# Attitudes towards Classroom-Based Physical Activity in Pre-Service and In-Service Elementary (Primary) School Teachers

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Submitted in fulfilment of the requirements of the
Degree of Doctor of Education

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May 2021

**Abstract**

The purpose of this dissertation was to explore attitudes towards Classroom-Based Physical Activity (CBPA) in Pre-Service Classroom Teachers (PCTs) and In-Service Classroom Teachers (CTs) who have experience in an Elementary (Primary) Teacher-Training Program (ETTP). Specifically, I wanted to understand research participants' perceptions about the benefits and barriers of incorporating CBPA into their practice. I also wanted to learn more about the coverage of CBPA in an ETTP, including within university courses and the schools that students attend during their teacher training. Relatedly, I wanted to explore research participants' views concerning how this ETTP could better prepare PCTs to implement CBPA. I also sought to examine research participants' knowledge and self-efficacy to incorporate CBPA into their practice based on their experiences in the ETTP. While these topics were the primary focus of this research, I also wanted to develop a more comprehensive understanding of CBPA, which is a relatively new approach to increasing school-age students' Physical Activity (PA) during school hours.

The outcomes of this research suggest that CBPA is viewed as a beneficial teaching practice by PCTs and CTs, primarily within the context of improving factors related to academic performance, such as increasing on-task behaviour and enhancing the effectiveness of academic instruction. However, CBPA is considered an 'ancillary' or 'optional' teaching practice by many educational stakeholders. Subsequently, neither PCTs or CTs are provided with adequate training to utilise CBPA on a consistent basis. They would benefit both from additional resources and ideas about how CBPA may be used to teach core academic subjects, as well as more guidance relating to the potential objectives and implementation of CBPA.

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**Acknowledgements**

First, I would like to thank my supervisor, Georgina Wardle, for her support, encouragement, and constructive feedback about my dissertation. Georgina has been very accommodating and responsive throughout the entirety of my dissertation, and I am very grateful to have been provided with the opportunity to work with her.

I am indebted to all of the interviewees who participated in this research. They have provided me with valuable insights and knowledge that I can use to enhance my professional practice and contribute to my career aspirations.

I want to thank my Physical Education colleague, Jim Kamla, for his support and constructive feedback throughout the Ed.D. His knowledge and experience have been an invaluable resource to me.

Finally, I want to acknowledge my amazing wife, Heather, for her support throughout the Ed.D. She gave birth to our two incredible children during my dissertation, and without her patience, sacrifice, and compassion, I would never have completed it. I will forever be indebted to you, Heather, for everything that you have done for me; I can never thank you enough.

**Author's Declaration**

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

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## Chapter 1: Introduction and Rationale

Currently, I am a lecturer in the School of Education, Health, and Human Performance at a university in South Carolina (SC). I teach Physical Education (PE) and health classes to both the general student population and to students who are majoring in either PE or elementary (primary) education. One of the classes that I teach consistently is 'Health and Physical Education for the Elementary School Child'. The remit of this class is to provide Pre-Service Classroom Teachers (PCTs) with the knowledge and resources to teach both health education and PE. As well as my role as a faculty member at a university, I also provide Physical Activity (PA) training to early childhood and elementary education In-Service Classroom Teachers (CTs). My postgraduate research focused on childhood obesity, and its prevalence in the United States (U.S.) was a motivating factor in my decision to pursue a professional career in health education and to advocate for a greater emphasis on health promotion in elementary schools and preschools.

I became interested in learning more about Classroom-Based Physical Activity (CBPA) after its inclusion in the Centers for Disease Control and Prevention's (CDC) Comprehensive School Physical Activity Plan (CSPAP) (described at the end of this chapter). Before this time, I had minimal knowledge about CBPA; it was not discussed or presented significantly (if at all) during my undergraduate training in PE or my postgraduate training in early childhood education. It was not a concept that I encountered during my early years teaching early childhood education and PE courses either. However, the potential of CBPA to increase daily PA in children during school hours was intriguing, especially due to insufficient PE instruction (the primary outlet for PA in school) in SC. This dissertation provided me with an opportunity to expand my knowledge about CBPA and to present this information to both PCTs and CTs; I hoped that this would motivate them to become agents of change in the health and wellbeing of their students.

### *Organization of Chapter*

The first part of this chapter will identify the theory that frames this dissertation: Martha Nussbaum's Capabilities Approach (CA) (Nussbaum, 2006a). I will provide a brief summary of the central tenets of the CA and highlight its relevance for this research. I will then present the reader with some basic information about Physical Activity (PA), including appropriate terminology and guidelines, health benefits, and measurement techniques. This will provide context for the review of literature on Classroom-Based Physical Activity (CBPA) presented in chapter two. I will also provide a summary of the organizational

structure of the public school system in the USA; this will give the reader additional context when interpreting the outcomes of this research. Next, I will highlight specific school policies that are relevant to the content of this dissertation and discuss the status of PA and Physical Education (PE) in Elementary schools in the U.S., with a particular focus on how this has generated significant interest in CBPA. Finally, I will present the theme of this dissertation.

**Part One**

*Theory*

This dissertation was underpinned by Martha Nussbaum's Capabilities Approach (CA), which is also referred to as the 'Human Development Approach' (Nussbaum, 2011). The CA is a normative political theory declaring that the primary responsibility of a national government is to provide its citizens with 10 capabilities or 'basic entitlements' (Nussbaum, 2006a, p.155). The capabilities in the CA are as follows: Life; Bodily Health; Bodily Integrity: Senses, Imagination, and Thought; Emotions; Practical Reason; Affiliation; Other Species; Play; [and] Control over One's Environment (ibid, p.77). Nussbaum (2011, p.20) defines capabilities as 'a set of (usually interrelated) opportunities to choose and to act', and she puts forth the claim that these capabilities are of 'central importance' as they provide a 'necessary basis for pursuing the good life' (Nussbaum, 1997, p.286).

I believe that the CA is an appropriate theoretical framework for this dissertation because of the importance of PA in achieving the capabilities of 'Life' and 'Bodily Health'. The capability of 'Life' is described as 'being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced to be not worth living' (Nussbaum, 2006a, p.76); 'Bodily Health' refers to the ability 'to have good health, including reproductive health; to be adequately nourished; to have adequate shelter' (ibid, p.76). I will provide a comprehensive account of the relationship between PA and health throughout this chapter. Regular PA is also important for the achievement of some 'internal' capabilities, described by Nussbaum (2011, p.21) as 'trained or developed traits and abilities, developed, in most cases, in interaction with the social, economic, familial, and political environment'. Nussbaum outlines both 'bodily fitness' and 'physical health' as 'internal capabilities' (ibid), and both are inextricably linked to regular PA.

Utilising the CA to present a conception of education is discussed elsewhere (see Walker, 2003). Nussbaum views education as an important tenet of public policy in the CA, focusing

primarily on its utility in developing the dispositions required for 'democratic citizenship' (Nussbaum, 2006b). She is also a proponent of a liberal approach to education, which emphasises a broad curriculum incorporating a variety of subjects (ibid). Nussbaum asserts that 'one job of a society that wants to promote the most important human capabilities is to support the development of internal capabilities' (Nussbaum, 2011, p.21), and she states that education has an important role in developing such capabilities (ibid). Schools are considered important settings to facilitate and promote PA in young children, a point which I will discuss in more detail later in this chapter.

It is important to acknowledge the distinction made in the CA between 'capabilities' and 'functionings', particularly as it relates to this dissertation. Dixon & Nussbaum (2012, p.557) state that capabilities are considered to be 'opportunities' to choose various forms of human life but that functioning 'is an active realization of one or more capabilities' (Nussbaum, 2011, pp. 24-25, as cited in Hedge & Mackenzie, 2013, p.333). Nussbaum's preference for capabilities over functionings demonstrates her belief in individual autonomy and freedom of choice (Nussbaum, 2006a). However, a caveat is made for children, with Nussbaum (2006b, p.172) suggesting that functionings should take preference over capabilities due to the child's 'cognitive immaturity' and the importance of such functioning in 'enabling adult capabilities'. This distinction is important for the content of this dissertation and its claim that children should participate in sufficient health-enhancing PA at school. While Nussbaum would likely argue that adults should have the freedom to decide if they want to engage in regular PA for health benefits, children are not yet mature enough to make this decision. Therefore, it should be mandatory for children to participate in appropriate minutes of PA at school due to its importance in developing internal capabilities and achieving the capabilities of 'life' and 'bodily health' as adults.

*Physical Activity Definitions and Health Guidelines*

Caspersen, Powell, & Christenson (1985, p.126) define PA as 'any bodily movement produced by skeletal muscles that results in energy expenditure'. PA is often classified by its 'intensity', which can be 'absolute' or 'relative'. 'Absolute' intensity 'is the rate of energy expenditure required to perform any physical activity' and is typically measured in 'METS' (Metabolic Equivalent) (Physical Activity Guidelines Advisory Committee, 2018, C-7). According to Pate, O'Neil, & Lobelo (2008, p.174), one 'MET' is the 'energy cost of resting quietly'. PA is classified as 'light-intensity' if it involves an energy expenditure of 1.6-2.9

'METS'; 'moderate-intensity' equates to 3.0-6.0 'METS'; and 'vigorous-intensity' PA is greater than 6.0 'METS' (Physical Activity Guidelines Advisory Committee, 2018). To provide context for the reader, examples of Light-Intensity Physical Activity (LPA) include 'walking at a slow or leisurely pace or cooking'; activities such as 'walking briskly' or 'raking a yard' are considered to be Moderate-Intensity Physical Activity (MPA); and examples of Vigorous-Intensity Physical Activity (VPA) include 'running' and 'carrying groceries or other loads upstairs' (ibid). Relative-intensity PA 'refers to the ease or difficulty with which an individual performs any given physical activity' (ibid, C-8). Relative-intensity PA can be assessed through physiological parameters such as heart rate and breathing, and 'anything that gets your heart beating faster' counts as MPA from a relative standpoint (U.S. Department of Health and Human Services, 2018, p.11).

Generally, PA is categorized as either 'aerobic (endurance)' or 'muscle-strengthening (resistance)' (U.S. Department of Health and Human Services, 2008), although recent publications provide additional classifications for different types of PA (see Physical Activity Guidelines Advisory Committee, 2018). PA is considered 'aerobic' if it is performed for 'more than a few minutes', 'involve[s] large muscle groups' and is 'rhythmic in nature' (IOM, 2013, p.39). Examples of aerobic PA include brisk walking, running, and swimming (U.S. Department of Health and Human Services, 2018). Aerobic PA is of particular interest to health professionals due to its significant health benefits (Powell, Paluch, & Blair, 2011), which will be discussed shortly. I will also provide more information about the benefits of 'muscle-strengthening (resistance)' PA for children later in this chapter.

The most recent PA guidelines by the United States Department of Health and Human Services (HHS) recommend that adults participate in 150 minutes (2 hours and 30 minutes) to 300 minutes (5 hours) a week of moderate-intensity aerobic PA, or 75 minutes (1 hour and 15 minutes) to 150 minutes (2 hours and 30 minutes) a week of vigorous-intensity aerobic PA, for health benefits (U.S. Department of Health and Human Services, 2018, p.8). HHS state that this accumulation of PA can be dispersed throughout the week and that 'bouts of any length contribute to the health benefits associated with the accumulated volume of physical activity' (ibid, p.23). They also state that 'additional health benefits are gained by engaging in physical activity beyond the equivalent of 300 minutes (5 hours) of moderate-intensity physical activity a week' and that even small increases in physical activity for inactive adults can confer health benefits (ibid).

Health organizations recommend that children (typically 6-11 years) and adolescents (12-19 years) participate in 60 minutes of Moderate-to-Vigorous Intensity PA (MVPA) daily (CDC, 2015; SHAPE, 2016; AHA, 2016). HHS state that the majority of these sixty minutes should involve aerobic PA of moderate intensity but should also 'include vigorous-intensity physical activity on at least 3 days a week (U.S. Department of Health and Human Services, 2018, p.48). Examples of aerobic PA for children include bicycling, running, and hopping (U.S. Department of Health and Human Services, 2008). It is important to note that children often perform PA in 'short bursts', which wouldn't technically be considered 'aerobic' (U.S. Department of Health and Human Services, 2018). However, it is common for health organizations to still classify these brief activities as 'aerobic' for children (ibid, p.49).

Health organizations also suggest that children should perform both muscle-and bone-strengthening activities three days a week (U.S. Department of Health and Human Services, 2018). Muscle-strengthening activities 'improve or maintain muscular strength' (Physical Activity Guidelines Advisory Committee, 2018, p. C-5) and examples include climbing on playground equipment and lifting weights (U.S. Department of Health and Human Services, 2008). Bone-strengthening activities refer to 'movements that create impact and muscle-loading forces on bone' (Physical Activity Guidelines Advisory Committee, 2018, p. C-5), and examples include hopping, skipping, jumping, and dancing. These types of activities are particularly important for children because the most significant developments in bone mass occur before and during puberty (U.S. Department of Health and Human Services, 2008).

Daily step-counts can also provide an estimate of PA in relation to public health guidelines (Tudor-Locke et al., 2011). 10,000 steps a day is widely considered to be a target for adults to achieve the health benefits associated with PA (NIH, 2019), although this may be unrealistic for sedentary adults (Tudor-Locke & Myers, 2001). For children and adolescents, between 11,000 and 16,000 daily steps is suggested to be a more appropriate goal (Tudor-Locke & The President's Council for Physical Fitness and Sport, 2002). Step-counts may be particularly relevant to measure PA in young children, who are 'naturally active in an intermittent way', alternating between short bursts of PA and rest (U.S. Department of Health and Human Services, 2008, p.16).

*Measuring Physical Activity*

The Physical Activity Guidelines Advisory Committee (2018, p. C-11) state that accurately measuring PA is 'complex' and 'difficult', an idea which is corroborated elsewhere (see IOM, 2013). Questionnaires asking individuals to report their levels of PA or observe it in others, and devices such as pedometers and accelerometers, are common methods of recording PA (ibid). Heart-rate monitors and armbands can also be used to measure PA (Sylvia, Bernstein, Hubbard, Keating, & Anderson, 2014). I will provide a summary of self-report questionnaires, direct observation, accelerometers, and pedometers, as these are the prevalent methods of recording PA in Classroom-Based Physical Activity (CBPA)-intervention studies.

Sylvia et al. (2014, p.200) state that self-report questionnaires are the most widely-used method of measuring PA. According to Aadahl & Jorgensen (2003, p.1196), 'self-report questionnaires are feasible and easy to administer, and are therefore the instrument of choice in largescale epidemiological studies'. However, they go on to state that the 'validity' of these methods 'depends on the respondents' ability to accurately assess the different aspects of physical activity' (ibid). Sylvia et al. (2014) provide a comprehensive list of the disadvantages of self-report questionnaires, including issues related to social desirability bias and lack of accuracy in classifying LPA and MPA.

Direct observation typically involves an independent person observing and recording PA. This method is particularly popular for research that involves young children, due to potential issues related to this population's ability to accurately recall their own PA (Sylvia et al., 2014). This technique is also commonly used when the PA is conducted in a restricted space such as a classroom (ibid). Many of the research studies described in chapter two involve direct observations. Advantages of this method include 'high quality data, ability to record numerous dimensions of physical activity…and flexible scoring of results' (Sallis, 2010, p.5). Some of the disadvantages of using this approach to measure PA are 'the expense of human observers, need for training, difficulties of managing and scoring the data, and possible reactivity effects of the observations on participant behaviour' (ibid).

Pedometers and accelerometers are the common instruments used to objectively measure PA. Both pedometers and accelerometers monitor a person's step-count which are recorded by body-worn sensors (Le Masurier & Tudor-Locke, 2003). These devices are considered

effective instruments for 'objectively assessing PA as steps taken over a defined unit of time' (ibid, p.870). However, accelerometers are able to 'detect the velocity of the movement, which can be used to infer intensity' (ibid); pedometers are not able to do this. Tudor-Locke et al. (2011, p.1) suggest that 'accelerometers offer a greater potential [than pedometers] to study complex patterns of physical activity and sedentary behaviours'. However, pedometers are often used in PA-intervention studies because they are 'cheaper' and more 'user-friendly' than accelerometers (Le Masurier & Tudor Locke, 2005 p.867).

'Dose' is a common term that is used in PA prescription and measurement and refers to 'the type and amount of physical activity' (Physical Activity Guidelines Advisory Committee, 2018, p. C-9). The elements of 'dose' in relation to aerobic PA include 'frequency', defined as the number of sessions of physical activity per day or per week; 'duration', defined as the length of time for each session of physical activity; and 'intensity' (ibid, C-9). 'Dose-response' refers to 'the relationship between the dose…of physical activity and the magnitude of change, if any, in the health outcome or physiologic change' (ibid, C-10). 'Dose-Response' is an important term to understand when interpreting the impact of CBPA on health and academic outcomes, which are presented in chapter two. These studies typically categorize PA as 'acute' or 'chronic' (Donnelly et al., 2016). 'Acute' refers to the impact of short bouts of PA, usually ranging from a few minutes to an hour (ibid). 'Chronic' refers to PA performed over days, weeks, or even months (CDC, 2010).

*Health benefits of Physical Activity*

In 2008, HHS published the first national guidelines related to PA in the U.S. (U.S. Department of Health and Human Services, 2008). An updated version of this report was released in 2018, and it suggests that there is 'clear' evidence that regular PA 'fosters normal growth and development' and 'can make people feel better, function better, sleep better, and reduce the risk of a large number of chronic diseases' (U.S. Department of Health and Human Services, 2018, p.6). This report highlights that 'just about everyone gains benefits' from regular PA, including young children, older adults, and individuals living with disabilities or chronic conditions (ibid).

The potential for regular PA to alleviate the risk of chronic disease is significant in the U.S., where 6 out of every 10 people are affected (CDC, 2020a); subsequently, chronic disease is responsible for the majority of deaths and disabilities in the country (ibid). Examples of chronic disease includes heart disease, diabetes, and cancer (ibid). HHS state

that ‘seven of the ten most common chronic diseases are favourably influenced by regular physical activity’ (U.S. Department of Health and Human Services, 2018, p.2). This reinforces other previous research citing the ‘compelling evidence’ that a physically active lifestyle is associated with a ‘reduced risk of premature death of any cause’ (Warburton, Nicol, & Brevin, 2006, p.802).

Regular PA is also important for maintaining a healthy body weight and preventing obesity (U.S. Department of Health and Human Services, 2018). Obesity is determined by a person’s Body Mass Index (BMI), which is their weight in kilograms divided by the square of their height in meters (CDC, 2017). This provides a weight category of ‘underweight, normal, overweight, or obese’ (ibid). Although BMI does not measure fat ‘directly', a ‘high BMI can be an indicator of high body fatness’ (ibid). Obesity can severely impair a person’s quality of life, and it is associated with health issues such as type-2 diabetes and hypertension (Dixon, 2010). Obese children are also more likely to suffer from type 2 diabetes, as well as asthma, sleep apnea, and are at increased risk of developing a variety of chronic diseases during adulthood (Obeng, 2011). Obesity is also associated with a variety of psychological issues during childhood, such as low self-esteem (Braet, Mervielde, & Vandereycken, 1997) and anxiety (Kalra, De Sousa, Sonavane, & Shah, 2012).

Obesity is a considerable health issue in the U.S., where it affects approximately 17% of young people and 34% of adults (Ogden, Carroll, Kit, & Flegal, 2014). In South Carolina (SC), approximately 33% of children and adults are considered either overweight or obese (Eat Smart, Move More SC, 2019a). Although regular PA is recognized as an important lifestyle-related behaviour towards the prevention of obesity, it is important to acknowledge that its determinants are ‘complex’ (Dixon, 2010, p.104), and that diet and genetics are also major contributing factors towards it (Anderson & Butcher, 2008).

As well as being a preventive measure for the onset of chronic disease, regular PA can also have a positive impact on mental health (Penedo & Dahn, 2005). Mental health is defined by The World Health Organization (WHO, 2004, p.12) as ‘a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, [and] can work productively and fruitfully’. The Physical Activity Guidelines Advisory Committee (2018, p. F3-1) uses the term ‘brain health’ to refer to a similar concept, defining it as ‘optimally functioning cognition, low levels of anxiety and feelings of depression, a positive assessment of perceptions of quality of life, and comfortable and effective sleep patterns.’

The impact of CBPA on 'brain health' for school-age children, particularly its relationship with cognition, will be explored extensively in chapter two. Moving forward, I will use the term 'mental health' to represent the definitions provided above, but I will reference specific aspects of mental health (e.g. cognition) when appropriate.

Investigating the relationship between PA and mental health is pertinent in the U.S, where 1 in 5 adults experience mental illness each year, and 1 in 6 young people aged 6-17 experience a mental disorder each year (National Alliance on Mental Illness, 2020). Two aspects of mental health that are considered to be positively linked to PA are anxiety and depression. For example, The Physical Activity Guidelines Advisory Committee (2018, F3-25/26) concludes that there is 'strong evidence' that 'acute bouts of exercise' can 'reduce depressive symptoms…[and] anxiety.' Others also add credibility to the idea that regular PA can alleviate anxiety and depression (for example, Ojimabo, 2013). Bailey (2006, p.398) adds that there is 'fairly consistent evidence' that PA may contribute towards the 'psychological well-being of children', particularly self-esteem (ibid). There is also evidence to suggest that PA can enhance the academic achievement of children (CDC, 2010), and this concept will be explored in detail during my review of literature in chapter two.

Dwyer, Higgs, Hardy, & Bauer (2008, p.67) purport that PA is a 'pre-requisite' for optimal growth and development in children. According to the World Health Organization ('WHO', 2020), physically active children are more likely to develop a 'healthy cardiovascular system…healthy musculoskeletal tissues…[and] maintain a healthy body weight'. HHS add that 'risk factors for chronic diseases such as heart disease, high blood pressure, type 2 diabetes and osteoporosis can develop early in life and regular physical activity [during childhood] can be a preventative measure' to reduce the likelihood of these diseases occurring during adulthood (National Association for Sport and Physical Education, 2010, p.3). Regular PA during childhood also enhances the likelihood that children will become physically active adults (Sallis & Patrick, 1994). Conversely, a sedentary lifestyle during childhood or adolescence may heighten the possibility of physical inactivity during adulthood (Raitakari et al., 1994).

Despite the universal recognition that regular PA is critical for health and well-being, less than fifty percent of adults in the U.S meet the public health guidelines for aerobic PA (U.S. Department of Health and Human Services, 2018). Additionally, The Institute of

Medicine (IOM, 2013, p.35) state that ‘few children’ adhere to national PA activity guidelines. For example, The Society for Health and Physical Educators (SHAPE, 2016, p.10) document that, in a recent study, only 42 percent of American children ages 6-11 ‘engaged in the recommended 60 minutes of [daily] physical activity’. Also of note, a recently developed PA guideline for preschool children (ages three to five) suggests that pre-schoolers should engage in 3 hours of PA per day (Pate & O’Neil, 2012); yet Pate et al. (2015, p.419) caution that ‘most children…are not meeting this new PA guideline’. However, it is important to reiterate a previous point acknowledging the difficulties of accurately measuring PA, with the IOM (2013, p.46) affirming that common methods are not ‘completely satisfactory’.

Although public health guidelines focus primarily on increasing MVPA, it is also important to acknowledge the growing body of research highlighting the benefits of LPA (for example, Loprinzi, 2017; Amagasa et al., 2018). Increasing LPA is effectively the same as reducing sedentary behaviour (IOM, 2013), which refers to ‘any waking behaviour characterized by a low level of energy expenditure (less than or equal to 1.5 METs) while sitting, reclining, or lying’ (U.S. Department of Health and Human Services, 2018, p.45). There are a variety of health issues associated with extended periods of sedentary behaviour (Buman et al., 2010), which make increasing LPA a worthy health-related goal. For example, Mullane, Buman, Zeigler, Crespo & Gaesser (2017, p. 489) state that sedentary behaviour ‘is now recognized as a unique health risk factor for cardiometabolic diseases and early mortality.’ Biddle & Assare (2011, p.14) also provide studies that show ‘consistent negative mental health associations [in children and adolescents] with sedentary behaviour’.

Amagasa et al. (2018, p.2) state that ‘within a day (24 h),’ adults in the U.S. spend ‘an average of 7.7 h in SB [Sedentary Behaviour] [and] 7.8 h in LPA....Thus, the clarification of the effects of LPA is crucial to promote public health.' They also state that ‘although current global PA guidelines recommend only MVIPA, promoting LIPA may confer additional health benefits’. Efforts with the intent of increasing LPA may be particularly relevant for children and teenagers in the U.S., who spend approximately ‘80-93% of their waking hours being sedentary’ (Webster, Russ, Vazou, Goh, & Erwin, 2015, p.2). However, while increasing LPA appears to be an important consideration in improving health, especially for inactive adults (Physical Activity Guidelines Advisory Committee, 2018), the extent of the health benefits associated with it is an emerging area of research that likely needs further clarification (Fuzeki, Engeroff, & Banzer, 2017).

*Physical Activity Policy*

Due to the positive health outcomes associated with MVPA, concomitant with the negative health outcomes liked to a sedentary lifestyle, PA has become a topic of interest for a significant number of organizations in the U.S. (Strong et al., 2005). For example, The National Physical Activity Plan, which seeks to develop 'a comprehensive set of policies, programs, and initiatives designed to increase physical activity in all segments of the U.S. population', was 'developed through a process that engaged hundreds of professionals, researchers, and leaders from public and private organizations' (National Physical Activity Plan, 2016, p.1). The initiative, which is interested in increasing PA in children and young people (National Physical Activity Plan, 2018), is a global trend, also (for example, see the Active Healthy Kids Global Alliance, 2019).

Another health-related policy that stresses the importance of regular PA is HHS' 'Healthy People 2020', which provides a framework for its vision of a 'society in which people live long, healthy lives' (U.S. Department of Health and Human Services, N.D., p.1). This policy proposes that health-related behaviours such as PA 'are determined by influences at multiple levels…[including] personal…organizational/institutional, environmental…and policy levels' (ibid). HHS add that 'significant and dynamic inter-relationships exist among these different levels of health determinations', and that 'interventions [to improve health] are most likely to be effective when they address determinants at all levels' (ibid).

The development and implementation of policy is a specific area of focus for organizations interested in increasing minutes of PA in children and adolescents in the U.S. (IOM, 2013). Eyler (2011, p.2) states that policies 'consist of laws, regulations and rules…[that] can determine changes in physical, economic, and social environments.' The impetus of a health-related policy approach is to 'help people develop healthier behaviours by providing opportunities and support for those behaviours' (ibid). The 'Physical Activity Policy Research Network' (PAPRN) is an example of an initiative designed to assess PA-related policies. The PAPRN was developed by the Centers for Disease Control and Prevention (CDC) and is intended to 'study the effectiveness of health policies related to increasing physical activity in communities' (CDC, 2014). A focus of this policy is to look at policies in schools, particularly local district PE policies, and how this impacts PA levels (Physical Activity Policy, 2020).

The role of the school in increasing PA is an area of focus for many health-related organizations (CDC, 2020b; U.S. Department of Health and Human Services, 2018). The IOM (2013, p.2) state that 'children spend up to half their waking hours in school…[and] therefore provide the best opportunity for a population-based approach for increasing physical activity among the nation's youth'. On average, in the U.S., schools have 'direct contact' with more than 95% of young people aged 5 to 17 years, for about 6 hours per day, for 13 years (CDC, 2019a). Most schools are also able to provide the space, equipment, and supervision required for children to engage in age-appropriate PA (Pate et al., 2006). Based on these factors, it has been proposed that children should undertake at least thirty minutes of their daily PA at school (Mahar, 2011). Before proceeding to examine the prominence of PA in public schools, I will provide the reader with some information about the structure of the school system in the U.S.; this should provide context when interpreting the standing of PA in these settings, as well as considering its potential status in the future.

**Part Two**

*U.S. School System and Related Policy*

The education system in the U.S. consists of early childhood education (for children ages 0-5 years), elementary school (for children ages 5/6-11 years of age), middle school (for children ages 11/12-13/14 years of age), and high school (for children 14-18 years of age) (U.S. Department of Education, 2008a). According to the U.S. Department of Education, the educational system in the U.S is 'decentralized' (U.S. Department of Education, 2008b); state and local government should primarily determine educational practices (ibid). However, funding opportunities provided to local and state agencies are awarded based upon state compliance with the initiatives set forth by the federal government; this arguably makes the federal government a significant driver of educational practices (Miller, 2014).

An example of this is the 'No Child Left Behind' policy (NCLB) enacted by the Bush administration in 2001. A primary objective of NCLB was to ensure that '100% of students reach proficiency in maths and reading by the year 2014' (Husband & Hunt, 2014, p.214). Although no state was obligated to adopt the policy and its rigorous accountability measures, it was a requirement for those that wanted to receive federal funding (Testani & Mayes, 2008). A more recent example is the 'Common Core State Standards', which are academic standards in maths and English Language Arts/Literacy (ELA) designed to promote

career and college readiness (Common Core, 2020). Although these standards were not developed by the federal government, they provided financial incentives for states that adopted them (Center for Public Education, 2014).

Based on the claim that the federal government is likely to have a significant impact on public education in the U.S., it is important to consider how they are likely to influence practices in schools. It is widely considered that National education policies in the U.S are framed by a neoliberal agenda (Hairston, 2013; Baltodono, 2012). Neoliberalism is primarily concerned with individual competition for economic gain (Olssen, Codd, & O'Neil, 2004). Hastings (2019, p.1) states that 'neoliberalism frames the purpose of education in terms of investments made in the development of students' human capital, [and that] what students should learn and the value of education is relative to their individual prospects for future earnings'. Relatedly, much of the political discourse of public education in the U.S (as well as internationally) is primarily focused upon the 'subjects and dispositions that increase citizens' economic productivity' (Hursh & Martina, 2003, p.30).

Brown & Lauder (2006, p.25) suggest that it is widely assumed there is a 'global knowledge economy' where 'ideas, skills and knowledge…contribute to [national] economic advantage' (ibid, p.26). Discourse from the federal government in the U.S. acknowledges the importance of an educational system that prepares school-age students to compete for jobs in this 'global knowledge economy'. For example, former president George W. Bush highlighted that the U.S. education system 'must compete with education systems in China and India' or else 'the jobs will go elsewhere' (Bracey, 2008, p.781).

Globalization has many interpretations but, from an economic standpoint, is described by Olssen et al. (2004, p.5) as the 'processes that enable the free flow of goods, services, investment, labour and information across national boundaries in order to maximize capital accumulation'. The Organization for Economic Development and Cooperation (OECD) is considered to be a significant driver of educational policy (Rizvi & Lingaard, 2009); within the context of globalization, the OECD espouse the importance of a competitive educational system in the pursuit of national economic prosperity (Dale, 2005).

In the year 2000, the OECD launched the 'Program for International Student Assessment' (PISA); this program evaluates the competencies of school-age students in the curriculum areas of maths, science and literacy (OECD, 2003). The knowledge and skills related to

these content areas are determined to be important for vocational success and economic well-being (ibid). Based on the claim that the U.S federal government is primarily concerned with an educational system that prepares students to compete for jobs in a global marketplace, it is no surprise that the only mandated outcomes in contemporary federal policies are the content areas of maths, ELA, and science (ASCD, 2015).

Despite the overwhelming focus on these subject areas in public schools in the U.S., there are federal policies that include requirements for PA at school. According to Moag-Stahlberg, Howley, & Luscri (2008), there was a greater focus on the role of the school in promoting and maintaining health-related behaviours (such as regular PA) after the CDC released the 'Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity' in 2001. An example of this is the 2004 'Child Nutrition and WIC Re-Authorization Act', which required local education agencies who participated in the National School Lunch Act or the Child Nutrition Act to create and implement wellness policies (Child Nutrition, 2004). Although the primary focus of this policy was nutrition-based, goals for PA were required to be included in the policy (ibid). The 'Healthy, Hunger-Free Kids Act of 2010' continued this wellness policy initiative, also requiring 'goals for physical activity and other school-based activities that promote student wellness' (Piekarz et al., 2016).

However, despite the acknowledgment from the federal government that the school plays an important role in promoting and maintaining the health of school-age students, Moag-Stahlberg et al. (2008, p.563) suggest that the government 'did not provide funding to assist with the development, implementation, and monitoring of school wellness policies'. President Obama's 'Every Student Succeeds Act', which replaced NCLB, highlights the importance of a 'well-rounded education' (U.S. Department of Education, 2016), and although it provides funding opportunities for Physical Education (PE) under this initiative (SHAPE, 2016, p.16), the impact of this legislation on PE and PA is yet to be determined.

Despite the influence of the federal government on education in the U.S, it is important to recognize that a variety of decisions about related practices are made at both the state and local levels. Cox et al. (2011, p.40) suggest that 'elevating the importance of physical activity' to these educational stakeholders is 'an important step in strengthening and improving…related policies'. There are numerous initiatives in SC focused on increasing PA levels of school-age students, often within the context of combating childhood obesity in the state. An example of this type of initiative is 'Eat Smart, Move More SC', a non-profit

organization that 'works with community partners to create healthy eating and active living options' for young people and adults in the state (Eat Smart, Move More SC, 2019b). There is also reference to the importance of PA in local school districts in SC. For example, the wellness policy of a local school district close to the ETTP associated with this research states that 'students will be given opportunities for physical activity during the school day through physical education classes, daily recess periods for elementary education students, physical activity breaks and in the integration of physical activity into the academic curriculum' (Spartanburg School District No. 7, 2016). However, there are no specific criteria about how these opportunities for PA are or should be implemented.

*Status of Physical Activity in Public Schools*

Physical education (PE), recess, classroom-based physical activity, and after-school programs are all considered to be opportunities for PA in school settings (SHAPE, 2016). However, PE instruction is considered the primary source for providing PA during school hours (Rink, Hall, & Williams, 2010). PE is defined by the IOM (2013, p.198) as 'a planned and sequential K-12 standards-based program of curricula and instruction designed to develop motor skills, knowledge and behaviours of active living, physical fitness, sportsmanship, self-efficacy, and emotional intelligence'. The two main goals of PE are to 'prepare children and youth for a lifetime of physical activity…[and] engage them in physical activity during physical education' (ibid, p.199). SHAPE (2016, p.10) recommend that elementary schools provide 150 minutes of PE instruction per week, and that at least 50% of PE instruction should involve students participating in MVPA (ibid, p.13).

A recent SHAPE (2016) report suggests that the majority of states in the U.S do not meet the recommendation of 150 minutes of Elementary PE instruction per week. Although most states require some form of PE instruction in elementary school, only thirty-seven percent require a specific number of minutes of weekly PE instruction (ibid, p.17). In SC, elementary students are required to have 150 minutes of PA per week, and sixty minutes must be PE (Students Health and Fitness Act, 2005). However, reiterating the idea that PE is a 'non-essential' subject in schools (Sallis, et al., 2012, p.129), SHAPE (2016, p.3) states that 'most states allow waivers, exemptions, and substitutions for physical education', which 'undermine' many of the PE policy requirements. A comprehensive report on PE and physical activity policies by the IOM (2013, p.78) suggests that many states acknowledge the importance of these content areas, but very few have 'strong laws' that ensure the sufficient implementation of recommended practices. This point is further illustrated in a

recent report by the South Carolina Department of Education (2018), which highlights that less than 50% of elementary schools in SC responded to a survey on schools' compliance with the students' health and fitness act requirements.

In light of the contemporary status of PE, which does not provide children with sufficient opportunities for PA during school hours, health organizations have begun to consider alternative conceptions of the school and its role in enhancing the PA levels of children in the U.S. For example, the CDC, in collaboration with SHAPE, recently developed the 'Comprehensive School Physical Activity Plan' (CSPAP); SHAPE (2016, p.12) describes this plan as a 'new national framework for physical education and physical activity for young people'. The CSPAP is separated into five parts: 'Physical Education, Family and Community Engagement, Physical Activity During School, Physical Activity Before and After School, and Staff Involvement' (CDC, 2019b). Physical activity 'during' school includes 'recess' and 'classroom physical activity breaks' (SHAPE, 2016).

*Theme of Dissertation*

The theme of this dissertation is to explore attitudes towards 'classroom physical activity breaks', or Classroom-Based Physical Activity (CBPA), amongst Pre-Service Teachers (PCTs) and In-Service Classroom Teachers (CTs), and to learn more about its inclusion in an Elementary Teacher-Training Program (ETTP) and elementary schools in the upstate region of SC. CBPA refers to any PA conducted by the classroom teacher in a school classroom. Chapter two will provide an extensive review of literature on CBPA, including its prevalence in elementary schools in the U.S., health and academic benefits associated with it, and attitudes towards CBPA in both CTs and PCTs.

## Chapter 2: Review of Literature

*Organization of Chapter*

In this chapter, I will present my review of literature on Classroom-Based Physical Activity (CBPA). First, I will explore some of the definitions and applications of CBPA, as well as its current status in elementary schools in the U.S. I will then discuss some of the seminal research studies about CBPA, exploring the benefits of incorporating it into the elementary school classroom, as well barriers associated with its implementation. Concomitantly, I will also examine considerations related to the future promotion and implementation of CBPA. Finally, I will provide an account of research investigating perceptions of CBPA in both In-Service Classroom Teachers (CTs) and Pre-Service Classroom Teachers (PCTs), as well as provide an overview of the inclusion of CBPA in university teacher-training programs. Finally, I will present the main research questions that guided the content of this dissertation after completing my review of literature.

### Part One

*Defining Classroom-Based-Physical Activity (CBPA)*

There are a variety of terms that provide a reference point for PA that takes place in the school classroom, including: 'activity breaks' (Turner & Chalpoupka, 2012); 'activity bursts' (Delk, Springer, Kelder, & Grayless, 2014); 'classroom energizers' (Mahar et al., 2006a); 'classroom activity breaks' (IOM, 2013); 'active classroom instruction' (Honas et al., 2016); 'movement integration' (Webster et al., 2015); 'exercise breaks' (ibid); classroom-based physical activity (Watson, Timperio, Brown, Best, & Hesketh, 2017): 'brain breaks' (Perera, Frei, Frei, & Bobe, 2015); 'brain boosts' (CDC, 2018); and 'active classrooms' (ibid). This array of names reflects different approaches and objectives associated with PA conducted in a school classroom, which I will discuss shortly. Moving forward, I will use the term 'Classroom-Based Physical Activity' (CBPA) to refer generally to 'any physical activity done in the [school] classroom' (CDC, 2018, p.6).

The CDC (2018, p.6) provide two broad categories of CBPA: 'physical activity integrated into planned academic instruction…[or] physical activity outside of planned academic instruction'. More specifically, Watson et al. (2017, p.2/3) classify CBPA under three headings: 'Active Breaks,' which they describe as 'short bouts of physical activity performed as a break from academic instruction' (these are also referred to as 'brain breaks'); 'curriculum-focused activity breaks', defined as short bouts of physical activity that include curriculum content'; and 'physically active lessons', described as 'the

integration of physical activity into lessons in key learning areas other than physical education (e.g. mathematics)'.

