., Letts, W., Lowe, K., Mackay, J., McGill, M., Moss, J., Nagel, M., Shaw, K. & Vick, M. (eds.) *Teaching: Making a Difference*, 2nd ed. Milton, Qld: John Wiley and Sons Australia, pp. 460-487.

Levin, M. & Greenwood, D. (2011) 'Revitalizing universities by reinventing the social sciences', in Denzin, N. & Lincoln, Y. (eds.) *The Sage Handbook of Qualitative*

Research. 4ᵗʰ edn. London: Sage Publications Inc., pp.27-42.

Lim, B. & Wang, C. (2009) 'Perceived autonomy support, behavioural regulations in physical education and physical activity intention', *Psychology of Sport and Exercise*, 10(1), pp.52-60.

Lim, W., Ting, D., Loh, K., Loo, W. & Shaikh, S. (2013) 'Men's motivation to go to the gymnasium: a study of intrinsic and extrinsic motivation', *International Journal of Sport Management & Marketing,* 13(1), pp.122-139.

Lima-Serrano, M. & Lima-Rodríguez, J. (2014) 'Impact of school-based health promotion interventions aimed at different behavioural domains: a systematic review', *Gaceta Sanitaria*, 28(5), pp.411-417.

Lincoln, Y. & Guba, E. (1985) *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Loflin, J. (2015) 'Relationships between teacher fidelity and physical education student outcomes', *The Physical Educator*, 72, pp.359-383.

Lonsdale, C., Rosenkranz, R., Peralta, L., Bennie, A., Fahey, P. & Lubans, D. (2013a) 'A systematic review and meta-analysis of interventions designed to increase moderate-to-vigorous physical activity in school physical education lessons', *Preventive Medicine*, 56, pp.152-161.

Lonsdale, C., Rosenkranz, R., Sanders, T., Peralta, L., Bennie, A., Jackson, B., Taylor, I. & Lubans, D. (2013b) 'A cluster randomized controlled trial of strategies to increase adolescents' physical activity and motivation in physical education: results of the Motivating Active Learning in Physical Education (MALP) trial', *Preventive Medicine*, 57(5), pp.696-702.

Lounsbery, M., McKenzie, T., Trost, S. & Smith, N. (2011) 'Facilitators and barriers to adopting evidence-based physical education in elementary schools', *Journal of Physical Activity and Health*, 8(Suppl1), S17-25.

Loucks-Horsley, S. (1999) *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin Press.

Loughborough University (2018) *Doctoral College Handbook. 2018-19 Academic Year*. Available at: https://www.lboro.ac.uk/media/wwwlboroacuk/external/content/services/loughboroughdoctoralcollege/downloads/Doctoral%20College%20Handbook%202018-19.pdf (Accessed: 13 November 2018).

Lubans, D., Foster, C. & Biddle, S. (2008) 'A review of mediators of behavior in interventions to promote physical activity among children and adolescents', *Preventive Medicine*, 47, pp.463–470.

Lubans, D., Morgan, P., Callister, R. & Collins, C. (2009) 'Effects of integrating pedometers, parental materials, and E-mail support within an extracurricular school sport intervention', *Journal of Adolescent Health*, 44(2), pp.176-183.

Luguetti, C., Oliver, K., Dantas, L. & Kirk, D. (2017) '"The life of crime does not pay; stop and think!" The process of co-constructing a prototype pedagogical model of sport for working with youth from socially vulnerable backgrounds', *Physical Education and Sport Pedagogy*, 22(4), pp.329-348.

Luke, M. & Sinclair, G. (1991) 'Gender differences in adolescents' attitudes toward school physical education', *Journal of Teaching in Physical Education*, 11(1), pp.31-46.

Lund, J. & Tannehill, D. (eds.) (2005) *Standards-based Physical Education Curriculum Development*. Sudbury, MA: Jones and Bartlett Publishers.

Lund, J. & Tannehill, D. (eds.) (2010) *Standards-based Physical Education Curriculum Development*. 2nd edn. Sudbury, MA: Jones and Bartlett Publishers.

Lund, J. & Tannehill, D. (eds.) (2015) *Standards-based Physical Education Curriculum Development*. 3rd edn. Burlington, MA: Jones and Bartlett Publishers.

Macdonald, D. (2002) 'Extending agendas: Physical culture research for the twenty-first Century', in Penney, D. (ed.) *Gender and physical education: Contemporary issues and future directions*. London: Routledge, pp.208-222.

Macdonald, D. (2003) 'Curriculum change and the post-modern world: Is the curriculum reform movement an anachronism?' *Journal of Curriculum Studies*, 35(2), pp.139-149.

Macdonald, D. (2004) 'Curriculum change in health and physical education: the devil's perspective', *Journal of Physical Education New Zealand*, 37, pp.70-83.

MacEwan, B., MacDonald, D. & Burr, J. (2015) 'A systematic review of standing and treadmill desks in the workplace', *Preventive Medicine*, 70, pp.50-58.

Mack, L. (2010) 'The Philosophical Underpinnings of Educational Research', *Polyglossia*, 19, pp.5-11.

MacPhail, A. (2007) 'Teachers' views on the construction, management and delivery of an externally prescribed physical education curriculum: Higher Grade Physical Education', *Physical Education and Sport Pedagogy*, 12(1), pp.43–60.

Makkai, T., Morris, L., Sallybanks, J. & Willis, K. (2003) 'Sport, physical activity and antisocial behaviour in youth', *Trends and issues in crime and criminal justice*, no. 249. Available at: https://aic.gov.au/publications/tandi/tandi249 (Accessed: 23 April 2018).

Marshall, S. & Welk, G. (2008). 'Definitions and measurement', in Smith, A. & Biddle, S. (eds.) *Youth physical activity and sedentary behavior*. Champaign: Human Kinetics, pp.3-29.

Martins, J., Marques, A., Sarmento, H. & Carreiro da Costa, F. (2015) 'Adolescents' perspectives on the barriers and facilitators of physical activity: a systematic review of qualitative studies', *Health Education Research*, 30(5), pp.742-755.

Masterman, M. (1970) 'The nature of paradigms', in Lakatos, I. & Musgrave, A. (eds.) *Criticism and the growth of knowledge*. New York: Cambridge University Press.

McAuley, E., Wraith, S. & Duncan, T. (1991) 'Self efficacy, perceptions of success, and intrinsic motivation for exercise', *Journal of Applied Social Psychology,* 21(2), pp.139-155.

McCaughtry, N., Sofo, S., Rovegno, I. & Curtner-Smith, M. (2004) 'Learning to teach sport education: Misunderstandings, pedagogical difficulties, and resistance', *European Physical Education Review*, *10*(2), pp.135-155.

McConnell, K. (2005) 'Fitness Education', in Lund, J. & Tannehill, D. (eds.) *Standards-based Physical Education Curriculum Development*. Sudbury, MA: Jones and Bartlett Publishers, pp.262-279.

McConnell, K. (2015) 'Fitness and Wellness Education', in Lund, J. & Tannehill, D. (eds.) *Standards-based physical education curriculum development*. 3rd edn. Burlington, MA: Jones & Bartlett Learning, pp.365-383.

McDermott, L. (2012) '"Thrash yourself Thursday": The production of the 'healthy' child through a fitness-based PE practice', *Sport, Education and Society*, 17(3), pp.405-429.

McIntyre, A. (2008) *Participatory Action Research*. Thousand Oaks, California: Sage Publications Inc.

McKenzie, T. (2001) 'Back to the future: health-related physical education' in Ward, P. & Doutis, P. (eds.) *Physical education for the 21st century.* Lincoln: University of Nebraska, pp.113–131.

McKenzie, T. (2007) 'The preparation of physical educators: a public health perspective', *Quest*, 59, pp.346-357.

McKenzie, T. & Kahn, D. (2008) 'Physical activity, public health, and elementary schools', *The Elementary School Journal*, 108, pp.171-180.

McKenzie, T. & Lounsbery, M. (2009) 'School physical education: the pill not taken', *American Journal of Lifestyle Medicine*, 3(3), pp.219-225.

McKenzie, T. & Lounsbery, M. (2013) 'Physical education teacher effectiveness in a public health context', *Research Quarterly for Exercise and Sport*, 84(4), pp.419-430.

McKenzie, T. & Marshall, S. (2000) 'Student activity levels, lesson context, and teacher behavior during middle school physical education', *Research Quarterly for Exercise and Sport*, 71, pp.249–259.

McKenzie, T., Catellier, D., Conway, T., Lytle, L., Grieser, M., Webber, L., Pratt, C. & Elder, J. (2006) 'Girls' activity levels and lesson contexts during middle school PE: TAAG baseline', *Medicine & Science in Sports & Exercise*, 38(7), pp.1229-1235.

McKenzie, T., Li, D., Derby, C., Webber, L., Luepker, R. & Cribb, P. (2003) Maintenance of effects of the CATCH physical education program: results from the CATCH-ON study', *Health Education and Behavior,* 30, pp.447–462.

McKenzie, T., Sallis, J. & Rosengard, P. (2009). 'Beyond the Stucco Tower: design, development, and dissemination of the SPARK physical education programs', *Quest*, 61, pp.114-127.

McKenzie, T., Sallis, J., Elder, J., Berry, C., Hoy, P., Nader, P., Zive, M. & Broyles, S. (1997) 'Physical activity levels and prompts in young children at recess: a two-year study of a bi-ethnic sample', *Research Quarterly for Exercise and Sport*, 68, pp.195-202.

McKenzie, T., Sallis, J., Rosengard, P. & Ballard, K. (2016) 'The SPARK programs: a public health model of physical education research and dissemination', *Journal of Teaching in Physical Education*, 35(4), pp.381-389.

McLaughlin, C., Black-Hawkins, K. & McIntyre, D. (2008) *Networking practitionerresearch*. London: Routledge.

McLeroy, K., Bibeau, D., Steckler, A. & Glanz, K. (1988) 'An ecological perspective on health promotion programs', *Health Education Quarterly*, 15, pp.351-377.

McMahon, E. & MacPhail, A. (2007) 'Learning to teach sport education: the experiences of a preservice teacher', *European Physical Education Review*, 13(2), pp.229-46.

McMullen, J., Ní Chróinín, D., Tammelin, T., Pogorzelska, M. & Van der Mars, H. (2015) 'International Approaches to Whole-of-School Physical Activity Promotion', *Quest*, 67(4), pp.384-399.

McNeill, M., Fry, J., Wright, S., Tan, W., Tan, K. & Schempp, P. (2004) 'In the local context: Singaporean challenges to teaching games on practicum', *Sport Education and Society*, 9(1), pp.3–32.

