

“Where do you get that extra 20 minutes a day?”

Understanding how local-level environmental  
factors shape the implementation of  
Ontario’s Daily Physical Activity Policy

by

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## **Author's Declaration**

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

## Abstract

Rising obesity rates and low physical activity levels among children and youth are a global concern due to links to adverse health outcomes, poor quality of life, and an increased burden on the health care system. One response to the problem has been the implementation of school-based physical activity and nutrition policies. For example, the Ontario Ministry of Education's Daily Physical Activity (DPA) Policy mandates that all elementary school students receive at least 20 minutes of physical activity per day. This exploratory research sought to understand the local-level factors shaping implementation of DPA, from the perspective of elementary school teachers and principals. Qualitative in-depth interviews were conducted with Ontario grade 1-8 teachers (n=14) and elementary school principals (n=5) regarding DPA implementation, facilitators, barriers, perceived outcomes, and suggestions for change. Interviews were audio recorded (with permission) and transcribed verbatim for subsequent thematic analysis using NVivo.

Although all but two participants indicated they had implemented DPA, the majority reported that students were not meeting the requirement daily. Findings were organized using the Analysis Grid for Environments Linked to Obesity (ANGELO) framework. Implementation facilitators were focused within the microenvironment (i.e., classrooms and schools), while barriers were identified within both the micro- and macroenvironments (i.e., classrooms, schools, school boards, and the Ministry of Education). Both teachers and principals considered DPA a lower priority than other subjects, partly because of limited monitoring of implementation within schools and school boards. Participants discussed student benefits resulting from DPA; however, student fitness was not identified as a positive outcome- in fact, some questioned whether the policy is improving student physical activity levels.

The results suggest the status of DPA results from a failure of implementation rather than a failure of concept. Participants believed increasing student physical activity levels was important; however, they argued that factors within the classroom, school, school board, and Ministry of Education limit the feasibility of delivering DPA. This thesis contributes to the limited literature regarding the evaluation of DPA implementation and outcomes by exploring the perspectives of teachers and principals implementing the policy. Substantive, methodological, and theoretical contributions to the school-based physical activity literature are discussed, followed by policy implications and directions for future research.

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## **Dedication**

This thesis is dedicated to my loving grandparents, Nan and Pop. Thank you for your unconditional love and for always believing in me. You taught me so much about what really matters in life and I thank you for shaping the person I am today. Miss you both xoxo.

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## **List of Abbreviations**

**ANGELO:** Analysis Grid for Environments Linked to Obesity (framework)

**DPA:** Daily Physical Activity (Policy)

**EQAO:** Education Quality Accountability Office (Testing) [the standardized testing in Ontario schools]

**MVPA:** moderate to vigorous intensity physical activity

**Ophea:** Ontario Physical and Health Education Association



# CHAPTER ONE: INTRODUCTION

## 1.1 Research Problem

Physical activity levels are alarmingly low: between 2007 and 2009, 85% of adults (age 20-79) and 93% of children (age 6-19) in Canada were not meeting the Canadian Physical Activity Guidelines (Colley et al., 2011a; Colley et al., 2011b). This is particularly concerning because it has been estimated that physical inactivity causes 6-10% of breast cancer, colon cancer, coronary heart disease, and type 2 diabetes globally (Lee et al., 2012). As well, more than 5.3 million deaths in 2008 were attributed to physical inactivity (Lee et al., 2012). Lee et al. (2012) estimated that if global physical inactivity declined by just 10%, more than 533 000 deaths could be prevented each year. Physical inactivity also has negative economic impacts. In Canada, it has been estimated that the cost of physical inactivity in 2001 was \$5.3 billion, almost 3% of Canada's health care costs for that year (Katzmarzyk & Janssen, 2004). More recent estimates from the 2009 Canadian Community Health Survey indicate that for Ontario only, the cost of physical inactivity was \$3.4 billion in 2009 (Katzmarzyk, 2011). Low physical activity levels can lead to chronic disease and create an economic burden on the health care system, jeopardizing its sustainability; hence, it is essential to increase physical activity levels across the population.

Low physical activity levels among children are a public health concern due to documented links to adverse health outcomes (Dobbins, DeCorby, Robeson, Husson, & Tirilis, 2009; Kriemler et al., 2011; World Health Organization [WHO], 2004). The 2011 Canadian Physical Activity Guidelines recommend that 5-17 year-olds achieve 60 minutes of moderate to vigorous intensity physical activity (MVPA) per day, including vigorous physical activity at least three times per week (Canadian Society for Exercise Physiology, 2011). However, data collected from 2007 to 2009 for the Canadian Health Measures Survey show that only 7% of Canadian

children and youth are achieving these guidelines (Colley et al., 2011b). Developing strategies to increase physical activity levels among children has become a public health priority. Schools have been described as ideal settings for physical activity interventions because the target population can be easily reached on a daily basis (Efrat, 2011). Yet even within this ideal setting, there is variation in student physical activity levels across schools, because school characteristics influence student physical activity opportunities (Hobin et al., 2012; Hobin, Leatherdale, Manske, & Robertson-Wilson, 2010; Leatherdale, Manske, Faulkner, Arbour, & Bredin, 2010).