I will refer to CBPA intended to be a break from academic instruction as an 'Active Break' (AB), and CBPA that is integrated into academic instruction as a 'Physically Active Lesson' (PAL). When applicable, I will explore subcategories within these two general classifications (for example, if a PAL is intended to teach new academic content versus reinforcing previously-taught content). ABs are likely to take place between academic lessons (e.g. asking students to watch a dance video) or during transitional periods (e.g. asking students to jump or skip around the classroom before lining up to go to go to recess or lunch) (Webster et al., 2015); PALs would take place during an academic lesson (Daly-Smith et al., 2018).

Content for CBPA can come from 'pre-packaged' programs (Webster et al., 2015, p.7), which are often provided to CTs by physical education specialists (usually through professional development training), or it can be created by the CT (ibid). Examples of 'pre-packaged' programs prevalent in CBPA literature are provided in Table 1; this will provide context for the reader when these programs are referred to later in this review. I will also provide specific examples of CBPA (both ABs and PALs) that do not come from 'pre-packaged' programs throughout this review of literature so that the reader has a comprehensive understanding of examples and common applications of CBPA.

The benefits of CBPA are broadly separated into 'health-based' and 'education-based' outcomes (Webster et al., 2015). Examples of 'health-based' outcomes include increasing both Moderate-to-Vigorous Intensity Physical Activity (MVPA) and Light-Intensity Physical Activity (LPA), and 'education-based' outcomes include improving classroom behaviour, cognition, and academic achievement (Watson et al., 2017). I will provide a comprehensive review of research studies that examine all of these potential benefits associated with CBPA later in this chapter.

CBPA can be intended to last for twenty minutes (Howie, Newmun-Norland & Pate, 2014), fifteen minutes (Daly-Smith et al., 2020), ten minutes (Mahar et al, 2006a; Kibbe et al., 2011; Liu et al., 2008; Whitt-Glover et al., 2011), five minutes (McMullen, Kullina, & Cothran, 2014), one minute (Goh et al., 2013), or even less than one minute (Webster et al., 2015). The CDC (2018, p.9) state that 'ideally, classroom physical activity should be in

brief periods of 5 minutes or more and done multiple times throughout the day'. A variety of factors are likely to influence the length of CBPA, such as the type of activity being performed and whether it is an AB or a PAL. CBPA generally encompasses any type of PA (e.g. dancing, walking, push-ups, etc.) at any type of intensity (Behrens et al., 2017). As CBPA is a relatively new strategy for enhancing levels of PA in young children in the school setting, there are many questions and uncertainties regarding criteria of effectiveness (Watson et al., 2017; Daly-Smith et al., 2018), as well as what the specific goals of CBPA should be (Webster et al., 2015). This will be a prominent theme throughout this dissertation.

*Classroom-Based Physical Activity Statistics*

There are limited data on the prevalence of CBPA in schools across the U.S due to its status as a 'relatively new approach to promoting physical activity during the school day' (IOM, 2013, p.268). At the state level, according to SHAPE (2016), based on their own data, Colorado is the only state in the U.S. that has a policy requirement for CBPA. This policy states that 'classroom physical activity breaks are required for elementary school students' and that they (as well as PE, recess and field trips) are intended to assist students in accruing 600 minutes of PA per month (ibid).

However, it is important to reiterate that state policies are often 'open to interpretation at the local level' (ibid, p.6); this arguably makes it difficult to gain a realistic grasp of the extent of CBPA in elementary schools in any state, or throughout the country overall, based exclusively on state policy. At the local level, the IOM (2013, p.26) suggest that 'few if any school districts require that physical activity opportunities be provided…within the classroom'. The 2006 CDC School Health Policies and Programs Study indicated that approximately 16% of school districts 'required regular physical activity breaks, excluding recess and PE, during the elementary school day' (Kibbe et al., 2011). Turner & Chaloupka (2012) suggest that between the years 2009-2011, twenty-five percent of public elementary schools in the U.S. incorporated PA (other than PE or recess) during school hours, but this also includes PA outside the academic classroom, such as in cafeterias during lunchtime (ibid). A more recent study by the CDC (2018) suggests that 11% of school districts 'require' regular CBPA during the school day in Elementary school.

While CBPA may not be mandatory in the vast majority of states, their districts, or their schools, it has been proposed that CTs may be 'encouraged' by school administrators to

incorporate it into their practice (Turner & Chaloupka, 2012, p.3). Therefore, it is possible that CBPA is more common than is inferred from examining state and local policy. For example, CDC (2018, p.8) state that based on their discussions with 'local, state, and national experts in classroom physical activity', 43% of elementary schools across the U.S. involve 'students participating in regular physical activity breaks outside of physical education during the school day' (ibid, p.8) (although this also includes spaces outside the classroom such as hallways, auditoriums, and lunchrooms). Webster et al. (2015, p.7) suggest that 'little is actually known about the extent or nature of how classroom teachers utilize CBPA'. Therefore, moving towards a greater understanding of the attitudes of CTs (and PCTs) towards CBPA is likely to be an important step in determining the potential future implementation of this practice (ibid).

*Classroom-Based Physical Activity Programs*

*Take10!*

Take10! is a program that has received much attention in CBPA literature. TAKE10! was developed by the International Life Sciences Institute (ILSI) within the context of rising childhood obesity rates in the U.S, and the subsequent desire to increase PA in young children (Kibbe et al., 2011). According to the ILSI (2015), Take10! combines 'academic instruction with 10-minute physical activity breaks to get kids moving without sacrificing time dedicated to academic learning.' The program focuses on 'reinforcing specific learning objectives in math, reading, language arts, science, social studies, and general health' (ibid). Kibbe et al. (2011) state that Take10! consists of five characters who are consistently featured in the materials, which include grade-specific PA and learning objectives, worksheets, posters, teacher resources, assessments and stickers (ibid).

*Classroom Energizers*

Classroom energizers were developed by a research team at East Carolina University in response to a North Carolina (NC) law requiring that schools provide students with thirty minutes of daily PA (Mahar, Kenny, Shields, Scales, & Collins, 2006b). Energizers are physical activities designed to be performed in the classroom and integrated into academic content (Mahar, 2011). According to Mahar et al. (2006a, p.2087), energizers 'last approximately 10 minutes, integrate grade appropriate learning materials, involve no equipment, and require little teaching preparation'. Initially designed solely for elementary school students, energizers for both middle-school students and after-school students have recently been developed (Eat Smart, Move More NC, 2020).

*Activity Bursts in the Classroom for Fitness (ABC)*

The Activity Bursts in the Classroom for Fitness (ABC) program was part of a collaborative effort from Yale University and the Independence school district in Missouri to promote the importance of PA and a healthy diet to elementary students and their families (Katz et al., 2010). According to their website, the ABC program 'shows schools how to restructure physical activity into multiple, brief episodes of activity into classrooms throughout the day without taking away valuable time for classroom instruction'. The goal of the ABC program is to 'promote an interest in physical activity among children and increase their behavioural capacity' (ibid, p.2). ABC are designed to be incorporated into the beginning of classroom instruction to improve student focus during the subsequent academic lesson. Each activity burst includes three components, which are provided in Table 1.

*Instant Recess*

The Instant Recess program was developed in response to rising rates of childhood obesity in the U.S. and the impact of a sedentary lifestyle on this population ('Instant Recess', 2013). The program originated within the context of the North Carolina (NC) policy which required schools to provide thirty minutes of daily PA for students in grades K-8 (Whitt-Glover et al., 2011). Instant Recess involves physical activity breaks that 'consist of a series of basic aerobic dance, calisthenics, and sports movements' (ibid, p.291). The PA is designed to be 'moderate intensity, low-impact, and…performed in 10-minute bouts to music (ibid)'.

*Go Noodle*

Music and dancing are prevalent types of CBPA referenced in related literature (Webster et al., 2015; CDC, 2018; Glapa et al., 2018; Becker, 2013). A common resource for CTs to access this content is the website, 'Go Noodle' (Go Noodle, 2020a), which uses songs and games to encourage PA in the classroom. According to the 'Go Noodle' website, this program is 'used in 4 out of 5 U.S. public elementary schools [and]…gets 14 million kids moving…each month' (ibid). The focus of 'Go Noodle' activities is to improve student behaviour, concentration, engagement, and to facilitate more interaction between students (Go Noodle, 2020b).

**Table 1: Examples of Activities from Selected 'Pre-Packaged' Classroom-Based Physical Activity Programs**

| CBPA Program | Example |
|---|---|
| **Take10!** | **Grade Level:** Kindergarten<br>**Subject:** Maths/Number Sense<br>**Lesson title:** Invisible Jump Rope<br>**How to Play:** The objective of this activity is to practice counting forward and backward to 50 and practice simple addition<br>Each student has an invisible jump rope and begins to jump<br>Class continues until 10 minutes of physical activity have been completed<br>**Beginner**<br>Teacher calls out numbers from 1-10 starting with one<br>Everyone jumps as they count to that number<br>Option: Teacher calls out one foot or both feet. Students jump on one foot or two for 3-4 jumps<br>**Intermediate**<br>Teacher calls out the numbers starting with 10<br>Everyone jumps backwards as they count backwards to one<br>Teacher calls out either "left foot," "right foot" or both feet. Students jump on the correct foot for 10 jumps<br>Integrate the concept of before and after. For example, ask the students which number comes before 10. Students call out the number and jump that many times.<br>Advanced: Teacher holds up finger(s) from 1 to 10. Students call out the number and jump that many times. |
| **Classroom Energizer** | **Grade Level:** K-3<br>**Subject:** English Language Arts (ELA)<br>**Name of Activity:** Space Jam<br>**Formation:** Standing at desks<br>**Equipment:** None<br>**Rules/Directions**:<br>1. Teacher reads story to class and class identifies each verb or "action" word. |

| | |
|---|---|
| | 2. Teacher pauses during reading while class acts out each verb in place for 15-20 seconds.<br>3. Continue until end of story:<br>Hello, my name is Zippy and I live on a space station. Today, I will lead you on a tour through space. First, we need to **put on** our moon boots. They will allow us to **walk** through space. The first stop will be Mercury, the closest planet to the sun. Mercury is very hot . . . so, OUCH, be careful and **step quickly** so your feet do not get burned. Mercury also has many craters. On the count of 3, let`s **jump** into a crater and see what we find. 1, 2, 3, **JUMP!** **Climb** out of the crater so we can **march** to Venus. Venus is the second planet from the sun. This planet has very strong winds and volcanoes. See if you can **walk** through the wind without **blowing over**. A lot of the surface of Venus is covered with lava, and here comes some . . . **RUN!** The next stop is Earth, the third planet from the sun. Seventy-one percent of the Earth`s surface is water, so **hop** in and start **swimming**. See if you can do the **front crawl** and the **backstroke**. Our next stop will be Mars. Mars is known as the red planet. The largest mountain in space, Olympic Mons, is located on Mars. See if you can **climb** to the top! Jupiter is the fifth planet from the sun. It is made up of mostly gas and you can see clouds when you look at this planet. **Find** a cloud and see if you can **float** on it.<br>Our next stop is Saturn, the sixth planet from the sun. It has a rocky core and there are areas of ice throughout the planet. There are also rings of gases around Saturn. WHOA, there is a huge piece of ice, be careful and **slide** across it. **Hop** on one of the rings surrounding Saturn and **spin** around in circles. Uranus is our next stop. It has a small rocky core. Can everyone **tiptoe** across Uranus **watching** out for the ice? Next, let`s visit Neptune. Neptune has four rings and large storms with fast winds. It also has 13 moons. Quick, **duck**! Here comes a moon, **move to the left** so you do not get hit. Pluto is our next stop. It is the smallest planet and is furthest from the sun. It is a cold planet because it is furthest from the sun. **Shiver** and **rub your hands** together to stay warm. This ends our tour of space. **Grab** a partner and **hop** back to the space station. |
| **ABC** | Basic Activity Burst<br>Each Activity Burst has three phases:<br>**Warm-up (30 seconds – 1 minute)**: Stretching and Walking |

| | |
|---|---|
| | **Core activity (2-5 minutes):** Jog in place, Knee Lifts, Lunges etc.<br>**Cool down: (30 seconds – 3 minutes)**<br>Example of 'Advanced' Activity Burst (combines various movements)<br>**Grade level:** 2-5<br>**Title:** The 12 Days of Fitness (sung to the beat of '12 days of Christmas')<br>Students will act out the following fitness song, with a chance to catch their breath between verses.<br>With each line of the song, the students will perform the corresponding activity.<br>Students start with the verse "Us all standing still in 1 place."<br>Followed by "2 squat jumps" and "us all standing still in our space"<br>Progressively adding 1 more line at a time to each new verse.<br>"On the first day of fitness, my trainer gave to me…"<br>12 jumping jacks<br>11 raise the roofs (bend arms, then push up toward the ceiling)<br>10 knee lifts<br>9 arm circles<br>8 jogs in place<br>7 jumping ropes (imaginary jump rope)<br>6 star jumps<br>5 hula hoops (imaginary hula hoop)<br>4 hopscotch steps<br>3 side slides<br>2 lunges<br>And us all standing still in 1 place |

**Part Two**

In this section, I will provide an account of research studies that explore the potential of CBPA to improve school-age students' PA, MVPA, and LPA. I will also identify research that examines the potential relationship between CBPA and 'academic-related outcomes', which Watson et al. (2017, p.115) define as an 'overarching term to encompass factors associated with academic performance at school'. This term is separated into three sub-categories: classroom behaviour, cognition, and academic achievement. I will define each of these terms in the section where they are discussed. For cognition and academic achievement, I will include research that explores the relationship between these two

outcomes and PA conducted in a variety of settings (e.g. P.E. classes, after-school programs, etc.); this may provide the reader with a broader scope of these potential relationships. Throughout this section, I will also provide commentary on how key findings from these research studies are likely to impact the future implementation of CBPA and related research.

*Health Benefits Associated with Classroom-Based Physical Activity*

*Increases Physical Activity*

Several research studies have demonstrated that CBPA is a viable strategy to increase PA in elementary-age students in the school setting (Kibbe et al., 2011; Erwin, Beighle, Morgan, & Noland, 2011; Whitt-Glover et al., 2011; Bartholomew & Jowers, 2011; Stewart, Dennison, Kohl, & Doyle, 2004). For example, a seminal study by Mahar et al. (2006a) incorporated classroom energizers in specific K-4th grade classes at a public school in North Carolina to determine their impact on daily PA. Students in K-4th grade classes wore pedometers for five consecutive days during a randomly selected week, with students in each grade level wearing the pedometers during the same week. The study concluded that the intervention classes (i.e. students who received classroom energizers) 'averaged approximately 782 more daily in-school steps than the control classes' (p.2089). To provide context for the reader, an increase of this number of steps per day is equivalent to walking an additional 70 miles per year based on the number of days' students attend school per year (ibid).

Bartholomew & Jowers (2011) also provide evidence that CBPA can contribute meaningful minutes of daily PA within their report on the Texas I-CAN (Initiatives for Children's Physical Activity and Nutrition) project. Texas I-CAN developed two types of 'active academic lessons' (ibid, p.51): the first type of lesson 'incorporated the teaching of new information through physically active games'; the second lesson 'emphasized drill and practice of factual information' (ibid, p.52). These activities were implemented by 22 teachers in K-5$^{th}$ grade classes at one school over a four-week period. Students in each grade wore accelerometers for one week to assess the impact of the active academic lessons on their levels of PA. During this week, pedometer counts were compared during two days when teachers used the active academic lessons and two days without those lessons. According to the authors, the Texas I-CAN intervention resulted in an increase of approximately '1000 steps [on days with the active academic lessons] for [students in] all grades'. In a larger study involving eight schools (four control schools and four intervention

schools), forty-seven teachers of third grade students were asked to implement the Texas I-CAN active academic lessons 'on a minimum of 4 of 5 school days per week (one lesson per day on average)'. The authors state that 'intervention students' increased 'activity by more than 300 steps' (per day).

A pilot study by Erwin et al. (2011) assessed the impact of PA integrated into maths instruction on students' in-school PA. This research involved 75 students aged between eight-twelve years at a school in the south eastern region of the U.S. During the 13 days when students performed CBPA, the authors concluded that five hundred additional in-school steps each day were recorded when compared to the five days of baseline. Bershwinger & Brusseau (2013) also document that CBPA can increase the in-school step-counts of elementary students. Their two-week pilot study at a school in western New York showed that PA designed by the teacher, which included 'classroom games and walking activities' (ibid, p.134), enhanced the number of daily steps taken by 4th grade students by 19% for boys and 12% for girls, when compared to the baseline week. The author's state that the activity breaks were approximately ten minutes in length and were implemented 1-3 times/day. Kibbe et al. (2011) reviewed ten years of studies concerning the Take10! program and its impact on both health-related and academic outcomes. Their report concluded that students who participated in the TAKE 10! program experienced 13% higher PA levels than those who did not participate in the program.

It is important to note that not all CBPA-intervention studies report positive outcomes concerning increases in PA (Webster et al., 2015). For example, Cirignano, Du, & Morgan (2010) assessed the impact of a six-week walking program called 'Fit Bits' on the PA levels of fourth-, fifth-, and sixth-grade students in New Jersey. Fit Bits provides teachers with different ways to implement CBPA, such as 'pairing food groups with physical activities that are done in place to music (grains = march) when the food group is mentioned' (ibid, p.164). The results of this investigation showed that fourth-grade students enhanced their in-school step count significantly during the four weeks of the 'Fit Bits' program (increasing their number of weekly steps from 19,482 at baseline [week one] to 26,057 steps during week six). However, fifth-grade students demonstrated only a minor increase in the mean number of weekly steps during this period, and sixth graders actually had a reduced number of steps in week six when compared to week one (this arguably raises fidelity issues related to the teacher's implementation of CBPA that will be returned to shortly).

Based on the study by Cirginano et al. (2010), it is plausible to suggest that CBPA may be more effective in enhancing the PA levels of younger elementary students than older students. This could be due to the likelihood that older elementary students may be more self-conscious and less willing to engage in CBPA when compared to younger elementary students (Dinkel, Schaffer, Snyder, & Lee, 2017). However, Stewart et al. (2004) provide research with step-counts increasing in each ascending grade level during a CBPA-intervention study, and other research has shown that students in the upper elementary grades demonstrate positive responses to CBPA (Howie et al., 2014).

It is also possible (and perhaps likely) that the attitude and conduct of the CT during CBPA may influence the PA levels of students (Donnelly & Lambourne, 2011). For example, Ernst & Pangrazi (1999) utilized the Promoting Lifetime Activity for Youth (P.L.A.Y.) program in a school-based intervention study designed to increase PA in children in grades four through six and to promote the importance of such activity. An important finding from this study was that 'teacher guidance and participation' in CBPA 'were requisites for increasing [physical] activity levels of participants' (ibid, p.402). This adds further credibility to the pertinence of learning more about the attitudes of CTs and PCTs towards CBPA, as they are likely to have a significant role in how elementary students respond to it, as well as its effectiveness in improving student PA during it.

When evaluating the utility of CBPA to increase PA levels in elementary students, it is important to consider the fidelity of the CT with regard to its implementation. For example, in the study by Cirignano et al. (2010), the authors state that the utilization of 'Fit Bits' during weeks two to six was under the 'control of the teachers' and, during exit interviews, fifty percent of the respondents indicated that they did not use 'Fit Bits' consistently throughout the program as instructed' (ibid, 169). Consequently, it may be difficult to ascertain the impact of the 'Fit Bits' program on student PA in all classrooms during the entire six weeks of this study. The issue of CT fidelity is also raised in other similar research (Bartholomew & Jowers, 2011; Webster et al., 2015), and it is important to be aware of this potential issue when interpreting the outcomes of school-based CBPA intervention studies.

Additionally, Watson et al. (2017, p.24) state that many school-based CBPA intervention studies compare the impact of CBPA on PA levels 'with [either] a traditional seated lesson…or intervention effects on school day physical activity levels only…[and] therefore,

it is unclear if the increase in physical activity during these sessions is compensated for by a reduction in physical activity at other times of the day.' In other words, more CBPA may result in less PA at other times in the day and therefore prove to be somewhat counterproductive.

*Increases Moderate-to-Vigorous-Intensity Physical Activity*

Mura et al. (2015, p.79) undertook a comprehensive literature review in European countries and found that 'among the studies focused on solely PA school-based intervention, most were devoted to enhancing moderate to vigorous PA'. This is likely due to the significant health benefits associated with MVPA, such as alleviating childhood obesity. There is also significant interest in enhancing levels of MVPA in elementary students through CBPA (Watson et al., 2017; Daly-Smith et al, 2018). Examples of MVPA in a classroom setting include running, marching, jumping jacks, dancing, and Zumba (Behrens et al., 2017). Intensity of CBPA can be determined qualitatively (ibid) or through more objective measures such as The System for Observing Fitness Instruction Time (SOFIT) (Honas et al., 2016). SOFIT is a 'visual observation instrument previously validated as a measure of physical activity during physical education classes' (Honas et al., 2008, p.3). SOFIT 'scores [PA] using a 5-point Likert scale (1 = lying down, 2 = sitting, 3 = standing, 4 = walking, 5 = very active)' (ibid), and these codes are then used to infer the intensity of exercise.

There is considerable research to suggest that CBPA may be able to provide elementary students with meaningful minutes of MVPA (Holt, Batree & Heelan, 2013; Bartholomew & Jowers, 2011; Bershwinger & Brusseau, 2013). For example, the 'Physical Activity Across the Curriculum' (PAAC) project conducted by Donnelly et al. (2009) is a seminal research study in the CBPA literature. The primary objective of this three-year cluster randomized trial was to 'promote physical activity and diminish increases in overweight and obesity in elementary school children' (ibid, p.336). Students who participated in this longitudinal study were in grades two and three when it commenced and in grades 4 and 5 when it ceased. Teachers were 'encouraged to perform 90 min/week of moderate- to vigorous intensity physically active academic lessons (3-6 METS, 10 minutes each) delivered intermittently throughout the day' (ibid, p.337). PAAC lessons were integrated into a variety of academic subjects, including maths, language arts, geography, history, and science (Donnelly & Lambourne, 2011). For example, a geography lesson could have consisted of dividing the classroom into sections labelled North, South, East, and West, and having students perform a variety of locomotor movements (e.g. hopping, skipping) to the

area that corresponded with the city or state called out by the teacher (e.g. ‘Texas’ would require students to move to the area labelled ‘South’) (ibid, p.38).

Accelerometers were used to calculate daily PA in 90 students at control schools and 77 students at PAAC intervention schools each spring during a three-year period (Donnelly et al., 2009, p.339). The findings from this research indicated that children who received the PAAC intervention were more physically active during the school day (12%>) and ‘exhibited 27% greater levels of moderate to vigorous physical activity [during the school day] compared to control schools’ (ibid). An interesting finding from this study was that ‘teacher participation in classroom physical activity was directly related to children’s physical activity levels’ (Donnelly & Lambourne, 2011, p.40) - this underscores the importance of the CTs role in CBPA. The PAAC project also found that CTs performed between 45 and 75 minutes of CBPA per week on average, much less than the recommended ninety minutes (ibid).

Stewart et al. (2004) also provide evidence that CBPA can be a meaningful source of MVPA for elementary students. This study involved a convenience sample of ‘one class each of first, third, and fifth grade students’ in Georgia who performed either eight or nine selected activities from the Take10! program. The authors state that research ‘participants achieved exercise intensities in the moderate to vigorous range and maintained these levels throughout’ these activities (p.399). However, it is important to acknowledge the variation in PA intensity during these activities; some activities produced exercise intensities as much as 44% higher than others within grade levels. This suggests that the type of CBPA is likely to have a significant impact on a student’s PA intensity during it. It is also important to highlight the limitations of the research by Stewart et al.; it was performed at only one school, and classrooms at this school were ‘selected based on teacher willingness to participate’ (p.398). Hence, it is likely that the CTs who participated in this study were enthusiastic about PA and/or confident in their ability to incorporate it into the classroom and, subsequently, may have been likely to enhance the amount and intensity of PA in their students. This research also involved a very small sample size, which is another limitation when interpreting the findings from it.

Due to the potential for CBPA to engage students in MVPA and therefore maintain a healthy body weight, Donnelly & Lambourne (2011, p.40) suggest that programs such as PAAC ‘may be capable of diminishing the trend of increasing BMI in elementary school children’. Other

studies have also shown that CBPA has the potential to decrease BMI over time in elementary children (Liu et al., 2008). However, it may be likely that vigorous forms of PA are required to significantly reduce BMI in young children (Adams-Blair & Oliver, 2010), and there is currently no evidence in the literature that CBPA can provide this for elementary students (Watson et al., 2017). The idea that CBPA is more likely to engage elementary students in more moderate-intensity PA (MPA) is illustrated by Honas et al. (2008, p.1501), who investigated the intensities from a student sample in the PAAC project and found that the CBPA in this research engaged students in exercise intensities of approximately 3.4 METS (which is at the lower end of MPA). Other organizations propose that CBPA is more likely to consist of LPA (IOM, 2013), a point which will be returned to shortly.

Watson et al. (2017) conducted a meta-analysis on the effect of CBPA interventions on both PA and academic-related outcomes. Their findings suggest that CBPA interventions can increase MVPA in school-age students by 2%-16%. However, they state that only a small percentage of studies used an 'objective measure of PA intensity' (ibid, p.20), and many of these types of studies involve interpretations of students' PA intensity from CTs. Therefore, it is difficult to draw 'definitive conclusions' from these reports (ibid).

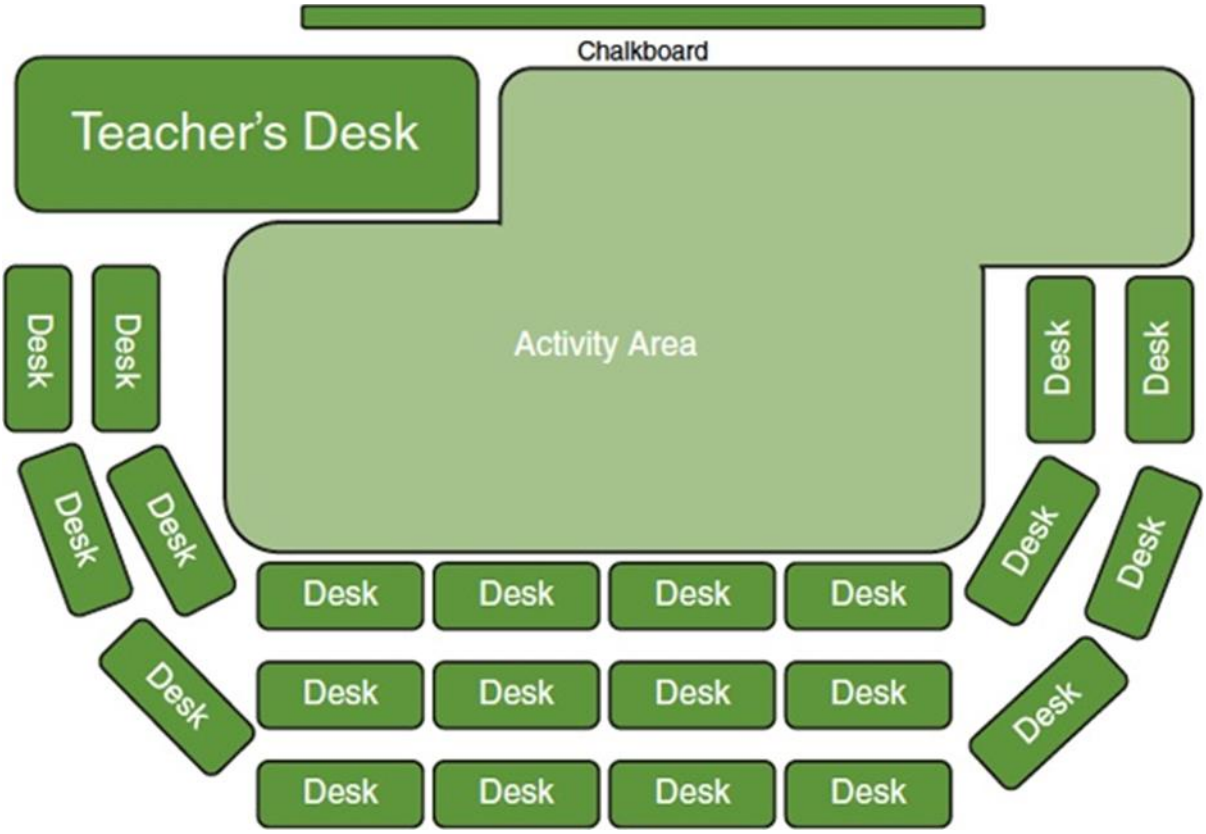
*Increases Light-Intensity Physical Activity*

Despite research suggesting that CBPA may be able to provide meaningful minutes of MVPA to elementary students, the IOM (2013, p.333) propose that it is more likely to consist of 'shifts from sedentary [behaviour] to light-intensity activities'. A potential reason for this could be inadequate space to conduct MVPA in a typical school classroom (McMullen et. al, 2014), classroom management concerns during more vigorous forms of PA (Stylianou, Kullina, & Nayman, 2016), and difficulties transitioning students to seated academic work after CBPA (Watson, Timperio, Brown, & Hesketh, 2019). (Examples of the conventional layout of a school classroom in the U.S, as well as a potential arrangement to facilitate CBPA, are provided in Figure 1 and Figure 2.) On this basis, it is worth exploring the merits of CBPA that aims to increase LPA, especially as it is likely 'preferable to sedentary activity from both health and academic perspectives' (IOM, 2013, p.333).

Examples of LPA include walking and stretching (Physical Activity Guidelines Advisory Committee, 2018); other examples provided in CBPA literature include bean bag or ball tossing, charades, and the game 'Simon Says' (Behrens et al., 2017).

**Figure 1: Typical Layout of a School Classroom in the U.S. (IOM, 2013)**

**Figure 2: Reconfiguration of a School Classroom for Classroom-Based Physical Activity (IOM, 2013)**




Unfortunately, there appear to be only a very limited number of specific studies that explore the use of CBPA towards increasing LPA. Whitt-Glover et al. (2011) conducted a CBPA intervention study involving the administration of the program 'Instant Recess' to third through fifth grade classrooms in eight schools in NC. CTs were asked to implement this program, which consists of 10-minute ABs, at their discretion throughout the day. Four schools were selected for immediate intervention and four schools were selected for delayed intervention.

The research team conducted four 'observational assessments of PA' during the beginning and final weeks of the semester for the 'immediate intervention' school and the 'delayed intervention' school. Three classrooms were randomly selected from each grade level, and students were observed for 20-second intervals by a trained observer who recorded their intensity of PA. The authors concluded that students in the intervention groups enhanced MVPA by 16% and LPA by 51% when compared to the control groups. However, there were several limitations to this study, including observing students at the end of the semester

when they were engaged in non-traditional activities (such as picnics and parties) that would have likely resulted in increases in PA.

Martin & Murtagh (2015) suggest that CTs may be unaware of the health problems linked to sedentary behaviour, so they may be unlikely to recognize the potential health benefits of increasing LPA in their students. However, as stated in chapter one, whilst the extent of the benefits of LPA is an emerging area of research, it is likely that more research is needed before considering if this should be a focal point for the advocacy and promotion of CBPA.

*Academic-Related Outcomes Associated with Classroom-Based Physical Activity*

It is reasonable to suggest that the impetus for CBPA is to increase the number of minutes of PA in school students; this is within the context of the 'escalating' trend of health-related concerns relating to both children and adolescents in the U.S. (Fedewa & Ahn, 2011, p.522). However, despite the widely-acknowledged view that schools should be concerned about the health and well-being of their students, as well as provide opportunities and instruction designed to improve it, it is fair to suggest that the 'chief mission' of public schools is the 'academic achievement' of its students (Donnelly & Lambourne, 2011, p.40). Relatedly, educational stakeholders may question the validity of a 'health-related, non-academic intervention' such as CBPA in the school classroom (Bartholomew & Jowers, 2011, p.51).

Mahar et al. (2006a, p.2086) suggest that a discussion on the merits of CBPA must place significant weight on any associated academic benefits in order to 'justify' the practice, 'especially to teachers and administrators'. Subsequently, organizations that are interested in enhancing and maintaining the health of young children have 'searched for the holy grail of PA in schools: a positive connection between PA and academic achievement' (Howie & Pate, 2012, p.160). It is likely that teachers and administrators will be more receptive towards the implementation of CBPA if this link can be effectively demonstrated (Mahar et al., 2006a).

*Academic Achievement*

Watson et al. (2017, p.3) define academic achievement as a child's 'performance on school-related tasks; often reported via classroom grades…[and] national standardised tests'. There are a significant number of research studies that explore the impact of CBPA

on academic achievement (Donnelly et al., 2017; Donnelly & Lambourne, 2011; Bartholomew & Jowers, 2011; Watson et al., 2017; Daly-Smith et al., 2018; IOM, 2013). For example, the PAAC project (Donnelly et al., 2009) provides some important insights regarding the impact of CBPA on academic achievement, as well as non-academic outcomes. Although changes in academic achievement of students who received the PAAC intervention were a 'non-powered, exploratory aim' of the study (Donnelly et al., 2017, p.141), the authors concluded that there was a 'significantly greater improvement in composite academic achievement score, and reading, maths and spelling scores in students [who received the PAAC intervention]' in a random sub-sample of 167 students (ibid).

These findings prompted Donelly et al. (2017) to conduct another cluster randomized trial titled 'Academic achievement and Physical Activity Across the Curriculum' (A + PAAC). In contrast to the previous study, the primary outcome of this investigation was to explore the relationship between Physically Active Lessons (PALs) (incorporating MVPA) and academic achievement (ibid). According to the authors, the A + PAAC study 'integrates activity with academic instruction in contrast to physical activity breaks…[and] can be applied in a variety of academic disciplines including mathematics, language arts, geography, spelling etc. and settings (e.g. classroom, hallways, cafeterias etc.)' (ibid, p.141).

This study asked 'classroom teachers to deliver two, 10-min lessons per day (~4-5 METs) in the subject of their choice; one in the morning and one in the afternoon, 5 days per week' (ibid). Academic achievement was measured by the Wechsler Individual Achievement Test-Third Edition and analysed 'standardized composite scores for mathematics (math problem solving and numerical operations subtests), reading comprehension fluency (reading comprehension and oral reading fluency subtests) and the standardized subtest score[s] for spelling' (p.42). The study concluded that, based on teacher reports, 'A + PAAC lessons were delivered ~ 3 days a week for an average of ~ 55 mins per week across the 3-year intervention' (p.143). The findings of this research indicated that there was 'no impact of physically active academic lessons on academic achievement in elementary school children' (p.144). However, the PALs did not detract from academic achievement (ibid).

Adams-Blair & Oliver (2010) piloted a five-month intervention program in six elementary schools in Kentucky (grades K-5) which incorporated PA and nutrition on the school days when students did not have PE class. CTs were trained and then asked to perform three, ten-minute, Take10! activities during these days. Students were pre- and post- tested in

grade-appropriate mathematic content that 'aligned with Kentucky's academic expectations' (ibid, p.151). The authors concluded that the 'cognitive assessment of grade-appropriate math skills was…reported to be significantly higher after the pilot program' (ibid, p.151).

The Texas I-CAN initiative explored the impact of PALs on proximal spelling scores (Bartholomew & Jowers, 2011). An example of this type of lessons is as follows: students 'would be asked to compete in relay teams in which each member would race-in turn-to the board to write…one letter of a word. The next child adds to the word or corrects an earlier error by a teammate. The first team to correctly spell the word wins the relay' (ibid, p.53). A pre-test was given to students on a Monday, with control or intervention lessons occurring on Tuesday, Wednesday and Thursday, and a post-test on Friday (ibid). There was also a retention test two weeks later (ibid). The results showed that the traditional spelling lesson 'provided a small, but non-significant benefit relative to the intervention' (p.54). However, 'for the follow-up retention test, the Texas I-CAN lessons provided a moderate, significant benefit' (ibid).

The IOM (2013, p.161) suggest that 'mathematics and reading are the academic topics that are most influenced by PA'. Fedewa & Ahn (2011, p.531) also highlight that 'among several measures of children's outcomes, the largest effectiveness for physical activity [in the studies that they reviewed] was found for children's mathematics achievement, followed by a positive significant effect on IQ and reading achievement'. Maths and reading are influenced by executive function (EF) (IOM, 2013), which refers to the mental skills that allow people to 'engage in deliberate, goal-directed, thought and action…[and] forms the basis of abilities such as problem solving and flexible thinking' (Cragg & Gilmore, 2014, p.64). There is growing research to suggest that both acute and chronic PA have a positive impact on EF (Best, 2010; Donnelly et al., 2016).

Research studies exploring the relationship between other forms of PA and academic achievement are often classified as either experimental/quasi-experimental or observational (cross-sectional or longitudinal) (Fedewa & Ahn, 2011), with the majority being cross-sectional (Howie & Pate, 2012). Problematically, according to the American College of Sports Medicine (ACSM), 'analyses of cross-sectional data often fail to take into account the role of moderators…[such] as SES, family roles, age, psychosocial variables' etc. (Donnelly et al., 2016, p.1216). Subsequently, much of the research exploring the

relationship between PA and academic achievement can only 'afford correlation rather than causation' (IOM, 2013, p.185).

Howie & Pate (2012, p.165) state that 'many nuances exist in the complicated relationship between PA… [and academic achievement]'. Many of the studies published involve 'different interventions and exposures …[and] have widely varied and sometimes contradicting effects' (ibid). This notion is also validated by the ACSM, who acknowledge that even when study designs or settings (i.e. laboratory or field) are the same, 'some studies [find] positive associations between PA and math, but not spelling, whereas other studies [find] the opposite' (Donnelly et al., 2016, p.1215). It may be suggested that there are cognitive improvements associated with PA, and that these may positively impact academic achievement, particularly in relation to a child's performance on standardized tests (Donnelly et al., 2016).

*Cognition*

The potential relationship between PA and cognition is an area of interest in many research studies (Sibley & Etnier, 2003; Fedewa & Ahn, 2011; U.S. Department of Health and Human Services, 2018; IOM, 2013). The ACSM defines cognition as 'the set of mental processes that contribute to perception, memory, intellect, and action' (Donnelly et al., 2016, p.1198). An exploration of the potential relationship between PA and attention, memory, and EF is prevalent in related literature (ibid). Some components of cognition are also separated into sub-categories to be studied independently (for example, sustained attention versus selective attention). The impact of cognition on PA is commonly assessed by the response speed and accuracy of students in aptitude-related tests (Hillman, Kamijo, & Scudder, 2011).