McTaggart, R. & Curró, C. (2009) 'Action Research for curriculum internationalization: education versus commercialization', in Kapoor, D. & Jordan, S. (eds.) *Education, participatory action research and social change: international perspectives*. New York, USA: Palgrave Macmillian, pp. 89-106.

Mehta, R., Shortz, A. & Benden, M. (2015) 'Standing up for learning: a pilot investigation on the neurocognitive benefits of stand-biased school desks', *International Journal of Environmental Research and Public Health*, 13(1). doi: 10.3390/ijerph13010059

Metcalf, B., Henley, W. & Wilkin, T. (2012) 'Effectiveness of intervention on physical activity of children: systematic review and meta-analysis of controlled trials with objectively measured outcomes', *British Medical Journal*, 345: e5888, pp.1-11. doi: 10.1136/bmj.e5888

Metzler, M. (2000) *Instructional models for physical education.* Scottsdale, Arizona: Holcomb Hathaway, Publishers.

Metzler, M. (2005) *Instructional models for physical education.* 2nd edn. Scottsdale, Arizona: Holcomb Hathaway, Publishers.

Metzler, M. (2011) *Instructional models for physical education.* 3rd edn. Scottsdale, Arizona: Holcomb Hathaway, Publishers.

Metzler, M., McKenzie, T., Van der Mars, H., Barrett-Williams, S. & Ellis, R (2013a) 'Health Optimizing Physical Education (HOPE): A new curriculum for school programs - Part 1: Establishing the need and describing the model', *Journal of Physical Education, Recreation & Dance*, 84(4), pp.41-47.

Metzler, M., McKenzie, T., Van der Mars, H., Barrett-Williams, S. & Ellis, R. (2013b) 'Health Optimizing Physical Education (HOPE): A new curriculum for school programs - Part 2: Teacher knowledge and collaboration', *Journal of Physical Education, Recreation & Dance*, 84(5), pp.25-34.

Meyers, C. & Brandt, W. (eds.) (2015) *Implementation fidelity in education research: Designer and valuator considerations*. London: Routledge.

Michie, S. & Abraham, C. (2004) 'Interventions to change health behaviours: evidence-based or evidence-inspired?', *Psychological Health*, 19, pp.29-49.

Michie, S., Van Stralen, M. & West, R. (2011) 'The behaviour change wheel: a new method for characterising and designing behaviour change interventions', *Implementation Science*, 6(42). doi: 10.1186/1748-5908-6-42

Mockler, N. (2005) 'Trans/forming teachers: new professional learning and transformative teacher professionalism', *Journal of In-service Education*, 31(4), pp.733-746.

Moody, A. (2016) 'Adult overweight and obesity', in Fuller, E., Mindell, J. & Prior, G. (eds.) *Health Survey for England 2015*. London: NHS Digital. Available at: http://www.content.digital.nhs.uk/catalogue/PUB22610/HSE2015-Adult-obe.pdf (Accessed: 22 April 2018).

Morgan, D. (2007) 'Paradigms lost and pragmatism regained: methodological implications of combining qualitative and quantitative methods', *Journal Of Mixed Methods Research*, 1(1), pp.48-76.

Morgan, M., Ludlow, L., Kitching, K., O'leary, M. & Clarke, A. (2010) 'What makes teachers tick? Sustaining events in new teachers' lives', *British Educational Research Journal*, 36, pp.191-208.

Morrison, J. & Harms, A. (2018) *Advancing evidence-based practice through program evaluation: A practical guide for school-based professionals*. New York: Oxford University Press.

Mosston, M. (1966) *Teaching physical education: From command to discovery*. Columbus, Ohio: Charles E. Merrill Publishing Co.

Muijs, D. & Lindsay, G. (2008) 'Where are we at? An empirical study of levels and methods of evaluating continuing professional development', *British Educational Research Journal*, 34, pp.195-211.

National Association for Sport and Physical Education (2004) *Moving into the future: National standards for physical education*. 2nd edn. Reston, VA: NASPE.

National Health Service (2017) *National Child Measurement Programme*. Available at: https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/national-child-measurement-programme-england-2016-17 (Accessed: 23 April 2018).

National Health Service (2017) *Overcoming the barriers to exercise*. Available at: https://www.nhs.uk/Livewell/c25k/Pages/overcoming-the-barriers-to-exercise.aspx (Accessed: 22 April 2018).

National Institute for Health and Care Excellence (NICE) (2009) *Promoting physical activity for children and young people*. Available at: https://www.nice.org.uk/guidance/ph17 (Accessed: 23 April 2018).

National Institute for Health and Care Excellence (NICE) (2015) *Obesity in children and young people: Prevention and lifestyle weight management programmes*. Available at: https://www.nice.org.uk/guidance/qs94

National Institutes of Health and National Heart, Lung, and Blood Institute (2006) 'Your Guide to Physical Activity and your Heart'. Washington, DC: United States Department of Health and Human Services. Available at: http://www.nhlbi.nih.gov/files/docs/public/heart/phy_active.pdf (Accessed: 23 April 2018).

Nauta, J., Martin-Diener, E., Martin, B., Van Mechelen, W. & Verhagen, E. (2015) 'Injury risk during different physical activity behaviours in children: a systematic review with bias assessment', *Sports Medicine,* 45, pp.327–336.

Neuman, W. (2014) *Social Research Methods: Qualitative and Quantitative Approaches*. 7th edn. Harlow: Pearson Education Limited.

Newton, A. & Bowler, M. (2015) 'Assessment for and of learning in PE', in Capel, S. & Whitehead, M. (eds.) *Learning to Teach Physical Education in the Secondary School: A Companion to School Experience*. 4th edn. London: Routledge, pp.140-155.

Ní Chróinín, D., Murtagh, E., & Bowles, R. (2012) 'Flying the 'Active School Flag': Physical activity promotion through self-evaluation in primary schools in Ireland', *Irish Educational Studies*, 31(3), pp.281–296.

Nike, Inc. (2012) *Designed to Move*. Available at: http://www.designedtomove.org (Accessed 22 April 2018).

Noffke, S. & Somekh, B. (2013) *The Sage Handbook of Educational Action* Research. 2nd edn. Los Angeles: Sage.

Ntoumanis, N. (2001) 'A self-determination approach to the understanding of motivation in physical education', *British Journal of Educational Psychology*, 71(2), pp.225-242.

Ntoumanis, N. (2005) 'A prospective study of participation in optional school physical education based on self-determination theory', *Journal of Educational Psychology*, 97, pp.444-453.

Ntoumanis, N. (2012) 'A self-determination theory perspective on motivation in sport and Physical Education: Current trends and possible future research directions', in Roberts, G. & Treasure, D. (eds.) *Advances in Motivation in Sport and Exercise*. 3rd edn.

Champaign, IL: Human Kinetics, pp.91-128.

Ntoumanis, N. & Standage, M. (2009) 'Morality in sport: a self-determination theory perspective', *Journal of Applied Sport Psychology*, 21(4), pp.365-380.

O'Donovan, T., MacPhail, A. & Kirk, D. (2010) 'Active citizenship through sport education', *Education 3-13*, 38(3), pp.203-215.

O'Sullivan, M. (2005) 'Beliefs of teachers and teacher candidates: Implications for teacher education', in Carriero da Costa, F., Cloes, M. & Gonzales, M. (eds) *The Art and Science of Teaching in Physical Education and Sport*. Lisbon: Universidade De Tecnica, pp.149-164.

Organisation for Economic Co-operation and Development (2015) 'Embedding professional development in schools for teacher success, Working Paper. *Teaching in Focus, 10*. Available at: http://dx.doi.org/10.1787/5js4rv7s7snt-en (Accessed: 29 November 2018).

O'Sullivan, M. & MacPhail, A. (eds.) (2010) *Young people's voices in physical education and youth sport*. London: Routledge.

Ofsted (2014) *The PE and sport premium for primary schools: Good practice to maximise effective use of funding*. Available at: https://www.gov.uk/government/publications/the-pe-and-sport-premium-for-primary-schools (Accessed: 23 April 2018).

Ofsted (2018) *School Inspection Handbook*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/699810/School_inspection_handbook_section_5.pdf (Accessed: 23 April 2018).

Öhman, M. & Quennerstedt, M. (2012) 'Observational studies', in Armour, K. & Macdonald, D. (eds.) *Research methods in Physical Education and youth sport.* London: Routledge, pp.189-203.

Okely, A., Salmon, J., Trost, T. & Hinkley, T. (2008) Discussion paper for the development of physical activity recommendations for children under five years. Canberra: Australian Department of Health & Ageing, pp.1-191.

Oliver, K & Kirk, D. (2015) *Girls, Gender and Physical Education: An activist approach*. London: Routledge.

Oslin, J. & Mitchell, S. (2006) 'Game-Centred Approaches to Teaching Physical Education', in Kirk, D., MacDonald, D. & O'Sullivan, M. (eds.) *The Handbook of Physical Education*. London: Sage, pp.627–651.

Palmer, S. & Bycura, D. (2014) 'Beyond the gym: increasing outside of school physical activity through physical education', *Journal of Physical Education, Recreation & Dance*, 85(1), pp.28-35.

Pandey, S. & Patnaik, S. (2014) 'Establishing reliability and validity in qualitative inquiry: a critical examination', *Jharkhand Journal of Development and Management Studies*, 12(1), pp.5743-5753.

Pardo, M., Bengoechea, G., Lanaspa, G., Bush, P., Casterad, Z., Clemente, J. & Gonzalez, G. (2013) 'Promising school-based strategies and intervention guidelines to increase physical activity of adolescents', *Health Education Research*, 28(3), pp.523-538.

Pate, R. & Hohn, R. (1994) 'Introduction: A contemporary mission for physical education', in Pate, R. & Hohn, R. (eds.) *Health and fitness through physical education*. Champaign, IL: Human Kinetics, p.2.

Pate, R., Freedson, P., Sallis, J., Taylor, W., Sirard, J., Trost, S. & Dowda, M. (2002)

'Compliance with physical activity guidelines: prevalence in a population of children and youth', *Annals of Epidemiology*, 12(5), pp.303–308.

Patton, M. (2002) *Qualitative research and evaluation methods*. 3rd edn. Thousand Oaks, CA: Sage.

Penney, D. & Chandler, T. (2000) 'Physical Education: What future(s)?', *Sport, Education and Society*, 5(1), pp.71-87.

Penuel, W., Fishman, B., Yamaguchi, R., & Gallagher, L. (2007) 'What makes professional development effective? Strategies that foster curriculum implementation' *American Educational Research Journal*, 44(4), pp.921–958.

Petitpas, A., Cornelius, A. & Van Raalte J. (2008) 'Youth development through sport: It's all about relationships', in Holt, N. (ed) *Positive youth development through sport*. London: Routledge, pp.61-70.