Generally, research supports the idea that PA is likely to result in cognitive benefits ('US Department of Health and Human Services,' 2018). These benefits appear to be particularly relevant for acute bouts of PA, which Daly-Smith et al. (2018, p.2) state 'are premised on the physical arousal hypothesis where PA of a certain duration and intensity causes an increase in blood flow, brain-derived neurotrophic factor and plasma catecholamines.' For example, The Physical Activity Guidelines Advisory Committee (2018, F3-5) provide 'strong evidence [that] acute bouts of moderate-to-vigorous physical activity have a transient benefit for cognition…during the post-recovery period following a bout of exercise'. They add that their 'findings indicate that the effects are larger in preadolescent

children…relative to other periods of the lifespan,' which is particularly significant when considering the relationship between PA and cognitive functioning in elementary children, who would be considered 'preadolescent'.

The ACSM conducted a meta-analysis on the relationship between PA and aerobic fitness on cognition and academic achievement in children (Donnelly et al., 2016). This research included results from cross-sectional, longitudinal, acute, and intervention study designs. Based on evidence from both school-based and laboratory studies, the ACSM suggest that acute PA 'improves children's cognitive test performance, particularly when assessed in terms of speed and accuracy' (ibid, p.1216). They add that research exploring the impact of acute PA on cognitive outcomes in the school setting typically involves MVPA, is of 4-42 minutes in duration, and includes a variety of modes including games, running, and aerobic circuit training (ibid, p.1203). While the ACSM acknowledge that research is 'limited' in this area and that this topic requires further investigation, they reinforce the work of other authors in this area of the literature (Best, 2010; Donnelly et al, 2016), by suggesting that acute PA may be particularly beneficial for EF.

It is important to acknowledge that the intensity and duration of a single bout of acute PA will likely have 'differential effects' on cognitive functioning (IOM, 2013, p.171). Tomporowski (2003, p.317) suggests that, for adults, 'exercise can, under certain conditions, enhance response speed and accuracy, and it can facilitate greater cognitive processes that are central to problem-solving and goal-oriented action'. The Physical Activity Guidelines Advisory Committee (2018, F3-11) state that in some of the studies they reviewed, acute bouts of 'moderate-intensity exercise demonstrated a larger effect [on cognition] than light- and vigorous-intensity exercise,' and other studies indicated that 'very light-, light-, and moderate-intensity exercise benefited cognition, but hard-, very hard-, and maximal-intensity exercise intensity demonstrated no benefit'. They also state that acute bouts of PA lasting from 11-20 minutes showed the greatest effects on cognition in these research studies (ibid).

Chronic PA may also have a positive effect on cognition based on the assertion that it 'has been shown to alter brain structure and function through synaptogenesis, neurogenesis and angiogenesis' (Daly-Smith et al., 2018, p.2). The ACSM reviewed studies that primarily implemented PA during after-school programs, and the interventions ranged from 8 weeks to 9 months. These studies 'consistently' provided evidence that chronic PA had a positive

impact on cognitive outcomes, particularly EF (ibid). However, The ACSM acknowledge their 'inconsistent findings' and the need to 'translate laboratory findings to the school environment' (ibid, p.1197). They also highlight study design limitations such as small sample sizes and insufficient data on participant characteristics, and therefore urge caution when interpreting findings from their research.

Although there seems to be widespread acknowledgment that acute bouts of PA (particularly MVPA) are likely to have a positive impact on cognition, there seems to be less certainty about this relationship in CBPA intervention studies. For example, the results of a meta-analysis conducted by Watson et al. (2017, p.16) showed that ABs had an 'acute positive effect on selective attention,' defined as 'the process of directing our awareness to relevant stimuli while ignoring irrelevant stimuli in the environment' (Mcleod, 2018); however, results relating to other aspects of cognition, as well as chronic effects, were 'inconsistent'.

Daly-Smith et al. (2018) also examined the impact of CBPA on cognition, classroom behaviour, and academic achievement, focusing specifically on research study designs that explore this relationship. They also suggest that there are inconsistent findings between cognition and CBPA. In the studies they reviewed that did show improvements in cognition after acute CBPA, they state that 'attention was shown to improve with 5 min vigorous-intensity [PA]…but not with longer bouts of 10–12 min of moderate-to-vigorous intensity [PA]' (p.14). The studies they reviewed for their meta-analysis also suggest that 'cognitive improvements [are] highest within 10 min of the acute bouts [of PA] and reducing after [it]' (p.14). They purport that 'moving beyond a universal cognitive outcome is essential due to varied responses to exercise of each underlying process' (p.14); research studies need to study the impact of the different aspects of cognition (e.g. selective attention) because they are likely to be influenced differently by CBPA. They also state that there needs to be more clarity in studies about the timing of cognition assessment following an acute bout of CBPA, as well as more delineation between chronic and acute effects of CBPA on cognition.

An interesting point forwarded by Watson et al. (2017, p.18-19) is a consideration of the different benefits of 'cognitive-engaging physical activity' (i.e. physical activity combined with cognitive demands) versus 'non-cognitively engaging physical activity' (repetitive exercise). They put forward the idea that cognitively-engaging PA 'may enhance cognitive function to a greater degree than non-cognitively engaging physical activity.' PALs would

typically be considered ‘cognitively-engaging PA’, although this could also be true for some ABs, particularly those that involve repeating dance moves or patterns. The authors suggest this needs further research, along with many other aspects related to the impact of CBPA on cognition.

*Classroom Behaviour*

Watson et al. (2017, p.3) define classroom behaviour as ‘observed behaviours that may promote or interfere with learning in the classroom, including on-task behaviour (e.g. concentrating on tasks assigned by the teacher), and off-task behaviour (e.g. not concentrating on tasks assigned by the teacher)’. The CDC (2018, p.7) state that CBPA may be viewed ‘as a behavioural management strategy to help students stay focused and to mitigate off-task behaviour like fidgeting, excessive talking, and gazing off’, and the utility of CBPA towards improving student behaviour is of particular interest to researchers (Watson et al., 2017; Daly-Smith et al., 2018).

For example, the aforementioned seminal study by Mahar et al. (2006a, p.2088) looked at the impact of classroom energizers on ‘on-task’ behaviour, which they defined as ‘verbal or motor behaviour that followed the class rules and was appropriate to the learning situation’. The study used a multiple baseline approach, with some groups of students receiving the energizer intervention after four weeks of baseline, and some students receiving it after eight weeks of baseline. In this study, on-task behaviour was assessed for 30 minutes before an energizer activity and for 30 minutes after an energizer activity. The study used trained observers to determine whether a behaviour was considered to be ‘on’- or ‘off’-task. Behaviours were observed in ten second intervals, after which the observer had five seconds to record the student’s behaviour as ‘on-task, motor off-task, noise off-task, or passive off-task’ (ibid, p.2088). This research aimed to ensure ‘interobserver reliability’ by providing training sessions for observers until there was at least 80% reliability on video observations (ibid).

The results of this study concluded that ‘when the pre-energizers and post-energizers observations during the intervention period were compared, the mean percentage of on-task behaviour increased by more than 8%’, which was ‘statistically significant’. A limitation of the Mahar et al. (2006a) study was that it did not use blinded observers, so raters of classroom behaviour knew which students had received the energizers and which students had not. However, an interesting finding from this research was that on-task

behaviour increased by 20% for the traditionally 'least on-task students'; students who were identified during the baseline period as being off-task more than fifty percent of the time (ibid, p.2089). Other research also suggests that PA 'may have the greatest impact on students who are in the most need of academic support' (Dinkel et al., 2017).

The results from Mahar et al. (2006a) are congruent with others that show CBPA has a positive impact towards on-task behaviour (Mahar, 2011; Bartholomew & Jowers, 2011; Ma, Mare, & Gurd, 2014). A recent meta-analysis' by Watson et al. (2017, p.3) included studies that examined the impact of CBPA on classroom behaviour both immediately after PA and 'after a longer exposure' (pre- and post-intervention periods spanning up to 8 months) (ibid, p.16). These studies included both ABs and PALs. The authors state that 'the majority of studies (10 out of 12) showed participation in these programs had an acute effect on improving on-task classroom behaviour and reducing off-task behaviour'. However, there was 'no difference between groups when chronic intervention effects on reported behaviour incidents were assessed.' (ibid). Despite research highlighting the benefits of CBPA concerning on-task behaviour, Webster et al. (2015) suggest that more research is needed to determine the nature of this relationship. It is also important to acknowledge that effectively measuring on-task behaviour in the classroom is difficult (Mahar, 2011), which may raise questions about the likelihood of sufficient research in this area from which to draw reliable conclusions.

**Part Three**

Attitudes have been described as 'a relatively enduring organization of beliefs, feelings, and behavioural tendencies towards socially significant objects, groups, events or symbols' (Hogg, & Vaughan 2005, p. 150), and 'a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour' (Eagly, & Chaiken, 1993, p. 1). For the purpose of this dissertation, attitudes are considered in relation to any prominent thoughts and feelings CTs and PCTs may have towards CBPA.

It is likely that the attitudes of CTs influence their behaviour in the classroom (Webster, Monsma, & Erwin, 2010). While it is important to acknowledge that the objectives and practices of public education in the U.S. are influenced by policy at the Supranational, National, State, and District levels of governance, CTs usually possess some autonomy concerning their classroom practices (Dinkel et al., 2017). Therefore, a greater

understanding of how CTs view CBPA may provide important insights concerning the likelihood of its implementation in schools.

Relatedly, it is also plausible that CTs' perceived self-efficacy, defined by Bandura (1994, N.P) as 'people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives', is also likely to influence their behaviour in the classroom (Parks, Solomon & Lee, 2007). For the purposes of this dissertation, 'perceived self-efficacy' will refer to the extent that CTs and PCTs believe they can successfully integrate CBPA into their teaching practices (ibid). It is unlikely that these populations will incorporate CBPA if they don't have the confidence that they can do so effectively (Goh et al., 2013).

Based on the assertion that the attitudes and perceived self-efficacies of CTs towards CBPA are likely to influence its prevalence and viability in schools, it is logical to suggest that the same concepts also merit exploration in PCTs; many of these individuals will become CTs in the future. Concomitantly, it has been proposed that university teacher-training programs influence the attitudes towards teaching in CTs (Avramadis, Bayliss, & Burden, 2000; Xiang, Lowry, & Mcbride, 2002) and PCTs (Webster et al., 2015; Goh et al., 2013). Therefore, it is relevant to explore the attitudes and perceived self-efficacies towards CBPA in PCTs, as well as the inclusion of CBPA in university teacher-training programs, as these will likely contribute to the status of CBPA in the future (Webster et al., 2015). However, it is important to be aware that the attitudes of PCTs towards education may change when they become CTs and experience 'real' teaching; this is an important point to consider when determining the significance of PCTs' attitudes towards CBPA. I will also explore research examining the promotion of personal health and PA in university teacher-training programs based on the premise that these factors may influence a teacher's orientation towards CBPA. (Goh et al., 2013).

This section will provide an account of extant literature examining CTs' and PCTs' attitudes towards CBPA, focusing on their perceptions of the benefits involved with such activity, as well as perceived barriers associated with its implementation. The types of CBPA that CTs have indicated to be preferable, as well as personal characteristics of CTs that may be most likely to implement CBPA, are also considered. I will also present the role of Professional Development (PD) training towards the perceived self-efficacies of CTs to incorporate CBPA. Finally, I will explore the inclusion of PA, health, and CBPA in university

teacher-training programs, and how this may impact the attitudes of PCTs towards CBPA, as well as their perceived self-efficacy towards its implementation.

*In-Service Classroom Teachers Perceptions about the Benefits of Implementing Classroom-Based Physical Activity*

Generally speaking, CTs that work with young children appear to recognize the health and academic benefits of both PA (Sevimili-Celik & Johnson, 2013) and CBPA (Martin & Murtagh, 2015). For example, Dinkel et al. (2017, p.190) explored the attitudes of CTs towards CBPA in grades pre-eight in the Midwestern United States. This mixed-methods cross-sectional study initially had 318 participants who completed an online questionnaire, with more than ninety percent of participants indicating that they utilized CBPA, which was described to them as 'taking a short break (typically three to five minutes) within the classroom to perform some type of physical movement or integrating physical movement into academic concepts' (p.188). Fifty-one of these CTs, who all indicated that they implemented CBPA, agreed to participate in subsequent semi-structured interviews. Based on the qualitative data analysis from this research, the authors reported that the CTs implemented CBPA because of its 'physical (health), cognitive (academic performance) and affective (behavioural) benefits' (ibid).

*Improves Classroom Behaviour*

More than fifty percent of the CTs who were interviewed in the research conducted by Dinkel et al. (2017) implemented CBPA for 'affective' benefits, described as helping children focus and/or minimizing behaviour problems. This is a prevalent theme in other research studies, with CTs stating that their rationale for CBPA is to help students 'get the wiggles out' (McMullen et al., 2014), or if they believed that their students were 'antsy', 'restless', or 'lethargic' (Stylianou et al., 2016, p.400). A CT in a research study by Dinkel et al. (2017, p.190) stated: 'I know kids have a hard time focusing for long periods of time, and if I'm able to break it up they stay engaged throughout the day'. Although the majority of CTs in this study used ABs, the study by Mahar et al. (2006a) (which used PALs) also reported that students were more attentive and on-task after PA.

The idea that CBPA is an effective strategy to enhance on-task behaviour has already been suggested in this review of literature. However, it is important to acknowledge that the response to CBPA will likely vary based on individual students, an idea alluded to by CTs. For example, Gately, Curtis, & Hardaker (2013) evaluated the perceptions of primary CTs in

the UK after completing a year of the Take10! program. A CT in this study stated that PALs from that program can make some students 'calmer' but that 'it has the opposite effect on others – who get giddy and over-excited'. Elementary students who misbehave during PALs are unlikely to learn the material incorporated into it, and their behaviour may harm other students' learning potential, also. Students who get 'over-excited' during CBPA may also have difficulty transitioning to classroom activities after it, which is a barrier towards implementing CBPA that has been identified in other research (Watson et al., 2019). Appropriate PD training in classroom management both during and commencing CBPA would likely provide CTs with the knowledge to alleviate these issues, a point which will be discussed shortly.

*Aids Academic Instruction*

There is evidence to suggest that CTs view CBPA as a viable strategy to enhance the instructional process of delivering academic lessons to their students. For example, McMullen et al. (2014) examined the attitudes of twelve primary/secondary CTs towards CBPA in a school district in the south western United States. Semi-structured interviews and reflective journals were used to ascertain teacher attitudes towards CBPA. The CTs in this research believed that incorporating CBPA into academic instruction made the material more meaningful to students. For example, a CT highlighted that her students were 'able to learn the [academic] content more effectively when they were incorporated into [a physical] activity…[and that the] movement is helping them retain information and be more interested in what they are doing' (ibid, p.518). In the research by Dinkel et al. (2017, p,190), CTs expressed a similar theme, with one stating: 'I feel they seem to remember things a little bit better when they are moving or doing some kind of action too'.

However, other CTs believe that certain academic content is received better when students are seated (Webster et al., 2015). A concern of some CTs, especially when using pre-packaged CBPA programs, is that the academic material in the program doesn't align with the content or standards that they are required to teach. For example, a theme from the research by Gately et al. (2013, p.74) was that CTs believed that that the academic content in Take10! 'did not link to the school's curriculum and the lessons they were teaching in a 'meaningful way'. Consequently, CTs were required to adapt the academic material in Take10! for it to align with their school's curriculum.

*Student Enjoyment*

One of the most prevalent themes cited by CTs when discussing the benefits of CBPA is that students typically enjoy it (McMullen et al., 2014; Howie et al., 2014; Martin & Murtagh, 2015). For example, Stylianou et al. (2016) interviewed 13 CTs from an elementary school in the south western United States after they had completed one year of incorporating CBPA into their curriculum. The authors stated that 'pupil enjoyment [of CBPA] was reported by all teachers in the study', with CTs documenting on reflection cards that 'kids love them', 'pupils think it's fun', 'they [kids] ask for them' and 'kids are doing their own breaks when they feel tired' (ibid, p.399).

Research that has explored student perceptions of CBPA also conveyed a similar theme. For example, Howie et al. (2014, p.684) integrated 'simple aerobic exercises…such as jumping, hopping and marching' into the classrooms of fourth- and fifth-grade students. Videotapes of students performing the exercises (along with student focus group interviews) were utilized to quantify their response to the activities. In general, the students reported positive feelings towards CBPA, describing it as 'awesome' and 'fun' as well as recognizing the potential health and learning benefits (ibid). However, Katz et al. (2010) studied the impact of the 'ABC' program and its impact on attitudes towards PA in 1,216 students in grades two-four. Student attitudes towards PA were measured using questionnaires before and after the CBPA intervention and the results of the study found no significant differences in attitude between the groups (ibid).

*In-Service Classroom Teachers Perceptions about the Barriers Associated with Implementing Classroom-Based Physical Activity*

*Time Constraints*

Despite evidence suggesting that CTs are aware of the potential benefits of CBPA, there also appear to be many barriers concerning its implementation. Perhaps the most prevalent barrier is the additional time required to implement CBPA into what has been described as 'an already overloaded school curriculum' (Gately et al., 2013, p.73). This theme is evident in CTs who have implemented both PALs (Stylianou et al., 2016) and ABs (Howie et al., 2014). Although CTs have cited a variety of responsibilities and activities that contribute to a saturated school curriculum, such as school trips and play rehearsals (Gately et al., 2013), the perceived pressure on them to cover an extensive amount of academic content in preparation for standardized testing is typically considered to be the aspect of their teaching practices which requires the greatest time commitment (Stylianou et al., 2016).

It is important to reiterate that pre-packaged programs such as Take10! include PA that is designed to aid in the instruction of academic content and which can be completed in ten minutes. Thus, in principle, it should not require a *significant* investment of time and, theoretically, should not be viewed as an 'additional' activity – especially if it assists in the delivery of academic instruction (although it may not always align with the school curriculum, which is problematic). However, CTs in the research by Gately et al. (2013) suggested that the amount of time allocated to complete Take10! activities was often longer than ten minutes after allowing for students to drink fluids after the activity and putting any required equipment away (ibid). CTs who lack experience (and knowledge) incorporating CBPA may also spend additional time both planning and executing it (Stylianou et al., 2016).

Due to the time constraints cited by CTs as a barrier towards the implementation of CBPA, it is not surprising that they tend to prefer CBPA that is relatively short in duration. For example, Howie et al. (2014) asked CTs to incorporate ABs that lasted either five, ten, or twenty minutes. Based on teacher responses during focus group interviews, shorter ABs were preferred as 'strict curricula and limited time [are] large barriers to implementing longer breaks'. (Interestingly, the students in this study preferred longer breaks.) McMullen et al. (2014, p.519) also strengthen the idea that CTs are likely to prefer CBPA that is 'short and sweet', adding that CBPA with 'few equipment needs and simple rules that [can] be understood the first time the activity [is] tried' are also favourable.

While it may be desirable for CTs to conduct CBPA that is five minutes or less, it is important to consider if this duration of CBPA is substantial enough to make a significant difference to children's in-school PA (Howie et al., 2014), and how it impacts some of the academic-related outcomes that have already been presented. Based on the research by Daly-Smith et al. (2018), five minutes of VPA may confer cognitive benefits, but this likely requires more investigation.

*Classroom Management*

In addition to the limited amount of time CTs believe they have to incorporate CBPA into their practice, there is also a perception that it is challenging to ensure that students behave appropriately during this time. For example, McMullen et al. (2014, p.516) cited 'threats to classroom control' as a fear of CTs during CBPA, acknowledging that certain activities caused 'chaos' and 'safety issues' in the classroom. These concerns were

magnified due to the 'space constraints' of the classrooms at their school (ibid, p.517), a barrier to the incorporation of CBPA that has been suggested in other research (Gately et al., 2013). It is important to acknowledge that the hesitancy of CTs to incorporate CBPA may be due to a preconceived notion that it is *likely* to cause student misbehaviour; it may not always be due to their experiences conducting it. For example, Howie, et al. (2014, p.685) highlighted that a major benefit of the CBPA program, 'Brain Bites', which focused on ABs that included aerobic exercises, was that it actually 'limited behaviour disruptions…despite teacher expectations that students would be "riled up" after the exercise breaks.'

It is possible that certain types of CBPA are more likely to result in classroom management issues than others. The CBPA utilized in the research by Howie et al. 'did not involve games and focused on static aerobic exercises such as running and marching in place' (ibid, .682). However, CBPA involving significant movement throughout the classroom and/or student interaction arguably enhances the likelihood of behaviour problems occurring (McMullen et al., 2014). Howie et al. (2014) state that 'interventions that try to implement activity breaks in the classroom need to address the common teacher belief that activity causes poor behaviour in students' (ibid). Appropriate PD training can help debunk CTs' misconceptions about CBPA, a topic that is discussed in the next section of this chapter.

*Inadequate Support*

A common perception of CBPA is that there is limited support from administration and PD training on this topic (Webster et al., 2015; Daly-Smith et al., 2020). Relatedly, it is likely that CTs would improve their knowledge and confidence to incorporate CBPA if they were provided with PD training in this area (Erwin et al., 2011). For example, Naylor, MacDonald, Zebedee, Reed, & McKay (2006) utilized the 'Action Schools' PA program in ten elementary schools in Canada. In this program, schools and teachers were encouraged to increase student levels of PA throughout the day, including in the classroom. This study showed that more training and support lead to an increased likelihood that CTs would implement CBPA. Another example can be found in research by Delk et al. (2014). As part of the Coordinated Approach to Teaching Child Health (CATCH), CTs in Texas middle schools incorporated five-ten minutes of CBPA to 'generate PA and reinforce academic content' (ibid, p.723). This research identified that 'the study conditions with CATCH facilitator support resulted in the highest levels of [CBPA] implementation' (ibid, p.727).

Webster et al. (2013, p.437) state that efforts to increase the prevalence of CBPA in schools should focus on 'increasing school support', which includes 'principal buy-in, sufficient classroom space, [and] provision of relevant resources/materials'. Administrative support is likely to include acknowledgment that CBPA is a relevant and useful practice in the elementary school curriculum, as well as the provision of CBPA-related training. Stylianou et al. (2016) found that support from school administrative personnel, including the principal, and PD training designed to provide ideas for CBPA, resulted in CTs having more positive views about CBPA.

*Teacher Philosophy*

Even if CTs are encouraged to implement CBPA (and perceive themselves as competent in the delivery of it), it is still possible that they may not feel as though it is their responsibility to incorporate it into their classroom practice (Parks et al., 2007; Cothran, Kullina, & Garn, 2010). CTs often state that their school, and their teaching, is 'judged on academic achievement rather than physical health' (Gately et al., 2013, p.74). For example, Dinkel et al. (2017) highlight that only 25% of the CTs they interviewed implemented CBPA for health-related reasons, with the vast majority implementing CBPA for academic-related outcomes.

Concomitantly, the typical school classroom layout in the U.S. is often not conducive to PA (Donnelly & Lambourne, 2011), and many CTs discourage PA in their classroom rules (Kaufman & Moss, 2010). CTs may also believe that it is the responsibility of the PE teacher to engage students in PA during school hours (excluding recess and after-school programs) and that most elementary students engage in enough PA during school due to PE instruction (Gately et al., 2013). This is plausible based on the notion that many adults may overestimate the PA levels of young children (Corder, Crespo, Van Sluijs, Lopez, & Elder, 2012).

It has been suggested that the teaching philosophy of the CT is likely to influence his or her implementation of CBPA. For example, Cothran et al. (2010) interviewed 23 elementary teachers that had been involved in a one-year project that incorporated PALs. The study found that CTs who were motivated to participate in this voluntary study did so because they possessed the 'desire to meet the needs of the whole student, not just their academic needs' (p.1384). Relatedly, CTs who believe that they have a responsibility or possess the aspiration to help their students develop holistically (which may include emotional, social

and physical domains), are perhaps more likely to view health and PA as important components of elementary education and, subsequently, are more likely to incorporate CBPA when compared to CTs who are focused primarily on the cognitive development of their students.

Cothran et al. (2010) also found that the willingness of CTs to incorporate CBPA was influenced by their 'wellness history' and, specifically, whether or not they had positive experiences with PA. The idea that CTs who value their personal health may be more likely to incorporate CBPA was also evidenced by a CT in the research by Stylianou et al. (2016, p.398), who stated: 'I believe in exercise. I'm the type of person that does exercise. And kids don't get enough now in school'. Goh et al. (2013) also found that PCTs who became more conscientious about their health practices were more apt to value the health of their students, a point which will be returned to in the next section.

*Pre-Service Teachers*

Based on the idea that university teacher-training programs are likely to influence the attitudes of CTs (Avramadis et al., 2001) and PCTs (Goh et al., 2013), it is important to learn more about the coverage of CBPA in these programs, as well as consider what could be included in them to elevate the status and prevalence of CBPA in schools. This encompasses learning more about the information related to CBPA provided to PCTs during their teacher training, as well as the opportunities they have to practice implementing CBPA. A greater understanding of the extent PCTs are encouraged to value health and PA during their teacher training is also pertinent as this is likely to influence their attitudes towards CBPA (ibid). It is important to acknowledge that research examining the views of PCTs towards CBPA is relatively limited, due to the fact that CBPA has only recently begun to receive attention as a plausible strategy to increase the in-school PA of children (IOM, 2013). This dissertation will contribute to the literature in this subject area.

*Status of Classroom-Based Physical Activity in Teacher-Training Programs*

The majority of elementary education teacher-training programs typically include a class on how to teach PE (Erwin et al., 2011), which may include aspects related to CBPA, as well as a variety of other health-related concepts. However, it has been suggested that these courses do not provide 'sufficient content knowledge [for PCTs] to plan their own PE programs' (Webster, 2011, p.323). Hall, Little, & Heidorn, (2011, p.40) 'propose a change from the notion of preparing classroom teachers to teach physical education to preparing

classroom teachers to orchestrate and promote quality physical activity among their students'. This is certainly relevant based on the Comprehensive School Physical Activity Plan (CSPAP) outlined in chapter 1, in which CTs are encouraged to implement CBPA. However, it is generally acknowledged that university teacher-training programs 'do not systematically include the use of PA in their courses of study' (Dinkel et al., 2017, p.187). Consequently, PCTs may lack both the knowledge and confidence to implement CBPA (ibid).

*Attitudes of Pre-Service Teachers towards Classroom-Based Physical Activity*

Erwin et al. (2011) purport the idea that if university teacher-training programs place more emphasis on health-related content, then PCTs are more likely to become advocates for the health of their students and, subsequently, it is more probable that they will implement CBPA. This content would likely include information about health issues in the U.S such as childhood obesity (Webster, 2011), the role of the school in increasing PA levels of children to help combat this epidemic (as well as promoting other health benefits), the importance of teacher health and, relatedly, how teachers can promote positive health habits in their students by being healthy role models.

This idea is demonstrated in research by Goh et al. (2013, p.293), who found that PCTs who participated in a PE infusion program became more conscientious of their personal health behaviours, and, subsequently, 'reported making tangible changes in their lifestyle to incorporate more ways to become healthy'. As a result of these changes, PCTs 'indicated stronger beliefs in the benefits of…[CBPA]…and suggested that they aspired to become healthier role models' to students (ibid, p.295). Relatedly, If CTs are physically fit, then it is logical to suggest that they will be in a better position to participate more effectively in CBPA; this is likely to increase student PA during it (Ernst & Pangrazi; Donnelly & Lambourne, 2011). However, it is important to note that the inclusion of a PE program in elementary education teacher-training programs may not always result in the individuals who participate developing positive attitudes towards CBPA, personal health, and PE. For example, Xiang et al. (2002) found that PCTs who completed a PE class during their training were less enthusiastic about teaching PE after they had completed the course.

On a broader scale, if PCTs were encouraged to care about their students' holistic well-being, then they could be more likely to implement CBPA due to the potential health benefits associated with it (a similar idea has already been presented in the study by

Cothran, et al. (2010). Nel Noddings' Care theory can perhaps guide this line of investigation. According to Noddings (1992), 'teachers are motivated by this philosophy to perform conscious acts of 'being with' and 'doing for' for the sake of their students' (as cited in Owens & Ennis, 2005, p.393). Owens and Ennis (2005, p.392) suggest that 'current teacher education programs and professional development programs often fail to address the ethic of care and its impact on the educational process'. Relatedly, PCTs may be unaware of the potential magnitude of their role in the growth and development of their students.

Webster et al. (2015, p.6) suggests that an 'emerging line of research explores factors that may facilitate or undermine…[CBPA]…from a self-determination theory perspective'. According to self-determination theory, 'autonomously motivated behaviour (i.e. doing something because it is inherently interesting, enjoyable, or highly valued), is more enduring than behaviour controlled by external pressures and rewards' (ibid). Despite the external pressures on CTs to maintain an overwhelming focus on the academic outcomes associated with education, PCTs that value the health and well-being of their students may be motivated to integrate CBPA into their future practice regardless of these external forces. Collectively, these CTs may be able to have a 'push-up' influence on the inclusion of CBPA in their school, described as 'a bottom-up pressure… [that can affect] the implementation of school-level policies' (Langille & Rodgers, 2010, as cited in Goh et al., 2013, p.297).

Goh et al. (2013) found that many of the perceived barriers towards CBPA implementation described by PCTs were the same as those that have already been presented to be evident in CTs, including a 'lack of time, pressure from testing, space constraints, classroom management, and attitudes of colleagues and administrators'. The PCTs who participated in this research believed that they would benefit from additional ideas for CBPA (particularly PALs), which was suggested by CTs in the study by Stylianou et. al (2016), also. The authors concluded that although the PCTs 'voiced their concerns and perceived barriers towards [CBPA] in their future classroom…they appeared to be positive about implementing [it] in the future' (p.295).

*Self-Efficacies of Pre-Service Teachers towards Implementing Classroom-Based Physical Activity*

The principle that additional CBPA training for CTs may result in more favourable views towards CBPA, as well as enhance their perceived self-efficacy towards the successful implementation of it, may apply to PCTs, also. Webster (2011) examined the impact of a 16-week course on the attitudes and skills towards School Physical Activity Promotion (SPAP) in early childhood and elementary education majors. The authors concluded that 'participants reported significantly higher perceived competence for SPAP…and more favourable attitudes at the end of the sixteen week course than at the beginning' (ibid, p.332). This research looked at perceived SPAP competencies of PCTs during recess/classroom, extracurricular activities, and PE, and found that 'the most meaningful changes…occurred in perceived competence for promoting PA in the classroom/recess setting' (ibid). Webster et al. (2015, p.7) state that 'building pre-service classroom teachers' competency… [in CBPA]..may be particularly important to future successful implementation of…[it]. These efforts should include 'hands-on experiences' to practice implementing CBPA in a 'peer-teaching setting in the university context and possibly in a real classroom setting with actual students in the school context'.

In line with the research by Webster (2011), Parks et al. (2007) used collective efficacy theory as a framework to examine elementary classroom teachers' and principals' [from 44 elementary schools] perceptions about incorporating PA into classroom settings. Based on their analysis, they found that 'the most powerful predictor of individual efficacy was mastery experiences' (ibid, p.234), which is when an individual has success performing a behaviour (this will be discussed in more detail in the next chapter). It is logical to suggest that university teacher-training programs are an important time to provide PCTs with sufficient knowledge about CBPA and opportunities to practice implementing it; this will likely enhance their confidence and result in a higher likelihood of integrating it into their future classroom practice once they are CTs.

*Summary of Review of Literature and Research Questions*

This review of literature about CBPA suggests that it can positively impact both health and academic outcomes in elementary students. However, there are uncertainties regarding the most effective way to utilize CBPA to achieve these outcomes (Webster et al., 2015; Donelly et al., 2016). Additionally, Daly-Smith et al. (2018, p.15) suggest that research exploring the impact of CBPA on academic-related outcomes, specifically, should be

‘interpreted with caution’ due to ‘high variability in critical design features, intervention mode, duration and intensity, and outcome measures’. These authors add that many of the older designs are ‘low-to-medium quality’ but [promisingly] that more recent designs are higher quality (ibid, p.15). Hopefully, emerging studies with higher quality designs will enrich the knowledge base in this area.

CTs and PCTs appear to view CBPA as a viable and effective teaching practice; however, both of these populations cite barriers towards its implementation, including insufficient time to incorporate it (especially ABs) and minimal training about CBPA. Relatedly, an important finding from this review of literature is that university teacher-training programs are likely to have a significant impact on the prevalence of CBPA in elementary schools; these programs provide an opportunity to disseminate information and resources about CBPA to PCTs, as well as provide them with opportunities to practice implementing it in a classroom setting.

However, literature is sparse on the coverage of CBPA in university teacher-training programs and, concomitantly, PCTs’ perceived level of self-efficacy to incorporate it into their teaching practice. Therefore, I wanted to learn more about the inclusion of CBPA in an Elementary Teacher-Training Program (ETTP) at a university in upstate SC and how it impacted the attitudes, knowledge, and self-efficacies towards CBPA of both PCTs and CTs with experiences in this program. Based on this gap in the literature, my research questions were as follows:

Research Question 1: What are some of the prevailing attitudes of PCTs and CTs towards CBPA who have experiences in an ETTP at a university in upstate SC? Specifically, what are their perceptions of the benefits of CBPA and the barriers associated with incorporating it in the classroom?

Research Question 2: How is CBPA represented in an ETTP at a university in upstate SC and in local schools where students attend for their teacher training?

Research Question 3: What could be done to improve the knowledge and self-efficacy of PCTs in an ETTP at a university in upstate SC to incorporate CBPA and therefore improve the likelihood of its implementation in local schools?

The following chapter will describe the methodology used in this research and identify why I believed that it would help me learn more about my research questions.

## Chapter 3: Methodology

*Organization of Chapter*

This chapter will describe the methods used for this research. First, I will present some of the terms and definitions associated with this research. Second, I will acknowledge the paradigm of this research and how it impacted my decisions and actions during the research process. Third, I will provide extensive commentary on interviewing - the data collection method used in this research. Fourth, I will discuss why I believed that interviews were an appropriate data collection method for me to learn more about my research questions, and how I applied important aspects associated with effective interviewing to my research. Fifth, I will discuss some of the widely-acknowledged standards and processes associated with rigorous research, imbued with the decisions and actions that I took throughout my research to align with these principles. Lastly, I will provide contextual and demographic information about the research participants for this research, as well as provide a statement of positionality.

### Part One

*Research Terminology*

Research can be defined as a 'systematic inquiry' leading to knowledge about the physical or social world (Mertens, 2015, p.2). The purpose of a research project is to 'understand, describe, predict, or control' phenomena (ibid). The researcher's actions will depend upon the specific objectives of his or her research (Yin, 2016); however, there are a variety of options for conducting research, and this can make it difficult for new researchers to determine appropriate procedures for their inquiry (Creswell, Hanson, Clark, & Morales, 2007). The 'confusion…[and] contradictory information' that is evident in research literature can make this decision-making process even more arduous (Mackenzie & Knipe, 2006, p.1). Schon (1983, p.42) acknowledges the ambiguity and uncertainty associated with performing research, referring to this process as a 'swampy lowland…of confusing messes'.

An important decision for a researcher is to determine what they believe constitutes meaningful research (Lincoln, 2010); this is often referred to as a 'paradigm' (ibid). Guba and Lincoln (1994, p.105) define paradigm as 'the basic belief system or worldview that guides the investigator'. The researcher must determine what they believe 'counts as knowledge' (Lincoln, 2010, p.7), and this will influence the decisions made and actions taken during their research (ibid).

Guba & Lincoln (1994, p.108)) propose that a researcher's paradigm is defined by how they interpret the following questions: the ontological question is concerned with 'what is the form and nature of reality and, therefore, what can be known about it?'; the epistemological question asks 'what is the nature of the relationship between the knower or would-be knower and what can be known?'; and the methodological question posits 'how can the inquirer (would-be knower) go about finding out whatever they believe can be known? (ibid, p.109). Additionally, the 'axiological' question of research is concerned with 'the nature of ethics' (Mertens, 2015, p.10). The researcher's interpretation of any one of these questions will likely influence how they view the others (Krauss, 2005). Lincoln (2010) suggests that a researcher must explicitly inform the reader of the paradigm underpinning their investigation; by doing so, the reader has a greater understanding of 'the intent, motivation and expectations for [that] research' (Mckenzie & Knipe, 2006, p.2). The paradigm of this research is presented in the next section of this chapter.

Research is often classified as 'qualitative', 'quantitative', or 'mixed-methods' (a combination of 'quantitative' and 'qualitative' methods) (Creswell, 1994). I believe that my research is 'qualitative', based on the criteria of qualitative research provided by Yin (2016). Specifically, qualitative research is interested in 'studying the meaning of people's lives, in their real-world roles…representing the views and perspectives of the people in a study…[and] explicitly attending to and accounting for real-world contextual conditions' (ibid, p.9). Strauss & Corbin (1998, p.11) add that qualitative research explores the 'behaviours, emotions and feelings of people'. It is important to acknowledge that these descriptions of qualitative research are not all-encompassing, and that there are a variety of definitions of and approaches to this type of inquiry (Kvale, 2007).

Finally, it is important to define the term 'method', which is often used interchangeably with the term 'methodology' (Mcgregor & Murnane, 2010). I will define the term 'method' as the specific 'techniques' that are used to collect research data (Feldman, 1999, p.126). The interviewing 'technique' was used during this research, and the core features of this data collection method will be discussed later in this chapter.

*Interpretivist Paradigm*

This research is framed by an interpretivist conception of meaningful inquiry. The interpretivist paradigm is sometimes referred to as the 'constructivist' paradigm (Mckenzie & Knipe, 2006), although some researchers view these research approaches differently (for

example, Schwandt, 1998). I assert that the core assumptions of the interpretivist and constructivist paradigms concerning the nature of the social world are relatively homogenous, an assertion that has been suggested elsewhere (see Ponterotto, 2005). At its core, these approaches to research are interested in 'understanding the complex world of lived experience from the point of view of those who live it' (Schwandt, 1998, p.221). However, while this definition provides a general objective of the goal of interpretivist research, there are different conceptions of this approach to inquiry (Garrick, 1999). For example, phenomenology and hermeneutics are two examples of research frameworks with interpretivist underpinnings but take different approaches to collecting and analysing research data (Schwandt, 1998). Subsequently, the following description of the interpretivist paradigm is not exhaustive.

*Ontology*

The ontological belief of the interpretivist paradigm is founded on the concept of 'relativism', which purports that there are 'multiple' realities which are 'local' and 'specific' (Weaver & Olson, 2006, p.462). A person's 'reality' is determined by how they consciously interpret the phenomena around them (Scotland, 2012); essentially, 'reality' is 'constructed in the mind of each individual' (Ponterotto, 2005, p.129). Interpretivist research explores individual realities 'as a whole', in order to gain a comprehensive understanding of how participants perceive phenomena (Garrick, 1999, p.149). This is based on the premise that there are 'multiple interacting factors, causes and processes' responsible for human thought and behaviour (ibid). Concomitantly, interpretivist research values the context within which experiences occur (Chowdhury, 2014).

According to Garrick (1999, p.149), the interpretivist paradigm values the autonomy and agency of people, recognizing that their 'inner capabilities…can allow for individual judgments, perceptions and decision-making'. These cognitive capacities are what an individual relies on to 'make sense' of (or create meaning in) the world around them (ibid). Krauss (2005, p.762) states that 'meanings' are 'the most fundamental aspect of a human social setting', as people 'have a natural inclination to understand and make meaning out of their lives and experiences'. Interpretivist research is interested in 'capturing' these meanings 'in order to describe and explain… behaviour' (Johnson, Buehring, Cassell, & Symon, 2006, p.132).

*Epistemology*

Aligned with the ontological principle of interpretivist research is the idea that 'knowledge' is subjective; it is a 'social construction by human actors' (Chowdhury, 2014, p.433). However, it can also be thought of as 'inter-subjective', as people may perceive phenomena in similar ways (McQueen & McQueen, 2010). Knowledge is also viewed as being 'shaped by the cultural, historical, political, and social norms that operate within that context and time' (Darlaston-Jones, 2007, p.19). The aim of the interpretivist researcher is to 'develop an understanding of individual cases, rather than universal laws or (predictive) generalizations' (Garrick, 1999, p.149); subsequently, interpretivist research methods are usually 'idiographic, using small numbers of participants' (Phothongsunan, 2010, p.2).

Mertens (2015, p.19) suggests that during interpretive research, 'inquirer and the inquired-into are interlocked in an interactive process, each influencing each other'. Therefore, interpretivist researchers assert that the knowledge generated during their research is a 'literal creation of the inquiry process' (Krauss, 2005, p.761). Due to this conception of knowledge-creation, the interpretivist researcher is considered to have a significant role in the outcomes of his or her research; they are considered a critical research 'instrument' (Tavakol & Zeinaloo, 2004, p.76). The researcher is considered a 'meaning-maker' in the same way that the research participant is a 'meaning-maker' (Phothongsunan, 2010, p.1). However, interpretivist researchers do not aim to distance themselves from research participants; rather they strive to 'move into the culture or organization being studied and experience what it is like to be a part of it' (Krauss, 2005, p.760).

The influence of the interpretivist researcher on the outcomes of his or her research has caused some critics to question the 'legitimization' of this paradigm (Kelliher, 2005, p.123); Denzin (1994, p.501) refers to this as an 'interpretive crisis'. However, interpretivists suggest that 'all research is essentially biased by each researcher's individual perceptions' (Krauss, 2005, p.760). Instead of striving for objectivity, qualitative research paradigms such as interpretivism promote the concept of 'reflexivity' (Jootun, McGee & Marland, 2009). This is defined by Sandelowski & Barrosso (2002, p.222) as the 'willingness of researchers to acknowledge and take account of the many ways they themselves influence research findings and thus what comes to be accepted as knowledge.' I will return to how I adopted a reflexive stance throughout this research later in this chapter. However, it is important to recognize a point forwarded by Scheurich (1995,

p.240), who suggests that researchers have ‘multiple intentions and desires, some of which are consciously known and some of which are not’.

*Axiology*

Axiology involves the role of ethics (Mertens, 2015) or values (Carter & Little, 2007) in research. Ethics in research can be viewed as ‘doing good and avoiding harm’ (Orb, Eisenhauer, Wynaden, 2001, p.93). Breaches of ethical conduct are a risk in many forms of research, but they are particularly applicable for interpretive forms of inquiry, which are often ‘intimate and open-ended’ (Scotland, 2012, p.12). Relatedly, Howe & Moses (1999, p.40) assert that the nature of interpretive inquiry (and other forms of qualitative research) increases the possibility that the researcher will ‘discover secrets and lies as well as oppressive relationships’ (ibid). This information ‘may put research participants at risk in ways that they had not consented to and that the researcher had not anticipated’ (ibid). Depending on the nature of the information, the researcher may have to decide ‘whether they have an ethical responsibility to maintain the confidentiality of participants’ (ibid). The topic of inquiry will impact the potential relevance of this issue, but it is important that the researcher remains aware of this possibility throughout the data collection process (and beyond).

Research involving faculty and students from the same university may present additional ethical concerns. University faculty inherently hold positions of power (Legard, Keegan, & Ward, 2003), and this may result in students feeling obliged or pressured to participate in faculty research (Ferguson, Yonge, & Myrick, 2004). Leentjens & Levenson (1997, p.395) suggest that ‘the requirement or coercion [of students] to participate in research, the nature of the reward for participating, recruitment methods, and related privacy issues’ are all potential ethical aspects of research that involves faculty and students from the same university. Ferguson et al. (2004) advocate that faculty who interview students at their university should ensure that ‘students are not coerced to participate in the research; [that] they have the opportunity to discontinue in the research at any time; and [that] student anonymity is maintained by ensuring student data remains confidential’.

In the U.S., all research is required to conform to the Belmont Report to ensure that a basic set of ethical standards are met (ibid). The Belmont Report is a federal document that ensures that researchers who work with human subjects do not violate the rights and interests of those individuals (U.S. Department of Health and Human Services, 1979). The

three major principles of the Belmont Report are 'respect for persons, beneficence, and justice' (ibid). To ensure that research is conducted in the most ethical manner possible, researchers must obtain approval to conduct research from an institutional review board (IRB) before beginning their research; IRB's follow the ethical principles of the Belmont report (Won Oak, 2012). I was required to submit IRB's to both The University of Glasgow and The University of South Carolina and receive approval before I could begin collecting my data; these letters are provided in Appendices 2 and 3.

*Method*

Due to the complexity of human experience and thought, data collection methods in the interpretivist paradigm are concerned with generating a 'thick description of [research] participants' feelings, opinions and experiences' concerning a topic of interest to the researcher (Rahman, 2016, p.104). Interviews are a common data collection method used in interpretivist research with this remit (Scotland, 2012) and with broader qualitative research also (Jamshed, 2014). For this dissertation, I conducted eight semi-structured interviews with PCTs, eight semi-structured interviews with CTs, and two group interviews with PCTS. In the following section, I will discuss interviewing and why I believed that this data collection method would facilitate a greater understanding of my research questions.

**Part Two**

*Interviewing*

Interviews are 'ubiquitous in everyday life' (Edwards & Holland, 2013, p.1); many people have been interviewed and are familiar with the dynamics of interviewing. Kvale & Brinkman (2009, p.1) describe an interview as a 'conversation' that can generate new insights about the lives and experiences of people. Interviews may allow the researcher to 'to find out things that are not easily discernible, such as feelings, thoughts, intentions, and previous behaviours' (Brayda & Boyce, 2014, p.319) According to Lederman (1990, p118), researchers who conduct interviews believe that 'people are a valuable source of information' and are 'articulate enough to put into words their thoughts, feelings and behaviours' (ibid).

Scheurich (1995, p.39) states that 'interviewing as a research method can be artificially separated into two parts: the first part is actually doing the interview; the second is interpreting the interview'. The language that is co-created by the interviewer and interviewee during the interview is the primary object of analysis for the researcher.

Seidman (1996, p.8) suggests that the words people use during interviews are a 'microcosm of their consciousness'. Therefore, an interview format may provide the researcher with 'access' to the interviewee's consciousness, enabling a greater understanding of how that individual views the phenomena of interest to the researcher (ibid). It is worth noting the scepticism of other researchers, particularly postmodernists, concerning the use of language to accurately describe a person's understanding of their world (see Scheurich, 1995). For example, Mishler (1991, p.260) suggests that it may be problematic to infer meaning from language due to the notion that language is 'contextually grounded, unstable, ambiguous, and subject to endless reinterpretation'.

Interviews conducted for research typically include an individual who is responsible for moderating the interview, referred to as the interviewer, and one or more interviewees (individuals who are of interest to the research study). Interviews can take place face-to-face, on the phone, and through computers via email and 'chat-boxes', both in real-time and lagged (Opdenakker, 2006). The interview time will vary based on the topic and individual participant (Gill, Stewart, Treasure, & Chadwick, 2008). Interviews are usually recorded by an audio or visual recorder and transcribed verbatim for analysis (ibid).

Interviews are often classified by their structure; the three most common types of interviews are structured, semi-structured, and unstructured (Gill et al., 2008). Semi-structured and unstructured interviews are the interviews that are typically associated with qualitative research (Edwards & Holland, 2013). These are often referred to as 'in-depth' interviews (Berry, 1999), although some researchers equate in-depth interviews with unstructured interviews only (Britten, 1995). For the purposes of this dissertation, I will consider both unstructured and semi-structured interviews a form of 'in-depth' or qualitative interviewing.

According to Larossa (1989, p.228), in-depth interviewing is 'only minimally structured' and 'gives considerable weight to people's thoughts and feelings'. Such interviews typically use 'open-ended' questions, which provide research participants with the 'latitude' to express viewpoints and 'expand on ideas' (Thomas, Nelson, & Silverman, 2011, p.276). The goal of in-depth interviewing is for the researcher to arrive at a 'holistic understanding of the interviewee's point of view' on the topic of inquiry (Berry, 1999). The researcher must then 'put [these viewpoints] together in a reasoned way that re-creates a culture or describes a

process or set of events in a way that participants would recognize as real' (Rubin & Rubin, 2012, p.7).

*Group Interviews*

According to Kitzinger (1995, p.299), group interviews provide different benefits when compared to individual interviews, primarily due to the fact that 'group processes can help people to explore and clarify their views in ways that would be less easily accessible in a one to one interview'. Lederman (1990, p.119) proposes that the 'synergy' typically associated with the group interview creates more information 'than the sum of the individual inputs'. During group interviews, participants usually expand on other participant's ideas through a process referred to as 'piggybacking' (Leung & Savithiri, 2009, p.218); this can result in the retrieval of memories and ideas related to the research topic that may not have been stimulated by the researcher in an individual interview. Concomitantly, interviewees are likely to discuss topics in a vernacular that is comprehensible to all participants, enhancing the richness of the data produced. The interviewer's ability to do this may be limited due to his or her status as a group 'outsider' (Warr, 2005, p.204).

Group interviews typically last for sixty to ninety minutes (Vaughan, Schub & Singabub, 1996; Leung & Savithri, 2009), but it is logical to suggest that the content of research investigations and the specific nature of each interview will likely impact upon the length of it. Group interviews are often used in conjunction with other data collection methods such as individual interviews (Morgan, 1997; Mitchell, 1999), and it is permissible to ask the same questions to research participants during both types of interview (Gill et al., 2008). Data from group interviews should also 'include observer descriptions of group dynamics and analyses should integrate the interaction dynamics within each group' (Dicicco-Bloom & Crabtree, 2006, p.315). This is important as 'people generate meaning through a variety of forms of talk and interaction' (Raby, 2010, p.4). This data may also include 'what…is not expressed' during the interview, as this can also provide meaningful insights for the researcher (Kitzinger, 1994, p.112).

Group interviews with university students may provide unique advantages when compared to individual interviews with the same population. Billups (2012, p.3) suggests that university students are likely to be more comfortable in a group setting, 'since their sense of identity is still developing and they… [might be] …insecure about expressing their

opinions in an individual interview'. Hearing another student voice an opinion or attitude similar to their own may act as a catalyst for them to either acknowledge a similar point view or provide additional information. Group interviews may be particularly advantageous when faculty members interview students at their university due to the power dynamic that exists between these two populations. Relatedly, it is argued that group interviews result in a 'shift...[in] power…from researcher to participants' (Kitzinger & Barbour 1999; Wilkinson, 1998, as cited in Raby, 2010, p.3). As a result, individuals that participate in group interviews may be more likely to provide 'candid' responses (ibid) when compared to individual interviews.

A criticism associated with group interviews is the potential for more dominant participants to monopolize the interview (Raby, 2010). This may be particularly relevant when the participants in a group interview know each other, with Hofmeyer & Scott (2007, p.70), suggesting that 'preexisting groups have preexisting internal hierarchies, power differentials and subgroups of individuals'. However, Kitzinger (1994) suggests that conducting group interviews with people who know each other may also enhance the willingness of those individuals to contest or disagree with the opinions of other participants during the interview.

There is also the potential for 'social acquiesce bias' or 'yes-saying' in a group setting, which involves participants simply agreeing with the views of others (Costello & Roodenborg, 2015). This could be because participants do not have genuine views on a topic or do not feel comfortable to share their opinions in front of other people. 'Social acquiesce bias' and 'yes-saying' could be particularly problematic when conducting group interviews with college students due to the suggestion that these individuals may be susceptible to peer pressure (Kruegger & Casey, 2009). An additional concern of group interviews is the inability of the researcher to guarantee anonymity (Raby, 2010), but this is a concern in all research.

Sim (1998, p.345) suggests that it is 'misguided…to infer an attitudinal consensus from focus group data'. Hollander (2004, p.603) adds to this claim suggesting that group interviews are 'shaped by multiple social contexts' and, subsequently, are not an effective 'tool for understanding individual thoughts, feeling and experiences'. However, Dicoco-Bloom & Crabtree (2006, p.315) state that although group interviews may limit the extent

that the researcher can understand individual attitudes and experiences, they do allow the researcher to understand ‘a wider range’ of experiences.

*Why I chose interviewing*

The purpose of this dissertation was to elicit a detailed and comprehensive account of research participants’ attitudes and experiences related to CBPA, and I believed that interviews were an effective method of providing this information. I decided to conduct individual, semi-structured interviews as they would allow me to explore specific aspects of CBPA related to my research questions while allowing the flexibility to pursue other topics of interest as they arose during the interview. Even though the researcher may anticipate some of the interviewee’s responses during an interview, the diversity of human perception and experience will likely result in interviewees providing information that the researcher may not have considered previously. This notion is even more pertinent for phenomena that are not well-researched, such as exploring the attitudes of PCTs towards CBPA (Goh et al., 2013).

I believed that group interviews would also be a useful method of generating meaningful data related to my research questions, particularly for PCTs. University students might feel more comfortable and provide more candid responses in interviews when surrounded by their peers (when compared to individual interviews), especially if the interviewer is a faculty member at their university. Subsequently, group interviews with PCTs could provide additional insights about my research questions, as well as triangulate the data from individual interviews to enhance the credibility of my findings (a concept that will be discussed in part three of this chapter). I also wanted to learn more about the representation of CBPA in an ETTP at a university in upstate SC, so the potential for group interviews to provide a broader range of experiences within this program was also a motivating factor for me to utilize this method. I will now discuss the formulation of my interview questions that were used during both individual and group interviews.

*Interview Questions*

Qualitative interviews typically use ‘open-ended questions which tend to start with words like who, what, where, when, why, and how’ (Chenail, 2011, p.256). However, there may be times when closed questions are more appropriate, particularly if the interviewer requires a ‘high degree of specificity’ when striving to understand an experience or point of view of the interviewee (Legard et al., 2003, p. 154). Regardless of the type of question

asked, the researcher must carefully consider the words used in their interview questions; Agee (2009, p.444) states that 'substituting one word for another or adding one word can clarify or obscure the meaning of a question'.

The researcher should also make every effort to ensure that the questions they ask research participants 'fit the vocabulary, the educational background, and the comprehension of each subject' (Kinsey, Pomeroy, & Martin, 1948, as cited in Kvale & Brinkman, 2009, p.134); this will increase the probability that interviewees understand the meaning of the questions asked during the interview. In order to achieve this goal, the researcher must strive to make his or her interview questions 'brief and simple' (Kvale & Brinkman, 2009, p.134), although this is rarely an easy task (Fontanna & Frey, 1994). It is also important that the interviewer does not pose 'double questions', which involves asking two questions simultaneously (Legard et al., 2003, p.155), or ask 'lead questions', which are questions structured with a potential answer within them (ibid).

The researcher may have to change the wording of questions during the course of the research project if it appears that participants are misinterpreting the intended meaning of those questions. Barriball & While (1994, p.330) put forward the idea that 'not every word has the same meaning to every respondent and not every respondent uses the same vocabulary'. The goal of the researcher is to ensure that if questions are worded differently, they still possess 'equivalence of meaning' (ibid). However, it is important to acknowledge that 'what a question…means to the researcher can easily mean something different to the interviewee' (Scheurich, 1995, p.240). The researcher should remain aware of this possibility, adopting a reflexive stance throughout the interview process (and the entirety of the research project). Additionally, Leech (2002, p.666) purports the importance of question order (particularly for developing rapport with the interviewee, which I will discuss shortly), suggesting that 'non-threatening' questions should be asked first to make the interviewee feel comfortable with the interview process.

The questions that the researcher asks during his or her interviews are often guided by one or more theoretical perspective(s), which provide a 'framework for understanding a phenomenon' (Brayda & Boyce, 2014, p.319). Rodgers & Widick (1980, as cited in Evans, Forney, Guido, Patton, & Renn, 1998, p.23) defines formal theory as a 'set of propositions regarding the interrelationship of two or more conceptual variables relevant to some realm of phenomena'. Evans et al. (1998, p.23) add that formal theory helps to 'explain how

variables interact and provides a framework for the study of these relationships'. The interview questions for this dissertation were guided by four theoretical perspectives on human behaviour: Social Learning Theory; Self-Efficacy Theory; Teacher Socialization Theory; and the Health Belief Model. Table 2 presents the relationship between these four theories and my interview and research questions. However, it is important to acknowledge that there is cross over between the core principles associated with some of these theoretical perspectives and questions listed in multiple columns in this table. I have attempted to locate both interview and research questions with what I perceived to be the most relevant theory. I will now describe each of these theories and how they contributed to the interview questions used in this research.

*Social Learning Theory (SLT)*

Social Learning Theory (SLT) was developed by theorists Julian Rotter and Albert Bandura (Rosenstock, Strecher, & Becker, 1988). Bandura's SLT, which was later named Social Cognitive Theory (SCT) (Bandura, 1986), posits that human beings 'acquire…new patterns of behaviours…by observing [the behaviour of] others' (Bandura, 1971, p.3). People may also develop new behaviours when they 'direct[ly] experience' those behaviours, and those behaviours result in 'favourable effects' (ibid). A person must have the cognitive capacities of attention and memory, as well as the requisite motor abilities, in order to replicate an observed behaviour (ibid).

According to Bandura, the newly observed behaviour will only be 'activated into overt performance' if there are 'positive incentives' associated with the behaviour (ibid, p.8). Rosenstock, Strecher, & Becker (1988, p.176) define 'incentive' as 'the value of a particular object or outcome' as perceived by the individual. Examples of valuable outcomes for people may include 'health status, physical appearance, approval of others [and] economic gain' (ibid).

SLT underpinned my interest in exploring how CBPA is presented or modelled to PCTs and CTs by educational stakeholders who they are likely to have interacted with during their teacher training and/or in-service teaching experiences; this includes teachers and administrative personnel in public schools. Additionally, I wanted to examine research participants' perceptions of the 'incentives' potentially associated with the implementation of CBPA, as well as if they have been provided with opportunities to practice it themselves.

Table 2: Theories Underpinning Interview and Research Questions

| | | |
|---|---|---|
| Health Belief Model | • What do you think are some of the benefits of classroom-based physical activity?<br>• What do you think are some of the barriers associated with incorporating classroom-based physical activity? | **Research Question 1:** What are some of the prevailing attitudes of PCTs and CTs towards CBPA who have experiences in an ETTP in upstate SC? Specifically, what are their perceptions of the benefits of CBPA and the barriers associated with incorporating it in the classroom? |
| Social Learning Theory | • How was classroom-based physical activity represented in your university courses and in the schools you attended for teacher training?<br>• How do you think your fellow teachers and administration view classroom-based physical activity? (Question asked to CTs only) | **Research Question 2:** How is CBPA represented in an ETTP in upstate SC and in local schools where students attend for their teacher training? |
| Self-Efficacy Theory | • Please describe your level of preparation to implement classroom-based physical activity as a result of your teacher training?<br>• To what extent did you have opportunities to practice classroom-based | **Research Question 3:** What could be done to improve the knowledge and self-efficacy of PCTs in an ETTP in upstate SC to incorporate CBPA and therefore improve the likelihood of its |

| | | |
|---|---|---|
| | physical activity during your teacher training?<br>• What could have been included in your teacher training program to make you feel more prepared to incorporate classroom-based physical activity?<br>• Have you had any training about classroom-based physical activity during your time as an in-service teacher? (Question asked to CTs only) | implementation in local schools? |
| Teacher Socialization Theory | • How was classroom-based physical activity represented in your teacher training program?<br>• Please tell me what you think the role of the school and the classroom teacher should be in making sure that young children engage in enough daily physical activity?<br>• To what extent do you think that elementary school teachers have a responsibility to be health role models for their students?<br>• Please tell me how or if your classes during your teacher training program influenced your attitudes | **Research Question 2:** How is CBPA represented in an ETTP at a university in upstate SC and in local schools where students attend for their teacher training? |

| | | |
|---|---|---|
| | towards health and physical activity? | |

*Self-Efficacy Theory*

SLT is closely linked to self-efficacy theory (Stajkovich & Luthans, 1998). According to Rosenstock, Strecher, & Becker (1988, p.176), behaviours are also influenced by 'expectations about one's own competence to perform the behaviour needed to influence the outcomes '(ibid); this is often referred to as 'self-efficacy', which has been defined already. Essentially, a person is more likely to reproduce a behaviour if they believe that they can perform it successfully. Self-efficacy, according to Bandura, is 'developed by four main sources of influence', including 'mastery experiences…vicarious models…social persuasion…[and] somatic and emotional states' (ibid). As previously stated, mastery experiences refer to the notion that a person is more likely to repeat a behaviour if they have previous success performing it; Bandura states that this is the most 'effective way of creating a strong sense of self-efficacy' (ibid).

In the previous chapter, Parks et al. (2007) concluded that mastery experiences were the most significant predictor of individual efficacy with regard to CTs' self-efficacy towards incorporating CBPA. Consequently, I wanted to explore the perceived self-efficacies of both PCTs and CTs to incorporate CBPA, focusing on the opportunities that they have had for 'mastery experiences' during the ETTP associated with this research and for CTs during their time as a teaching professional. I also wanted to learn more about the PD opportunities for CTs, and the extent to which these experiences have influenced their perceived self-efficacy to incorporate CBPA into their practice.

I also believed that 'vicarious experiences', defined by Bandura as 'seeing other people succeed similar to oneself' (Bandura, 1994, N.P), was a component of self-efficacy theory that was worthy of consideration in this investigation. I wanted to understand the extent to which PCTs ad CTs had witnessed other students, teachers, certified professionals, or educational stakeholders at their schools implement CBPA, and how these experiences influenced their views of CBPA.

*Teacher Socialization Theory (TST)*

Teacher Socialization Theory (TST) also framed some of the content of the interview questions for this dissertation. Sabari (1985, p.96) defines socialization as the 'process by which individuals acquire and internalize the values, norms, roles, and skills that enable them to function as members of their cultural group'. Specifically, TST examines the 'process whereby the individual becomes a participating member of the society of teachers' (Zeichner & Gore, 1989, p.1). Lawson (1983), focusing specifically on PE teachers, acknowledges three categories of teacher socialization: 'accultural socialization refers to cumulative life experiences prior to initial teacher education; professional socialisation refers to the initial teacher education programme; and organisational socialisation refers to socialisation into schools and throughout the teaching career' (as cited in Chroinin & Coulter, 2012, p.221).

The 'professional socialisation' of both PCTs and CTs was of particular interest to my research, primarily due to the fact that I am an instructor in an ETTP. Subsequently, I wanted to learn more about how this ETTP may have influenced the attitudes of PCTs and CTs towards CBPA, as well as present the role of the school and CT in promoting and enhancing student health. Additionally, for CTs, I wanted to explore 'organizational socialisation', focusing specifically on the inclusion and discussion of CBPA in their schools.

*The Health Belief Model (HBM)*

There are a variety of models that are used as a conceptual framework to describe and interpret health-related behaviours (for example, see Glanz, Rimer, & Viswanath, 2008). However, the Health Belief Model (HBM) is widely-used to provide a basis for understanding health-related behaviours (Green & Murphy, 2014), and it has also been used specifically to understand an individual's participation in PA (see 'CDC', 1996). According to Janz & Becker (1984, p.2), the fundamental premise of the HBM is that 'behaviour depends mainly upon two variables: the value placed by an individual on a particular goal…. [and] the individual's estimate of the likelihood that a given action will achieve that goal'. Relatedly, the HBM is closely related to self-efficacy theory (Hayden, 2014). The beliefs in the HBM can be categorized into 'perceived seriousness, perceived susceptibility, perceived benefits, and perceived barriers' (ibid, p.63).

Of particular interest to this dissertation were 'perceived benefits', described as 'an individual's conclusion as to whether…[a] new behaviour is better than what he or she is

already doing', and 'perceived barriers', defined as 'an individual's opinion as to what will stop him or her from adopting…[a] new behaviour' (ibid). I utilized these constructs to examine research participants' perceptions towards the benefits of, and barriers to, the implementation of CBPA. I also used this model to examine how research participants viewed health and PA in their personal lives, based on the previous point that health-conscious teachers are more likely to be concerned with the health and PA of their students (Cothran et al., 2010).

*Follow-up Questions*

During semi-structured interviews, a significant number of the questions asked by the researcher are improvised based on the responses of the interviewee (Wengraf, 2001). The researcher is likely to ask follow-up questions to many of the participant's responses in order to thoroughly examine their perspective on the phenomena that is being investigated (ibid). Kvale & Brinkman (2009, p.138) refer to this as the 'art of second questions'; the ability of the interviewer to listen to the response of the interviewee and then ask a follow-up question that is of interest to them (ibid). These questions may encourage the interviewee to elaborate upon content that has already been identified by the researcher as of interest, or it may encourage the interviewee to pursue ideas and areas of interest that were not initially identified by the researcher. It is also permissible to have planned follow-up questions during semi-structured interviews related to topics that the researcher may want to explore during the interview (Dejonckheere & Vaughn, 2019).

Encouraging the interviewee to provide more information on a topic of interest to the interviewer is often referred to as 'probing' or 'prompting' (Deleon & Cohen, 2005). Rubin & Rubin (2012, p.118) state that probes can be viewed as 'questions, comments, or gestures used by the interviewer to help manage the conversation'. Barriball & White (1994, p.330) add that probes are the techniques used by the interviewer to obtain 'more information [from the research participant] and [for the] clarification of [participants'] answers'.

There are a variety of types of probes an interviewer can use during an interview (Barriball & White, 1994). Leech (2002, p.668) highlights the usefulness of 'informal' prompts, which 'may be nothing more than the reassuring noises and interjections that people make during any conversation to show that they are listening and interested'. McCracken (1998) acknowledges the importance of a 'floating prompt', which is used to 'clarify' the

respondent's remarks (as cited in Leech, 2002, p.668). McCracken also states that an effective way to clarify what the respondent has said, as well as build rapport, which will be discussed shortly, is to 'repeat the key term of the respondent's last remark as a question' (ibid). Using the participants' own words in this way is likely to demonstrate that the interviewer is listening to what the interviewee is saying, and 'encourage[s] the [interviewee] to provide more information on the topic instead of simply agreeing with the interviewer' (bid).

*Rapport*

Karnieli-Miller, Strier, & Pessach (2009, p.280) state that researchers should aim to create a 'non-threatening environment' that enhances the feeling of 'intimacy' between the researcher and the research subject; this concept is often referred to as developing 'rapport' (Dicicco-Bloom & Crabtree, 2006). Leech (2002, p.665) defines the key criterion for developing rapport as 'convincing [the interviewee] that you are listening, [and] that you understand and are interested in what they are talking about'. If the interviewee believes the interviewer genuinely wants to learn more about his or her thoughts and feelings then they are arguably more likely to reveal their 'personal stories' during the interview (Karnieli-Miller et al., 2009, p.280). Leech (2002, p.666) suggests that interviewers who wish to build rapport with the interviewee should be 'open' about the nature of their research, have a 'positive attitude', appear 'friendly and curious', and explain the 'nature of [their] research project'.

The interviewer should aim to build rapport with the interviewee at the beginning of the interview, a period in which Dicicco-Bloom & Crabtree (2006, p.316) label the 'apprehension' phase. This phase is 'characterized by uncertainty stemming from the strangeness of a context in which the interviewer and interviewee are new' (ibid). During this time, the interviewee may experience 'stage fright' (Field and Morse, 1999, as cited in Britten, 1995), which, if not alleviated, could negatively impact the interview. Dicicco-Bloom & Crabtree (2006, p.316) state that the goal during the initial stages of the interview is to 'get the interviewee talking'; Legard et al. (2003, p.145) add that the interviewer should view the interviewee as a 'guest' during the beginning of the interview, generating informal conversation to help the interviewee feel relaxed and at ease. Collecting contextual information at the beginning of the interview is an effective way to accomplish this (ibid).

*Interviews for this research*

I followed many of the principles for effective interviewing presented in this chapter. I tried to create interview questions that are brief and simple and worded in a vernacular that would likely be comprehensible for research participants (my interview questions can be found in Appendices 4 and 5). I also recognized that discussing personal health-related behaviours such as PA may be a sensitive topic for some people (Dickson-Swift, James, Kippen, & Liamputtong, 2006). Subsequently, I planned to ask those questions towards the latter stages of the interview unless they occurred naturally at an earlier part of it. I documented any thoughts or ideas related to my research questions throughout all interviews, including any non-verbal occurrences based on the idea that these may also generate meaning in qualitative research.

Developing rapport with interviewees was an especially important objective of this research. My status as a faculty member at a university, and its position of 'power and influence' (Legard et al. 2003, p.143), could make research participants feel nervous or intimidated in such an intimate setting. Therefore, I tried to alleviate apprehension or tension in research participants by beginning each interview with 'informal' or 'casual' conversation, asking them how their classes or teaching was going, as well as thanking them for agreeing to participate in the interview. I also informed research participants about the purpose of this research, emphasizing that my goal was to learn more about their attitudes and experiences related to CBPA and that I wanted them to feel comfortable in being open and honest with me. I gathered contextual information from research participants at the beginning of each interview to get them talking in a casual and non-threatening way. At the beginning of group interviews, I explained that I would allow everyone to voice their opinion on topics or ideas they were interested in sharing with the group.

I used both informal and floating probes throughout all interviews to encourage participants to expand upon their thoughts and beliefs, especially those related to my research questions. It was important to convey to the interviewee that I genuinely wanted to understand his or her perceptions and experiences related to CBPA. While this is a defining feature of qualitative research, it may be particularly important when faculty interview students at their university. Interviewees may be inclined to convey thoughts and ideas that they perceive to be congruent with prevailing social norms or provide what they perceive to be the 'correct' answer. Although this is undoubtedly a limitation of

interviewing, it seems logical to suggest that interviewees are more likely to give honest opinions if they perceive that the interviewer is genuinely interested in seeking them. An additional prompt that I used for both individual and group interviews was the simple method of pauses and silences. This prompt was particularly useful for group interviews, as I wanted to encourage participants to respond to comments from other group members, allowing them to provide 'additional points of view or [to agree] with [a] previously mentioned position' (Villard, 2003, p.5).

**Part Three**

*Rigor and Trustworthiness in Qualitative Research*

Morrow (2015, p.250) suggests that 'standards of quality' are sought in all research, and this encompasses a variety of terms such as 'validity, credibility, rigor and trustworthiness' (ibid). The terms 'rigor' and 'trustworthiness' are the terms that are typically used to evaluate the quality of qualitative research (Shenton, 2004); it has been suggested that these terms may be regarded as synonymous (Hadi & Kloss, 2016). According to Thomas & Magilvy (2011, p.151) 'rigor' is a way 'to establish trust or confidence in the findings or results of a research study; this is important if the 'research findings [are] to make an impact on policy, practice, or both' (Hadi & Kloss, 2016, p.641). The following commentary will discuss the criteria for 'rigor' in qualitative research. Concomitantly, I will also acknowledge how this dissertation adhered to many of these principles.

Guba (1981) provides a framework from which the rigor of qualitative research can be evaluated, and this model has been used by other researchers (for example, Tuckett, 2005). The four aspects of rigor (or 'trustworthiness'), according to Guba (1981, p.80), are 'credibility, transferability, confirmability, and dependability'. It is important to note that these terms are described differently and there is often overlap amongst them (Shenton, 2004). I will now describe how I interpreted each of these concepts, outlining how they were applied to my research.

*Credibility*

The credibility of qualitative research refers to the 'confidence in the truth of the study and therefore the findings' (Connelly, 2016, p.435); this is also referred to as 'truth value' (Guba, 1981). Krefting (1991, p.215) states that the 'truth value' of qualitative research is 'obtained from the discovery of human experiences as they are lived and perceived by informants'. There are a variety of procedures the qualitative researcher can undertake to

enhance the credibility of his or her research (Shenton, 2004). One of these approaches is to use methods that are 'well established…[in] qualitative investigation' (ibid, p.64). The primary data collection method for this research, interviewing, is a widely-utilized method in qualitative research (Dicicco-Bloom & Crabtree, 2006). Interviews can facilitate a 'thick description of the phenomena under scrutiny' (Shenton, 2004, p.69), providing researchers with an array of information that can be utilized to study the participant's reality concerning the topic of inquiry.

The credibility of qualitative inquiry can also be enhanced by providing a 'reflective commentary' (Shenton, 2004, p.68) on the research process, particularly an analysis of the methods used during the research, as well as how the researcher interprets 'emerging patterns' during the data collection process (ibid). A detailed account on the methods used for this research has already been provided in the chapter, and I will describe the data analysis process in detail in the next chapter. Additionally, researchers can also present their findings to peers or colleagues to receive feedback about them (Shenton, 2004); this is referred to as 'peer debriefing' (Janesick, 2007). I presented my research findings to a P.E. colleague to receive his feedback, which will also be described in more detail in the next chapter.

Triangulation can enhance the credibility of qualitative research (Carter, Bryant-Lukosios, Dicenso, Blythe, & Neville, 2014). This concept is described as 'the use of multiple methods or data sources…to develop a comprehensive understanding of phenomena' (ibid, p.545). Patton (1999, p.1193) proposes that there are four types of triangulation: 'methods triangulation, triangulation of data sources, analyst triangulation [and] theory/perspective triangulation'. For this dissertation, I triangulated methods and data sources. To achieve methods triangulation, which is described by Patton as 'checking out the consistency of findings generated by different data collection methods' (ibid), I conducted both individual interviews and group interviews. While I recognized that there were likely to be different outcomes from both methods due to the inherent differences in them, a focus of my analysis was to consider if the themes identified were evident in both individual and group interviews. Triangulating data sources is referred to as 'examining the consistency of different data sources within the same method' (ibid). I interviewed both CTs and PCTs to examine their attitudes towards CBPA. Although I expected there to be different information provided by these two populations due to their varying experiences, I looked for prevalent themes that were voiced in both sets of participants to enhance the

credibility of my findings, particularly concerning the inclusion of CBPA in the ETTP associated with this research.

*Transferability*

It is argued that the findings of qualitative research cannot be applied to other research studies due to the fact that they 'are specific to a small number of particular environments and individuals…[and] observations are defined by the specific contexts in which they occur' (Shenton, 2004, p.69). Guba (1981, p.86) suggests that qualitative forms of inquiry 'eschew[s] generalizations on the grounds that virtually all social/behavioural phenomena are context bound'. With this in mind, Hamberg, Johansson, Lindgren, & Westman, (1994, p.179) suggest that conclusions drawn from qualitative inquiry are concerned with 'description and interpretation' and must be 'evaluated for their plausibility, inner logic and ability to be communicated to others'. According to Shenton (2004, p.69), it is argued that 'if [readers] believe their situations to be similar to that described in the study, they may relate the findings to their own positions'.

For this to be possible the researcher must 'ensure that sufficient contextual information about the fieldwork sites is provided to enable the reader to make such a transfer' (ibid, p.69-70). Hamberg at al. (1994, p.179) state that it is important for the researcher to describe a variety of demographics in the population or group investigated, and then 'it is possible for others to decide whether the findings are relevant in other situations.' (ibid). What I perceived to be appropriate contextual information for this research is provided in the next section of this chapter. This includes demographics about the research participants, information about the ETTP associated with this research, and the school districts where CTs are currently teaching. I also provided information about the public school structure in the U.S. in chapter one to provide additional context for the reader.

*Confirmability*

According to Anney (2014, p.279), confirmability 'refers to the degree to which the results of an inquiry could be confirmed or corroborated by other researchers'. Hamberg et al. (1994, p.180) adds that the confirmability aspect of qualitative inquiry is focused on moving 'from the researcher as a subject, and instead is focused on the data and the interpretation of the data' (ibid). Tobin & Begley (2004, p.392) state that confirmability is 'concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination, but are clearly derived from the data'. Peer debriefing

appears to be a reasonable step to assist the researcher in enhancing the confirmability of their research, and this has already been established as part of my investigation.

An ‘audit trail’ can also help address the confirmability aspect of qualitative research (Lincoln & Guba, 1985). An audit trail is essentially data that is generated during the research process that includes, but is not limited to, keeping a record of ‘contextual background of data, the impetus and rationale for all methodological decisions, the evolution of the findings, and the researcher’s particular orientation to the data’ (Rodgers & Cowles, 1993, p.219). Many of these components of an audit trail are addressed in the 'credibility' section. Additionally, memos, or written documents related to aspects of the research process, are also a suggested procedure as part of an audit trail (Birks, Chapman, & Francis, 2008). Memos ‘provide a mechanism for the articulation of assumptions and subjective perspectives about the area of research’ (ibid, p.69). Jasper (2005, p.248) adds that memos also ‘facilitate creativity, critical thinking and strategies for analysis and innovative discovery.’ Throughout the data collection and analysis phases of this research, I wrote memos to document what I perceived as noteworthy elements associated with my research, including my potential influence on its outcomes. I will reference some of the memos that were used as part of my analysis in chapter four. I will also discuss my orientation to the data, often described as ‘researcher positionality’ (Bourke, 2014), at the end of this chapter.

*Dependability*

According to Ponelis (2010, p.538), dependability ‘rests on the quality of the data collection and analysis…and is shown by explaining that the research systematically studied what it claimed to study’. Shenton (2004) suggests that assuring the research study is credible and reporting as much data as possible can enhance the dependability of qualitative research. I have previously discussed how I performed both of these actions during the course of my research.