Pill, S., Swabey, K. & Penney, D. (2017) 'Investigating PE teacher use of Models Based Practice in Australian secondary PE', *Revue phenEPS/PHEnex Journal*, 9(1), pp.1-19.

Ponterotto, J. (2005) 'Qualitative Research in Counseling Psychology: A Primer on Research Paradigms and Philosophy of Science', *Journal of Counseling Psychology*, 52(2), pp.126-136.

Pratt M., Macera, C., Sallis, J., O'Donnell, M. & Frank, L. (2004) 'Economic interventions to promote physical activity: applications of the SLOTH model', *American Journal of Preventive Medicine*, 27 (suppl 3), pp.136-45.

Pritchard, P., Hawkins, A. & Wiegand, R. (2008) 'Effects of two instructional approaches on skill development, knowledge, and game performance', *Measurement in Physical Education and Exercise Science*, 12, pp.219-236.

Prochaska, J., Redding, C. & Evers, K. (2008) 'The transtheoretical model and stages of change', in Glanz, K., Rimer, B. & Viswanath, K. (eds.) *Health behavior and health education: theory, research and practice*. 4th ed. San Francisco: Wiley, pp.97–121.

Public Health England (2014) *Everybody active, every day*. London: Public Health England.

Public Health England, Youth Sport Trust & Association of Colleges Sport (2015) *What works in schools and colleges to increase physical activity?* Available at: https://www.gov.uk/government/publications/what-works-in-schools-to-increase-physical-activity-briefing (Accessed: 23 April 2018).

Puhse, U., Barker, D., Brettschneider, W-D., Feldmenth, A., Gerlach, E., McCuaig, L., McKenzie, T. & Gerber, M. (2011) 'International approaches to health-oriented physical education – local health debates and differing conceptions of health', *International Journal of Physical Education*, 3, pp.2-15.

Quality Assurance Agency (2014) *UK Quality Code for Higher Education. Part A: Setting and Maintaining Academic Standards. The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies*. Available at: https://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf (Accessed: 13 November 2018).

Quennerstedt, M. (2008) 'Exploring the relation between physical activity and health – a salutogenic approach to physical education', *Sport, Education and Society*, 13(3), pp.276-283.

Quennerstedt, M. (2010) '"Warning: physical education can seriously harm your health!" – but it all depends on your health perspective', in Brown, S. (ed.) *Issues and controversies in physical education: Policy, power and pedagogy*. Auckland, NZ: Pearson Education, pp.46-56.

Quennerstedt, M. & Ohman, M. (2014) 'Salutogenic approaches to health and the body', in Fitzpatrick, K. & Tinning, R. (eds.) *Health Education: Critical Perspectives*. London: Routledge, pp.190-203.

Quinn, P. & Strand, B. (1995) 'A comparison of two instructional formats on heart rate intensity and skill development, *Physical Educator*, 52(2), pp.62-69.

Quitério, A. (2012) 'School physical education: the effectiveness of health-related interventions and recommendations for health-promotion practice', *Health Education Journal*, 72(6), pp.716-732.

Reeve, J. (2009) 'Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive', *Educational Psychologist*, 44(3), pp.159-175.

Reeve, J. & Jang, H. (2006) 'What teachers say and do to support students' autonomy during a learning activity', *Journal of Educational Psychology*, 98(1), pp.209-218.

Reeve, J., Jang, H., Carrell, D., Jeon, S. & Barch, J. (2004) 'Enhancing students' engagement by increasing teachers' autonomy support', *Motivation and Emotion*, 28, pp.147-169.

Reiff, C., Marlatt, K. & Dengel, D. (2012) 'Difference in calorific expenditure in sitting versus standing desks', *Journal of Physical Activity and Health*, 9, pp.1009-1011.

Reiner, M., Niermann, C., Jekauc, D. & Woll, A. (2013) 'Long-term health benefits of physical activity – a systematic review of longitudinal studies', *BMC Public Health*, 13(813). doi: 10.1186/1471-2458-13-813.

Rich, E. (2011) '"I see her being obesed": public pedagogy, reality media and the obesity crisis', *Health*, 15, pp.3–21.

Rich, E. & Mansfield, L. (2018) 'Fat and Physical Activity: Understanding and challenging Weight Stigma - Special Issues of Fat Studies: An Interdisciplinary Journal of Body Weight and Society' *Fat Studies*. https://doi.org/10.1080/21604851.2019.1552823.

Richard, L., Gauvin, L. & Raine, K. (2011) 'Ecological models revisited: their uses and evolution in health promotion over two decades', *Annual Review of Public Health*, 32(1), pp.307-326.

Robinson, D. & Randall, L. (eds.) (2016) *Social Justice in Physical Education: Critical reflections and pedagogies for change*. Ontario: Canadian Scholars' Press Inc.

Rogers, E. M. (2003) *Diffusion of innovations* (5th ed.) New York: Free Press.

Ross, J., Dotson, C., Gilbert, G. & Katz, S. (1985) 'What are kids doing in school physical education?', *Journal of Physical Education, Recreation and Dance*, 56(1), pp.73-76.

Roth, M. & Stamatakis, E. (2010) 'Linking young people's knowledge of public health guidelines to physical activity levels in England', *Pediatric Exercise Sciences*, 22, pp.467-476.

Rovegno, I. (1998) 'The development of in-service teachers' knowledge of a constructivist approach to physical education: teaching beyond activities', *Research Quarterly for Exercise and Sport*, 69, pp.147-162.

Russ, L., Webster, C., Beets, M. & Phillips, D. (2015) 'Systematic review and meta-analysis of multi-component interventions through schools to increase physical activity', *Journal of Physical Activity & Health*, 12(10), pp.1436-1446.

Ryan, R. & Deci, E. (2017) *Self-determination theory: Basic psychological needs in motivation, development and wellness*. London: The Guilford Press.

Ryan, R., Frederick, C., Lepes, D., Rubio, N. & Sheldon, K. (1997) 'Intrinsic motivation and exercise adherence', *International Journal of Sport Psychology*, 28, pp.235-254.

Ryley, A. (2013) 'Children's BMI, overweight and obesity', in Craig, R. & Mindell, J. (eds.) *Health Survey for England 2012: Volume 1 Health, Social Care and Lifestyles.* London: NHS Digital. Available at: http://www.hscic.gov.uk/catalogue/PUB13218 (Accessed: 23 April 2018).

Sallis, J. & Owen, N. (1999) *Physical Activity & Behavioral Medicine.* Thousand Oaks, CA: Sage Publications, Inc.

Sallis, J., Bull, F., Guthold, R., Heath, G., Inoue, S., Oyeyemi, A., Perez, L., Richards, J. & Hallal, P. (2016) 'Progress in physical activity over the Olympic quadrennium', *The Lancet*, 388(10051), pp.1325-1336.

Sallis, J., Cervero, R., Ascher, W., Henderson, K., Kraft, K. & Kerr, J. (2006) 'An ecological approach to creating active living communities', *Annual Review of Public Health*, 27, pp.297-322.

Sallis, J., McKenzie T., Conway, T., Elder, J., Prochaska, J., Brown, M., Zive, M., Marshall, S. & Alcarez, J. (2003) 'Environmental interventions for eating and physical activity: a randomized controlled trial in middle schools', *American Journal of Preventive Medicine*, 24(3), pp.209-217.

Sallis, J., McKenzie, T., Beets, M., Beighle, A., Erwin, H. & Lee, S. (2012) 'Physical Education's Role in Public Health', *Research Quarterly for Exercise and Sport*, 83(2), pp.125-135.

Sallis, J., Owen, N. & Fisher, E. (2008) 'Ecological models of health behavior', in Glanz, K., Rimer, B. & Viswanath, K. (eds.) *Health behavior and health education: Theory, research, and practice.* 4th edn. San Francisco, CA: Jossey-Bass, pp.465-485.

Sallis, J., Prochaska, J. & Taylor, W. (2000) 'A review of correlates of physical activity of children and adolescents', *Medicine and Science in Sports and Exercise,* 32(5), pp.963-975.

Salmon, Booth, M., Phongsavan, P., Murphy, N. & Timperio, A. (2007) 'Promoting physical activity participation among children and adolescents', *Epidemiologic Reviews*, 29(1), pp.144-159.

Sammon, P., Bowler, M., Casey, A., Haerens, L. & Kirk, D. (2011) 'Developing a professional development programme for teachers to implement and sustain a Health-Based Physical Education model in their schools'. Paper presented at the *British Educational Research Association Annual Conference*. Institute of Education, London, 6-8 September.

Sandford, R., Duncombe, R. & Armour, K. (2008) 'The role of physical activity/sport in tackling youth disaffection and anti-social behaviour', *Educational Review*, 60(4), pp.419-435.

Scantling, E., Dugdale, H., Bishop, P., Lackey, D. & Strand, B. (1998) 'The effects of two instructional formats on the heart rate intensity and skill development of physical education students', *Physical Educator*, 55, pp.138-144.

Schmuck, R. (2006) *Practical action research for change.* Thousand Oaks, CA: Corwin Press.

Scholes, S. (2016) 'Physical activity in children', in Fuller, E., Mindell, J. & Prior, G. (eds.) *Health Survey for England 2015.* London: NHS Digital. Available at: http://webarchive.nationalarchives.gov.uk/20180328130852tf_/http://content.digital.nhs.

uk/catalogue/PUB22610/HSE2015-Child-phy-act.pdf/ (Accessed: 23 April 2018).

Scholes, S. (2017) 'Physical Activity in Adults', in NatCen Social research and UCL (eds.) *Health Survey for England 2016*. London: NHS Digital. Available at: https://digital.nhs.uk/catalogue/PUB30169 (Accessed: 23 April 2018).

Scholes, S. & Mindell, J. (2013) 'Physical Activity in Children', in Craig, R. & Mindell, J. (eds.) *Health Survey for England 2012: Volume 1 Health, Social Care and Lifestyles*. London: NHS Digital. Available at: http://www.hscic.gov.uk/catalogue/PUB13218 (Accessed: 23 April 2018).

Sebba, J. (1996) 'Developing Inclusive Schools', *University of Cambridge Institute of Education*, 31, p.3.

Sedentary Behaviour and Obesity Expert Working Group (2010) *Sedentary Behaviour and Obesity: Review of the Current Scientific Evidence.* London: Department of Health. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213745/dh_128225.pdf (Accessed: 23 April 2018).

Shulman, L. (1987) 'Knowledge and teaching: foundations of the new reform', *Harvard Educational Review*, 57(1), pp.1-23.

Siedentop, D. (1996) 'Valuing the Physically Active Life: Contemporary and future directions', *Quest*, 48, pp.266-274.

Siedentop, D. (2002) 'Content knowledge for physical education', *Journal of Teaching in Physical Education*, 21, pp.368-77.

Siedentop, D., Hastie, P. & Van der Mars, H. (2011) *Complete Guide to Sport Education*. Champaign, IL: Human Kinetics.

Siedentop, D. & Tannehill, D. (2000) *Developing teaching skills in physical education*. 4th edn. Mountain View, CA: May Publishing Company.

Silverman, S., Keating, X. & Phillips, S. (2008) 'A lasting impression: a pedagogical perspective on youth fitness testing', *Measurement in Physical Education*, 12, pp.146-166.

Sims J., Scarborough, P. & Foster, C. (2015) 'The effectiveness of interventions on sustained childhood physical activity: a systematic review and meta-analysis of controlled studies', *PLoS ONE*, 10(7). doi: 10.1371/journal.pone.0132935

Sinelnikov, O. (2009) 'Sport education for teachers: professional development when introducing a novel curriculum model', *European Physical Education Review*, 15, pp.91-114.

Sirriyeh, R., Lawton, R. & Ward, J. (2010) 'Physical activity and adolescents: an exploratory randomized controlled trial investigating the influence of affective and instrumental text messages', *British Journal of Health Psychology*, 15(4), pp.825-840.

Slingerland, M. (2014) *Physical Education's contribution to levels of physical activity in children and adolescents*. Unpublished PhD Thesis. Maastricht University. Available at: https://cris.maastrichtuniversity.nl/portal/en/publications/physical-educations-contribution-to-levels-of-physical-activity-in-children-and-adolescents(b8e50ef0-456c-4e55-88b1-37cdacf6438b).html (Accessed: 27 April 2018).

Slingerland, M. & Borghouts, L. (2011) 'Direct and indirect influence of physical education-based interventions on physical activity: a review', *Journal of Physical Activity & Health*, 8, pp.866-878.

Society for Health and Physical Educators (SHAPE America) (2013) *National Standards for K-12 Physical Education*. Reston, VA: SHAPE. Available at: https://www.shapeamerica.org/standards/pe/ (Accessed: 23 April 2018).

Somekh, B. & Zeichner, K. (2009) 'Action research for educational reform: Remodelling action research theories and practices in local contexts', *Educational Action Research*, 17(1), pp.5-21.

Sparkes, A. (1989) 'Health related fitness: an example of innovation without change', *The British Journal of Physical Education*, Summer, pp.60-63.

Sparkes, A. & Smith, B. (2014) *Qualitative research methods in sport, exercise and health: From process to product*. London: Routledge.

Sport England (2015) *This Girl Can*. Available at: http://www.thisgirlcan.co.uk (Accessed: 23 April 2018).

Sport England (2016a) *Education and life long learning: summary*. Available at: https://www.sportengland.org/media/3237/education_and_life_long_learning_-_summary.pdf (Accessed: 23 April 2018).

Sport England (2016b) *Social capacity and social cohesion*. Available at: https://www.sportengland.org/media/3441/social_capacity_and_cohesion_-_summary.pdf (Accessed: 23 April 2018).

Sport England (2016c) *Towards an active nation: Strategy 2016-2021*. Available at: https://www.sportengland.org/media/10629/sport-england-towards-an-active-nation.pdf (Accessed: 23 April 2018).

Sport England (2017) *Active Lives Adult Survey May 16/17*. Available at: https://www.sportengland.org/media/12458/active-lives-adult-may-16-17-report.pdf (Accessed: 23 April 2018).

Standage, M. & Ryan, R. (2012) 'Self-Determination Theory and Exercise Motivation: Facilitating Self-Regulatory Processes to Support and Maintain Health and Well-being', in Roberts, G. & Treasure, D. (eds.) *Advances in Motivation in Sport and Exercise*. 3rd edn. Champaign, IL: Human Kinetics, pp.233-270.

Standage, M., Duda, J. & Ntoumanis, N. (2005) 'A test of self-determination theory in school physical education', *The British Journal of Educational Psychology,* 75(Pt 3), pp.411–433.

Standal, Ø. (2016) *Phenomenology and Pedagogy in Physical Education*. London: Routledge.

Stenhouse, L. (1975) *An introduction to curriculum research and development*. London: Heinemann.

Stensel, D., Gorely, T. & Biddle, S. (2008) 'Youth health outcomes', in Smith, A. & Biddle, S. (eds.) *Youth Physical Activity and Sedentary Behavior: Challenges and Solutions*. Leeds: Human Kinetics, pp.31-57.

Steuart, G. (1985) 'Social and behavioural health strategies', in Phillips, H. & Gaylord, S. (eds.) *Aging and Public Health*. New York, NY: Springer, pp.217-247.

Stidder, G. & Hayes, S. (eds.) (2013) *Equity and inclusion in Physical Education and Sport*. 2nd edn. London: Routledge.

Stokols, D. (1996) 'Translating social ecological theory into guidelines for community health promotion', *American Journal of Health Promotion*, 10, pp.282-298.

Stolz, S. (2014) *The philosophy of physical education: A new perspective*. London:

Routledge.

Stolz, S. & Pill, S. (2014) 'Teaching games and sport for understanding: exploring and reconsidering its relevance in physical education', *European Physical Education Review*, 20(1), pp.36–71.

Strand, B. & Anderson, C. (1996) 'A comparison of two instructional formats on heart rate intensity, skill achievement and student attitude', *Nebraska Journal for the Nebraska Association of Health, Physical Education and Recreation*, 27(2), pp.21-24.

Stratton, G. (1996) 'Children's heart rates during physical education lessons: a review / Frequences cardiaques des enfants pendant les cours d'education physique: revue', *Pediatric Exercise Science*, 8(3), pp.215-233.

Stratton, G., McWhannell, N., Foweather, L., Henaghan, J., Graves, L., Ridgers, N. & Hepples, J. (2009) *The A-CLASS Project Research Findings: Summary Report*. Liverpool: Sportslinx.

Stylianou, M., Kloeppel, T. & Kulinna, P. (2016) 'Teacher fidelity to a physical education curricular model and physical activity outcomes', *Journal of Teaching in Physical Education*, 35 (4), pp.337-348.

Sun, H. & Chen, A. (2010) 'A pedagogical understanding of the self-determination theory in physical education', *Quest*, 62(4), pp.364-384.

Swaffield, S. (2005) 'No sleeping partners: relationships between head teachers and

critical friends', *School Leadership and Management*, 25(1), pp.43-57.

Tandon, R. (2005) 'Participatory research: main concepts and issues', in Tandon, R. (ed). *Participatory Research: Revisiting the Roots*. New Delhi: Mosaic Books, pp.22-39.

Tashakkori, A. & Teddlie, C. (2009) 'Integrating Qualitative and Quantitative Approaches to Research', in Rog, D. & Bickman, L. (eds.) *Handbook of Applied Social Research Methods*. 2nd edn. Thousand Oaks, CA: Sage.

Tashakkori, A. & Teddlie, C. (2016) 'Overview of contemporary issues in mixed methods research', in Tashakkori, A. & Teddlie, C. (eds.) *Sage Handbook of Mixed Methods in Social and Behavioural Research*. London: Sage Publications Inc., pp.1-42.

Taylor, I., Ntoumanis, N., Standage, M. & Spray, C. (2010) 'Motivational predictors of physical education students' effort, exercise intentions, and leisure-time physical activity: a multilevel linear growth analysis', *Journal of Sport and Exercise Psychology*, 32(1), pp.99-120.

Taylor, P. & Medina, M. (2013) 'Educational Research Paradigms: From Positivism to Multiparadigmatic', *The Journal of Meaning Centered Education*, 1(1), pp.1-17.

Teixeira, P., Carraça, E., Markland, D., Silva, M. & Ryan, R. (2012) 'Exercise, physical activity, and self-determination theory: a systematic review', *International Journal of Behavioural Nutrition and Physical Activity*, 9(78), pp.1-30.

Terry, P. (2013) 'An interview with Dr. Edward L. Deci, codeveloper of self-determination theory', *American Journal of Health Promotion*, 27(6), pp.TAHP2-7.

Tessier, D., Sarrazin, P. & Ntoumanis, N. (2008) 'The effects of an experimental programme to support students' autonomy on the overt behaviours of physical education teachers', *European Journal of Psychology of Education*, 23, pp.239-253.

Tessier, D., Sarrazin, P. & Ntoumanis, N. (2010) 'The effect of an intervention to improve newly qualified teachers' interpersonal style, students' motivation and psychological need satisfaction in sport-based physical education', *Contemporary Educational*

Psychology, 35(4), pp.242-253.

The Cooper Institute (2010) *Fitnessgram and Activitygram Test Administration Manual*. 4th edn. Champaign, IL: Human Kinetics.

Thomas, J., Nelson, J. & Silverman, S. (2005) *Research methods in physical activity*. Leeds: Human Kinetics.

Thomas, J., Nelson, J. & Silverman, S. (2011) *Research methods in physical activity*. 6th edn. Champaign, IL: Human Kinetics.

Tinning, R. & Kirk, D. (1991) *Daily Physical Education: Collected papers on Health Based Physical Education in Australia*. Geelong, Australia: Deakin University Press.

Tinning, R. (2010) 'Pedagogy and health oriented physical education (HOPE)', in Tinning, R. *Pedagogy and Human Movement*. London: Routledge, pp.169-183.

Tinning, R. & Fitzpatrick, K. (2012) 'Thinking about research frameworks', in Armour, K & Macdonald, D. (eds.) *Research Methods in Physical Education and Youth Sport*. London: Routledge, pp.53-65.

Tinning, R. & Kirk, D. (1991) *Daily Physical Education: Collected Papers on Health Based Physical Education in Australia*. Geelong, Victoria: Deakin University Press.

Toomey, E., Matthews, J. & Hurley, D. (2017) 'Using mixed methods to assess fidelity of delivery and its influencing factors in a complex self-management intervention for people with osteoarthritis and low back pain', *British Medical Journal Open*, 7. doi: 10.1136/bmjopen-2016-015452

Townsend, N., Bhatnagar, P., Wickramasinghe, K., Scarborough, P., Foster, C. & Rayner, M. (2012) *Physical activity statistics 2012.* London: British Heart Foundation.

Tremblay, M. & Haskell, W. (2012) 'From science to physical activity guidelines', in Bouchard, C., Blair, S. & Haskell, W. (eds.) *Physical Activity and Health.* 2nd edn. Champaign, IL: Human Kinetics, pp. 359–378.

Trost, S. (2004) 'School physical education in the post report era', *Journal of Teaching in Physical Education,* 23(4), pp.318-337.