**Part Four**

*Research Participants*

For this dissertation, I interviewed PCTs studying in an ETTP, as well as CTs who graduated from this same program within the last three years. All of the PCTs who were interviewed were senior students, meaning that they were in their last year of study in the program. Cleary, Horsfall, & Hayter (2014, p.473) state that research participants should be

'selected because of their personal experience or knowledge of the topic under study.' Based on my desire to learn more about the attitudes of CBPA in students who were currently or previously enrolled in the ETTP associated with this research, I identified these participants as relevant sources of information for me to arrive at a greater understanding of my research questions. My approach was congruent with purposeful sampling, which involves 'identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest' (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood, 2015, p.534).

My rationale for interviewing senior students was to ensure that they had completed the majority of the courses in the ETTP associated with this research, including those that require students to attend local schools (which take place during the last two years of this program). Thus, senior students would have substantial experiences in the ETTP and would be in a position to provide meaningful insights about the inclusion of CBPA within it. There were two primary reasons for my decision to limit the sample to CTs who graduated from the ETTP within three years: first, CBPA has only started to gain significant attention in recent years, so it would be unlikely that students who graduated longer than three years ago would have been exposed to CBPA-related content. Second, and more importantly, I wanted to interview CTs who were likely to be able to recall their experiences in their ETTP, and it seems reasonable to suggest that those who graduated more than three years ago may be in a less favourable position to do this. I was aware that CTs who have been teaching for longer than three years would likely provide different insights concerning teaching practices when compared to more inexperienced teachers, and this will be discussed in chapter six as a limitation of this research.

*Recruiting Research Participants*

An email was sent to all senior students in the ETTP associated with this research and to CTs who graduated from the program within the last three years and who were teaching in upstate SC, inviting them to participate in this study. The program coordinator of the ETTP sent an email to all senior students, and the director of student field experiences sent the same email to eligible CTs who were currently teaching in upstate SC. This email contained the plain language statement about the objectives of this research (Appendix 6), exclusively.

The emails were sent out to students in January 2018. A list of names was compiled of all the students who agreed to participate in this research. PCTs whose surnames began with the letters A-M were selected for individual interviews; students whose surnames began with the letters N-Z were selected for one of the group interviews. Ideally, I would have had eight students in each group interview. However, due to a limited response from students, I had seven participants in the first interview and five in the second interview. The CTs who agreed to participate in this research were selected for individual interviews. All interviews with PCTs were conducted on the campus of the ETTP associated with this research in the Health Education Complex. Interviews with CTs were conducted at their school at an available and appropriate location. All research participants were asked to sign a consent form before their interview (Appendix 7).

The data collection phase for this research took place between January and May of 2018. I conducted eight individual interviews and two group interviews with PCTs, and eight individual interviews with CTs. Cleary, Horsfall & Hayter (2014, p.473) state that the 'adequacy of participant numbers [in qualitative research] involves thoughtful decision-making; too few may risk adequate depth and breadth, but too many may produce superficial or unwieldy volumes of data'. Mason (2010, N.P) adds that a sample size for a qualitative investigation should be based on the concept of 'saturation', which is 'when the collection of new data does not shed any further light on the issue under investigation'. The emergence of repeated patterns during the initial interviews confirmed that the sample size for this research was sufficient. Concomitantly, it was difficult for me to get willing participants for this study; the ETTP associated with this research is relatively small, and the number of eligible participants was not substantial.

*Contextual Information*

Before providing the demographic information for research participants, I believe it is important to provide the reader with contextual information about the ETTP associated with this research. This program is for students who plan on teaching grades two through six (ages 7-11) in elementary school. In the U.S, it is common for universities to structure their courses around semesters; the major semesters are 'Fall' (August-December) and 'Spring' (January-May). Students can also enrol in summer courses. Students enrolled in a degree program are advised to follow a specific sequence of courses; this usually involves taking four or five courses during both the 'Fall' and 'Spring' semesters. Assuming the

students take the required courses required for their program of study, they are expected to graduate in four years.

Students are required to take a variety of general courses before taking courses specifically related to elementary education. Students are also required attend local schools to observe CTs and provide instruction to elementary students. These experiences take place during the second semester of the student's junior (third) year, and the first semester of their senior (fourth) year; these are referred to as 'clinical' placements. Although students may provide some instruction to elementary students, the majority of this experience is focused on observing the classroom teacher in the room in which they are assigned. Students are required to undertake fifty hours at clinical placement 1 and fifty hours at clinical placement 2. During the student's final semester, they are placed in a school for the full school day, five days a week; this is referred to as 'directed teaching'. Students stay in the same classroom throughout the semester, and they are required to write lesson plans and deliver these lessons to students. Students are required to teach for a full school day for a minimum of four weeks during this time period.

The ETTP associated with this research is located in upstate SC. Students in this program are assigned to a variety of school districts in this area for 'clinical' and 'directed teaching' placements, and the district where they assigned is largely based on the need of each school district (i.e. how many PCTs the district wants or can accommodate in the schools in that district). The grade level where they are assigned also depends on the level of need within the various school districts. The relevant demographics about research participants are displayed in Table 3.

*Positionality*

Before discussing the methods that I used to analyse the data generated from my interviews, it is important to identify my orientation to the content of this research; this is commonly described as the 'positionality' of the researcher (Bourke, 2014). Researcher positionality involves acknowledging my values as an individual, my 'social position' and, relatedly, my 'subjectivities' (ibid, p.3). This concept is significant to the role of the researcher during interpretivist research, and it is important to be aware of this when identifying the outcomes of it.

**Table 3: Demographic Information for Research Participants**

| | N | % |
|---|---|---|
| **In-Service Teachers:** | | |
| **Gender** | | |
| Male | 2 | 25% |
| Female | 6 | 75% |
| **Age** | | |
| Mean | | 25.3 |
| **Grade Level** | | |
| 1 | 1 | 12.5% |
| 3 | 3 | 37.5% |
| 4 | 2 | 25% |
| 5 | 2 | 25% |
| **Years of Teaching Experience** | | |
| 1 | 8 | 100% |
| **Subjects Taught** | | |
| All Subjects | 5 | 62.5% |
| Maths and Science | 3 | 37.5% |
| **School District** | | |
| District 2 | 3 | 37.5% |
| District 3 | 1 | 12.5% |
| District 7 | 2 | 25% |
| Neighbouring School District | 2 | 25% |
| **Pre-Service Teachers:** | | |

| | | |
|---|---|---|
| **Gender** | | |
| Male | 5 | 25% |
| Female | 15 | 75% |
| **Age** | | |
| Mean | | 23.2 |
| **Year** | | |
| Senior (Block 1) | 6 | 30% |
| Senior (Block 2) | 14 | 70% |

I am a Caucasian, heterosexual male born in the United Kingdom (UK). As a white man, I am aware of the privileges that I have been afforded in society. My socially-privileged position is furthered by being raised by supportive and loving parents and an extended family, who provided me with the financial and emotional support throughout my childhood and into my early adult years. Whilst these privileges have benefited me greatly, they may also make it difficult for me to fully relate to the situations of marginalized or oppressed classes and groups in society.

I have an undergraduate degree in Physical Education (PE), a Master's degree in Early Childhood Education, and Eighteen credit towards a Master's Degree in Public Health. I have significant experiences in coaching and playing football. I have been involved in sports throughout my life, and I am an avid runner. I am also very health-conscious. The research during my Master's degree in childhood obesity inspired me to pursue a profession in education and to advocate for the role of education in forming positive health behaviours and attitudes in young people. This was the catalyst for my role as a university lecturer in both early childhood education and PE.

While my extensive background in health could be interpreted as a positive for this research, particularly in terms of providing a context within which to guide its aims and analyse its outcomes, I am aware of my natural biases towards the importance and benefits of being health-conscious, and how this will be the lens that I use when interpreting the outcome of this research. I have never been in a position where I have not been health-

conscious; this may make it difficult for me to relate to people who do not value their own health

I am also aware that as a white male who is a faculty member at a university, I am in a position of power and authority. As already stated, interviewees may have been hesitant to be transparent about their beliefs due to my status and for fear of disapproval if they speak honestly about incongruences with social norms. I must also be aware of my social position as a 'teacher', and the inherent tendencies in this role to want to 'guide' student understanding and knowledge. This is something that could have subconsciously influenced my interviews, despite my best efforts to try to minimize this from occurring.

*Conclusion*

I believed that interviews were the most appropriate methodology for me to learn more about the attitudes and experiences of both PCTs and CTS concerning CBPA. I made a concerted effort to follow the principles of effective interviewing discussed in this chapter, and I hoped that these steps would provide an accurate representation of the 'voice' of research participants (which is an important criterion for establishing rigor in qualitative research). Researchers should also provide a thorough account of the actions taken during data analysis to enhance the credibility of their findings, and this is discussed in my next chapter. I will also present the results of my study in the following chapter.

## Chapter 4: Results

### *Organization of Chapter*

The purpose of this chapter is to report my results. Before I provide this information to the reader, I will discuss thematic analysis, the method I used to analyse my data. First, I will outline the important features of thematic analysis and how these were interpreted based on the objectives of my research. Second, I will provide the reader with an account of my thematic analysis, and how this process influenced the meaning generated from my data; this will provide context when interpreting the results of my research. Third, I will present my results, providing a detailed description of the five major themes identified for this research. The final part of this chapter discusses my peer debriefing report; the purpose of this report is to enhance the credibility of my results.

### *Thematic analysis*

The purpose of data analysis is to 'generate findings that transform raw data into new knowledge' (Thorne, 2000, p.68). This process can provide the researcher with insights about his or her research questions (Rubin & Rubin, 2012). However, as qualitative data is often 'unstructured and unwieldy' (Richie & Spencer, 1994, p.176), generating meaning from such data can be a difficult task. Thorne (2000) suggests that 'data analysis is the most complex and mysterious of all of the phases of a qualitative project, and the one that receives the least thoughtful discussion in the literature'. Nonetheless, there are a variety of methods for analysing qualitative data (ibid). Some of these methods are deemed to be applicable for specific approaches to performing research (for example, grounded theory) (ibid), whereas others provide a general framework for analysing qualitative research data (for example, Yin, 2016).

Regardless of the methods chosen by the researcher to analyse his or her data, it is widely asserted that qualitative data analysis is not a 'self-contained' stage of research (Basit, 2003, p.152); it usually occurs throughout a research project. Bryman & Burgess (1994, p.2) put forward the idea that 'qualitative research cannot be reduced to…set stages, but rather [it is] a dynamic process'. Creswell (2007, p.150) adds that analysing qualitative data can be conceived as a 'spiral' that typically involves 'data collection, data analysis, and report writing…simultaneously in a research project'. For example, in the previous chapter, I discussed my use of memos, which I used to record my ideas and thoughts concerning the data generated during interviews. These memos were an important element of my analysis and will be referred to throughout this chapter.

Whilst data analysis in qualitative research is an ongoing process, Creswell (2007, p.148) suggests that researchers usually allocate a significant amount of time for ‘preparing and organizing…data’ after it has been collected; this provides a platform for the researcher to conduct a detailed analysis. Blair (2015, p.143) states:

> ‘For many involved in analysing qualitative data there comes a time when they look at their raw data and ask themselves, "What does all this mean?" The ‘answers’ that lie within their data are not always explicit and methods need to be employed in order to extricate these ‘answers’’.

Providing the reader with this information is an important element of the ‘audit trail’ and can enhance the rigor of qualitative research (Rodgers & Cowles, 1993).

Thematic analysis is a popular choice for researchers who analyse qualitative data (Roulston, 2001). A thematic analysis identifies themes from a data set, and those themes then become the emphasis of the researcher’s analysis (Fereday & Muir-Cochrane, 2006). Boyatzis (2008, vii) defines a theme as a ‘pattern’ that the researcher perceives to be evident in a data set. Leininger (1985, p.60) adds that these patterns or themes ‘[bring] together components or fragments of ideas or experiences, which often are meaningless when viewed alone’. In a qualitative research project, these themes ‘are pieced together to form a comprehensive picture of [the research participants’] collective experience’ (Aronson, 1995, p.2).

Themes are often identified in relation to the researcher’s questions and topic of inquiry (Maguire & Delahunt, 2017); this allows the researcher to discuss the findings of his or her research in relation to similar literature (Braun & Clarke, 2006). However, it is important to acknowledge the assertion by Ryan & Bernard (2003, p.88) that themes can also be viewed as ‘fuzzy’ and ‘abstract’ concepts; they often rely heavily on the researcher’s interpretation of the data.

While thematic analysis is a common method for analysing qualitative data, literature concerning how to conduct a thematic analysis is relatively sparse (Nowell, Norris, White, & Moules, 2017). The literature that is available provides various interpretations and applications of this approach (Braun & Clarke, 2006). Thematic analysis has also been described as being similar to content analysis (Vaismoradi, Jones, Turunen, & Snelgrove,

2016), although Joffe & Yardley (2004, p.56) suggest that a differentiating factor between the two is that content analysis is focused on 'a numerical description of features of a given text', whereas a thematic analysis 'pays greater attention to the qualitative aspects of the material analysed'. Braun & Clarke (2006, p.78) assert that while thematic analysis has similar features to other forms of analysis that employ a 'thematic approach' (for example, grounded theory and interpretive phenomenological analysis), a benefit of thematic analysis is that it is not 'wedded to any pre-existing theoretical framework', which makes it a 'flexible' method for analysing data.

Researchers who conduct a thematic analysis must determine whether or not themes will be generated using an inductive or deductive approach (Braun & Clarke, 2006). An inductive thematic analysis generates themes exclusively from the 'raw data' (Thomas, 2006, p.3), whereas a deductive or 'theoretical' analysis is 'driven by the researcher's theoretical or analytic interest' (Braun & Clarke, 2006, p.84). The decision of the researcher to adopt an inductive or deductive approach will depend on the nature of his or her research topic and questions (ibid). Guest, MacQueen, & Namey (2012, p.7) state that 'inductive analyses…have a descriptive and exploratory nature… [and are] content-driven'. Whereas a more theoretical approach is considered to be a 'confirmatory, hypothesis-driven study…guided by specific ideas or hypothesis the researcher wants to assess'.

I decided to perform an inductive thematic analysis based on the objectives of my research: to explore research participants' attitudes towards CBPA, their views about the inclusion of it in an ETTP, and what could have been incorporated in this program to improve their ability to implement CBPA successfully. Braun & Clarke (2006, p.83) state that themes generated from an inductive thematic analysis are 'strongly linked to the data', which subsequently allow the researcher to learn more about the 'experiences, meaning and the reality of [research] participants' (ibid, p.81). An inductive thematic analysis also allows the researcher to examine concepts that may be unrelated to their research questions (Nowell et al., 2017). Based on the relative sparsity of literature on CBPA, especially attitudes towards it in PCTs, I wanted to remain open to anything that I considered to be meaningful in relation to this topic.

There are two 'levels' of themes that are typically associated with thematic analysis: semantic themes and latent themes (Maguire & Delahunt, 2017, p. 3353). These theme classifications are described elsewhere as 'descriptive' and 'interpretive' (Joffe & Yardley,

2004). According to Braun & Clarke (2006, p.844), a descriptive approach identifies themes 'within the explicit or surface meanings of the data'; the researcher is not looking for anything 'beyond what a participant has said' (ibid). In contrast, interpretive themes represent 'underlying ideas, assumptions, and conceptualizations - and ideologies' that are 'theorized as shaping or informing the semantic content of the data' (Braun & Clarke, 2006, p.84). Joffe and Yardley (2004) assert that a thematic analysis should involve both 'levels' of themes, whereas Braun & Clarke (2006) suggest that it should focus on identifying themes on only one of these levels. It is logical to suggest that the content of the data, as well as the research questions, are likely to influence the level of the themes identified in a research project. I wanted to remain open to the identification of both descriptive and interpretive themes, based on my perception of meaningful data. I identified both types of themes during my analysis, and these themes will be described later in this chapter.

Braun & Clarke (2006) provide a six-step framework to guide researchers during a thematic analysis of qualitative data, including: becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining themes, and writing a report. Other researchers have also used this model to analyse their data (for example see, Maguire & Delahunt, 2017; Nowell et al., 2017). I decided to utilize this framework for my analysis as generating meaning from qualitative data can be an arduous task, and it can be useful to have a template to assist the researcher during this process (as well as demonstrate rigor). As I have previously suggested, qualitative data analysis is not a linear process; it is an 'iterative and reflective process that develops over time and involves a constant moving back and forward between phases' (Nowell et al., 2017, p.4). Therefore, the steps provided by Braun & Clarke were viewed as a 'guide' during what was an inherently 'fluid' process.

*Data Familiarity and Transcription*

Green et al. (2007, p.545) state that the 'critical' aspect of data analysis is 'examining the information collected and transforming it into a coherent account of what was found'. In order to achieve this outcome, the researcher must have a 'thorough knowledge of the data' generated from his or her research (ibid, p.546). Thus, the researcher must study the data closely; this is sometimes referred to as 'data immersion' (Bryman & Burgess, 1994, p.6). Due to the fact that I was the moderator during all of the interviews for this research, I already had a basic level of familiarity with my data. However, due to a large amount of

data from a significant number of in-depth interviews, I believed that it was imperative to allocate a considerable amount of time to thoroughly study the entire dataset to generate meaningful insights from it.

Braun & Clarke (2006) suggest that researchers who perform a thematic analysis of data generated from interviews should transcribe both interview questions and answers. This process enables the researcher to perform a meticulous examination of that data (Bailey, 2008). While this is considered an integral part of analysing interviews, Green, Franquiz, and Dixon (1997) assert that a researcher must acknowledge that an interview 'transcript is a text that 're'-presents an event; it is not the event itself' (as cited in Tilley, 2003, p.751). A reiteration of this point is provided by Lemke (1997, p.1176), who states that the 'change of medium from speech to writing' can result in 'lost' meaningful data, particularly in relation to non-verbal occurrences (ibid). However, this problem can be alleviated if the interviewer documents the non-verbal occurrences that he or she perceives to be meaningful during interviews; these notes then become part of the data and are subject to subsequent analysis.

Researchers must also determine how much detail will be provided when transcribing data. Oliver, Serovich, & Mason (2005, p.1273) suggest the following:

> 'Transcription practices can be thought of in terms of a continuum with two dominant modes: naturalism, in which every utterance is transcribed in as much detail as possible, and denaturalism, in which idiosyncratic elements of speech (e.g., stutters, pauses, nonverbals, involuntary vocalizations) are removed'.

The researcher's decision concerning the level of detail they perceive to be appropriate during the transcription process will be influenced by his or her research questions and approach to analysing data (Bailey, 2008). However, it is important to recognize that transcribing is not simply a 'straightforward technical task...[it] involves judgements about what level of detail to choose' (ibid, p.127). Tilley (2003, p.769) views transcribing as an 'interpretive' process, with the decisions made by the transcriber likely to influence the meaning generated from the data. Braun & Clarke (2006, p.88) suggest that a thematic analysis 'does not require the same level of detail' as other forms of data analysis, such as discourse analysis (for a detailed account of discourse analysis, see Shaw & Bailey, 2009).

However, they do suggest that a thematic analysis requires a 'verbatim' account' of all verbal [and sometimes non-verbal] …utterances' (ibid, p.88).

The researcher must also determine who will transcribe the data; the amount of data and resources of the researcher is likely to influence this decision (Kvale & Brinkman, 2009). Transcribing in-depth interviews can be a strenuous and time-consuming process; a one-hour in-depth interview can take anywhere from four to six hours to transcribe (ibid). Whilst some researchers may view transcription as a 'chore' (Agar, 1996, p.153), it is important to acknowledge that it can help researchers generate meaning during qualitative inquiry (Oliver et al., 2005; Bailey, 2008). Braun & Clarke (2006, p.88) purport that researchers who transcribe interviews that they have moderated are likely to 'have a far more thorough understanding of [that data]' when compared to having someone else perform the transcribing process. Kvale & Brinkman (2009, p.180) add that 'researchers who transcribe their own interviews…will have the social and emotional aspects of the interview situation present or reawakened during transcription'.

Based on the factors outlined above, I decided to transcribe all of my interviews. Not only did I want to enhance my 'craft' of 'qualitative research interviewing' (Kvale & Brinkman, 2009, p.89), which includes transcribing (ibid), I also believed that (more importantly) transcribing the interviews for this research would provide a better platform to generate meaningful insights from the data. Relatedly, during the data collection process, I learned that in-depth interviewing is mentally challenging; hence, it is likely that researchers who conduct multiple interviews may not document or consider potentially significant information in 'real-time' during them. Transcribing my interviews provided me with an opportunity to listen to them again, producing new insights or simply re-affirming previous ones. I followed the advice provided by Braun & Clarke (2006) and carefully transcribed each interview verbatim, noting what I perceived to be meaningful non-verbal occurrences (coughs, stutters, etc.).

Once all interviews were transcribed, I read every interview again in succession. Braun & Clarke (2006) suggest that this is important so that researchers begin to get a sense of the overall 'story' of the data. During this process, I continued to write memos, primarily concerning my interpretation of the meaning associated with the data. This reinforced some of the 'candidate' themes that I had already considered during the interviews. For example, it was clear to me that interviewees primarily viewed CBPA through the lens of

improving academic-related outcomes; they rarely mentioned its utility towards increasing daily PA in their students. I also 'grappled' with many potentially meaningful concepts that weren't fully formed or lucid. For example, I believed it was significant that many of the examples of CBPA provided by interviewees appeared to be synonymous with 'active learning strategies', which Roehl, Reddy, & Shannon (2013, p.45) describe as 'an umbrella term for pedagogies focusing on student activity and student engagement in the learning process'. However, I was not able to determine why this was significant at this point in the process. The concept would later contribute to the development of theme 5, 'Guidance', which I will discuss later in this chapter.

*Generating Initial Codes*

At this stage of my analysis, I felt confident that I had identified some prominent patterns in the data corpus. However, it is common for qualitative researchers to conduct a rigorous and systematic procedure to organize their data; this process is often referred to as 'coding' or 'creating categories' (Green et al. 2007, p.546). Braun & Clarke (2006) suggest that coding is a pre-requisite for generating themes, although others regard 'codes' and 'themes' synonymously (Boyatzis, 1998). Whilst there are many other interpretations for the term 'code', Rubin and Rubin (2012, p.192) define it as 'a word or phrase' that reflects the researcher's interpretation of the data. Boyatzis (1998, p.63) adds that a code refers to the 'most basic segment, or element, of the raw data, that can be assessed in a meaningful way regarding the phenomenon'. According to Charmaz (2006, p.3), a benefit of coding is that it 'distils data…and gives [the researcher] a handle for making comparisons with other segments of data'. While coding is a common procedure for qualitative researchers, it is worth noting that some researchers are more sceptical about coding qualitative data; for example, St Pierre & Jackson (2014, p.715) suggest that coding can be a 'brute' process, perhaps adopting a 'quasi-statistical' or quantitative approach to a qualitative procedure (ibid).

There is no universal consensus concerning how or what to code (Yin, 2016). Approaches to coding may be determined by the researcher's theoretical perspective (for example, Charmaz (2006), provides a method of coding based on grounded theory). Saldana (2016, p.17) suggests that while some qualitative researchers believe that all data' is worthy of consideration,' others purport that 'only the most salient portions of the corpus related to the research questions merit examination'. Braun & Clarke (2006) put forward the idea that researchers who perform thematic analysis should adopt a flexible stance and code

anything they find ‘interesting’ (both related and unrelated to research questions). The number of codes generated from qualitative data is likely impacted by many factors, such as the length of the data corpus and whether or not the codes are more descriptive or interpretive (Elliott, 2018).

In an inductive thematic analysis, codes are developed as the researcher reads the data corpus. In contrast, for a theoretical or ‘deductive’ thematic analysis, codes are created a priori; they are determined by the researcher before the formal data analysis process begins (usually based on a particular theory or similar research) (Fereday & Muir-Cochrane, 2006). Yin (2016, p.196) differentiates between ‘level 1’ and ‘level 2’ codes; level 1 codes ‘stick closely to the original data’ and may ‘reuse…the exact words in the original data’ (referred to as ‘invivo’ codes). Level 2 or ‘category’ codes denote the researcher’s interpretation of segments of the data that may be representative of a broader concept (ibid). DeCuir-Gunby, Marshall, & McCulloch (2011, p.138) suggest that researchers who code should keep a codebook, which they define as ‘a set of codes, definitions, and examples used as a guide to help analyse interview data’. A codebook can help the researcher remember the meaning behind assigned codes (Guest et al., 2012), which is likely to be useful if he or she has a large data set.

Coding can be performed manually or through the use of a computer program. Braun & Clarke (2006, p.89) define manual coding as ‘writing notes’ on the text and using coloured pens and ‘post-it’ notes to pinpoint significant portions of the data. Computer-assisted coding typically utilizes a computer software program to look for codes in the data; these methods can be time-efficient and enhance the validity of the data analysis due to the decreased risk of human error (Welsh, 2002). However, Rubin and Rubin (2012, p.192) suggest that computer-assisted methods of coding may miss the ‘shades of meaning’ that are more readily detected by the human mind; these elements of meaning may be more difficult to identify in a ‘mechanical manner’ (ibid). A manual approach to coding also requires the researcher to engage thoroughly with his or her data (Ryan and Bernard, 2003); thus, it may provide the researcher with perspectives and insights not generated through computer-assisted methods. Welsh (2003) suggests that the amount of data and resources of the researcher will likely impact his or her decision to code manually or through the use of a computer. Ryan & Bernard (2003) propose that the researcher can use both manual and computer-assisted coding methods.

I decided to code my data manually. I am a visceral learner, and I felt as though a manual approach to coding would likely stimulate meaningful insights about my data, which would enhance the analysis process. I used a combination of post-it notes and highlighter pens to note elements of the data that I found interesting, primarily in relation to my research questions. I coded large segments of data as well as short phrases or sentences, a technique referred to as 'lumping and splitting' (Malterud, 2012). I also assigned some segments or chunks of data with multiple codes, an acceptable strategy in qualitative research (Elliott, 2018). I also used both 'level 1' and 'level 2' codes, depending on my interpretation of meaningful data.

I created a codebook to ensure that the meaning I assigned to codes was applied consistently. There are different approaches and guidelines for what to include in a codebook (Decuir-Gunby et. al, 2011); there arguably has to be more detail in a codebook when there are multiple coders analysing data. However, due to my manual approach to coding, I decided that a definition for each code was sufficient, especially as I continued to review the meaning assigned to each one during the process of coding the entire data corpus. If I wanted to assign a code that was already in the codebook, I would revisit the meaning that had already been allocated to that code to determine if it captured what I perceived to be significant in the data. For example, my initial definition for the code 'Age' was that it represented the interviewee's perception that the age of the student may influence their enjoyment of and reaction to CBPA. However, as I re-read the data, I replaced this code with 'Older Children Dislike CBPA', as I perceived this to be a more accurate representation of this data. I kept the code 'Age' to signify the idea that the teacher may have to conduct CBPA differently based on the age of the student. An extract from my codebook can be found in at the end of this chapter (Figure 4).

After coding the entire data corpus, I read it again with the intent of reviewing my initial set of codes to determine their applicability. I followed the advice provided by Nowell et al. (2017, p.6) and tried to ensure that my codes had 'explicit boundaries' and were 'not interchangeable or redundant'. Thus, I collated many of the codes if they did not capture a meaningful aspect of my data individually. For example, I collated the code 'Traditional Instruction Boring' with 'PALs More Enjoyable', as they both represented the perception of interviewees that elementary students enjoy PALs more than seated or lecture-based instruction. I also discarded many of the codes that I did not perceive to be prevalent enough in the entire dataset. Lastly, I carefully re-read chunks of data that were assigned

multiple codes and followed the advice of Creswell (2015, p.160) in considering my perception of 'the main idea being conveyed' by the research participant (and subsequently identified one code for that chunk of data).

It is important to state that an individual's interpretation of meaning from qualitative data could proceed (and change) indefinitely (King, 2004). Braun & Clarke (2006) suggest that a researcher should stop this process once it is not generating new insights about the data. After a significant amount of time reviewing the data, coding, generating a codebook, and revising definitions in that codebook, I decided that I would begin to utilize these codes to identify candidate themes in my data. However, I proceeded with the understanding that revising codes and the codebook could still be done in later stages of the analysis (ibid). The final stage of this process was to ensure that each code had all of the data extracts that I had assigned to that code, which would be important for the next phase of using my codes and those coded extracts to generate themes.

*Generating Candidate Themes*

There are a variety of approaches to generating themes from qualitative data (Ryan & Bernard, 2003). Ryan, Coughlin, & Cronin (2007, p.742) state that 'some researchers use generic data analysis tools whereas others use less structured and more creative approaches'. As with the development of codes, themes are often determined by the researcher's 'judgement' (Braun & Clarke, 2006, p.82). However, Vaismoradi et al. (2016, p.102) suggest that certain methods of developing themes are effective only under 'some conditions…[and] their nature and the way in which they are generated varies between different qualitative approaches'. Whatever techniques the researcher employs to generate themes, it is important that he or she is transparent about the criteria for thematic development (Braun & Clarke, 2006). It is critical that this process 'is described in sufficient detail to enable the reader to judge whether the final outcome is rooted in the data generated' (Ryan et al., 2007, p.742). This enhances the rigor of the research findings (ibid).

Before determining the criteria for thematic development, Braun & Clarke (2006, p.83) state that the researcher 'must determine the type of analysis' they want to do, and the 'claims' they want to make 'in relation to…[their] data set'. As stated previously, there is no 'hard and fast rule' concerning what makes a theme (Maguire & Delahunt, 2017, p.3356). The researcher must decide what they perceive to be 'significant' in the data

(ibid); this is usually in relation to his or her research questions. There are different ideas concerning the 'proportion' of data that 'needs to display evidence of a theme for it to be considered a theme' (Braun & Clarke, 2006, p.82). Sandelowski (2001, p.231) states that 'pattern recognition implies seeing something over and over again in one case or across a selection of cases'. In other literature, Meehan, Vermeer, & Windsor (2000, p.372) identify themes as being those topics discussed by 'many participants', whereas Braun, Gavey, & McPhilllips (2003, p.49) consider a theme to be prevalent enough if represented by a 'number of participants'. Nowell et al. (2017, p.9) state that themes should 'capture a set of ideas contained in numerous text segments'. Braun & Clarke (2006, p.82) add that the 'keyness' of a theme is not necessarily dependent on quantifiable measures – but rather on whether or not to capture something important in relation to the overall research question' (ibid).

A primary objective of this research was to learn more about research participants' views concerning the inclusion of CBPA in an ETTP and what could be done to improve their ability to incorporate CBPA successfully. This information could inform the planning and inclusion of CBPA in future classes at this university. Based on these research objectives, I decided that it was appropriate to identify themes that represented the 'voice' of a significant number of research participants. I believed that this was important if the outcomes of this research were to be meaningful in assisting both myself and other instructors at this university with the planning and delivery of future classes for PCTs. In essence, the themes needed to represent a reasonably significant portion of the collective opinions of current and previous students, if they are to be considered meaningful enough to shape the experiences of future students. However, as I interviewed both PCTs and CTs, I acknowledged that CTs would likely have different perspectives when compared to PCTs, due to their teaching experience in public schools. Hence, I believed that it was reasonable that a theme could potentially still be 'justified' if it was not represented across a majority of the dataset yet captured a meaningful concept in relation to my research questions.

Braun & Clarke (2006, p.89) suggest that once all codes have been identified, collated, and reviewed, the researcher should 'consider how different codes may combine to form overarching themes'. Following this advice, I organized my codes into groups of potential themes. This involved writing each code on an index card, and then experimenting with how the various codes may be related in ways that may have formed a theme. This method of theme development is similar to the 'cutting and sorting' approach advocated by Ryan &

Bernard (2003). True to the spirit of inductive thematic analysis, I considered the potential for both descriptive and interpretive themes, depending on my interpretation of the data. And while I remained open to all potential meaning in the data, I primarily focused on developing themes related to research questions. This process required placing the codes together into different thematic piles and constantly rearranging them to form different themes, which Yin (2016, p.187) refers to as ‘dissembling and re-assembling data’. Consistent with the notion that data analysis is ‘iterative’, I spent a significant amount of time identifying and reviewing potential themes. I eventually identified five ‘candidate’ themes related to my research questions.

Theme 1, ‘Improves academic-related outcomes’, represented the idea that both PCTs and CTs viewed CBPA as a valuable practice, suggesting that it could enhance a variety of aspects related to teaching and learning. This was a very descriptive theme; it was clear that research participants perceived PALs as effective pedagogical practice, and that ABs could help elementary students expend energy, improve their focus, and reduce behaviour issues in the classroom.

Theme 2, ‘Impact of Directed Teaching and Clinical Placements’, represented the influence of these experiences on research participants’ knowledge and self-efficacy towards the implementation of CBPA. Both CTs and PCTs discussed how these experiences conveyed to them how much elementary students enjoy CBPA, as well as its effectiveness in enhancing academic-related outcomes. CTs acknowledged that they had used ideas for CBPA that they witnessed during these experiences, and PCTs stated that they planned to use some of the activities that they had encountered. However, not all PCTs witnessed regular CBPA or had the opportunity to practice implementing it during their clinical or directed teaching placements.

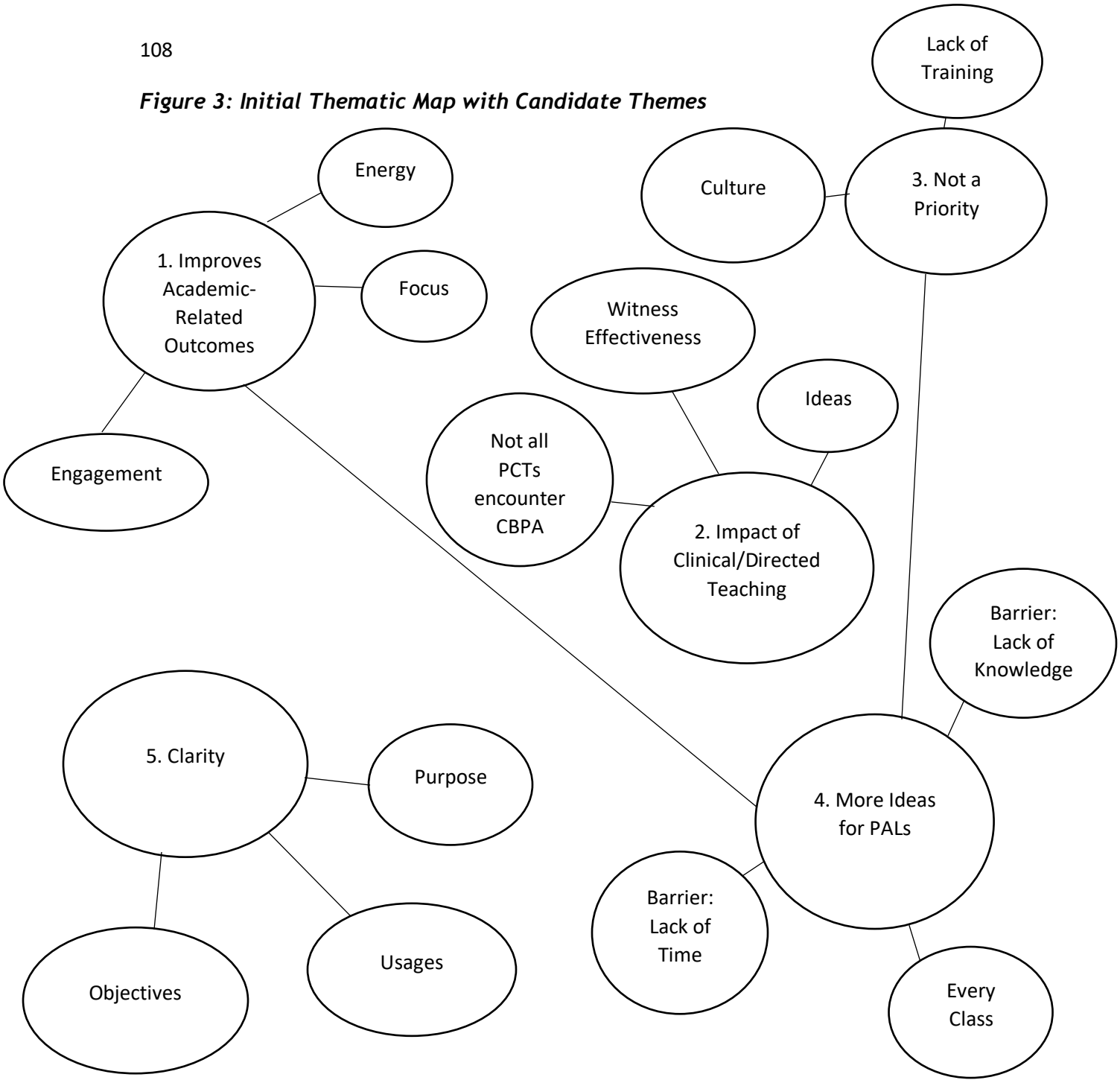
Theme 3, ‘Not a priority’, highlighted that CBPA is largely viewed as an 'ancillary' or 'optional' teaching practice by many educational stakeholders (e.g. school administration, policymakers, and some CTs). This theme was based on the sparsity of discussion and PD training opportunities about CBPA in local schools, the significant number of CTs who do not incorporate any CBPA, and the minimal coverage of CBPA in the ETTP associated with this research.

Theme 4, ‘More Ideas for PALs’, was a descriptive theme signifying that interviewees believed that there should be more emphasis in the ETTP associated with this research on providing PCTs with resources and ideas to use CBPA to teach academic concepts. This theme reiterated that research participants viewed PALs as more enjoyable and engaging for elementary students when compared to seated and lecture-based methods of instruction. theme 4 also represented a major barrier for the implementation of CBPA discussed by interviewees: that CTs are primarily judged on their ability to teach academic subjects, and would, therefore, be unlikely to sacrifice instructional time in these areas to incorporate CBPA as a stand-alone activity. Research participants suggested that ideas for PALs should be incorporated into multiple classes and that they would like to see professors physically demonstrate how to incorporate them in the classroom (instead of only explaining it verbally).

Theme 5, ‘Clarity’ (which would later become, ‘Guidance’), was an interpretive theme representing the idea that PCTs and CTs would likely benefit from further elaboration about many aspects related to CBPA. This includes the role and benefits of LPA; the affective objectives of CBPA, such as its potential to enhance the teacher-student relationship and foster positive associations with learning and school, how (or if) CBPA is different from ‘active learning strategies’, and practical steps such as how to involve students in CBPA if they do not want to participate in it. I had not fully considered these concepts before this dissertation, but I believed that they were important aspects of enhancing the knowledge and self-efficacy of PCTs and CTs towards the implementation of CBPA.