Trost, S. (2006) 'Public health and physical education', in Kirk, D., Macdonald, D. & O'Sullivan, M. (eds.) *The handbook of physical education*. London: Sage Publications, pp.163-187.

Trost, S. (2007) 'Measurement of physical activity in children and adolescents', *American Journal of Lifestyle Medicine*, 1, pp.299-314.

Trudeau, F. & Shephard, R. (2005) 'Contribution of School Programmes to Physical Activity Levels and Attitudes in Children and Adults', *Sports Medicine*, 35(2), pp.89-105.

Trudeau, F. & Shephard, R. (2008) 'Is there a long-term health legacy of required physical education?', *Sports Medicine*, 38(4), pp.265-270.

Tsangaridou, N. (2006) 'Teachers' beliefs', in Kirk, D., Macdonald, D. & O'Sullivan, M. (eds) *The Handbook of Physical Education*. London: Sage, pp.486-501.

Tucker, P. & Gilliland, J. (2007) 'The effect of season and weather on physical activity: a systematic review', *Public Health*, 121(12), pp.909-922.

United Nations Educational, Scientific and Cultural Organization (2014) *Worldwide survey of school physical education*. Available at: http://unesdoc.unesco.org/images/0022/002293/229335e.pdf (Accessed: 23 April 2018).

US Department of Health and Human Services (2008) *Physical Activity Guidelines for Americans*. Available at: http://health.gov/paguidelines/ (Accessed: 23 April 2018).

US Department of Health and Human Services (2010) *Strategies to improve the quality of physical education*. Available at: http://www.cdc.gov/Healthyyouth/physicalactivity/pdf/quality_pe.pdf (Accessed: 23 April 2018).

Vallerand, R. (2007) 'A hierarchical model of intrinsic and extrinsic motivation for sport and physical activity', in Hagger, M. & Chatzisarantis, N. (eds.) *Intrinsic motivation and self-determination in exercise and sport*. Champaign, IL: Human Kinetics, pp.255-79.

Van Acker, R., Costa, F., Bourdeaudhuij, I., Cardon, G. & Haerens, L. (2010) 'Sex equity and physical activity levels in coeducational physical education: exploring the potential of modified game forms', *Physical Education and Sport Pedagogy*, 15(2), pp.159–173.

Van Acker, R., De Bourdeaudhij, I., De Martelaer, K., Seghers, J., Kirk, D., Haerens, L., De Cocker, K. & Cardon, G. (2011) 'A Framework for Physical Activity Programs Within School–Community Partnerships', *Quest*, 63, pp.300-320.

Van den Berghe, L., Vansteenkiste, M., Cardon, G., Kirk, D. & Haerens, L. (2014) 'Research on self-determination in physical education: key findings and proposals for future research', *Physical Education and Sport Pedagogy*, 19(1), pp.97-121.

Van der Horst, K., Paw, M., Twisk, J. & Van Mechelen, W. (2007) 'A brief review on correlates of physical activity and sedentariness in youth', *Medicine and Science in Sports & Exercise*, 39(8), pp.1241-1250.

Van der Mars, H. (1989) 'Systematic observation: An introduction', in Darst, P., Zakrajsek, D. & Mancini, V. (eds.) *Analyzing physical education and sport instruction*. 2nd edn. Champaign IL: Human Kinetics. pp.3-19.

Van Sluijs, E. & Kriemler, S. (2016) 'Reflections on physical activity intervention research in young people - dos, don'ts, and critical thoughts', *International Journal of Behavioral Nutrition and Physical Activity*, 13(25). doi: 10.1186/s12966-016-0348-z

Van Sluijs, E., McMinn, A. & Griffin, S. (2007) 'Effectiveness of interventions to promote physical activity in children and adolescents: systematic review of controlled trials, *British Medical Journal*, 335(7622), pp.703-707.

Vansteenkiste, M., Zhou, M., Lens, W. & Soenens, B. (2005) 'Experiences of autonomy and control among Chinese learners: vitalizing or immobilizing?', *Journal of Educational Psychology*, 97(3), pp.468-483.

Vella, S., Braithwaite, R., Gardner, L. & Spray, C. (2016) 'A systematic review and meta-analysis of implicit theory research in sport, physical activity, and physical education', *International Review of Sport and Exercise Psychology*, 9(1), pp.191-214.

Verstraete, S., Cardon, G., De Clercq, D. & De Bourdeaudhuij, I. (2007) 'Effectiveness of a two-year health-related physical education intervention in elementary schools', *Journal of Teaching in Physical Education*, 26, pp.20-34.

Vickerman, P. (2010) 'Inclusive teaching and learning', in Bailey, R. (ed.) *Physical Education for learning: A guide for secondary schools*. London: Continuum, pp.197-207.

Vlachopoulos, S. & Michailidou, S. (2006) 'Development and initial validation of a measure of autonomy, competence, and relatedness in exercise: The Basic Psychological Needs in Exercise Scale', *Measurement in Physical Education and Exercise Science*, 10, pp.179-201.

Wallhead, T. & O'Sullivan, M. (2005) 'Sport education: physical education for the new

millennium?', *Physical Education and Sport Pedagogy*, 10(2), pp.181-210.

Ward, J., Wilkinson, C., Graser, S. & Prusak, K. (2008) 'Effects of choice on student motivation and physical activity behavior in physical education', *Journal of Teaching in Physical Education*, 27(3), pp.385-398.

Webber, L., Catellier, D., Lytle, L., Murray, D., Pratt, C., Young, D., Elder, J., Lohman, T., Stevens, J., Jobe, J. & Pate, R. (2008) 'Promoting physical activity in middle school girls: trial of activity for adolescent girls', *American Journal of Preventive Medicine*, 34(3), pp.173-184.

Wechsler, H., McKenna, M., Lee, S. & Dietz, W. (2004) 'Role of schools in preventing childhood obesity', *The State Education Standard*, 5(2), pp.4-12.

Weiss, I. & Pasley, J. (2006) *Scaling Up Instructional Improvement Through Teacher Professional Development: Insights From the Local Systemic Change Initiative*. CPRE Policy Briefs. Available at: http://repository.upenn.edu/cpre_policybriefs/32 (Accessed 29 November 2018).

Welk, G. (1999) 'The Youth Physical Activity Promotion Model: A Conceptual Bridge Between Theory and Practice', *Quest*, 51, pp.5-23.

Wellington, J. (2000) *Educational Research. Contemporary Issues and Practical Approaches*. London: Continuum.

Wheaton, B. (2004) *Understanding lifestyle sports: consumption, identity and difference*. London: Routledge.

Whitehead, J. & Fox, K. (1983) 'Student-centred physical education', *Bulletin of Physical Education*, 19, pp.21–30.

Whitehead, M. (2015) 'Aims of PE', in Capel, S. & Whitehead, M. (eds.) *Learning to Teach Physical Education in the Secondary School: A Companion to School Experience*. 4th edn. London: Routledge, pp.18-30.

Whitehead, M. (ed.) (2010) *Physical Literacy: Throughout the Lifecourse*. London: Routledge.

Willensky, J. (2006) 'When the research's over, don't turn out the lights', in Tobin, K. & Kinchloe, J. (eds.) *Doing educational research: A handbook*. Rotterdam: Sense Publishers, p.439.

Williams, A. & Wainwright, N. (2016a) 'A new pedagogical model for adventure in the curriculum: part one – advocating for the model', *Physical Education and Sport Pedagogy*, 21(5), pp.481-500.

Williams, A. & Wainwright, N. (2016b) 'A new pedagogical model for adventure in the curriculum: part two – outlining the model', *Physical Education and Sport Pedagogy*, 21(6), pp.589-602.

Willis, J. (2007) *Foundations of qualitative research: Interpretive and critical approaches*. Thousand Oaks, CA: Sage Publications.

World Health Organization (2010) *Global recommendations on physical activity for health*. Available at: http://www.who.int/dietphysicalactivity/publications/9789241599979/en/ (Accessed: 23 April 2018).

World Health Organization (1946) *Preamble to the Constitution of the World Health Organization*. New York: World Health Organization.

World Health Organization (1986) *The Ottawa Charter for Health Promotion.* Available at: http://www.euro.who.int/en/publications/policy-documents/ottawa-charter-for-health-

promotion,-1986 (Accessed: 23 April 2018).

World Health Organization (2008) *School Policy Framework: Implementation of the WHO Global Strategy on Diet, Physical Activity and Health*. Available at: http://www.who.int/dietphysicalactivity/schools/en/ (Accessed: 23 April 2018).

World Health Organization (2009) *Global Health Risks: Mortality and burden of disease attributable to selected major risks*. Available at: http://www.who.int/healthinfo/global_burden_disease/global_health_risks/en/ (Accessed: 23 April 2018).

World Health Organization (2012) *Population-Based Approaches to Childhood Obesity Prevention*. Available at: http://www.who.int/dietphysicalactivity/childhood/approaches/en/ (Accessed: 23 April 2018).

World Health Organization (2014) *Global status report on noncommunicable diseases*. Available at: http://www.who.int/nmh/publications/ncd-status-report-2014/en/ (Accessed: 23 April 2018).

World Health Organization (2016) *Report of the Commission on ending childhood obesity*. Available at: http://apps.who.int/iris/bitstream/10665/204176/1/9789241510066_eng.pdf?ua=1&ua=1 (Accessed: 23 April 2018).

World Health Organization Global Health Observatory (2015) *Insufficient physical activity*. Available at: http://apps.who.int/gho/data/node.main.A892?lang=en (Accessed: 23 April 2018).

Wrench, A. & Garrett, R. (2008) 'Pleasure and pain: experiences of fitness testing', *European Physical Education Review*, 14(3), pp.325-346.

Wright, J. (2009) 'Biopower, biopedagogies and the obesity epidemic', in J. Wright & V. Harwood (eds.) *Biopolitics of the "obesity epidemic": Governing the body*. New York: Routledge.

Wright, J. & O'Flynn, G. (2012) 'Conducting ethical research', in Armour, K. & MacDonald, D. (eds.) *Research methods in physical education and youth sport*. London: Routledge, pp.66-78.

Wright, S., McNeill, M. & Fry, J. (2009.) 'The tactical approach to teaching games from teaching, learning and mentoring perspectives', *Sport, Education and Society*, 14(2), pp.223-244.

Young, D., Phillips, J., Yu, T. & Haythornthwaite, J. (2006) 'Effects of a life skills intervention for increasing physical activity in adolescent girls', *Archives of Pediatrics & Adolescent Medicine*, 160, pp.1255–1261.

Zeichner, K., & Nofke, S. (2001) 'Practitioner research', in Richardson, V. (ed.) *Handbook of research on teaching*. Washington, DC: AERA, pp.298-330.

Zhang, T. & Solmon, M. (2013) 'Integrating self-determination theory with the social ecological model to understand students' physical activity behaviors', *International Review of Sport and Exercise Psychology*, 6(1), pp.54-76.

APPENDICES

APPENDIX 1: INFORMATION LETTER AND CONSENT FORM

Re: Health-Based Physical Education Project

Dear colleague

Thank you for your initial expression of interest in working with us on developing a new model for Health-Based Physical Education (HBPE), centred on pupils 'valuing the physically active life'. Specifically, this project will involve collaboration between the university and schools to design and implement bespoke HBPE programmes for your pupils and specific school context. As highlighted in the attached information sheet, HBPE may require alternative approaches and activities if we wish for pupils to 'value the physically active life'. Ideally, you will work with colleagues in your school to design your programmes and we would request that you discuss this opportunity with your department before the project commences.

In order for this project to succeed and for both your school and the university to benefit, it will require some guarantee of commitment on both parts. The university is willing to provide the following free professional development as part of the project:
❖ Face to face workshops in 'HBPE' and 'practitioner research' skills
❖ Ongoing support and resources during the design and implementation phases

We would expect schools to be committed to the following:
❖ Attending a monthly meeting in a local school or at the university in the Autumn term (we will mix these around)
❖ Jointly designing a HBPE unit of work for an identified class(es)
❖ Reflecting on the implementation of the HBPE programme with your class(es)
❖ Monitoring the impact of the HBPE programme on your pupils
❖ Engaging in a 'community of practice' with the project group

We would be very grateful if you could confirm your continued interest in the project to mark.bowler@beds.ac.uk. To do this please provide details of the name(s) of staff in your department who may be willing to be involved, along with their gender and approximate years of teaching experience. After this, we will arrange follow up conversations to finalise arrangements for the Autumn term.

Kind regards

Mark Bowler
Senior Lecturer in Physical Education

CONSENT FORM FOR PARTICIPANTS
HEALTH-BASED PHYSICAL EDUCATION PROJECT

Principal Investigator: Mr Mark Bowler, Senior Lecturer in Physical Education
Project Institution: University of Bedfordshire, Polhill Avenue, Bedford, MK41 9EA
Project Dates: January 2012 – December 2013 (approximate)
Contact Details: Email: mark.bowler@beds.ac.uk Tel: 01234 793379

Please circle as appropriate:
Have you read and understood the Information Letter?   Yes   No

Do you understand that your participation in this study is entirely voluntary?   Yes   No

Do you understand that you are free to refuse participation and have the right to withdraw at any time without it influencing you in any way, and that all data collected from you at that time will be removed?   Yes   No

Do you agree to complete questionnaires and participate in audio-taped interview(s) and video-recorded lessons?   Yes   No

Do you understand that all audio-taped and video-recorded data will be securely transcribed and no one else will be permitted access to the data?   Yes   No

Do you understand that your school's name will not be shared and disclosed in the reporting of results?   Yes   No

Do you understand that your name will not be displayed in any reports, presentations or publications and will instead use a Unique Reference Number (URN)?   Yes   No

Do you understand that you have an opportunity to ask questions before, during and after the study?   Yes   No

Are you happy to be contacted to give further clarification to any of your data if contacted by the principal researcher?   Yes   No

_____   _____   _____
Signature of Teacher   Print Name   Date

_____
Name of School

Thank you for your participation!
Please complete and return this form to the principal researcher, Mark Bowler

APPENDIX 2: HBPE POST-LESSON TEACHER REFLECTION (PLTR)

Teacher: **Date:**   **Class:**

Activity: **Lesson no:**

1. What were your aims for the lesson?
a. For you as a teacher
b. For your students

2. What specifically did you see in your lesson that met your aims?
a. For you as a teacher
b. For your students

3. What went well?
a. For you as a teacher
b. For your students

4. What did not go so well?
a. For you as a teacher
b. For your students

5. What are your specific aims for the next lesson?
a. For you as a teacher
b. For your students

6. Select with a ☒ or state (ie T1 T2 etc.) which Teacher and Student Benchmarks you believe were achieved during this lesson.

	TEACHER BENCHMARKS		STUDENT BENCHMARKS
☐	**T1. Teacher promotes physical activity (PA)** ☐ *Demonstrates a passion and energy for PA* ☐ *Encourages students to identify and meet PA targets* ☐ *Maximise opportunities for MVPA* ☐ *Sets 'activity challenges' beyond the lesson* ☐ *Communicates with parents/carers and community bodies*	☐	**S1. Students engage in regular physical activity (PA)** ☐ *Are fully prepared for lessons* ☐ *Actively engage in meaningful MVPA during lessons* ☐ *Evidence progress in PA participation out of lessons*
☐	**T2. Teacher supports students to be informed movers** ☐ *Refers to current national PA recommendations for age group* ☐ *Refers to current national PA levels* ☐ *Highlights how and where to engage in PA* ☐ *Highlights the effects of PA (benefits and risks)* ☐ *Promotes safe and effective practice*	☐	**S2. Students are informed participants in physical activity (PA)** ☐ *Explain PA levels and guidelines for age group* ☐ *Describe how and where to engage in PA locally* ☐ *Can explain the benefits of PA* ☐ *Demonstrate/explain safe and effective practice*
☐	**T3. Teacher creates a needs supportive learning environment** ☐ *Provides choices in response to needs and interests of students* ☐ *Encourages students to work collaboratively and sensitively* ☐ *Demonstrates empathy towards all students* ☐ *Provides personalised feedback on student progress* ☐ *Provides personalised feedback on student effort*	☐	**S3. Students set and review individual/team physical activity targets** ☐ *Set and review written self-referenced targets* ☐ *Actively contribute to team target setting and review* ☐ *Share individual and team progress at regular intervals* ☐ *Provide peer feedback on progress*
☐	**T4. Teacher encourages students to become critical movers** ☐ *Identifies barriers to participation* ☐ *Illustrates strategies to overcome barriers* ☐ *Sets 'movement promoter challenges'* ☐ *Supports movement promoters*	☐	**S4. Students promote physical activity (PA)** ☐ *Encourage others to meet and exceed PA guidelines* ☐ *Support peers to engage in PA within lessons* ☐ *Promote PA out of lessons* ☐ *Support others to overcome barriers to participation*

APPENDIX 3: STUDENT PHYSICAL EDUCATION QUESTIONNAIRE 1

We are interested in the reasons for peoples' decisions to take part, or not take part, in physical activity. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about physical activity. Your responses will be held in confidence.

Physical activity is any movement that raises your heart rate and leaves you slightly out of breath, such as brisk walking.

WHY DO / DON'T YOU ENGAGE IN PHYSICAL ACTIVITY?

Using the scale below, indicate to what extent each item is true for you.

		Not true for me	Sometimes true for me			Very true for me
1	I am physically active because other people say I should be	0	1	2	3	4
2	I feel guilty when I don't participate in physical activity	0	1	2	3	4
3	I value the benefits of physical activity	0	1	2	3	4
4	I take part in physical activity because it's fun	0	1	2	3	4
5	I don't see why I should have to be active	0	1	2	3	4
6	I take part in physical activity because my friends/family say I should	0	1	2	3	4
7	I feel ashamed when I miss a physical activity opportunity	0	1	2	3	4
8	It's important to me to be active regularly	0	1	2	3	4
9	I can't see why I should bother with physical activity	0	1	2	3	4
10	I enjoy taking part in physical activity	0	1	2	3	4
11	I am physically active because others will not be pleased with me if I were not	0	1	2	3	4
12	I don't see the point in physical activity	0	1	2	3	4
13	I feel like a failure when I haven't participated in physical activity for a while	0	1	2	3	4
14	I think it is important to make the effort to be physically active regularly	0	1	2	3	4
15	I find physical activity a pleasurable activity	0	1	2	3	4
16	I feel under pressure from my friends/ family to do physical activity	0	1	2	3	4
17	I get restless if I don't take part in regular physical activity	0	1	2	3	4
18	I get pleasure and satisfaction from participating in physical activity	0	1	2	3	4
19	I think physical activity is a waste of time	0	1	2	3	4

HOW MUCH PHYSICAL ACTIVITY SHOULD YOUNG PEOPLE DO?

Q1. Do you know how much physical activity is recommended for young people for health purposes?   Yes / No / Not sure   (circle one only)

If 'Yes' or 'Not sure', please write how much physical activity is recommended

_____

HOW ACTIVE ARE YOU NOW? DO YOU INTEND TO BE ACTIVE IN THE FUTURE?

Tick the <u>one</u> sentence that <u>best</u> matches where you are now in relation to your physical activity participation.

	Tick <u>one</u>
A. I currently do not participate in physical activity and I am not thinking about starting	
B. I currently do not participate in physical activity but I am thinking about starting	
C. I currently do participate in some physical activity but not on a regular basis	
D. I currently do participate in regular physical activity but I have only begun to do so within the last 6 months	
E. I currently do participate in regular physical activity and I have done so for longer than 6 months	

How often have you participated in physical activity for at least 20-30 minutes in your free time in the last 3 months? (Circle only <u>one</u>).

1	2	3	4	5	6	7	8	9	10
Never	1-3 times per month	1-2 times per week	3-4 times per week	5-6 times per week	7-8 times per week	9-10 times per week	11-12 times per week	13-14 times per week	15+ times per week

Describe the type of physical activity you enjoy doing most (ie hockey, walking) and why you enjoy them.

_____
_____

Please give your details below: **Name:** _____   **Class:** _____ **Age:** _____ years _____ months   **Sex:** male female (please circle)

APPENDIX 4: STUDENT PHYSICAL EDUCATION QUESTIONNARE 2/3

We are interested in the reasons for peoples' decisions to take part, or not take part, in physical activity. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about physical activity. Your responses will be held in confidence.

Physical activity is any movement that raises your heart rate and leaves you slightly out of breath, such as brisk walking.

WHY DO / DON'T YOU ENGAGE IN PHYSICAL ACTIVITY?

Using the scale below, indicate to what extent each item is true for you.