Visual representations of data are often suggested as a good strategy to assist the researcher in identifying potential relationships between codes, themes, and sub-themes (Stirling, 2001). Not only did I arrange the index cards containing codes into potential themes, I also created visual representations depicting potential themes and key concepts within those themes, as presented in Figure 3. Miles, Huberman, & Saldana (2014, p.108) state that showing visual representations can help the reader ‘re-create your intellectual journey with some confidence’. As the researcher is still generating ideas at this point, Braun & Clarke (2006, p.90) state that it is acceptable to create a ‘miscellaneous’ theme for codes that ‘do not seem to fit into…main themes.’ I had multiple ‘miscellaneous’ codes at this point in my analysis, and some of those will be discussed in the next section.

***Figure 3: Initial Thematic Map with Candidate Themes***



*Reviewing Themes*

Once 'candidate' themes have been identified by the researcher, he or she should begin the process of refining those themes (Nowell et al., 2017). This involves reviewing if there is enough data to support each candidate theme, as well as determining whether or not they need to be separated into multiple themes, or combined into one overarching theme (Braun & Clarke, 2006). Maguire & Delahunt (2017, p.3358) suggest that the researcher should ask him/herself the following questions: 'Do the themes make sense? Does the data support the themes? Am I trying to fit too much into a theme? If themes overlap, are they really separate themes? Are there themes within themes (subthemes)?

Braun & Clarke (2006, p.91) propose that there are two 'levels' of theme refinement. The first 'level' is concerned with 'reviewing themes at the level of the coded extracts'. This involves reading 'the collated [data] extracts for each theme, and consider[ing] whether they appear to form a coherent pattern'. If a theme does not appear to form a coherent pattern, the researcher needs to judge 'whether the theme itself is problematic, or whether some of the data extracts within it simply do not fit there' (ibid). The second part of this process involves contemplating 'the validity of individual themes in relation to the entire data set' (ibid, p.91). They advise the researcher to read the entire dataset in order to determine how each theme fits into the narrative emerging from the data. NowelL et al. (2017, p.9) state that themes will need to be 'refined into themes that are specific enough to be discrete and broad enough to capture a set of ideas contained in numerous text segments'. At the end of this phase, Braun & Clarke suggest that the researcher should have a 'fairly good idea of what different themes are, how they fit together, and the overall story they tell about the data' (ibid).

I spent a significant amount of time examining the validity of my candidate themes, both at the level of the coded data extracts and in relation to the overall dataset. While I believed that the themes I had identified represented meaningful patterns related to my research questions, I wasn't convinced that all of them had captured the 'essence' of certain aspects of my data. I was reasonably confident that theme 1, 'Improves Academic-Related Outcomes' and theme 4, 'More Ideas for PALs,' were strong enough to include in my final report; these were very descriptive themes, and it was clear that they were prevalent and important concepts emanating from the data. I also believed that theme 5, 'Clarity', was a valid and meaningful theme. However, I was not convinced about the validity of the remaining themes.

After reading the entire dataset again, I changed two of my candidate themes: ‘Impact of Directed Teaching and Clinical Placements’ and ‘Not a Priority’. For the theme, ‘Impact of Directed Teaching and Clinical Placements’, it was clear that PCTs, when placed with supervising teachers who incorporated CBPA, were motivated to incorporate it as a direct result of these experiences. However, it was also evident that there was a wide range of experiences concerning exposure to CBPA during PCTs’ clinical and directed teaching placements, with some research participants stating that they witnessed regular ABs and some PALs, whereas others witnessed no CBPA at all. I also became more aware of the significance of university professors who do not teach health-related classes on interviewees’ attitudes towards CBPA, and that one instructor who teaches the class that PCTs are most likely to be exposed to CBPA-related content, ‘Health and PE for the Elementary School Child’, does not cover it. Therefore, based on the potential diversity of university professors, clinical, and directed teaching placements that PCTs are likely to encounter during the ETTP associated with this research, it was clear to me that students are likely to have different experiences concerning CBPA during this time. I believed that this was a significant theme, especially as one of my research questions was to learn more about the inclusion of CBPA in this ETTP.

After considerable reflection about the scope and validity of the theme, ‘Not a priority’, as well as reviewing some of my miscellaneous codes, I decided to change this theme to ‘Culture’. This new theme included the coded extracts of ‘Lesson Plans’, ‘Routine’, and ‘Introduced early’, which I knew were significant but, until that point, was unsure where they fit into the narrative of my data. This new theme represented that CTs who want to make CBPA a regular aspect of their classroom practices need to commit to doing so (based on the likelihood that they won’t be encouraged to do it or be provided with appropriate PD training), and this requires implementing practical steps to demonstrate its value to both students and themselves as teachers. This theme ultimately represented a goal of my research, which was to learn more about approaches and strategies to present CBPA to PCTs (and CTs) to enhance the likelihood of its implementation in local schools.

*Defining and Naming Themes*

Braun & Clarke (2006, p.92) suggest that at this point in the analysis the researcher should be able to identify ‘the essence of what each theme is about’. They also urge researchers conducting a thematic analysis against paraphrasing ‘the content of the extracts presented’. For each theme, it is important to write a detailed analysis concerning what is

interesting about it and why (Nowell et al., 2017). The researcher should also consider each theme in relation to the other themes (Braun & Clarke, 2006), and how each is related to the story of the entire dataset (ibid). King (2004) proposes that themes may be shared with individuals who possess knowledge in the content area to see if they perceive them to be clear. This was an impetus for my peer debriefing report, which is provided at the end of this chapter.

After reviewing my data set, I believed that the title and description of my themes represented what I perceived to be meaningful about them, with the exception of theme 3, 'More Ideas for PALs'. I changed this title to 'Core Subjects' because I felt that it represented the 'essence' of this theme. As stated previously, the 'Core' subjects of elementary education in the U.S. are maths, science, and ELA; these are the subjects that students are tested on by the state. This change was made after re-reading the entire data set and recognizing that both CTs and PCTs wanted more specific ideas on how to teach these specific subjects. I also changed the title of theme 5 to 'Guidance' after my peer debriefing, which I will discuss at the end of this chapter.

**Part Two**

*Presentation of Data*

I will now provide a detailed description of the themes generated by my analysis. I have explained the impetus for these themes already, highlighting why they became meaningful concepts in my research. The focus of this section is to provide a comprehensive account of each theme, embedding quotes from research participants to provide credible evidence that the themes emanated from the data for this research. I will also describe how each theme relates to others within the overall framework of my research.

*Theme 1: Improves Academic-Related Outcomes*

The outcomes of this dissertation suggest that both PCTs and CTs who have experiences in the ETTP associated with this research view CBPA as a beneficial and viable practice in elementary school. Research participants were generally of the opinion that ABs enable students to release energy, focus, and minimize behaviour issues in the classroom, and PALs are more engaging and effective than seated methods of instruction. Interestingly, the majority of interviewees viewed the utility of CBPA primarily to improve academic-related outcomes, with its role in providing opportunities for in-school PA for students as an ancillary benefit, if considered at all.

One of the benefits of CBPA cited by most research participants was that it provided elementary students with an opportunity to expend energy. Characteristics of elementary students included that they are often 'antsy' (CT16, CT11), 'fidgety' (PS2), 'restless' (CT9, PS6) and that they have 'tons of energy' (CT15). Relatedly, CBPA could provide an outlet for students to release this energy, and this would have a beneficial impact on their ability to focus and subsequently learn in the classroom. This point was captured by PS2, who stated the following:

> 'I think it [CBPA] is important because they need to get their energy out, you know. For them to truly learn and focus on what they are doing, they need to have some physical activity'.

The idea that CBPA helped students 'focus' (PS5, PS6, FPS9) or 'concentrate' (CT13, PS3) was a prevalent theme across many interviews (this was sometimes referred to specifically within the context of improving cognitive abilities and not necessarily on-task behaviour, which will be discussed shortly). ABs, which were often referred to as 'Brain Breaks', in particular, were considered to be useful for achieving this objective. For example, CT10, stated the following:

> 'I will have them stand up just for a couple of minutes and just like wiggle out their energies…I think if we give them the opportunity to move or have those things in place like brain breaks where they are moving their arms or jumping up and down then they become more focused in the classroom'.

Dancing to music was the most prevalent AB that interviewees had either seen or utilized in the classroom. These dance videos typically last from 3-5 minutes and are often implemented in the morning as part of a school-wide activity (usually three days a week). However, some of the CTs interviewed for this research incorporated the dances throughout the day, particularly when they sensed that students were struggling to focus and/or appeared to be disinterested with academic instruction. For example, CT11 stated that:

> 'we do [the dances] every hour, and sometimes if it's just a really hard day and their brains are struggling, we will do it more frequently, just because I can tell

> when they are starting to get antsy and they are tired of doing whatever they are doing'.

ABs are considered useful not only when students are exhibiting high levels of energy or restlessness, but also when they are lethargic, cited as being particularly apparent in the morning. For example, CT13 stated that 'in the morning when they first get here, it is like talking to a brick wall'. Subsequently, ABs are deemed to be beneficial as they 'wake [students] up' (PS3, PS4). It is worth acknowledging that the research participants who referenced the utility of ABs to combat lethargy in the morning either currently taught or were in classrooms during their clinical or directed teaching experiences with older (i.e., 4$^{th}$ and 5$^{th}$ grade) students. This suggests that CTs who work with elementary students in upper grades may have different motivations to incorporate CBPA (and may have to vary its implementation) when compared to those who teach students in lower grades (a concept which will be returned to in theme 5, 'Guidance'). It is also worth noting that despite the positive outcomes associated with ABs, a significant number of CTs in local schools in upstate SC (that interviewees were either familiar with or currently taught at) do not incorporate them regularly. The inconsistency of CBPA will be returned to in theme 2 ('Different Experiences') and theme 4 ('Culture').

There were references to cognitive benefits of CBPA, with some research participants stating that it gets children's 'blood flowing and brain working,' (PS7) or 'brain going' (FPS10). Relatedly, the interviewees who discussed these physiological outcomes associated with CBPA believed that they would help students pay attention in class and make them more likely to remember the content presented. For example, CT9 stated that 'if I keep my kids active…then they are going to be more attentive and retain the information better'. Other interviewees also alluded to the idea that CBPA would help students remember academic content, although this was primarily referenced within the context of using PALs to improve student engagement (which I will discuss shortly), as opposed to using an AB for the potential cognitive benefits associated with it.

Several interviewees stated that CBPA would likely alleviate behaviour problems in the classroom, which is likely associated with its utility in providing an outlet for students to expend energy. This point was illustrated by FPS10, who stated that:

> ‘it [CBPA] would help with behaviour too, because if you have those brain breaks, your kids are going to chill out, and then they will come back to you, once you get some energy out’.

CT13 also put forth the idea that that there are ‘definitely less behaviour problems’ in classrooms whose teachers incorporate CBPA regularly. While ABs were cited most frequently as the type of CBPA that teachers would use if they felt students were ‘restless’ or ‘fidgety’ (and potentially likely to be disruptive), off-task behaviours are also more likely to occur if students are bored or disinterested in academic instruction. Therefore, PALs could be viewed as a proactive approach to minimizing behaviour issues in the classroom. For example, CT13, when talking about a PAL, stated that ‘they had to get up and move…[and] they really enjoyed it and I didn’t have any kind of behaviour issues…it was because they were having fun, while doing it’.

Relatedly, there was almost universal consensus among research participants that PALs are an effective strategy to teach academic content to elementary students, primarily because they are engaging and enjoyable for them. If students enjoy the method of instruction, then they are more likely to remember the content that is presented to them. This was point was captured by PS1:

> ‘We are constantly told to make learning fun for students because if the learning is not fun for them, they are more than likely not going to remember it in the first place, so with the physical activity, in order for them to have fun they need that physical activity’.

CT11 also stated that ‘it [PA] makes learning fun when you can integrate into lessons.’ Examples of PALs that interviewees had either seen or used included asking students to arrange their bodies in the shape of various letters (and combining with other students to form words), performing ‘plank’ exercises to teach concepts related to time and measurement, and having students perform aerobic exercises such as jumping jacks to teach number concepts (multiplication principles, etc.). Utilizing CBPA to reinforce previously-taught concepts (as well as teach new concepts) was also referenced as a beneficial usage of it by some interviewees. For example, PS7 stated that ‘whenever I do reviews in the classroom for a test, I try to do something where they are like running, or dancing or something… [because] they remember the material better’. Relatedly, PS5

suggested that ‘when the kids are doing their tests…[you] see them doing those movements to help them remember’.

A significant number of research participants referenced the health benefits associated with PA, such as helping children maintain healthy body weight and developing healthy bones and organs. They also believed that schools should value the importance of PA and provide sufficient opportunities for students to engage in it. Several research participants also stated that CTs should be role models for their students and that they should discuss the importance of health and PA with them in the classroom (this will be returned to in theme 4, ‘culture’).

*Theme 2: Different Experiences*

This research suggests that PCTs are likely to have different experiences related to CBPA during the ETTP associated with this research. PCTs’ exposure to CBPA depend on the schools where they attend clinical or directed teaching placements (and their supervising CTs at these schools), their university professors, and, specifically, their instructor for the class, ‘Health and Physical Education for the Elementary School Child’. Subsequently, the combination of these experiences is likely to influence PCTs’ attitudes, knowledge, and self-efficacies towards CBPA.

All students are required to take two classes that, according to research participants, discuss CBPA: these classes are ‘Health and PE for the Elementary School Child’ and ‘Fine Arts in the Curriculum’. The first class, ‘Health and PE for the Elementary School Child’, is taught by multiple instructors; as a result, there were a variety of responses concerning the coverage of CBPA in this class. Some research participants stated that their instructor for this class did not discuss CBPA at all; others stated that their instructor included it in the course, but not sufficiently enough for them to feel prepared to incorporate it into their practice. This was evident during a discussion in the first group interview with PCTs, where all students had taken the class with this instructor:

> FPS1: ‘I don’t know that I have necessarily been trained how to do it here. I think I have enough background knowledge, and enough creativity myself to be able to know how to do it’;
> FPS5: ‘I think we have learned more from each other than we have technically from our professors [group members agree – ‘yeah’)’.

It is noteworthy that the majority of research participants who had taken the 'Health and PE for the Elementary School Child' class were either not exposed to CBPA-related content or did not feel adequately prepared to implement it into their practice as a result of taking this course, as this would primarily be where it is presented to PCTs. The minimal coverage of CBPA in these classes likely reinforces the notion that it has only recently emerged as a 'legitimate' teaching practice and reiterates that the majority of PCTs are unlikely to be equipped to incorporate it at the conclusion of their teacher-training program. Experiences in K-12 schools provide opportunities for PCTs to learn more about CBPA and enhance their capabilities towards its implementation, and this will be discussed shortly.

It is important to acknowledge that the many of the research participants who had taken the 'Health and Physical Education for the Elementary School Child' course with the instructor who discussed CBPA expressed that it had made them interested in learning more about it. For example, CT10 stated that:

> 'most of the classes didn't cover it [CBPA]...but [this] class really got me thinking about it…I was never taught this way, I was taught strictly by the book or by worksheets, so getting those examples and seeing the different ways to teaching was interesting'.

PS8 added that this class 'was a real big push for me…it really brought to light all these different activities…it is honestly the only class I have taken in college that has encouraged [it]'. The awareness that PCTs in the ETTP associated with this research may be surprised to learn that PA can be utilized to teach academic content reiterates that seated instruction is the dominant approach to teaching in both schools and PCT-training programs. Therefore, instructors who present CBPA to PCTs may need to challenge some of the broader assumptions about the nature of teaching and instruction. I will discuss this point in more detail in my next chapter.

PCTs are also required to take a 'Fine Arts in the Curriculum' class during the ETTP associated with this research, and the research participants who referenced this course stated that it also discusses CBPA. This class is described in the course catalogue as 'exploring both content and methods for enriching all subject areas in the elementary classroom through the visual arts, drama, dance/movement, and music' (Course documentation of relevant institution – anonymized). Based on responses from

interviewees, the part of this course that focuses on incorporating PA in the classroom frames it around its utility to make academic content more engaging and meaningful for students. For example, PS5 stated:

> ‘I know we have fine arts standards that incorporate movement and dance, and we actually took a class here about how to get those standards incorporated into math and social studies and all the other subjects so kids don’t have to sit at a desk and learn traditionally’.

As with the ‘Health and Physical Education for the Elementary School Child’ class, the general consensus from interviewees was that there was not enough time spent on CBPA to make them feel prepared to incorporate it into their future classroom practice. There is also no reference to the health benefits associated with CBPA in this class, which validates the idea that it is primarily viewed as a pedagogical strategy to improve academic-related outcomes.

A concept that emerged during interviews was the potential influence of individual professors who implement PALs and how this made research participants who had taken those classes interested in incorporating them into their practices as future teachers. This was particularly interesting because the professors who were referenced did not teach health-related classes or classes with content that would typically discuss the benefits or relevance of CBPA. However, interviewees who experienced these courses stated that they became interested in CBPA after witnessing its beneficial impact on their own learning experience, including a greater engagement in the learning process, as well as helping them remember the content that was presented. For example, CT16 stated that:

> ‘we had teachers that made us get up and do things, which was great, and I mean even as an adult, as a college student, it was great for me to get up and actually do it, instead of just talking about it.’

Based on the assumption that PCTs are likely to enjoy (and see the benefits of) participating in PA during university courses, it is sensible to suggest that promoting CBPA to them can be framed within the context of their own learning experiences and responses to prolonged periods of seated instruction (which are most likely negative). This point is also connected to an important aspect of theme 3 (‘Core subjects’), which is that students

would like more opportunities to *participate* in CBPA, instead of being simply being *told* to do it (which will be discussed shortly).

The other variable that can potentially have a significant impact on PCTs' attitudes and confidence towards implementing CBPA is the specific schools that students attend for clinical and directed teaching placements. For example, CT11 stated the following:

> 'in my first clinical placement, I was in a third grade classroom and she [the teacher] played one of the songs that I actually use [in my classroom] …and I was like "oh my gosh that is awesome", and so I just made a note…that was really cool to see the benefits [of the teacher incorporating the] music.'

It appears as though these experiences can provide impactful opportunities for PCTs to learn about the utility of CBPA, and they can, if implemented successfully, influence them to want to incorporate it when they become CTs. Additionally, some research participants who had the opportunity to conduct CBPA during their clinical or directed teaching placements suggested that this enhanced their self-efficacy with regard to incorporating it, as well as reaffirming its beneficial outcomes. For example, PS7 stated that:

> 'I got to put it (CBPA) into play during my student teaching and my confidence built with it because I actually got to do it in the classroom and see if first-hand, and I got to see how students reacted to it and [how it] affected them in the classroom.'

However, the prevalence of CBPA in these schools varies widely; a school-wide dance in the morning is common, but consistent ABs throughout the day are not widespread, and regular PALs are rare. For example, PS1 stated that 'I have heard of classrooms that incorporate physical activity, but they are very few and far between'. Others also suggested that there is 'very little' CBPA in schools (CT14) and that you 'don't really see a lot of it' (PS3). It also appears as though PCTs in the ETTP associated with this research have discussed the lack of CBPA in the schools where they attend for their clinical and directed teaching placements. For example, PS1 stated the following:

> 'Sometimes when we compare experiences we have had in clinical settings, they are very similar when it comes to the movement aspect, and when asked what they (the teachers) could do better in the classroom and what they could learn, most of them

> bring up having the kids move around and having them be interactive and engaged with movement'.

It would appear as though this quote is referring primarily to PALs due its reference to student 'engagement'. However, an important point to consider when evaluating the prevalence of CBPA in schools in upstate SC is that some research participants did not have a clear understanding of what 'counted' as PA; they were not sure if forms of LPA such as walking were vigorous enough to be considered PA. Hence, this is likely to skew their perception of how prevalent CBPA is in school classrooms, particularly LPA. This point will be returned to in theme 5 ('Guidance').

*Theme 3: Core Subjects*

The majority of research participants believed that it would be beneficial to provide PCTs with more content related to using PALs to teach 'Core' academic subjects (i.e., maths, ELA, and science) during their enrolment in the ETTP associated with this research. For example, FPS3 stated that she would like to have seen 'more ways to incorporate it [CBPA], like how I can turn a math lesson into something where they are up and doing something.' CT12 added that there should be more 'specific examples…. [of] how you can tie it [CBPA] in with your lesson…. maybe an example for each subject, so math, science [and] ELA'. The idea put forward by the interviewees who discussed this topic was that if PCTs had more ideas and resources for PALs, then they would be more likely to implement them consistently when they become CTs. This point reiterates an important aspect of theme 1; that research participants view PALs as an effective approach to teaching elementary students.

Many research participants indicated that they would like to have learned more about utilizing PALS to teach content related to the SC State Standards, specifically. For example, CT9 stated that CBPA content should be more 'focused on standards…here is how you can plan and integrate that [CBPA] in your classroom while you are trying to teach them the content'. This idea was referenced by both PCTs and CTs, although it was particularly prevalent in responses from CTs. This point likely reiterates that the practices of elementary school CTs are influenced primarily by teaching concepts related to the subjects associated with standardized testing, which is a barrier for the implementation of CBPA, particularly ABs (discussed shortly).

Several interviewees suggested that they would like to see content related to teaching PALs embedded in a variety of classes throughout the ETTP associated with this research, instead of just one class; for example, how to teach maths content in a maths class; ELA content in an ELA class, etc. This point was emphasized by FPS5, who stated that ideas and resources related to PALs should be incorporated into 'every class' and that 'we could have someone come into our literacy class and say this is how we can incorporate [it into] literacy…or say with math, this is how you can do it.' CT16 suggested that 'I think it would be beneficial to have it [CBPA] incorporated, just a little bit, in all of the classes'. PCTs typically enrol in the 'Health and Physical Education for the Elementary School Child' course at the beginning of their junior (third) year, and some of the research participants who had been introduced to CBPA during that class stated that they had likely forgotten a significant amount of the material provided in it by the time they had completed their degree. Therefore, regular reinforcement about how to incorporate PALs into different subjects would likely strengthen students' self-efficacies concerning its implementation and, perhaps more importantly, it would likely affirm CBPA as a credible pedagogical strategy, which is an important element of theme 4 ('Culture').

During the discussions about the presentation of CBPA to PCTs in the ETTP associated with this research, several research participants stated that it would be beneficial for professors to visually show them how to incorporate CBPA, instead of simply describing those activities. Relatedly, they believed that it would have been beneficial to participate in them, also. For example, FPS1 stated that 'they [professors] talk about it [CBPA]…but they don't show us how to do it'. FPS8 added that it would be been beneficial to 'actually do the activities'. CT13 added that:

> 'a lot if it [CBPA] should have been more examples of like OK, the whole class act as students…and you make them do what you want, like what you would want to see in a classroom, and that didn't happen for me'.

While it is reasonable to suggest that the majority of university students are likely to respond more favourably (and retain more of the content) during instructional approaches that involve 'doing' rather than just 'listening', this may be particularly applicable when teaching PCTs about CBPA. Theme 2 suggested that the prospect of implementing CBPA (particularly PALS) consistently may require a paradigm shift for many PCTs, particularly within the context of what they might consider 'normal' pedagogy. Therefore, it is

reasonable to propose that it would be beneficial for PCTs to participate in CBPA not only to learn more about practical aspects related to implementation (e.g., classroom management) but, perhaps more importantly, to assist them in becoming more comfortable in a classroom that involves standing, stretching, and moving around. I will discuss this in more detail in my final chapter.

While this theme strengthens the idea that research participants view CBPA as a useful component of teaching practices for elementary students (theme 1), it also highlights two barriers concerning its implementation: insufficient knowledge about how to incorporate CBPA (particularly PALs), and the pressure on CTs to cover material related to state testing in core academic subjects, which leaves little time (and perhaps energy) to incorporate CBPA that is unrelated to this objective. This point was illustrated by CT14, an in-service teacher:

> 'We are always pressed to teach the standards, and the reality is that, nowhere in the [standards] book will you find a standard that says the student has to move around…I think the biggest obstacle for me is time, figuring out where I can squeeze ten minutes in'.

PCTs also seemed to recognize that time was a barrier associated with the implementation of CBPA, with PS5 stating that 'I think time is a factor because we have 35 or 40 minutes to teach a subject, so it becomes a lot to figure out how to incorporate it (CBPA) into a certain time frame.' Time was perceived as a barrier for ABs but not for PALs, based on the perception that these forms of CBPA would not impede or restrict the CT's ability to teach academic content to students. For example, research participants from both group interviews referenced the term 'two birds with one stone,' a colloquialism that refers to doing one activity to serve two purposes. However, both of these focus groups were with PCTs, and it is important to be aware of the 'realities' of teaching PALs acknowledged in the review of literature presented in chapter two, including the additional time to get students back on task after those lessons, as well as the difficulties in aligning PALs with content that CTs are required to teach to their students. PCTs would likely not have experienced these potential issues. However, the CTs in this research did not reference these potential issues with PALs.

*Theme 4: Culture*

Although interviewees viewed CBPA favourably and indicated that they would like to learn more about how to incorporate it successfully into their classroom practice, it is predominately viewed as an 'ancillary' or 'optional' teaching practice by educational stakeholders in upstate SC. This concept is based on the absence of PD training related to CBPA for CTs, concomitant with the idea that it is rarely discussed by CTs or school administration. This point was illustrated in an exchange with CT16:

> I: 'Is there any reference to PA and incorporating it into the classroom from school administration?
> R: (pause) (quietly) not really, no
> I: Do you think there should be?
> R: I think so yeah, yeah
> I: What about fellow teachers at your school, is there any discussion about PA amongst those teachers?
> R: Not that much about PA in the classroom, no'

The idea that CBPA is not a primary concern for many CTs is strengthened by a point made by CT12, who stated the following:

> 'we have a share drive which is for the whole district, which we can go onto, and people can upload different ideas, this is what I have done for Math, this is what I have done for Science, but I haven't really noticed many things for being physically active throughout the lesson'.

It is possible (and perhaps likely) that the sparsity of PALs on shared resources for CTs is due to insufficient knowledge related to their implementation, not necessarily a lack of interest in them. Based on responses from CTs, the only significant 'encouragement' or reference to CBPA comes from PE teachers, who provide resources and ideas related to CBPA. It is generally then left up to the individual teacher to decide whether or not to implement it (with the exception of a school-wide morning dance that takes place in most schools). For example, CT11 stated that 'it is left up to us' concerning whether or not to incorporate CBPA, but that the 'PE coach…sends out videos every Friday with exercises'.

Within this context, as well acknowledging that a barrier towards the implementation of CBPA is the perception of CTs that they should devote the majority of their instructional time to teaching core academic subjects, it is plausible to suggest that CBPA would likely need to become part of the classroom 'culture' for it to be incorporated consistently. Essentially, CTs need to view CBPA as a credible and beneficial teaching practice and, *importantly*, implement certain actions that reflect this conception of CBPA. Research participants suggested that this would likely include incorporating CBPA from the beginning of the school year, providing a thorough explanation about the rationale behind its inclusion in the classroom, making CBPA a consistent aspect of the classroom routine, and incorporating it into lesson plans. This theme is titled 'culture' instead of 'teaching philosophy' to reflect the idea that in addition to the CT, it would also be beneficial for schools to value CBPA and embrace it as part of their ethos (this will be discussed in the next chapter).

The importance of implementing CBPA consistently from early in the school year was referenced by both CTs and PCTs, but it was particularly prevalent in responses from CTs. For example, CT13 stated that:

> 'I think it would have been easier [to incorporate CBPA] from the beginning [of the school year] …to make it a routine…you can't come in the middle of the school year and day, "OK, we are going to do ten jumping jacks today" …they go into culture shock.'

It was also suggested by some CTs that the beginning of the school year was an appropriate time to explain teacher expectations for student behaviour during CBPA. For example, CT9 stated that 'I think you have to set it up in the beginning…and having those expectations and things…so they know what is expected of them and how to behave.' Implementing CBPA from the beginning of the school year was something that a significant number of CTs suggested as part of their intentions for the following school year. It is important to reiterate that all of the CTs interviewed for this research were first-year teachers; hence, there would likely be many changes these individuals would make during their second year based on their first 'real' experience as a CT. And while recognizing the barriers associated with the consistent implementation of CBPA throughout the school year, it is interesting that taking a more proactive approach to incorporate it was suggested by the majority of CTs; this arguably reaffirms its potential value in education. Importantly, this point also

adds further validity to the claim that most CTs are not adequately prepared to implement CBPA upon the conclusion of their university teacher-training program (theme 2). However, learning more about CBPA during their first year teaching can motivate CTs to want to take a more proactive approach to implement it consistently during subsequent years.

The importance of implementing CBPA from the beginning of the school year is related to an important aspect of theme 2, which is that it is not a prevalent practice in individual classrooms in upstate SC. Subsequently, if elementary students are not familiar with CBPA, then they may not understand its role or purpose. For example, they could view it as a punitive measure by the CT, based on the perception that requiring students to perform PA is often a punishment in schools and in PE classes. Therefore, introducing CBPA early in the school year provides an opportunity for CTs to explain the rationale behind its inclusion in the classroom; this can assist in helping students 'buy-in' to the benefits of CBPA.

As well as introducing CBPA to students early in the school year, interviewees also considered regular implementation to be important; this would likely reaffirm to students that it is valuable classroom practice and prepare them for regular participation in it. Below is an extract from the second focus group with PCTs:

> PSF11: 'So if you start [incorporating CBPA] at the beginning of the year and you are consistent
> PSF10: yeah consistency
> PSF9: And know what to expect
> PSF11: And it will be easier for them to do it every day'

The importance of the consistent incorporation of CBPA, instead of implementing it sporadically (i.e., when the CT perceives that students are restless or disinterested in academic instruction), was reiterated by PS4 who stated that 'from day one…you say I want my class to be physically active and we are going to do this for ten minutes every day, they are going to know the rest of the school year that it is expected.'

Relatedly, it was also suggested by some interviewees that if CBPA was included in a CT's lesson plan and/or highlighted as part of the daily schedule, then there would be a greater likelihood that the CT would implement it. For example, PS2 stated that for a teacher to regularly incorporate CBPA they must:

> ‘put it in their lesson plan…it has to be a part of the plan that you are going to do…if I don’t have that [CBPA] incorporated in there, I won’t just think, “oh we have got to do that or should I do that?”

CT13 also stated that ‘if I put it in my schedule, then they [the students] have to do it’. The importance of including CBPA in a lesson plan was framed primarily for an AB, not necessarily a PAL (as CTs would naturally include PALs in a lesson plan as it is the ‘lesson’). The idea that CTs should include ABs in their lesson plans to ensure consistent implementation arguably highlights the overwhelming focus on teaching core academic subjects in public schools. Essentially, if CTs do not make a commitment and a concerted effort to incorporate CBPA into their teaching practice, then they are likely to focus solely on how their teaching and professional competencies are viewed (i.e., how their students perform on standardized tests in core subjects). For example, CT11 stated that ‘we do not have time [to teach] what we have to teach, so you really have to make a commitment and say “no matter what, I am doing a brain break at 8:30”’.

Several interviewees asserted that it is essential for CTs to participate in CBPA to validate the importance of it to students and increase the likelihood that it becomes an accepted and valued classroom practice. For example, FPS2 stated that when teachers participate in CBPA ‘it doesn’t just look like they are making them do it, it looks like there is maybe a purpose.’ This is connected to the previous point that many students may view CBPA as a punitive activity, which would likely be alleviated if CTs also participated in it. CT10 added that being physically active with the children ‘[shows them] how being active is OK within the classroom…[and] you are the role model so you are portraying what needs to be done’. Some interviewees also suggested that if CTs participate during CBPA, then it would likely make the students more *excited* to participate in it, also. Relatedly, all of the CTs who stated that they had participated in CBPA believed that it made it a more positive and productive experience for their students (an important point presented in chapter two).

*Theme 5: Guidance*

An important objective of this research was for me (an instructor in a university teacher-training program) to learn more about effective approaches and methods to prepare and motivate PCTs to incorporate CBPA into their teaching practice. Relatedly, an interpretive theme of my analysis is that PCTs (and CTs) would benefit from more guidance about the potential objectives and application of CBPA. This includes a clearer understanding of the

role and benefits of LPA, as well as information about equipment that can be used in the classroom to promote this type of CBPA; more clarity about the guidelines for optimal CBPA, including the dose of PA most likely to achieve specific academic-related outcomes (for example, improving on-task behaviour versus enhancing cognitive function); information related to how or if certain types of CBPA are different from 'active learning strategies'; appropriate methods of resolving issues related to students who don't want to participate in CBPA; and the role of CBPA in improving the teacher-student relationship and elementary students' perceptions of school and learning. I had not considered these concepts before this dissertation, and I believe that presenting them in my classes to PCTs would likely enhance their knowledge and perceived self-efficacy towards the implementation of CBPA.

It was clear throughout this dissertation that both PCTs and CTs would benefit from clarity related to the role and significance of LPA in the classroom. Many research participants appeared to be unsure if the examples that they provided for CBPA, which often involved LPA (primarily walking), were 'legitimate' types of PA. For example, PS6 stated the following:

> 'I have seen the students get up out of their seats, but I am not sure that you would classify that as physical activity. Like if they get up and move around the room…but they are really just walking back and forth, not doing much, I guess.'

Other research participants were also unsure if similar activities would 'count' as CBPA. Uncertainty about whether or not LPA is a 'worthy' type of CBPA may suggest that research participants are unaware of the health benefits associated with LPA and reducing extended periods of sedentary behaviour. A significant number of examples of CBPA provided by research participants are considered LPA; however, there was minimal (if any) reference to health benefits associated with these activities. Theme 1 suggests that research participants are motivated to incorporate CBPA for academic-related outcomes primarily, and that may be the reason for the omission of references to the health benefits of LPA. However, based on the relatively recent emergence of LPA as a significant topic interest for health organizations, as well as the strong emphasis on children accumulating sixty minutes of *MVPA*, it is arguably more likely that PCTs and CTs fail to consider the pertinence of LPA in the elementary school classroom.

Therefore, discussing the benefits of LPA with both PCTs and CTs may help them understand that activities such as walking, standing, and stretching are 'credible' types of CBPA and encourage them to incorporate these activities more frequently. Additionally, LPA is relatively convenient and straightforward to implement and may generate fewer behaviour issues when compared to more vigorous forms of PA; hence, it may be considered a desirable and sustainable type of CBPA by CTs. Relatedly, LPA could also be conceived as an effective 'first step' towards PCTs being comfortable incorporating PA in the classroom. I will discuss these concepts, as well as emerging research on the academic-related outcomes of LPA, in my final chapter.

A concept that I was unaware of before this dissertation was the use of classroom equipment such as large rubber bands, exercise balls, and stationary bicycles to promote and facilitate CBPA. Classrooms that incorporate this type of equipment were referred to by research participants as 'active classrooms' or classrooms with 'flexible seating' where students can choose where they sit to complete their work. Research participants who had encountered this type of equipment expressed positive views about it, particularly CTs. For example, CT9, a CT at a school that uses this type of equipment, provided the following statement about it:

> 'we have seating that keeps the kids active in the classroom…exercise balls [that the students] bounce on…. jumpy bands that you can put around the bottom of the desk for kids to release their energy…a bike station desk…standing tables where [they] can balance and do [their] work at the same time….and you know, the teachers that have [these types of equipment] are like oh my gosh I want to order more'

CT13, another in-service teacher at this school, added that there are 'definitely less behaviour problems [in those classrooms] … [and the students perform] really well on end of year testing'.

Increasing awareness in PCTs about this type of equipment may be useful in motivating them to incorporate CBPA in their future classroom practice, especially as this equipment not likely to require significant work or planning from the CT and appears to achieve many of the desirable academic-related outcomes presented by research participants in theme 1. As this type of equipment would likely facilitate LPA, it arguably adds further credibility to

the importance of presenting the health benefits associated with this type of CBPA to PCTs. CTs who discussed this equipment stated that they are required to receive external funding to purchase it, and they hoped to do that before the beginning of the next school year. Therefore, presenting appropriate resources to purchase this equipment is an important step in the promotion of CBPA to PCTs, also.

While it is beneficial for CTs and PCTs to recognize the benefits of LPA, they should also be aware of guidelines for optimal CBPA, particularly the duration of it and perhaps the extent to which it should be intentionally directed by the CT for it to be considered a 'legitimate' type of CBPA. It is important to reiterate that the CDC (2018, p.6) define CBPA as 'any physical activity done in the classroom', and it is generally considered that PA of any intensity 'counts' as CBPA (Webster et al, 2015). However, the CDC (2018, p.6) consider activities such as 'moving to different workstations' in the classroom as 'incidental' PA, which is not part of their definition of CBPA due 'limited evidence for this approach'. They also suggest that it is 'ideal' if CBPA lasts for a minimum of five minutes (preferably more) (ibid, p.9).

Many of examples of CBPA provided by research participants involved students 'walking around [the classroom]' (CT9) and 'roaming the classroom' (CT12) to different learning stations or to perform simple tasks (such as sharpening pencils or collecting equipment). Therefore, these types of activities, particularly those involving students walking around the classroom at their discretion (instead of being directed by the CT), would likely not be considered 'legitimate' CBPA based on the definition provided by the CDC. The remit of this dissertation isn't to provide a position stance on CBPA. However, more nuanced classifications of CBPA (for example, 'teacher-initiated' CBPA versus 'student-initiated' CBPA) would be useful when presenting it to PCTs and CTs so that they can conceptualize 'what it looks like' in their practice. However, there are currently no national guidelines or policies on CBPA and, subsequently, there are still many uncertainties about some of the finer details related to its implementation.

Another important step in providing PCTs and CTs with the knowledge to utilize CBPA optimally is clarity about the dose of CBPA (frequency, type, duration, and intensity) to achieve various academic-related outcomes. There were a variety of types of CBPA provided by research participants, ranging from MPA such as jogging in place, VPA such as jumping jacks and dancing, LPA such as stretching and walking, and muscle- and bone-

strengthening activities such as push-ups and planks. However, research participants rarely discussed the dose of CBPA that they believed was required to achieve their desired outcomes. Generally, the type of PA that students enjoyed, its applicability to the content taught in PALs, and more vigorous forms of intensity designed to expend student energy or improve the focus of students, were the only discernible criteria for the specific nature of CBPA chosen by the individual. It is logical to suggest that PCTs and CTs would likely benefit from a greater understanding of the types of PA most likely to produce different behavioural and cognitive benefits, as well as the different intensities and durations of CBPA to achieve these different benefits. However, as previously stated, although research in this area is emerging, there are still many uncertainties about these relationships.

I also believe that there needs to be more clarity about how or if PALs are different from 'active learning strategies'. Many of the examples of CBPA provided by research participants, such as art and craft projects, arranging bodies into different letters to spell words, moving around the room to write answers to questions on post-it notes, etc., are synonymous with these approaches to teaching, and, as discussed previously, they are likely intended to enrich the learning process for elementary students by incorporating movement, not to increase minutes of PA (theme 1). Therefore, a logical question to pose is: how are PALs different from other approaches in education that use movement to teach academic concepts? And if they are not, is the promotion of PALs really necessary or worthwhile?