		Not true for me	Sometimes true for me			Very true for me
1	I am physically active because other people say I should be	0	1	2	3	4
2	I feel guilty when I don't participate in physical activity	0	1	2	3	4
3	I value the benefits of physical activity	0	1	2	3	4
4	I take part in physical activity because it's fun	0	1	2	3	4
5	I don't see why I should have to be active	0	1	2	3	4
6	I take part in physical activity because my friends/family say I should	0	1	2	3	4
7	I feel ashamed when I miss a physical activity opportunity	0	1	2	3	4
8	It's important to me to be active regularly	0	1	2	3	4
9	I can't see why I should bother with physical activity	0	1	2	3	4
10	I enjoy taking part in physical activity	0	1	2	3	4
11	I am physically active because others will not be pleased with me if I were not	0	1	2	3	4
12	I don't see the point in physical activity	0	1	2	3	4
13	I feel like a failure when I haven't participated in physical activity for a while	0	1	2	3	4
14	I think it is important to make the effort to be physically active regularly	0	1	2	3	4
15	I find physical activity a pleasurable activity	0	1	2	3	4
16	I feel under pressure from my friends/ family to do physical activity	0	1	2	3	4
17	I get restless if I don't take part in regular physical activity	0	1	2	3	4
18	I get pleasure and satisfaction from participating in physical activity	0	1	2	3	4
19	I think physical activity is a waste of time	0	1	2	3	4

HOW ACTIVE ARE YOU NOW? DO YOU INTEND TO BE ACTIVE IN THE FUTURE?

Tick the one sentence that best matches where you are now in relation to your physical activity participation.

	Tick only one
A. I currently do not participate in physical activity and I am not thinking about starting	
B. I currently do not participate in physical activity but I am thinking about starting	
C. I currently do participate in some physical activity but not on a regular basis	
D. I currently do participate in regular physical activity but I have only begun to do so within the last 6 months	
E. I currently do participate in regular physical activity and I have done so for longer than 6 months	

How often have you participated in physical activity for at least 20-30 minutes in your free time in the last 3 months? (Circle only one).

1	2	3	4	5	6	7	8	9	10
Never	1-3 times per month	1-2 times per week	3-4 times per week	5-6 times per week	7-8 times per week	9-10 times per week	11-12 times per week	13-14 times per week	15+ times per week

List up to five things you have learnt about physical activity and health during Health-Based PE

1._____

2._____

3._____

4._____

5._____

Name: _____	**Class:** _____

APPENDIX 5: TEACHER SURVEY

Whilst completing this survey, the term HBPE (Health-Based Physical Education) is used to define the teaching of health-related elements of Physical Education (e.g. HRE / HRF / HRPE).

Background

1. Male / Female (please delete)   Qualifications:

   _____

2. Total teaching experience:

   _____

   Years ____ months ____

3. Time in current school:
   Years   months

Type of school: middle / upper / secondary (please delete)

Current delivery of HBPE in School

4. Does your school currently include HBPE on its physical education curriculum?
   Yes / No

5. Which of the following forms of HBPE does your school deliver? (tick all that apply)

   ☐ Health delivered through other activities (Permeated). Examples of activity:

   _____
   _____

   ☐ Health delivered in its own unit of work (Focused). Examples of activity:

   _____
   _____

   ☐ Health delivered through a range of school subjects (Topic). Examples of activity:

   _____
   _____
   _____

6. How much time do you currently spend on HBPE across your school's PE curriculum? (please complete the table below according to your type of school)

	Year 5		Year 6		Year 7		Year 8	
Middle School	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours

Secondary School	Year 7		Year 8		Year 9		Year 10		Year 11		Year 12		Year 13	
	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours

Upper School	Year 9		Year 10		Year 11		Year 12		Year 13	
	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours	Lessons	Hours

7. What materials / resources does your department have to support the delivery of HBPE?

☐ Schemes/units of work   ☐ Lesson plans   ☐ Teaching resources (please describe):

Goals of PE and HBPE

8. a). What do you consider as the <u>key goals</u> of <u>physical education</u>? (list up to 5)

- _____
- _____
- _____
- _____
- _____

b). What <u>content</u> and <u>teaching approaches</u> are used within <u>your PE curriculum</u> to achieve these goals?

_____
_____
_____
_____
_____

9. a). What are your main <u>goals</u> of <u>HBPE</u> currently?

_____
_____
_____
_____

b). What <u>content</u> and <u>teaching approaches</u> are used within your <u>HBPE</u> unit(s) to achieve these goals? (please provide specific details of activities for each year)

Year -

_____

Year -

_____

Year - _____

Year -

_____

Year -

_____

Year -

_____

Year -

_____

c). How would you rate the <u>importance of HBPE</u> within your school's PE curriculum?

Very important   Important   Not very important   Not at all important

d). How would you rate your <u>confidence</u> in teaching HBPE?

Very confident   Confident   Not very confident   Not at all confident

Previous Experience of HBPE

10. Have you experienced HBPE…

   a). As a pupil?   Yes / No

If yes, please describe content, structure, amount and experiences

_____
_____
_____
_____

   b). University / Initial Teacher Training (ITT)   Yes / No

If yes, please describe content, structure, amount and experiences

_____
_____
_____
_____

   c). CPD (in last 12 months)   Yes / No

If yes, please describe content, structure, amount and experiences

_____
_____

_____

_____

   d). CPD (in last 36 months)   Yes / No

If yes, please describe content, structure, amount and experiences

_____

_____

_____

_____

   e). CPD (beyond last 36 months) Yes / No

If yes, please describe content, structure, amount and experiences

_____

_____

_____

_____

11. How would you rate your HBPE experience <u>as a pupil</u>?

Very good   Good   Adequate   Inadequate

Previous Experience of HBPE (continued)

12. How would you rate the content and time dedicated to your HBPE-ITT experience?

Very good   Good Adequate   Inadequate

13. How effective was your ITT experience in preparing you to teach HBPE?

Very good   Good Adequate   Inadequate

14. Why have / haven't you experienced HBPE-CPD previously?

_____

_____

_____

_____

15. Where might you seek information on appropriate HBPE-CPD?

_____

_____

_____

16. What other forms of PE-CPD (not related to HBPE) have you experienced…

In the last 12 months?

_____

_____

In the last 36 months?

_____

_____

_____

Beyond the last 36 months?

_____

_____

Any other comments / Additional space for previous questions

_____

_____

_____

_____

_____

APPENDIX 6: TEACHER POST-UNIT INTERVIEW

Hi …..
Many thanks for agreeing to be interviewed as part of our Health-Based Physical Education (HBPE) project. The purpose of this interview is to gain some idea of your experiences engaging in an initial professional development programme and subsequently implementing a unit of HBPE with your class(es).

Starter Question
What has been the most positive aspect(s) of the whole HBPE project for you?

SECTION 1: PROFESSIONAL DEVELOPMENT PHASE
Q1. How successful was the pre-implementation professional development programme in preparing you to teach HBPE according to the model's design?
Q2. Did the programme match your outcome expectations?
Q3. How effective were the taught workshops in supporting you to plan and deliver a HBPE unit? What did you find to be <u>most/least useful</u>?
Q4. How effective were the school-based reflective tasks in supporting you? What did you find to be <u>most/least useful</u>?
Q5. What factors <u>supported your engagement</u> in the workshops and/or the school-based reflective tasks?
Q6. What factors <u>challenged your engagement</u> in the workshops and/or the school-based reflective tasks?
Q7. Overall, how useful did you find collaboration with university colleagues?

SECTION 2: TEACHER PHILOSOPHY & BELIEFS
Q1. Can you describe your philosophy and has it changed as a result of your engagement in this project?
Q2. Has there been any change in your beliefs concerning how health should be taught within physical education?

SECTION 3: TEACHER BEHAVIOUR IN PRACTICE
Q1. During your unit, to what extent did you embed the benchmarks in your practice?
Prompt in relation to each of the Teacher benchmarks as follows:
• Promotes physical activity
• Supports students to be informed movers
• Creates a needs supportive learning environment
• Encourages students to become critical movers

Q2. Have you transferred any of these behaviours into your teaching of other units or do you intend to in the future?
Q3. Do you think adopting these behaviours has had any impact on your students' learning?
 Q4. Have you noticed any change in your students' physical activity behaviour?
Prompt in relation to motivation, intentions to be active and physical activity levels

Q5. Which HBPE Learning Outcomes were you most confident delivering?
Prompt in relation to Habitual, Enthusiastic, Confident, Informed & Critical Movers
Q6. Were there any HBPE Learning Outcomes you found a challenge to deliver?
Q7. How useful did you find the Post Lesson Teacher Reflection? What factors supported and/or challenged your engagement with this process?
Q8. How did you share ideas/experiences with colleagues?

SECTION 4: CONTEXTUAL FACTORS

Q1. Were there any factors which facilitated the implementation of your HBPE unit?
Q2. Were there any factors which impeded the implementation of your HBPE unit?
Q3. Were the activities chosen to deliver HBPE 'fit for purpose'?
Q4. Have you identified any further opportunities for physical activity participation in school/in the local community?
Q5. Have you identified any barriers for physical activity participation in school/in the local community?

SECTION 5: LEGACY

Q1. Has this experience motivated you to seek out further professional development opportunities focused on HBPE and/or physical activity promotion?
 Q2. What impact do you hope this experience will have on your practice?
Q3. What impact do you hope this experience will have on your students?
Q4. Do you have any plans for delivering HBPE in the future?
Q5. Have you identified any key factors to sustain HBPE in your school?
Q6. Do you have any further comments?

Thank you very much for your time!

APPENDIX 7: TEACHER POST-HONEYMOON INTERVIEW

Hi .....
Many thanks for agreeing to be re-interviewed as part of our Health-Based Physical Education (HBPE) pedagogical innovation project. The purpose of this interview is to gain an insight into some of the factors which have facilitated and challenged the implementation and sustainability of HBPE in your school beyond the honeymoon period.

Starter Question
What has been the most positive aspect(s) of the whole HBPE project for you?

SECTION 1: IMPLEMENTING HBPE

Q1. Can you tell me some things about how you have recently implemented HBPE in your practice, for example, year group, ability, gender, activities? *Prompt in relation to reasons for choice?*

Q2. What positive experiences have you had working with the HBPE model? *Expand on specifics if necessary.*

Q3. Have there been any particular challenges you have faced in implementing HBPE? *Expand on specifics if necessary.*

Q4. Which HBPE Learning Outcomes have you been most confident in delivering?
Prompt in relation to Habitual, Enthusiastic, Confident, Informed & Critical Movers

Q5. Were there any HBPE Learning Outcomes you found difficult to achieve? If yes, why do you think this was?

Q6. How would you consider your current level of expertise in implementing HBPE?

SECTION 2: TEACHER PRACTICE

Q1. What key characteristics do you feel teachers need to teach the HBPE model well?

Q2. Are there any significant change(s) you have made to your practice? If yes, please can you provide some examples. *Prompt in relation to Teacher Benchmarks.*

Q3. Did you share ideas/practice with dept colleagues and support their

learning? If yes, please can you provide some specific examples?

Q4. Do you feel you were working in an emerging community of practice? Expand on specifics if necessary.

Q5. Have you shared practice with other colleagues beyond the department? If yes, please can you provide some specific examples.

SECTION 3: CONTEXTUAL FACTORS

Q1. Can you outline any key factors which you feel have helped to sustain HBPE beyond the initial implementation phase? *Prompt in relation to school, community, social/cultural context.*

Q2. Are there any factors which have challenged the sustainability of HBPE? *Prompt in relation to school, community, social/cultural context.*

SECTION 4: LEGACY

Q1. What do you see as the future for HBPE at your school?

Q2. Has this experience motivated you to engage in further professional development focused on HBPE and/or physical activity promotion?

Q3. Do you feel you need any further support to teach HBPE?

Q4. Is there anything else we haven't covered that you would like to tell me about?

Thank you very much for your time!

APPENDIX 8: STUDENT POST-HBPE FOCUS GROUP QUESTIONS

Hello, my name is Mark. You will remember me as I have been observing some of your HBPE lessons. You have been asked to join this group because your teachers told us that you would be excellent students to speak to.

HBPE is quite new in schools and we want to know what you think about it so that we can make it even better for you later in school life and for future students. We will talk informally about some of the important things you have experienced in HBPE. It would be great if you talked honestly as well as giving others an opportunity to speak.

<u>STARTER QUESTIONS:</u>

A. Can you remember the main activities you did in your HBPE lessons last term?

B. What did your teacher say about the reasons for doing HBPE?

<u>LEARNING</u>

Q1. What are the key things you have learnt during the 5/6 HBPE lessons?

Questions relating to the '<u>Informed movers</u>' learning outcome (in all cases, be sure to remind the students that we are looking for what they have learnt during their HBPE lessons)**:**

Q2a. What did your HBPE teacher say about <u>how much</u> and <u>what type</u> of physical activity you should do? (Probe for deeper understanding than "60 minutes" ie "moderate", "at least..")

Q2b. Can you give me some examples of activities that count in your daily minutes?

Q2c. Did your HBPE teacher indicate where you can be physically active in school and in the community? What examples did your HBPE teacher give you?

Q2d. What did your HBPE teacher say about the <u>benefits</u> of leading an active lifestyle?

Q2e. What did your HBPE teacher say about how to be <u>safe</u> when participating in physical activity and exercise? How would you ensure you were safe in the unit's main activities?

Q2f. Did your HBPE teacher explain how to exercise effectively in order to gain the maximum benefits? For example, did they encourage you to work at least at a moderate intensity to get your heart beating and improve your fitness?

ACHIEVEMENT OF THE 5 HBPE LEARNING OUTCOMES:

Enthusiastic Mover-
Q3a. What did you enjoy <u>most</u> about the HBPE lessons? Why? (probe further for indications of "choice" (autonomy), "caring/cooperative" environment (relatedness) and "positive feedback/improvement" (competence)

Q3b. What did you enjoy <u>least</u> about the HBPE lessons? Why?

Q3b. Did you enjoy the HBPE lessons? Did you enjoy them more than normal PE lessons, less, or about the same? Why?

Confident Mover-
Q4a. What is your favorite activity? How do you feel when you do that activity?

Q4b. Do you feel confident in this activity? Why?

Q4c. How confident did you feel in the HBPE lessons?

Q4d. Did you feel more, less or equally confident in the HBPE lessons compared to your usual PE lessons? Why?

Critical mover-
Q5a. Some people are very active whereas others aren't. What are some of the reasons people give for not participating in physical activity?

Q5b. How have/could you help others to overcome these barriers to participation?

Q5c. Did your HBPE teacher encourage you to promote physical activity to a friend or family? Did you manage to do this since September? If so, how?

MOTIVATION

Q6. What are the main reasons you participate in physical activity?
(probe for reasons relating to SDT such as…)

ACTIVITY LEVELS

Q7a. Which <u>one</u> of the following best describes your activity levels in your leisure time?

	Select one
A. I am <u>less active</u> than when I started HBPE in September	
B. I do about the <u>same amount</u> of physical activity as I did when I started HBPE in September	
C. I am <u>slightly more</u> active than when I started HBPE in September	
D. I am <u>much more</u> active than when I started HBPE in September	

Q7b. Indicate how much more/less you do, using specific examples.

Q7c. What are the main reasons for your similar or increase or decrease in activity?

INTENTIONS TO BE ACTIVE

Q8. What are your intentions for physical activity over the next 6 months?

APPENDIX 9: STUDENT POST-HONEYMOON FOCUS GROUP QUESTIONS

Hello, my name is Mark. You have been asked to join this group because your teachers told us that you would be excellent students to speak to about your experiences of HBPE.

HBPE is quite new in schools and we want to know what you think about it so that we can make it even better for you later in school life and for future students. We will talk informally about some of the important things you have experienced in HBPE. It would be great if you talked honestly as well as giving others an opportunity to speak. What you say will remain anonymous.

Before we start, can you tell me your first name and year/class?

STARTER QUESTIONS:

A. Can you remember the main activities you did in your HBPE lessons this year (and last year)?

B. What did your teacher say about the reasons for doing HBPE?

LEARNING

Q1. What are the key things you have learnt during the HBPE lessons?

Questions relating to the '<u>Informed movers</u>' learning outcome (in all cases, be sure to remind the students that we are looking for what they have learnt during their HBPE lessons)**:**

Q2a. What did your HBPE teacher say about <u>how much</u> and <u>what type</u> of physical activity you should do? (Probe for deeper understanding than "60 minutes" ie "moderate", "at least..")

Q2b. Can you give me some examples of activities that count in your daily minutes?

Q2c. Did your HBPE teacher indicate where you can be physically active in school and in the community? What examples did your HBPE teacher give you?

Q2d. What did your HBPE teacher say about the <u>benefits</u> of leading an active lifestyle?

Q2e. What did your HBPE teacher say about how to be <u>safe</u> when participating in physical activity and exercise? How would you ensure you were safe in the unit's main activities?

Q2f. Did your HBPE teacher explain how to exercise effectively in order to gain the maximum benefits? For example, did they encourage you to work at least at a moderate intensity to get your heart beating and improve your fitness?

ACHIEVEMENT OF THE 5 HBPE LEARNING OUTCOMES:

Enthusiastic Mover-
Q3a. What did you enjoy <u>most</u> about the HBPE lessons? Why? (probe further for indications of "choice" (autonomy), "caring/cooperative" environment (relatedness) and "positive feedback/improvement" (competence)

Q3b. What did you enjoy <u>least</u> about the HBPE lessons? Why?

Q3b. Did you enjoy the HBPE lessons overall? Did you enjoy them more than normal PE lessons, less, or about the same? Why?

Confident Mover-
Q4a. What is your favorite activity (sport, PA, exercise)? How do you feel when you do that activity?

Q4b. Do you feel confident in this activity? Why?

Q4c. How confident did you feel in the HBPE lessons? Explain your answer

Q4d. Did you feel more, less or equally confident in the HBPE lessons compared to your usual PE lessons? Why?

Critical mover-
Q5a. Some people are very active whereas others aren't. What are some of the reasons people give for not participating in physical activity?

Q5b. How have/could you help others to overcome these barriers to participation?

Q5c. Did your HBPE teacher encourage you to promote physical activity to a friend or family? Did you manage to do this? If so, how?

MOTIVATION

Q6. What are the main reasons you participate in physical activity?
(probe for reasons relating to SDT such as…)

ACTIVITY LEVELS

Q7a. Which <u>one</u> of the following best describes your activity levels in your leisure time?

	Select one
A. I am <u>less active</u> than when I started HBPE *last year*	
B. I do about the <u>same amount</u> of physical activity as I did when I started HBPE *last year*	
C. I am <u>slightly more</u> active than when I started HBPE *last year*	
D. I am <u>much more</u> active than when I started HBPE *last year*	

Q7b. Indicate how much more/less you do, using specific examples.

Q7c. What are the main reasons for your similar or increase or decrease in activity?

INTENTIONS TO BE ACTIVE

Q8. What are your intentions for physical activity over the next 6 months?

Q9. We are collecting ideas to improve HBPE. What suggestions would you make to the lessons more enjoyable? What could have been done to help you become more active? What would have motivated you further? Is there anything else you would like to learn in HBPE?

APPENDIX 10: HEALTH-BASED PHYSICAL EDUCATION FIDELITY TOOL

Observer: **Activity:**   **School:**
Teacher: **Class:**   **Date:**

The HBPE Fidelity Tool (FT) aims to determine the faithfulness of a unit of work to the model's major theme and specific learning outcomes. It is expected that high fidelity will be achieved when a unit of work evidences most of the following, either within the lesson, or in some other artefact.

Observable Behaviours	Observed	Not Observed	Secondary Data
1. Are lesson learning outcomes explicitly linked to the goals of HBPE? i.e. habitual mover; motivated mover; confident mover; informed mover; critical mover			
a). Is there evidence of pupils as 'habitual movers'?			
b). Is there evidence of pupils as 'motivated movers'?			
c). Is there evidence of pupils as 'informed movers?			
d). Is there evidence of pupils as 'critical movers?			
2. Is health-related learning in relation to PA explicit? e.g. reference to current national PA recommendations/levels; effects of PA participation; effective practice; PA opportunities			
3. Does the teacher help students to set and work towards personalised PA targets? e.g. identify their current level of PA; set/review PA targets			
4. Do students engage in meaningful periods of PA of at least moderate intensity? e.g. equivalent to at least brisk walking; commensurate with their interests, needs and ability			
5. Is there some choice of learning activities? e.g. differentiated/alternative activities			
6. Is peer support evident? e.g. students as 'PA Buddies'; activity teams; peer teach/feedback			
7. Does the teacher show empathy towards students? e.g. interested in students' PA participation; sensitive to students' needs and abilities			
8. Does feedback support student progress? e.g. knowledge and understanding; PA levels/competence?			
9. Does feedback support student effort?			
10. Is there evidence of home-school communication to support students' PA participation? e.g. PA diary; newsletter			

11. Does the teacher signpost PA opportunities beyond the lesson? e.g. within school; within wider community			
12. Do students evidence out of class PA? e.g. through teacher questioning, pupil discussion, photo, video, PA diary, mobile app			
13. Does the teacher emphasise safe practice in activity participation? e.g. appropriate preparation for PA; correct equipment/movement technique; developmentally and age-appropriate activities			
14. Does the teacher encourage students to promote PA to friends and/or family members? i.e. movement promoter challenges			
15. Do students evidence supporting the PA participation of their peers and/or family? e.g. class discussion; photo; video; parent verification in PA diary; mobile app			
16. Is there evidence of students' critical understanding of PA participation issues? e.g. facilitators/barriers/inequities to PA participation; strategies to overcome barriers; media messages			
Observer Notes			