Transparency about this topic would help PCTs and CTs conceptualize CBPA and guide considerations towards its representation in university teacher-teacher training programs. For example, this would help determine how or if CBPA should be included in the 'Fine Arts in the Curriculum' class, where an important objective is to enrich the learning process for students through a variety of activities, including movement. Greater clarity towards the distinct role of CBPA in elementary school classrooms could also enable greater collaboration between professors and administrators to ensure the consistent coverage of it in such programs. I will discuss this in more detail in my final chapter.

There also needs to be more information provided to CTs concerning best practices when encountering students who do not enjoy CBPA, and this needs to be considered against the backdrop of to what extent CBPA is designed to foster positive associations with PA in children (an important objective of PE). The general perception by research participants

was that the majority of elementary students enjoy CBPA. This was also alluded to in theme 1, largely based on the idea that elementary students tend not to enjoy sitting and listening for long periods of time and usually embrace the opportunity to participate in PALs. There was also a similar theme in relation to ABs, with interviewees suggesting that the majority of students enjoy participating in them. For example, CT16 stated that her students get 'really excited [during ABs] …it is not a case of if they want to do one, it is how many do you want to do'. PS6 also stated that the students she has encountered 'love' ABs.

However, research participants stated that not all students enjoy CBPA, particularly older elementary students. For example, PS4, who attended a 5th-grade classroom for his clinical placement, stated that 'half the class participates [in CBPA], while the other half don't. I don't know if they are embarrassed [or not]'. CT13, a CT also in the 5th grade, stated that 'we have dance on the TV on Monday, Wednesday, and Friday, but my kids hate it, they absolutely despise it.' There were various responses from research participants concerning how teachers typically handle these types of situation: some teachers required all students to perform CBPA; others provided students with options to perform a different type of CBPA; and some allowed students not to participate in CBPA at all. A variety of factors are likely to influence student attitudes towards CBPA, such as the personality of the student, the type of CBPA, and the teacher's attitude and conduct during the CBPA (discussed in theme 4). However, it is logical to suggest that older elementary children are likely to be more self-conscious when being physically active around their peers when compared to students in younger grades. Therefore, CTs and PCTs would likely benefit from more guidance concerning appropriate courses of action in these situations.

Finally, I believe that affective usages of CBPA, particularly its role in improving the teacher-student relationship and developing positive associations within school and learning environments for elementary students, should be an important concept when presenting CBPA to PCTs and CTs. It was evident that many research participants, particularly CTs, cared about their students and wanted to provide them with an enjoyable classroom experience. And while it is clear that students who enjoy attending class and are fond of their teacher are more likely to be in a better position to learn, I believe that many of the CTs in this research were motivated to achieve these outcomes due to intrinsic (not extrinsic) reasons. For example, CT16 stated:

> ‘I feel like [we] bog them [students] down with too much…all of this content, it gets to be stressful, and I just don’t feel like an 8- or 9-year old should have to be stressed out about school…kids need to be kids.’

Relatedly, discussing CBPA, CT10 stated that CBPA:

> ‘gives them a chance to not think about anything other than fun…they laugh, they giggle, they get to whisper to their neighbour, they just get away from their school work.’

While research participants discussed that elementary students typically enjoy CBPA, it was seldom mentioned that it could be implemented specifically for the objectives of developing positive relationships with students and increasing their love of learning. After becoming more aware that many CTs are likely to care about their students and want to create a positive learning environment for them, I believe that PCTs may be more motivated to incorporate CBPA for these reasons. Subsequently, I think that using CBPA for affective purposes needs to play a greater role in its overall promotion within schools.

*Peer Debriefing*

Generating meaning from qualitative data is subjective and significantly influenced by the researcher who performs it. Explicit recognition of positionality and bias can help researchers understand how they have consciously and subconsciously influenced the outcomes of their research. It is also accepted (and often desirable) practice for qualitative researchers to discuss their research with other people to gain additional perspectives about it; one of the names for this process is ‘peer debriefing’ (Hail, Hurst, & Camp, 2011). An appropriate peer is someone who is ‘not an immediate stakeholder in the outcome of a project, but who is a knowledgeable source on the topic’ (ibid, p.74). Peer debriefing provides an opportunity for researchers to present their analysis to an informed person in a related field and encourage that individual to affirm and/or challenge it’ (ibid); this process can enhance the rigor of the findings in a research study (Anney 2014).

A colleague in the PE department at the university where I work agreed to discuss my themes and how I developed them. I had spoken to him informally about my research throughout its entirety, so he appeared to be an appropriate peer for this aspect of my research. We agreed to meet on the university campus at a time that was convenient for

both of us. Before our meeting, I sent him a document with my codes and themes (Table 4), a description of my themes (Table 5), my research questions, and sufficient contextual information about my research for him to provide me with meaningful feedback about its outcomes. I was excited (and nervous) to discuss my findings with someone knowledgeable in this field. I wanted to use this opportunity as a platform to be critical about my assumptions and interpretations about my data and, relatedly, to arrive at a greater understanding of it.

I reiterated the aims and objectives of my research at the beginning of our meeting (as well as important contextual factors), and we proceeded to discuss each theme and related codes, as well as how they were related to the narrative of my data. Overall, my colleague believed that my themes were logical, supported by data, and represented meaningful concepts related to my research questions. Our discussion often moved to other concepts and points related to my themes, often associated with his experiences over twenty-five years in the PE field. For example, he also believed that CTs generally view CBPA as a beneficial teaching practice, and he questioned why it is not a more prominent aspect of teaching in elementary schools. We also discussed the importance of a paradigm shift from classrooms as places of seated instruction to a more student-oriented and 'active learning' environment.

My colleague also challenged me to consider the appropriateness of some aspects of my research findings. For example, he stated that he thought my final theme, 'Clarity', was ambiguous. I explained to him that this was an interpretive theme representing my perception that more clarity about a variety of aspects related to CBPA would likely enhance the knowledge and self-efficacy of PCTs and CTS towards implementing it. However, after some significant discussion about the nature of this theme, I changed the title of it to 'Guidance'. My colleague and I believed that this was a much more accurate term for this theme based on the codes that were associated with it. Essentially, it represented that PCTs in the ETTP associated with this research would benefit from more guidance about aspects related to the different objectives of CBPA, the various ways it can be incorporated into teaching practices, and the most efficient type, duration, and intensity of CBPA depending on its desired objective. We discussed labelling the title of this theme 'Best Practices', which, in education, typically represents the best way of doing something.

**Table 4: Codes and Themes**

| **Improves Academic-Related Outcomes** | **Different Experiences** | **Core Subjects** | **Culture** | **Guidance** |
|---|---|---|---|---|
| Get Energy Out | Not Common | More Examples | No Training | Incentives |
| PALS more Enjoyable | Basic Introduction | Testing | Teacher Philosophy | Kinaesthetic Teaching? |
| Improves Behaviour | Upstate Professors | Multiple Classes | Lesson Plan | Age |
| Focus | No mention | Judged On Academics | Commitment | What Counts? |
| Positive Feelings | Prepared | Standards | Benefits | Sedentary? |
| PA Ancillary | Movement Encouraged | Show Us How | No Discussion | Older Students Don't Enjoy CBPA |
| Remember Material | Motivated By Clinical | Lack of Knowledge | Schedule | CBPA? |
| Wakes Them Up | Equipment | Lack of Time | Know What To Expect | Dose? |
| Testing | Fine Arts | Wasn't Enough | Introduce Early | PE Teacher |
| Judged on Academics | School District | Resources | Teacher Participation | Affective Role |
| | Cooperating Teachers | PALS More Enjoyable | Not Used To It | Less Than One Minute |
| | Partially Prepared | | | LPA |
| | ABs Common | | | Intent |
| | PALs Not Common | | | Initiated by Student |
| | | | | Equipment |

**Table 5: Description of Themes**

| Description of each theme |
|---|
| **Theme 1: Improves Academic-Related Outcomes:** Research participants primarily viewed Classroom-Based Physical Activity (CBPA) as a practice to improve factors related to academic success for elementary students, including increasing on-task behaviour, minimizing disruptive behaviours, and making classroom instruction more enjoyable and effective. |
| **Theme 2: Different Experiences:** Pre-service teachers have different experiences related to CBPA during their enrolment in the ETTP associated with this research. The level of exposure they have to CBPA depends on their clinical and directed teaching placements in local schools and their university professors. |
| **Theme 3: Core Subjects:** Research participants believe that there should be more of an emphasis on using CBPA to teach concepts related to the 'Core' academic subjects of maths, ELA, and science in the ETTP associated with this research. |
| **Theme 4: Culture:** Teachers and school administrators must view CBPA as a credible and beneficial teaching practice if it is to be incorporated consistently in elementary schools. |
| **Theme 5: Guidance:** Pre-service classroom teachers and In-service classroom teachers would benefit from more guidance relating to the potential objectives and implementation of CBPA. |

Although this was related to certain aspects of this theme, I didn't believe it incorporated the importance of providing PCTs with more guidance about the broader purposes of CBPA, such as the nature of its role in education.

After this change, we discussed whether or not some of the codes from theme 4, 'Culture', could be applied to theme 5, particularly those that involved practical aspects related to the implementation of CBPA, such as incorporating it in lesson plans and introducing it from the beginning of the school year. However, I believed that the most pertinent element of these codes was that they represented the importance of CTs *committing* to incorporate CBPA, which is a meaningful concept based on the idea that they are not usually *required* (or even encouraged) to implement it and, therefore, they must value its role in the classroom and adopt a proactive approach to ensuring it is a consistent feature of their practice. My colleague accepted the differences in themes 4 and 5 (and related codes), and agreed that it was appropriate to keep them as they were.

This process of taking to a colleague about my research not only provided me with a greater understanding of my themes, but it also generated a number of ideas and questions about how my research was related to other important practices concerning CBPA. For example, during our discussion about theme 4, and the idea that CTs should include CBPA into their lesson plans to enhance the likelihood of its implementation, my colleague suggested that adding an additional column would be a simple step to encourage them to do this (which I plan to incorporate into my future presentation of CBPA to PCTs). We also discussed the important role of PE teachers in efforts towards the successful implementation of CBPA, and how they can provide CTs with ideas and activities for it. This is a focus of my post-doctoral research and is discussed in my final chapter.

## Conclusion

Research participants in this study generally have positive attitudes towards CBPA, perceiving it primarily as a strategy to enhance academic-related outcomes. However, CTs are likely required to make a concerted effort to implement CBPA (particularly ABs) consistently due to the perception that they must prioritize classroom time for academic instruction in subjects associated with state testing. PALs can potentially provide PA to elementary students and teach them academic concepts in those subject areas, and research participants expressed a strong interest in learning more about this pedagogy. University teacher-training programs appear to be well-positioned to prepare PCTs to implement PALs and motivate them to incorporate CBPA into their teaching practice; this concept is discussed in more detail in the next chapter. The next chapter will also discuss other major findings of this study in relation to my review of literature on CBPA and the theories that guided my interview and research questions.

**Figure 4: Final Thematic Map**

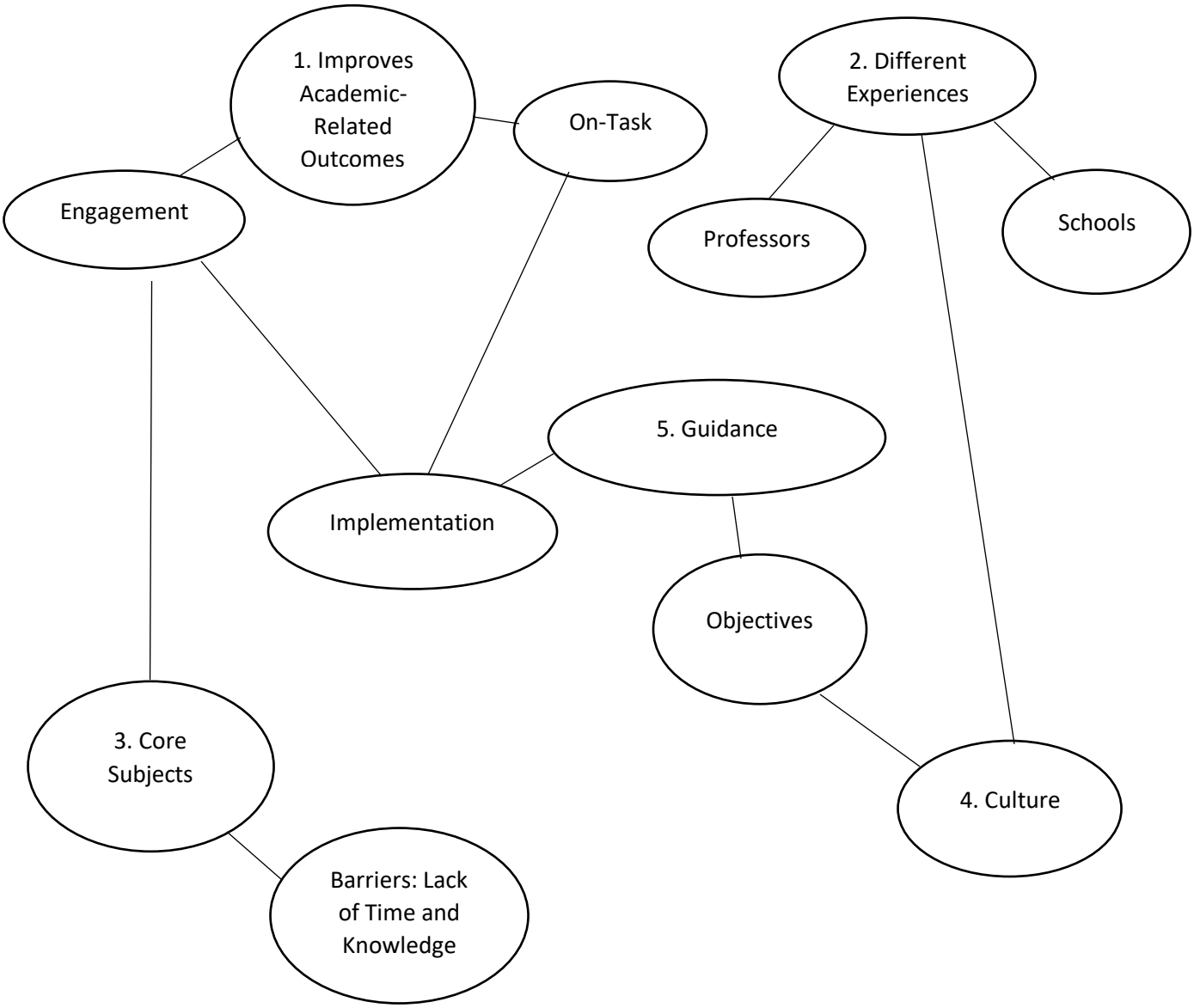


**Figure 5: Extract from Codebook**

**More Examples:** Research participant would have liked more examples of PALs during the ETTP

**Testing:** Elementary teachers prioritize teaching core subjects associated with state testing (Maths, Language Arts, and Science)

**Standards:** more focus on using PALs to teach standards related to core academic subjects in the ETTP

**Show us how:** Interviewees would like professors to physically demonstrate how to use CBPA to teach core academic subjects

**Wasn't enough:** belief that there isn't enough discussion of the benefits of PALs in the ETTP

**Resources:** research participant would have benefited from more resources for PALs during their time in the ETTP

**Kinaesthetic teaching:** Many examples of CBPA provided by research participants are synonymous with kinaesthetic teaching or active learning strategies

**LPA common:** Many examples of CBPA provided by research participants are LPA (e.g. walking between learning stations)

**Positive feelings:** CBPA can lead to positive perceptions of learning and school in elementary students

**Physically Active Lessons (PALs) more enjoyable:** students enjoy classroom instruction that involves physical activity

**Not common:** little or no CBPA in schools where students attend for clinical or directed teaching placements

**Improves relationship:** teachers who implement regular CBPA are likely to have better relationship with their students

**Motivated by clinical:** student was motivated to use CBPA after seeing it during their clinical or directed teaching placement

**Equipment:** Some schools use equipment to facilitate CBPA, such as rubber bands, medicine balls, stationary bicycles, etc.

**Remember Material:** Elementary students are more likely to remember academic content presented through PALs compared to lecture-based instruction

**Wakes them up:** ABs can make elementary students more alert, especially when implemented in the morning

## Chapter Five: Discussion

### *Organization of Chapter*

The purpose of this chapter is to discuss the results of my research, examining them against the backdrop of my review of literature on CBPA and the theories that guided my interview and research questions. First, I will provide commentary on the tension associated with framing CBPA to increase in-school PA when most CTs and PCTs perceive it as a strategy to primarily achieve academic (not health) outcomes. Second, I will discuss the potential of university teacher-training programs to foster positive attitudes towards CBPA in PCTs and motivate them to incorporate it once they become CTs; I will pay particular attention to the importance of providing opportunities for PCTs to observe demonstrations of CBPA and practice implementing it both in university courses and in schools. Third, I will present some of the developments in research and policy that are likely to provide greater clarity about the role and implementation of CBPA in elementary schools. I plan to contribute to these as part of my role as a faculty member in a university teacher-training program, a point which I will discuss in more detail in my final chapter.

### *Tension Associated with Framing Classroom-Based Physical Activity as a Strategy to Increase In-School Physical Activity*

A significant finding of this study is that research participants rarely framed CBPA within the context of improving or maintaining student health and enhancing in-school PA; the focus was overwhelmingly on the academic-related outcomes positively associated with it (Theme 1). Similar perceptions of CBPA are presented in my review of literature, with the majority of CTs in those studies conceptualizing CBPA as a strategy to minimize behaviour issues and improve student attention (Dinkel et al., 2017; McMullen et al., 2014; Stylianou et al., 2016). Utilizing CBPA to achieve *academic* and not *health* outcomes is significant as the impetus for CBPA, particularly within the context of the Comprehensive School Physical Activity Plan (CSPAP) outlined in Chapter One, is to increase in-school PA due to the health-related benefits associated with it.

A significant finding from my review of literature is that health organizations who champion CBPA recognize the importance of demonstrating its contribution to academic learning if it is to become a prevalent and accepted practice in elementary schools. However, the intended outcome of CBPA (whether it is health or academic) is likely to impact how it is presented and delivered to elementary students, as well as its overall promotion in schools. For example, CBPA implemented to achieve health benefits may likely include more vigorous forms of PA (and/or last for longer durations) when compared to CBPA which is

intended to foster academic-related outcomes. This is an important aspect to consider because many examples of CBPA provided by research participants in this study are LPA (e.g. walking) and conducted for short durations (theme 5). While Chapter One acknowledges the health benefits that are potentially associated with LPA, it should also be acknowledged that moderate-to-vigorous PA is optimal for improving and maintain health in children and teenagers.

Additionally, it is plausible that CTs are more likely to participate in CBPA if they perceive it as possessing the potential to improve their own health status (Chen et al., 2019). This is a significant factor, as research participants in this study suggested that elementary students are more likely to enjoy CBPA if their teacher also participates in the activity (theme 4). Relatedly, studies presented in my review of literature associate teacher participation during CBPA with increased levels of PA in students (Ernst & Pangrazzi, 1999). It is important to reiterate that although CBPA can provide a dose of PA sufficient to improve health, there are still many questions and uncertainties about the feasibility of implementing it consistently enough to *significantly* impact the health of elementary students.

Teacher Socialization Theory (TST) is concerned with how teachers perceive the roles and values associated with the teaching profession. TST underpinned my interest in learning more about PCTs' and CTs' perceptions concerning the responsibility of elementary teachers to improve the health of their students, particularly in assisting them to accrue PA during school hours. While most research participants are aware of the health benefits associated with PA and stated that CTs should promote the importance of such health-related behaviours to their students, they do not appear to believe that improving the health of their students is one of the *primary* roles of an elementary school teacher. Prioritizing classroom instruction for subjects associated with state testing (i.e., maths, ELA, and science) was cited consistently as the main responsibility of an elementary classroom teacher; this is also a prominent theme in my review of the literature (Gately et al., 2013; Stylianou et al., 2016).

The emphasis on improving student competencies in the core academic subjects of maths, ELA, and science reflects national (and transnational) neoliberal policies that promote the importance of these content areas due to their association with the skills that are considered necessary to compete for jobs in a global market (discussed in chapter one).

This rhetoric is so pervasive in education that CTs and PCTs may find it difficult to consider other meaningful objectives associated with the education process, such as improving the health of their students. To illustrate this point, even an explicit health-related behaviour such as PA was interpreted by research participants through the lens of its contribution to academic learning (it is also likely that a dearth of discussion about the health benefits associated with CBPA reflect the insufficient coverage of health content in PCT-training programs, a point which I will return to shortly). Theme 4 ('Culture') suggests that CTs need to make a concerted effort to implement a health-related behaviour such as CBPA (particularly ABs) consistently, highlighting the current emphasis on utilizing classroom time for academic instruction in elementary schools.

An alternative conception of education that prioritizes improving the health of elementary students (and in which the CT is likely required to play a prominent role) aligns with Martha Nussbaum's CA that was presented in Chapter One. The CA asserts that schools have an important role in developing physical health and fitness in children. This is arguably more pertinent now than ever before due to some of the contemporary health issues affecting children and adolescents in the U.S. (such as childhood obesity). If university teacher-training programs (and PD training for CTs) included more content related to the health benefits of CBPA and, perhaps more pertinently, stressed the important role of CTs in improving the health of elementary students, then perhaps the impetus for CBPA would be perceived and presented differently (which is likely to impact the type of CBPA delivered to students). This point was presented in my review of literature in the study by Goh et al. (2013), who found that PCTs became more conscious of their role in improving the health of students after participating in a PE infusion program. Relatedly, it is interesting that the health benefits associated with CBPA were discussed more during group interviews with PCTs in this study when compared to individual interviews. This may suggest that while PCTs are not naturally inclined to assume that they have a responsibility to improve the physical health of their students by contributing to their daily PA, being privy to discussions about it may result in a greater awareness and consideration of their potential role in doing so.

If PCTs are more aware of the scope of their role in improving student health, then they may be more likely to adopt CBPA as part of their teaching practice. The study by Cothran et al. (2010) presented in my review of literature highlighted that CTs who prioritize their student's holistic development (i.e. not just their academic progress) are more likely to

implement CBPA when compared to those who are focused primarily on the academic achievement of their students. Based on these insights, I plan to incorporate more content related to the professional identity of teachers (in particular, the importance of contributing to elementary students' health and wellbeing) into my presentation of CBPA to PCTs, a point which I will discuss in my final chapter.

*Potential of Teacher-Training Programs to Foster Positive Attitudes Towards Classroom-Based Physical Activity*

A significant theme identified from my review of literature (and evident throughout this research) is the importance of university teacher-training programs to enhance the status of CBPA. The sparsity of literature on this topic underpinned my desire to learn more about the representation of CBPA in the university teacher-training program associated with this research, which theme 2 suggests is minimal and inconsistent. PCTs who graduate from this program are unlikely to possess the necessary skills to implement CBPA effectively and consistently once they become CTs. However, the findings of this research suggest that university teacher-training programs have the potential to foster positive attitudes in PCTs' towards CBPA and *motivate* them to incorporate it into their teaching once they become CTs. This is significant based on the premise of The Health Belief Model, which advocates that attitudes influence a person's behaviour. CTs have some autonomy in determining their teaching practices, so their attitudes towards CBPA are likely to have some influence on whether or not they opt to implement it.

Many PCTs who observed a CT implement CBPA during a clinical or directed teaching placement developed favourable attitudes towards it; this was based on their perception that students both enjoyed it (theme 5) and were more engaged during the activity than when receiving seated instruction (theme 1). This concept aligns with the premise of Social Learning Theory (SLT), which states that a person may want to adopt a new behaviour when they see it modelled by others and it produces beneficial outcomes. Research participants also discussed how they became interested in learning more about CBPA when they encountered instructors who implemented it during university courses (theme 3) and experienced similar positive outcomes to those perceived to be evident in elementary students. The impact of PCTs witnessing educational stakeholders model CBPA, particularly PALs, suggests that it is still a relatively uncommon teaching practice and, relatedly, that PCTs need to see it visually implemented to fully comprehend its role and use in a classroom setting. I will return to this point later in this chapter.

It is important to acknowledge that not all research participants had positive experiences when they observed CTs model CBPA, particularly those who encountered it in elementary classrooms with students in higher grades. Some research participants stated that the students did not enjoy CBPA and were often reluctant to participate in it, particularly ABs such as dancing (theme 5). Therefore, it is possible that PCTs who witness CBPA in these settings may actually develop negative attitudes towards it due to these experiences.

It is also pertinent to consider other contextual factors that might impact the attitudes of PCTs towards CBPA when they encounter it during their clinical or directed teaching experience. For example, it is plausible to suggest that inexperienced CTs who implement CBPA may encounter issues related to classroom management, a perceived barrier to implementation cited in both my review of literature and by some of the research participants in this study. It is also important to consider the ways in which CBPA is presented to elementary students in clinical or directed teaching placements, and how this might impact PCTs' perceptions of it. If CTs do not frame CBPA as an activity to improve health and enhance in-school PA, then PCTs may perceive it as a means to enhance academic-related outcomes only (which could be problematic based on the previous discussions in this chapter). Regardless of PCTs' experiences related to CBPA during directed teaching or clinical placements, discussing them in university courses is likely to be a useful strategy in educating them on a variety of aspects related to CBPA; this is something that I plan to incorporate into my professional practice and that will be discussed in more detail in my final chapter.

While university teacher-training programs appear to be an appropriate and useful setting to promote the benefits of CBPA to PCTs, my review of literature advocated for programs to provide opportunities for PCTs to *implement* CBPA if it is to become a prevalent practice in schools (Webster, 2011). The findings of this study suggest that university teacher-training programs are well-positioned to provide such experiences and, importantly, that this may enhance PCTs' confidence in implementing CBPA (theme 2). This concept aligns with Self-Efficacy Theory, which promotes that a person is more likely to perform a behaviour if they perceive that they can do so successfully. 'Mastery' experiences (when people have success executing a behaviour) appear to have a particularly meaningful impact on the confidence of PCTs to implement CBPA, especially during their clinical or directed teaching experience. Research participants who implemented CBPA in these settings stated that their confidence was enhanced after witnessing students' positive

responses to the experience. The research study by Parks et al. (2007) identified in my review of literature suggests that 'mastery experiences' are likely to be the most significant determinant of whether or not CTs implement CBPA, so providing PCTs with this experience appears to be an important objective relating to the future status of CBPA.

Although directed teaching and clinical placements are the ideal settings to provide PCTs with 'mastery experiences' related to CBPA (due to the opportunity for them to practice it in a 'real' classroom setting), university courses can also provide them with invaluable experience. Many research participants suggested that there should be more opportunities for PCTs to practice implementing CBPA in courses during the ETTP associated with this study. Although this was discussed within the context of providing more ideas for PALs (theme 3), it is reasonable to suggest that these experiences may also enhance the confidence of PCTs to implement CBPA, particularly if they are provided with guidance and constructive feedback from the instructor. It is also important to reiterate that CBPA is not a consistent feature of most classrooms in upstate SC. Therefore, the number of opportunities for PCTs to practice CBPA in clinical and directed teaching placements is likely to be minimal (and university courses might be the only viable option for them to gain experience implementing it).

As stated in my review of literature, it is common for university teacher-training programs to require PCTs to take one course related to PE and PA (Erwin et al, 2011). In the ETTP associated with this study, the course is 'Health and PE for the elementary school child'. It is significant that the majority of research participants who had taken this university course did not feel adequately prepared to implement CBPA into their practice as a result of taking it (as this is where it is primarily presented to PCTs). Although most research participants believed that they had a basic understanding of CBPA and could implement it in a school classroom setting (particularly ABs), this perceived self-efficacy was often due to undertaking their own research on CBPA, ideas and strategies discussed with fellow students, or experiences during their clinical or directed teaching placements; it was not something that they had learned in their classes during the PCT-training program. This is a significant issue as university courses are likely to be the most effective platform to provide comprehensive guidance related to CBPA for PCTs. These courses are likely to be even more effective if they incorporate discussions and activities related to the clinical or directed teaching experiences of PCTs into the curriculum; these can provide a platform

for rich discussion about the benefits and barriers associated with implementing CBPA in schools in upstate SC.

The content of university courses that present CBPA to PCTs should also consider that the prospect of implementing CBPA *regularly* (i.e., not as a behaviour modification strategy when teachers sense the students are bored or disinterested) is likely to require a paradigm shift for PCTs due to its contrast with conventional methods of teaching. Subsequently, university professors who present content related to CBPA in university teacher-training programs may also need to challenge some of the broader assumptions about 'taken-for-granted' instructional practices in schools. For example, it is important to question why seated instruction remains the dominant practice in schools when many educators question its effectiveness in teaching and learning.

Although insufficient training (and knowledge) is a contributing factor towards the sparsity of PALs in schools, it is also likely a reflection of outdated approaches to education rooted in the 19th century (when teaching practices were focused primarily upon students sitting at desks and rote learning) that are still ingrained in current educational practices. Societal norms have changed significantly since that period (e.g. advancements in technology), and educational systems should accommodate those changes if they want to provide an optimal learning experience for the students who attend them. The majority of 'typical' PCTs (i.e., students who are 18-22 years of age) are part of a culture that is likely to understand the needs and expectations of young students, and due to their status as future educators, they are well-positioned to contribute towards an educational system that will better meet the needs of the students that they are going to serve.

University courses that present CBPA to PCTs will also likely need to emphasize the health benefits associated with it (based on the previous point that most PCTs are likely to perceive it as a strategy to improve academic-related outcomes exclusively). The content presented in these courses should ideally frame CBPA as a strategy to assist elementary students in accruing thirty minutes of MVPA during school hours, the minimum recommendation for them to achieve and maintain good health. However, these courses should also highlight the health benefits likely associated with LPA. The majority of research participants in this study did not appear to be aware of the favourable health outcomes linked to reducing sedentary behaviour (and increasing LPA); this point was also presented in my review of literature in the study by Martin & Murtagh (2015). PCTs should

also be made aware that they are in an optimal position to be healthy role models to their students and arguably have a moral responsibility to help them form the healthy habits that are important to flourish in both childhood and adulthood. These topics will be prominent aspects of my classes that present CBPA to PCTs, and I will discuss them in more detail in my final chapter.

It is important to consider the transition from PCT to CT and how this is likely to influence the perception of PCTs in relation to all aspects of teaching (including the role of CBPA). TST identifies three major categories of teacher socialization: this dissertation is interested in 'professional socialization', which represents the formation of attitudes towards teaching during university teacher-training programs, and 'organizational socialization', which refers to the socialization of teachers during their initial years of teaching and throughout their subsequent career. While university teacher-training programs may motivate (and prepare) PCTs in making CBPA a prominent aspect of their teaching practice, it is important to acknowledge that their attitudes about it may (and are likely to) change when they become CTs. This is particularly important to consider based on theme 4, which suggests that most schools in upstate SC are unlikely to encourage or provide any training related to CBPA (which may infer that it is an insignificant teaching practice).

Finally, even if PCTs form positive attitudes towards CBPA during university teacher-training programs and opt to make it a prominent feature of their classroom practice, the 'weight' of other competing priorities in schools may impede them from doing so. This point is evident in the findings of this research; while all of the first-year CTs had positive attitudes about CBPA, the majority did not implement it consistently because of a perception that they had to allocate the majority of their classroom time to teaching core academic subjects. If they had been provided with more guidance and resources on how to implement CBPA (particularly PALs) during their university teacher-training program, then it is plausible that they would have been more likely to make CBPA a more prominent feature of their classroom practice. However, it does also seem reasonable to suggest that PD training for CTs is another important strategy if CBPA is to become a prominent and consistent practice in elementary schools.

*Emerging Teaching Practice*

The findings of this study suggest that both PCTs and CTs view CBPA as a beneficial teaching practice and, relatedly, that CBPA has the potential to become a prominent

feature of elementary school classrooms in the U.S. My review of literature highlighted that many educational stakeholders are interested in learning more about CBPA due to its positive health and academic-related outcomes, and this idea is underscored by more recent research from Daly-Smith et al. (2018) who state that it is 'receiving substantial contemporary attention'. However, there are still many uncertainties and questions about CBPA due to its relatively recent emergence as a topic of interest in education.

Although the status and implementation of both PALs and ABs merit further exploration, PALs are of particular interest to educational stakeholders (including those interviewed for this study) based on the potential they have to make the learning process more meaningful and engaging for elementary students. For example, a recent article by Daly-Smith et al. (2020, p.41) explores 'co-produced multi-stakeholder perspectives…[on] successful widespread physically active learning (PAL) adoption and implementation'. This study included individuals from a variety of sectors, including educators, researchers, and policymakers who attended a 'design thinking PAL workshop' (ibid). This research reaffirmed many of the thoughts and questions that resulted from this dissertation. Key outcomes from the workshop included the importance of PCT training in providing both PCTs and CTs with the confidence and knowledge to successfully implement PALs; the importance of creating a school culture where CBPA is an accepted and valued teaching practice (supported by school administrators); the need to clarify best practices related to CBPA (e.g. duration, type of PA, and intensity); and how educators should view the ultimate intent and purpose of PALs.

The need for increased clarity about the fundamental nature of PALs resonated with me throughout all phases of this dissertation. Research participants appeared to view PALs as a strategy to make the learning process more engaging for elementary students instead of a viable practice to increase in-school PA (which has been alluded to previously in this chapter). This point was also raised in the research by Daly-Smith et al. (2020, p.43), with participants questioning whether PALs are 'a means of integrating PA into the school day, or a tool to enhance learning through PA'. The authors of this study purport that clarifying whether PALs are intended to improve learning or increase PA may not be necessary, stating that it is potentially 'a false dichotomy' and that PALS provide 'the means to achieve a dose of PA sufficient to improve health, while also improving the approach to learning' (ibid). However, I believe that increased clarity about the ultimate role and

purpose of PALs is an important step when considering its presentation to PCTs, a point which I will return to in my final chapter.

Daly-Smith et al. (2020) also highlight that a thorough understanding about the role and usage of CBPA in schools is still in its infancy, stating that 'more research on implementation and outcomes is needed before evidence-based recommendations on the type, time, intensity, and frequency of PAL strategies' for different ages can be recommended (ibid, p.46). The need for more clarity about the dose-response relationship of PALs (and ABs) and both health and academic-related outcomes is important within my role as a faculty member in a university teacher-training program. Without specific guidance on best practice towards CBPA, my ability to provide PCTs with the knowledge and confidence to implement it may be severely restricted. It seems likely that guidelines and objectives for CBPA will be classified according to the age of lower and upper elementary school students (based on the developmental differences typically associated with these age groups) (Wadsworth, 1996). I intend to learn more about attitudes towards (and implementation of) CBPA in CTs who work with elementary students in grades K-2 in my post-doctoral research (which I will discuss in my final chapter).

The impact of CBPA on specific populations also merits further exploration. Studies presented in my review of literature suggest that acute bouts of PA may be particularly beneficial for students with Attention-Deficit/Hyperactivity Disorder (ADHD) (U.S. Department of Health and Human Services, 2018; Dinkel at al. 2017). The CDC (2019c) suggest that a significant number of children in the U.S. may have difficulty paying attention, which they consider a symptom of ADHD. It is plausible that PALs may be a particularly effective instructional strategy for such children as they likely provide a more stimulating experience when compared to sitting at a desk. However, it is important to note that research participants in this study who discussed this topic inferred that the majority of elementary children they encountered have difficulty sitting for prolonged periods, not necessarily just students who have been identified as having learning difficulties such as ADHD. As the research on CBPA evolves, there will hopefully be more clarity about these matters.

Another interesting area of research to monitor is the extent to which approaches to CBPA extend beyond the classroom. The CDC (2018, p.4) suggest that many of the strategies for CBPA are applicable to 'hallways, multipurpose rooms, auditoriums, and outdoor areas'.

The location in which CBPA takes place will likely influence a variety of factors relating to its implementation. For example, the opportunity to perform PA in larger areas is likely to enhance the feasibility of engaging students in MVPA. However, the additional time and management of students that will be required in order to take them to another location would likely add further challenges for CTs. Other aspects related to the implementation of CBPA, such as its feasibility during the Fall versus the Spring (when there is often state testing), as well as its applicability during specific months of the year and during different seasons (e.g. Summer versus Winter), need to be explored more thoroughly.

The role of technology in delivering CBPA is also likely to develop in the future. Technology has the potential to enhance a variety of aspects related to CBPA, including offering the potential to make it more exciting and appealing to children, as well as to potentially motivate them to increase their PA levels. A recent study by Buchele Harris & Chen (2018) showed that students who wore 'fitbits,' a self-monitoring PA tool that provides 'detailed personalized data, such as minute-by-minute data and composite data on steps, distance travelled, MVPA, heart rate, and intensity' (p.167), increased their daily PA over a four-week period when compared to the control group. This approach to implementing CBPA may add a competitive element to it, especially if students are challenged to improve their step counts from previous days/weeks or compete against classmates (which they may enjoy).

Technology can likely provide individualized forms of CBPA, which may be particularly relevant for students who don't typically enjoy the group aspect of it. The majority of schools have digital tablets available for students, and these could customize CBPA for students based on their preferences. CTs in this research indicated that elementary students enjoy choosing the type of CBPA implemented - a point of consideration for its successful incorporation in school classrooms highlighted recently by the CDC (2018). The 'GoNoodle' website that was referenced in chapter two has recently developed an app for students to perform their activities (Go Noodle, 2020c), so it seems likely that customizable CBPA may become more prevalent in the future. CBPA delivered to students through a digital tablet may be more convenient for the CT. However, it may also present difficulties related to classroom management if a significant number of students are performing different physical activities simultaneously.

Finally, while it would likely be beneficial for CTs to have more guidance about a variety of aspects related to CBPA, it is important to consider how developments in this area may also impact their views about it. For example, if States or districts mandate that CBPA should be implemented several times a day or require a certain type or duration of PA, CTs may view it as a burden or another classroom task that the teacher feels he or she is compelled to undertake. It would be interesting to learn more about the attitudes of teachers towards CBPA in Colorado, as this is currently the only State that mandates CBPA.

*Conclusion*

Despite the uncertainty about many aspects related to CBPA, university teacher-training programs are likely to have a significant impact on its prevalence and status in elementary schools in the future. A significant finding from this study is the importance of modelling CBPA to PCTs and providing them with opportunities to practice it; educational stakeholders (i.e. university instructors and CTs in local schools) who do this are likely to reinforce CBPA as a legitimate pedagogical strategy. These experiences are important because seated instruction is the dominant form of teaching in schools in the U.S., so PCTs need to be presented with an alternate approach to teaching if CBPA is to become a consistent feature of their teaching practice. In my final chapter, I will discuss how I plan on incorporating these key findings (and others) from my research into my professional practice as a university lecturer in a teacher-training program.

## Chapter Six: Impact on Professional Practice

*Organization of Chapter*

The focus of the final chapter is to explain how this dissertation has influenced my professional practice and aspirations. I will discuss how it has contributed to a greater understanding of aspects related to CBPA, and, relatedly, how these new insights will impact the content that I present to PCTs in the ETTP associated with this research. This will include seven major additions to those classes: greater coverage of LPA; more ideas and resources for PALs; the use of equipment to facilitate and promote CBPA; practical guidelines associated with the successful implementation of CBPA; an increased emphasis on the potential for CBPA to improve the student-teacher relationship and foster positive associations towards learning and the school environment; incorporating more discussions and activities related to PCTs' experiences in local schools; and more content related to the professional identity of teachers. I will also identify how the outcomes of this dissertation may impact other aspects of the ETTP associated with this research (besides the classes that I am responsible for teaching). Then I will identify how this dissertation has influenced my professional objectives, including both research and non-research projects. Finally, I will discuss some of the limitations of this research.

### Part One

*New Content in University Courses*

I believe that this research has placed me in a better position to prepare PCTs in the ETTP associated with this research to incorporate CBPA into their teaching practice, as well as motivate them to want to do so. I will now discuss what I believe to be the most pertinent concepts and ideas related to this goal. Before this commentary, it is important to acknowledge that this research has provided me with a greater understanding of many concepts related to PA, which are likely to benefit all of the health classes that I teach at my university (i.e. general health classes that include PA content). Relatedly, this information has also provided a useful context for understanding a variety of aspects related to CBPA.

*Greater Coverage of Light-Intensity Physical Activity*

This dissertation has made me more aware of the significance of LPA within the context of the promotion and implementation of CBPA. As stated in chapter 1, health organizations typically focus on the importance of MVPA due to the substantial health benefits associated with it; therefore, promoting and encouraging MVPA has been my primary focus when

presenting CBPA to PCTs. However, during this dissertation, I have become more aware of the consideration of LPA in relation to good physical health (and have made it a priority to learn more about this topic). Although it is important to reiterate that the extent of the health benefits associated with LPA is an emerging area of research, The Physical Activity Guidelines Advisory Committee (2018, F2-4) state that 'strong evidence demonstrates a significant relationship between greater time spent in sedentary behaviour and higher all-cause mortality rates'. Therefore, facilitating bouts of LPA in children appears to be a worthy health-related goal, which is a concept that has been suggested elsewhere (IOM, 2013; Webster et al., 2015).

Additionally, I have learned that CTs may prefer light-intensity CBPA (when compared to MVPA) as it is likely to be easier to implement (Daly-Smith et al., 2020) and to get students back on-task afterward (Watson et al., 2019). This is significant as classroom management is often cited as a barrier for the implementation of CBPA. Relatedly, it could be conceived that LPA is a good point of entry for both PCTs and CTs to begin incorporating CBPA; they could then implement more vigorous forms of PA as they gain more confidence and knowledge about this concept. The use of specialized classroom equipment such as elastic bands and yoga balls, which would likely result in LPA, could be relevant types of CBPA to consider, especially as CTs expressed favourable opinions towards them.

Based on the benefits associated with implementing LPA in school classrooms, I am going to provide more content related to LPA during my presentation of CBPA to PCTs. This will include demonstrating examples of LPA, such as walking, stretching, and standing, and how these activities can be incorporated into PALs and used as an AB. I also plan on presenting the health benefits of LPA to PCTs. Research participants in this study rarely mentioned the health benefits of LPA and, based on my recent awareness of this content, as well as its emergence in contemporary health research, it is unlikely that PCTs are aware of them, either.

Despite the potential health benefits associated with increasing LPA (and minimizing sedentary behaviour), it is important to acknowledge that CTs are motivated to implement CBPA primarily due to its positive relationship with academic-related outcomes. Hence, evidence-based research demonstrating that LPA has a beneficial impact on the learning potential of elementary students is likely to be necessary if it is to become a focal point of the advocacy of CBPA. While it is reasonable to suggest that incorporating LPA through PALs

would likely be an incentive for CTs to implement it, it would be beneficial to also know more about the impact of LPA on cognition. Research in this area is currently limited, and the available literature tends to focus on the influence of LPA on the cognitive capabilities of older adult populations (for example, Amagassa et al., 2018). However, there is some research suggesting that LPA can have a beneficial impact on the cognitive functioning of younger adult populations; for example, Mullane et al. (2017) found that bouts of standing, walking, and bicycling had a positive influence on the cognitive outcomes of young adults when compared to sitting. A recent study by Watson, Timperio, Brown, & Hesketh (2019) also suggests that acute LPA may confer cognitive benefits. I will continue to monitor this research, in particular in relation to its potential application to children.

It is important to acknowledge that I will continue to encourage PCTs to incorporate MVPA in the school classroom due to the significant health benefits associated with it. Dancing, in particular, is a form of MVPA that I will present to PCTs. I was unaware that dancing was a viable and popular type of CBPA before this dissertation, but I have made it a priority to learn more about best practices concerning its implementation, as well as different resources for PCTs to access related videos. A recent study suggests that dancing can have a positive impact on aspects related to cognition, particularly selective attention (Kulinna Stylianou, Dyson, Banville, Dryden, & Colby, 2018). I will continue to monitor emerging research in this area.

The process of completing this dissertation, especially the extensive literature search that I conducted during this period, has also made me more aware of the potential barriers associated with incorporating MVPA in the classroom; particularly, the idea that CTs may be hesitant to incorporate MVPA due to concerns about getting students back on task afterward. Therefore, I plan on learning more about strategies to assist CTs in this process. Before this dissertation, I presented content about classroom management to PCTs, but it was exclusively related to classroom management *during* CBPA. However, I now realize that I also need to provide more guidance on appropriate conduct *following* CBPA. Lighter intensity forms of CBPA, such as stretching and yoga, appear to be sensible options to transition students back to their classroom work after CBPA. However, it is important to consider how these exercises might affect the intent of the initial activity. For example, if the rationale behind the implementation of CBPA is to improve cognition, and cognitive benefits are apparent immediately after an acute bout of PA, then the additional time spent in other forms of PA may negatively impact this outcome.

*Examples of Physically-Active Lessons*

It was clear during interviews that research participants believe there should be more content related to PALs (for the subjects of maths, ELA, and Science) in the ETTP associated with this research, also incorporating concepts related to the SC State Standards in these subject areas. Subsequently, I am going to make this a focal point of my classes that present CBPA to PCTs. A benefit of the extensive review of literature presented in chapter two was that it examined many research studies that provided numerous examples of PALs. Therefore, I have already developed a repertoire of ideas that I can utilize in my classes.

These PALs will be presented to PCTs both verbally and physically, and I will also provide numerous opportunities for students to practice implementing them during my class. This is related to the concept of developing self-efficacy through 'mastery' and 'vicarious' experience, an idea presented in the previous chapter. Although I have incorporated a 'flipped' approach during my classes occasionally in the past (i.e., the students become the 'teacher'), I plan on making this a significant part of my instructional strategy in the future. It is important to recognize that even if CTs have the knowledge and confidence to implement PALs (and ABs), it is also valuable for them to be aware of practical guidelines associated with their successful implementation; this will be the focus of my next section.

*Practical Guidelines*

An objective of this dissertation was to learn more about some of the practical considerations of incorporating CBPA in elementary classrooms. There is a sparsity of research on this topic (Behrens et al., 2017; CDC, 2018), and I have limited experience teaching full-time in a public school. School classrooms are diverse and dynamic environments; many contextual factors are likely to influence the effectiveness of CBPA (e.g., classroom size, uniqueness of students, school resources, etc.) as well as the feasibility of implementing it throughout an academic year. This variability prompted my decision to interview CTs who would likely have a greater range of experiences in a classroom when compared to PCTs.

CTs (and some PCTs) provided practical guidelines related to the successful implementation of CBPA. I believe three of those are particularly significant: implementing CBPA from the start of the school year, including CBPA in a CT's lesson plan, and allocating sufficient time to explain the purpose and benefits of CBPA to elementary students. While I believe that

two of these concepts are intertwined (i.e., the beginning of the school year is arguably a logical time to discuss the benefits of CBPA), I will describe each one separately, and delineate why each concept is important to include in my presentation of CBPA to PCTs.

Before this dissertation, I had not considered the significance of implementing CBPA from the beginning of the school year. However, I believe this is an important concept to present to PCTs for two reasons: first, students may not have encountered CBPA before, so making them aware of it at the beginning of the school year signifies its importance and future regularity in the classroom (assuming the teacher incorporates it consistently after); second, and perhaps more importantly, it also demonstrates a commitment from the CT that CBPA will be a consistent feature of his or her classroom practice. This is pertinent based on the suggestion from several interviewees that CTs need to 'commit' to incorporating CBPA consistently; otherwise, they are likely to focus primarily on using more traditional instructional methods to teach core academic subjects. Implementing CBPA from the beginning of the school year, as well as explaining its purpose and value to students, would arguably make it less likely for a teacher to remove it from their classroom routine, especially if students enjoy it.

Relatedly, an additional step that I will present to PCTs is to include CBPA in lesson plans (which is particularly important for ABs). Interviewees suggested that this would increase the likelihood of incorporating CBPA consistently, and it also arguably affirms CBPA as a legitimate educational practice. I already present lesson planning to PCTs, so I plan to include the concept within this pre-existing content. A point raised during my peer debriefing was to add a column on a lesson plan for CBPA specifically; I also plan on incorporating this into my presentation.

I am also more aware of the significance of explaining the purpose and benefits of CBPA to elementary students. This is important as students may be unfamiliar with CBPA, or they may not naturally be inclined to enjoy it. Therefore, CTs should discuss the positive outcomes of CBPA with their students, emphasizing it is intended to be enjoyable, to help them learn, and to provide health benefits. A recent article by the CDC (2018, p.12) validates this claim, acknowledging that 'student buy-in is essential for the success of classroom physical activity'. Additionally, providing elementary students with the autonomy to choose their own type of CBPA and, relatedly, the potential of technology to

customize it to meet student preferences and fitness levels, may assist CTs in promoting positive associations with CBPA in their students.

*Equipment*

Equipment used to promote or facilitate CBPA was not a concept that I considered (or was aware of) before this dissertation. However, both PCTs and CTs stated that they had either witnessed the use of equipment designed to facilitate CBPA or used it themselves. This type of CBPA would likely be considered an AB. However, it is important to acknowledge that it is typically intended for students to use *during* academic work (for example, gently bouncing up and down on a yoga ball), rather than a *break* from academic instruction. Subsequently, it does not technically comply with the definition of an 'AB' used in this dissertation. Also, certain types of equipment could be incorporated into academic instruction; for example, a stationary bicycle could be utilized to teach number concepts.

Incorporating this type of equipment in elementary classrooms appears to be a promising strategy to enhance the prevalence of CBPA. It is unlikely to require a significant amount of work or planning by the CT, and it does not require them to sacrifice time spent on academic instruction. The CDC (2018) discusses the appropriateness of balance balls, learning mats, standing desks, and bicycle chairs in the classroom; hence, it is plausible that this strategy may become a more prominent area of focus in CBPA research. Classroom equipment to facilitate CBPA would likely result in LPA (although it would depend on the level of exertion by each student and the specific activity), so I plan on incorporating this content into my classes with the inclusion of LPA.

I also plan on presenting resources related to purchasing this type of equipment. All of the CTs who had seen this type of equipment stated that they would like to include it in their classroom. However, they also acknowledged that funding needed to be acquired through a grant to do so. Therefore, I plan on incorporating content related to grant-writing and funding applications during my presentation of CBPA to PCTs. For example, interviewees referenced a website for CTs to submit grants for this equipment, and I plan on providing this information to PCTs. It seems reasonable to suggest that knowledge of these potential resources may increase the likelihood of PCTs gaining access to equipment that could be used to facilitate CBPA during their early years of teaching.

*Student Enjoyment of Learning*

The idea that CBPA can make instructional practices both more enjoyable and meaningful for elementary students is a concept that I have presented to PCTs in my previous classes. However, this dissertation has caused me to consider a broader theme: that CTs who make CBPA a prominent feature of their instructional practices (particularly PALs) could positively influence student perception of the school environment and learning process overall. This is based on the idea that the majority of students enjoy CBPA, as well as the potential for CBPA to improve the teacher-student relationship (which I will discuss shortly). Assuming that most students do enjoy CBPA, teachers who implement it on a consistent basis have an opportunity to demonstrate to their students that learning can be fun and interesting. This notion is reinforced by the CDC (2018, p.7), who state that CBPA 'affects student enjoyment of learning, which is an important factor in motivating students to want to learn. Allowing students to collaborate and interact with each other in a fun way can create conditions for them to feel safe, comfortable, accepted, and happy'.

Relatedly, I believe that that CTs who implement CBPA regularly may improve their relationship with their students. The CDC (2018, p.7) add validity to this claim, suggesting that CBPA can help create an environment where 'students feel connected to their teachers…[and] can provide a foundation for students to be more engaged, enjoy learning more, and perform better.' The potential of CBPA to improve the teacher-student relationship is something that I had not considered prior to writing this dissertation. However, I have recently begun to consider this concept more thoroughly, especially in relation to my experiences as a university lecturer (which I will discuss shortly). Based on these insights, I plan on including more content related to this topic when presenting CBPA to PCTs. Although the overall objectives of CBPA are still being developed and explored, the notion that regular CBPA may positively impact the teacher-student relationship and student enjoyment of learning might be a motivating factor for PCTs to incorporate it into their classroom.

*Discussion of Experiences in Schools*

An important takeaway from this dissertation has been the significance of clinical and directed teaching placements on PCTs' knowledge and self-efficacy towards CBPA. Although CBPA is inconsistent in these schools, the majority of research participants had witnessed some type of CBPA during at least one of these placements. Therefore, I believe that it would be beneficial to facilitate discussions about these experiences in my classes.

It is particularly pertinent to include this content after learning that PCTs are likely to be enrolled in a clinical class during the same semester when they are required to take the course that I teach, 'Health and Physical Education for the Elementary School Child'. Subsequently, they are likely to be in a position to provide accurate and descriptive accounts of their experiences in local schools.

Although similar discussions have occurred in my previous classes, they have been informal and sporadic. However, this dissertation has prompted me to take a more proactive approach to embed them into my presentation of CBPA to PCTs. I assume that these discussions would affirm some of the beneficial outcomes of CBPA that I suggest in my class, as well as address some of the potential challenges associated with its implementation (such as classroom management or the fact that not all students enjoy CBPA). It is likely that such discussions will contribute towards my own evolving knowledge of CBPA, especially the practicalities associated with its implementation in an elementary school classroom.

*Professional identity of teachers*

A pertinent finding of this research is that PCTs and CTs framed CBPA primarily as a strategy to improve academic, not health, outcomes. Subsequently, as indicated in my previous chapter, I plan to allocate more time to discussing broader conceptions of teaching in my presentation of CBPA to PCTs. Specifically, I will advocate that CTs are in a position to contribute to the health and wellbeing of young people by promoting and incorporating health practices in the classroom. I will present this content within the context of the Comprehensive School Physical Activity Plan (CSPAP) and its assertion that CTs are important educational stakeholders if children are to accrue 60 minutes of daily PA. An educational system that prioritizes the physical health of students aligns with Nussbaum's CA and its assertion that schools have a responsibility to develop physical fitness in young people. If PCTs are aware that CTs are important stakeholders concerning the health and fitness of elementary students, then they may be more likely to implement CBPA when they become a CT.

*Program Changes*

I hope that the knowledge that I have gained during the preparation of this dissertation (and its implementation in the classes that I teach) will better prepare and motivate PCTs to successfully incorporate CBPA into their future classroom practice. I am also optimistic

that there will be changes to other aspects of the ETTP associated with this research that will contribute towards this goal. I have already had preliminary discussions with the elementary education program coordinator about the outcomes of my research, focusing primarily on including PALs designed to teach core academic subjects in a variety of courses. Although this will require hard work and collaboration with other instructors in the program, I am encouraged by the fact that the program coordinator has granted me permission to initiate this process. I also plan to create PALs that teach concepts related to the SC State Standards, and disseminating this information to the instructors in the ETTP associated with this research. I have already spoken with the Instructor of the 'Fine Arts' class, and she is interested in working with me to ensure consistent and complementary coverage of CBPA in the program.

**Part Two**

Professional Aspirations

*My Post-Doctoral Research*

Whilst I will continue to monitor emerging research literature on a variety of aspects related to CBPA, I also plan on contributing to it through my post-doctoral research. This includes exploring attitudes of CBPA in PCTs and CTs who work with younger children in elementary school (i.e., children ages 5-7 years of age); perceptions of CBPA in CTs with significant experience (i.e., five years or longer) in schools; attitudes towards CBPA in pre-service and in-service PE teachers; and how university faculty perceive CBPA (which I will describe in the next section).

One of my research interests is to learn more about how PCTs and CTs who work with younger elementary students (grades Kindergarten to two) perceive CBPA. As stated previously, the majority of the research participants interviewed for this dissertation either teach or plan to teach older elementary students (grades three to five). Subsequently, it would be interesting to explore the extent to which the age of the student influences CTs' views or utilization of CBPA. There is typically a wide range of development across elementary schools, and the physical, mental, social, and emotional characteristics of these students will likely influence the criteria for the successful application of CBPA. PCTs interested in working with younger elementary students would enrol in the early childhood teacher-training program at the university where I am an instructor. I have taught various early childhood courses associated with that program, and I would be in a favourable position to learn more about how those PCTs view CBPA.

It would also be interesting to investigate attitudes towards CBPA in CTs with a significant number of years of teaching experience. A consideration that emerged during this dissertation was the unique predicament of first-year teachers and how this may influence their perceptions and implementation of CBPA. Nearly all of CTs interviewed for this research stated that their first year of teaching was highly stressful, primarily due to the pressure they felt to teach content related to core academic subjects (much of which they were still learning themselves). Although all of the CTs who were interviewed for this research had implemented CBPA, the majority stated that they would like to incorporate it into their teaching practice more frequently. However, the pressure they felt to teach core academic subjects, accompanied by their limited ability to utilize PALs, afforded them little time to devote to CBPA. It would be interesting to contrast this with CTs who had significant years of teaching experience and how or if this influenced their views on and utilization of CBPA. They would theoretically be more comfortable in their role as a teacher and, therefore, be in a more favourable position to incorporate CBPA into their practice.

Finally, I believe that PE teachers are likely going to be critical educational stakeholders concerning the prevalence and sustainability of CBPA. PE teachers can be a resource for CTs who want to incorporate CBPA, potentially providing guidance, encouragement, and content related to its implementation. On that basis, I would like to learn more about attitudes towards CBPA in PE PCTs, as well as attitudes of PE teachers in schools that PCTs attend for their clinical and directed teaching placements. Based on my familiarity with the PE program at the university associated with this research, I am confident that CBPA has minimal (if any) coverage in this particular teacher-training program. However, as I teach two courses for PE students, I am in a favourable position to motivate them to become agents of change concerning the implementation of CBPA in elementary schools.

*Promote Classroom-Based Physical Activity in Education*

This dissertation has strengthened my belief that implementing PA in a classroom setting has the potential to improve a variety of aspects related to teaching and learning. Subsequently, I plan on advocating for the consideration of CBPA in all teaching environments. While there are still a considerable number of uncertainties concerning guidelines and usages associated with CBPA, I believe that teachers at all levels of education (elementary, secondary, and higher education) should be aware of its utility in their respective settings.

One outcome of this dissertation that I did not anticipate was its impact on my consideration of the appropriateness of CBPA in higher education, particularly related to the utility of it in my classes in that setting. To provide a context for the reader, I decided to incorporate CBPA into my teaching practice based on a belief that it would improve student focus and engagement in the classroom. During my five years of teaching in higher education, I have included a variety of CBPA, including both ABs and PALs, into my teaching practice. Examples of ABs typically performed at the beginning of a lecture include LPA, such as clapping patterns and routines, to more vigorous PA, including hopping, jogging on the spot, and skipping. I have also incorporated PALs at the beginning of a lecture to reinforce academic concepts that have been taught previously to students; for example, splitting the class into teams and requiring students to jog on the spot while I ask them questions about content from the previous class.

I was aware of the beneficial outcomes associated with my incorporation of CBPA before beginning this dissertation. For example, I have received both anecdotal and formal feedback (Student Opinion Polls) from students stating that my use of CBPA, particularly ABs at the beginning of a lecture, 'wakes them up' and 'forces them to pay attention'. Similar concepts have also been identified in other research exploring students' reactions to ABs (for example, Ferrer & Laughlin, 2017). University students in the U.S. often take multiple classes each day; therefore, implementing an AB at the beginning of a lecture appears to have merit based on research suggesting that acute bouts of PA are likely to have a positive impact on cognition (Physical Activity Guidelines Advisory Committee, 2018).

Students have also relayed to me that my use of CBPA makes them feel like I genuinely care about their learning experience and want to make it both productive and enjoyable for them. Additionally, incorporating CBPA, particularly ABs at the beginning of a lecture, typically creates a positive mood in the classroom: students stand up from their desks and often walk around, giving them opportunity to talk to their classmates. Importantly, this practice also allows me to interact with students informally and jovially, which plausibly enables me to 'connect' with some of them more effectively as compared to traditional lecturing.

The potential for CBPA to improve the teacher-student relationship in elementary schools was a significant aspect of my data analysis. But this dissertation (and subsequent

reflection on my teaching practices and use of CBPA) has caused me to consider that this concept could apply to higher education as well. Hagenauer & Volet (2014, p.370) state that the relationship between the teacher and the student is important to consider because 'quality relationships have an impact on human beings with respect to motivation…[and] to specific outcomes across educational contexts'. They suggest that this is important to consider in higher education settings; specifically, as an effective teacher-student relationship can potentially reduce student drop-out rates (ibid).

At the university where I work, there are many first-generation college students, and student drop-out is a major concern. If university professors are perceived by students as approachable and genuine, students may therefore be more willing to talk to them about any problems they are experiencing and potentially prevent or alleviate such issues. While recognizing that there are many approaches to developing positive relationships with students, I believe that incorporating CBPA is a possible strategy to create an environment and platform that could facilitate a mutually-receptive relationship. Subsequently, it may be beneficial for university professors to be made aware of this topic and its potential role in their practice.

The utility of PALs to enhance student engagement is also important to consider in higher education settings. The effectiveness of traditional lectures involving students listening to an instructor for an extended period of time has been a source of debate amongst educators for decades (Barr & Tagg, 1995). Roehl, Reddy, & Shannon (2013, p.45) suggest that this approach to teaching is particularly ineffective for modern-day students who are likely to respond better to 'active learning strategies'. There is an array of pedagogical approaches that could be considered 'active learning strategies' (see, Zayapragassarazan & Kumar, 2012). Bonwell & Eison (1991, p.1) state that active learning strategies traditionally consist of 'instructional activities involving students in doing things and thinking about what they are doing.' PALs align with many of these principles and, while recognizing that many factors are likely to impact the feasibility of them in university settings (classroom space, the subject, etc.), they should arguably be a consideration for university professors who strive to maximize the learning process for their students.

Based on my greater awareness of the utility of CBPA in higher education, I would like to perform post-doctoral research on how it is perceived by faculty in those settings. University professors in the U.S. typically have autonomy to teach classes however they see

fit and they will likely base their instructional approach on a number of factors (the content they are teaching, their personality, etc.). I received minimal (if any) guidance about the best way to connect with university students when I started teaching and it would have been helpful to have been presented with CBPA. It is important to acknowledge that many of the uncertainties concerning the optimal implementation of CBPA discussed throughout this dissertation would apply to university professors, also. However, as I have demonstrated in my own classes, CBPA can have a positive role in higher education. Therefore, informing university professors about the utility of CBPA may have a beneficial impact on their teaching practices.

It is important to add that this dissertation has also provided me with new ideas and approaches concerning how I implement CBPA in my university classes. For example, learning that 'cognitively engaging physical activity' (i.e. physical activity combined with cognitive demands) may have a more beneficial impact on cognition than 'non-cognitively engaging physical activity' (e.g. repetitive exercise) has made me consider additional ways to incorporate this type of PA in my lectures. I have also made a concerted effort to explore literature on the role of CBPA in university classes, and I have found useful activities that I plan on incorporating into my lectures (for example, Ferrer & Laughlin, 2017).

Based on my belief that CBPA is a potentially useful teaching practice at all levels of education, a professional goal of mine is to develop a number of papers or even a book on this content. This body of work would likely include much of the content discussed in this dissertation, and it would need to be adapted for various levels of education (for example, using CBPA to expend energy would not be an incentive to implement it for university students). I also plan on developing a workshop for early childhood and elementary educators on this content. While there are some resources on CBPA available (discussed extensively in chapter 2), I believe that CTs in SC would likely benefit from more ideas to utilize PALs to teach content related to the SC State Standards in maths, ELA, and science. As stated previously, I plan to provide this information to professors responsible for teaching these subjects at my university. This material would likely evolve as there is more clarity on the optimal implementation of CBPA.

**Part Three**

*Research Limitations*

There are limitations when considering the outcomes of this research. Interviewees may have been hesitant to voice their honest opinions about CBPA and its coverage in the ETTP associated with this research to a faculty member who teaches related classes at that university; they may have felt pressured to say positive things about its usefulness in education and inclusion in the program. This issue was likely compounded as some of the interviewees were former students, which would have made them potentially less likely to make negative statements about courses that I teach. Research participants may have may also felt pressured to provide answers to questions that adhered to social norms about the value of health and PA to a faculty member at a university who teaches health classes. However, the rationale behind my decision to conduct group interviews was to alleviate some of the issues that were likely to have been more prevalent during individual interviews.

Another limitation of this research was that many of the PCTs interviewed had not completed the entire ETTP associated with this research. Therefore, there were elements of the program that they had not encountered and, subsequently, could not provide a complete perspective on the inclusion of CBPA throughout it. Specifically, some of the research participants had only just started their second clinical placement and had yet to begin their directed teaching placement. PCTs spend the entirety of their final semester at the school where they are assigned for their directed teaching placement (as opposed to one morning a week during their clinical placements), and this is likely to provide significant experiences from which to discuss CBPA. Hence, it would have been ideal to have interviewed PCTs who had completed all of their senior year.

Another potential limitation of this dissertation is the emerging nature of CBPA. Since I began my dissertation in 2017, there has been an abundance of research concerning a variety of aspects related to CBPA. Although I made a concerted effort to monitor emerging research on CBPA throughout my dissertation, it would have been beneficial to have a wider base of literature before conducting my interviews, as this may have changed the types of questions and information that I sought from participants.

*Conclusion*

I began my Doctorate in September 2013. I started my dissertation in January 2017 and submitted it in March 2021. Even though this research had a relatively small sample size, my work during this time has provided me with a greater understanding of both CBPA and qualitative methods, which I hope will enable me to conduct meaningful and rigorous research in the future. I have already discussed how it will impact my presentation of CBPA to PCTs, as well as some of the ways that it has motivated me to learn more about CBPA and contribute to the literature in this subject area.

This dissertation has also caused me to consider all aspects of my teaching practice and ways to improve it. For example, the interviews I conducted during this dissertation have changed the way I view the structure and content of my lectures. Listening to students talk about their views and experiences about an academic subject at length (and in their own words) was transformative. I learned how valuable it is for people to share their 'stories' about phenomena; it can be stimulating and thought-provoking. Subsequently, I plan to incorporate more discussions into my lectures. At the university where I work as an instructor, class sizes are relatively small (no more than 30 students), so individual and group discussions are plausible in nearly all classes.

I have undoubtedly experienced a paradigm shift related to CBPA due to this dissertation. The health benefits associated with regular PA, concomitant with the importance of schools providing sufficient opportunities for children to engage in it, was the impetus for this research. This conception of education was influenced by Martha Nussbaum's CA, which proposes that schools have an important role to play in human flourishing, and health is undoubtedly a pre-requisite to achieve this goal. And while framing CBPA as a practice to improve the health of school students will continue to propel my advocacy and promotion of it, this dissertation has made me more aware of its utility to improve a variety of aspects related to teaching and learning.

Some of these benefits are plausibly related to other aspects of Nussbaum's CA besides the capabilities of 'life' and 'health', which are explicitly associated with regular PA. For example, the capability of 'affiliation' involves the 'ability to engage in various forms of social interaction with others' (Nussbaum, 2006a, p.77); she also discusses the importance of being able to 'laugh [and] play' (ibid). CBPA can provide opportunities for young children to develop these capabilities during school and, it could also motivate them to seek

recreational and sporting opportunities outside of school. Perhaps more pertinently, if young children believe that education can be enjoyable and meaningful (a concept which CBPA can plausibly help CTs to accomplish), then they are perhaps more likely to become lifelong learners, which is undoubtedly related to Nussbaum's vision of a democratic and well-informed society (Nussbaum, 2010).

In her seminal book, 'Not for Profit', Nussbaum (2010, p.xi) purports that the emphasis on economic growth in education at the expense of a broad curriculum (particularly the arts and humanities) puts the 'quality' of lives 'at risk'. Although there needs to be more clarity about many aspects related to the consistent implementation of CBPA in schools, I believe that teachers and administrators should be aware of its potential to contribute towards both health and learning outcomes, and I plan to be at the forefront of efforts advocating it to educational stakeholders. I am an 'educator' before a 'physical' or 'health' educator, and any practice that has the potential to positively influence the educational process is something that I will promote. I am also excited to continue incorporating CBPA in all of my classes in higher education, and I am grateful for the opportunity to enhance this craft into my teaching practice as a result of this dissertation.

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## Appendix 1: List of Acronyms

| | |
|---|---|
| CBPA | Classroom-Based Physical Activity |
| PCT | Pre-Service Classroom Teacher |
| CT | In-Service Classroom Teacher |
| ETTP | Elementary Teacher-Training Program |
| PA | Physical Activity |
| SC | South Carolina |
| PE | Physical Education |
| U.S. | United States |
| CDC | Centers for Disease Control and Prevention |
| CSPAP | Comprehensive School Physical Activity Plan |
| ELA | English Language Arts |
| SLT | Social Learning Theory |
| TST | Teacher Socialization Theory |
| HBM | Health Belief Model |

## Appendix 2: IRB Approval from The University of Glasgow

University of Glasgow

College of Social Sciences

**Application Approved**

**Ethics Committee for Non-Clinical Research Involving Human Subjects**

Staff Research Ethics Application ☐ Postgraduate Student Research Ethics Application ☐x

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**Application Details**

Application Number: 400170094

Applicant's Name: Gary Lynch

Project Title: An exploration of the perceived role of the classroom teacher in the 'Comprehensive School Physical Activity Plan' era: attitudes towards classroom-based physical activity among pre-service and in-service elementary teachers

Application Status: **Approved**

Start Date of Approval: 19/02/2018

End Date of Approval of Research Project: **31/05/2018**

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Please retain this notification for future reference. If you have any enquiries please email socsci-ethics@glasgow.ac.uk.

E-mail: socsci-ethics@glasgow.ac.uk

## Appendix 3: IRB Approval from the University of South Carolina

UNIVERSITY OF SOUTH CAROLINA

**OFFICE OF RESEARCH COMPLIANCE**

**INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH**

**APPROVAL LETTER for EXEMPT REVIEW**

Gary Lynch

Re: **Pro00074067**

Dear Mr. Lynch:

This is to certify that the research study ***An Exploration of the Perceived Role of the Classroom Teacher in the 'Comprehensive School Physical Activity Plan' Era: Attitudes Towards Classroom-Based Physical Activity Among Pre-Service and In-Service Elementary Teachers*** was reviewed in accordance with 45 CFR 46.101(b)(**2**), the study received an exemption from Human Research Subject Regulations on **1/3/2018**. No further action or Institutional Review Board (IRB) oversight is required, as long as the study remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in procedures involving human subjects. Changes to the current research study could result in a reclassification of the study and further review by the IRB.

Because this study was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

All research related records are to be retained for at least three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Arlene McWhorter at arlenem@sc.edu or (803) 777-7095.

Sincerely,

Lisa M. Johnson
ORC Assistant Director
and IRB Manager

## Appendix 4: Interview Questions for PCTs

**Name:**

**Age:**

**Year:**

**Block:**

**Sex:**

1. Please tell me what you know about Classroom-Based Physical Activity?
2. What do you think are some of the benefits of Classroom-Based Physical Activity?
3. What do you think are some of the barriers associated with incorporating Classroom-Based Physical Activity?
4. How was Classroom-Based Physical Activity included in your elementary education teacher training program?
5. Please tell me how prepared you feel to implement CBPA as a result of your elementary education teacher training program?
6. Please tell me how or if your classes during your elementary education teacher training program have influenced your attitudes towards health and physical activity
7. Please tell me what you think the role of the school and the classroom teacher should be in making sure that young children engage in enough daily physical activity?
8. Please tell me why you think it might be important for young children to participate in regular physical activity?
9. Please describe how you view of the role of regular physical activity in your own life?

**Planned Follow-up questions:**

4. How was CBPA represented specifically in your university courses and in the schools you attended for teacher-training?
5. What could have been included in your elementary teacher training program to make you feel more prepared to incorporate CBPA?
5. To what extent did you have opportunities to practice CBPA?
7. To what extent do you think CT's have a responsibility to be health role models to their students?

## Appendix 5: Interview Questions for CTs

**Name:**

**Graduation year:**

**Current School and District:**

**Subjects Taught:**

**Grade Taught:**

**Number of years teaching:**

**Age:**

**Sex:**

1. Please tell me what you know about Classroom-Based Physical Activity?
2. What do you think are some of the benefits of Classroom-Based Physical Activity?
3. What do you think are some of the barriers associated with incorporating Classroom-Based Physical Activity?
4. How was Classroom-Based Physical Activity included in your elementary education teacher training program?
5. Please describe your level of preparation to implement CBPA as a result of your experiences in your elementary education teacher training program?
6. Please tell me how or if your classes during your elementary education teacher training program influenced your attitudes towards health and physical activity?
7. Please tell me what you think the role of the school and the classroom teacher should be in making sure that young children engage in enough daily physical activity?
8. How do you think your fellow teachers and administration view CBPA?
9. To what extent do you think that elementary school teachers have a responsibility to be health role-models for their students?
10. Please describe how you view of the role of regular physical activity in your own life?

**Planned follow-up questions**

4. How was CBPA represented specifically in your university courses and in the schools you attended for teacher training?
5. What could have been included in the elementary education teacher training program to make you feel more prepared to incorporate CBPA?
5. To what extent did you have opportunities to practice CBPA?
8. Have you had any training for CBPA during your time as an in-service teacher?

**Appendix 6: Plain Language Statement**

University of Glasgow

College of Social Sciences

**Plain Language Statement**

**Study Title and Researcher Details**

Study Title: An exploration of the perceived role of the classroom teacher in the 'Comprehensive School Physical Activity Plan' era: attitudes towards classroom-based physical activity among pre-service and in-service elementary teachers

Principal Researcher: Gary Lynch

Title: University Instructor

University of Glasgow Ed.D student

Supervisor: Dr Georgina Wardle (Georgina.Wardle@glasgow.ac.uk)

**Invitation Paragraph**

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

**What is the purpose of the study?**

To enhance the awareness of attitudes towards classroom-based physical activity among preservice and in-service elementary teachers. The information provided from this study will be considered when planning health-related elementary classes at a university. The

interviews included in this study will form part of the researcher's dissertation for his Ed.D at the University of Glasgow. This study will begin in January 2018 and will finish in May 2018.

**Why have I been chosen?**

You have been chosen to participate in this study because you are either a senior elementary education student in an elementary education teacher training program or an In-service elementary school teacher that has graduated from an elementary education teacher training program during the last three years. There will be approximately 32 people that may participate in this research. All senior elementary education students with surnames beginning with the letters A-M will be eligible for individual interviews. All senior elementary education students with surnames beginning with the letters N-Z will be eligible for the focus group interviews. All elementary in-service teachers will be eligible for individual interviews.

**Do I have to take part?**

It is entirely up to you to decide whether or not to take part in this research. If you decide to take part you are still free to withdraw at any time and without giving a reason. Your decision whether or not to participate will not affect your grades or your relationship with the researcher in any way. You may decide to withdraw from the research at any time and this will not affect your relationship with the researcher.

**What will happen to me if I take part?**

You will be interviewed either individually or as part of a focus group. Both types of interview will be audio-recorded and will last no longer than 60 minutes. Counselling will be available for you should you suffer any distress at any point before, during, or after the interview.

**Will my taking part in this study be kept confidential?**

Please note that assurances on confidentiality will be strictly adhered to unless evidence of wrongdoing or potential harm is uncovered. In such cases the university may be obliged to contact relevant statutory bodies/agencies. All information which is collected about you during the course of the research will be kept strictly confidential. You will be identified by an ID number and any information about you will have your name and address removed so that you

cannot be recognised from it. If you take part in a focus group interview your confidentiality cannot be guaranteed due to the fact that other research participants besides the researcher will take part in the interview.

**What will happen to the results of the research study?**

The results of this research study will be included in the researcher's dissertation as part of his Ed.D at the University of Glasgow. All of the personal details of each participant will be kept confidential in this study. Research data will be destroyed on July 1st, 2028. The research data will be kept for ten years so that it is available if this research is published in a journal. All participants will be given a pseudonym in any published material from this study. Direct quotes will only be used with permission from the research participant, and these quotes will be anonymised.

**Who is organising and funding the research?**

This research is being organized by the researcher. There is no funding for this research.

**Who has reviewed the study?**

This project has been reviewed by the Ethics Committee at the University of South Carolina and the College of Social Sciences Research Ethics Committee at the University of Glasgow.

For further information please contact Gary Lynch at glynch@uscupstate.edu.

If you have any concerns regarding the conduct of the research project please contact the College Ethics Officer Dr Muir Houston: Muir.Houston@glasgow.ac.uk

**Appendix 7: Consent Form**

University of Glasgow

College of Social Sciences

## Consent Form

**Title of Project:** An exploration of the perceived role of the classroom teacher in the 'Comprehensive School Physical Activity Plan' era: attitudes towards classroom-based physical activity among pre-service and in-service elementary teachers

**Name of Researcher:** Gary Lynch

I confirm that I have read and understood the Plain Language Statement/Participant Information Sheet for the above study and have had the opportunity to ask questions.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

I consent to interviews being audio-recorded.

I acknowledge that participants will be referred to by pseudonym.

I acknowledge that there will be no effect on my grades arising from my participation or non-participation in this research.

I understand that the data collected from this research will be stored securely with my personal details removed and agree for it to be held as set out in the Plain Language Statement.

**Basic consent clause, tick box format**

I agree to take part in this research study ☐

I do not agree to take part in this research study ☐

Name of Participant: …… Signature ……..

Date ……

Name of Researcher: …… Signature ……..

Date ……