Increasing physical activity levels has been shown to have positive effects on cardiovascular health, mental health, and reducing metabolic syndrome risk and adiposity in children and youth (Daniels et al., 2005; Janssen & LeBlanc, 2010; Strong et al., 2005). Due to the links between physical inactivity and chronic disease in adulthood (Warburton, Charlesworth, Ivey, Nettlefold, & Bredin, 2010), increasing physical activity levels in children and adolescents is likely to have preventative effects in adult life. The health and economic concerns associated with the low physical activity levels among today's children and youth have led to an increase in school-based physical activity initiatives worldwide.

The clear link between physical inactivity and adverse health outcomes is paralleled by an emerging area of research that concerns the relationship between student physical activity levels and academic performance. Several review studies have supported a positive association between physical activity and academic outcomes (Efrat, 2011; Mahar, 2011; Rasberry et al., 2011; Singh, Uijtdewilligen, Twisk, van Mechelen, & Chinapaw, 2012; Strong et al., 2005). Allocating increased time to physical activity during school has a positive or neutral effect on academic performance; hence, increased physical activity does not negatively influence other academic subjects (Rasberry et al., 2011; Trudeau & Shepherd, 2008). Rasberry et al. (2011)

concluded that physical activity could improve academic achievement, cognitive skills, attitudes, and academic behaviour. Mahar (2011) recommended that teachers implement physical activity during instructional time because of the positive association between physical activity and attention-to-task. Both the academic and health benefits of physical activity support the implementation of school-based physical activity initiatives.

Given the importance of increasing physical activity levels in this age group, it is essential to evaluate whether and how physical activity interventions are reaching their intended goals. Evaluation can determine whether policies are meeting their proposed objectives and the needs of governments and schools, leading to improved policy support and implementation (Taylor, McKenna, & Butler, 2010). Evaluation also provides accountability and evidence for future policy decisions (Chorney, 2009; Taylor et al., 2010).

## **1.2 Research Context**

The negative health effects of physical inactivity in children, as well as the potential social and economic burdens associated with decreased quality of life and increased chronic disease prevalence, have led to global, national, and provincial strategies to increase physical activity. In 2007, the World Health Organization released its “Guide for Population-Based Approaches to Increasing Levels of Physical Activity”, suggesting that schools provide daily physical education classes for students (WHO, 2007). However, only 55% of Canadian schools have fully implemented a policy for daily physical education (Canadian Fitness and Lifestyle Research Institute, 2012). Barriers to providing daily physical education include the subject being considered a lower priority than other curriculum areas, a shortage of physical education specialists, absence of or inadequate facilities, and scheduling (Dwyer et al., 2003). Therefore, alternative school-based physical activity interventions have been developed to increase student physical activity levels.

One type of alternative intervention is short physical activity breaks implemented in classrooms by general classroom teachers. Barr-Anderson, AuYoung, Whitt-Glover, Glenn, and Yancey (2011) conducted a review of 23 interventions that included short (average 10-15 minute) physical activity bouts. Of the 15 school-based interventions included, 12 studies reported improvements in physical activity, and more than half of the studies found positive academic outcomes. The authors concluded that these interventions show promise in increasing student physical activity levels (Barr-Anderson et al., 2011). Further, Bassett et al. (2013) investigated the increase in time spent in MVPA per school day for school-based physical activity policies and built environment interventions. While mandatory physical education was found to increase MVPA levels the most (23 minutes), classroom activity breaks were found to be almost as effective (19 minutes) (Bassett et al., 2013). Therefore, physical activity breaks led by classroom teachers provide an alternative opportunity to increase physical activity levels in schools where providing daily physical education is not feasible.

### **1.2.1 Ontario's Daily Physical Activity Policy**

In order to address physical inactivity, in 2005, the Ontario Ministry of Education enacted *Policy 138: Daily Physical Activity in Elementary Schools, Grades 1-8* (herein referred to as DPA), which mandates that all students in grades 1 to 8 participate in 20 minutes of sustained MVPA within instructional time each day:

School boards must ensure that all elementary students, including students with special needs, have a minimum of twenty minutes of sustained moderate to vigorous physical activity each school day during instructional time. The goal of daily physical activity is to enable all elementary students to improve or maintain their physical fitness and their overall health and wellness, and to enhance their learning opportunities.

(Ontario Ministry of Education, 2005).

However, there have been concerns regarding DPA implementation and the absence of policy monitoring and evaluation. A 2012 report by Public Health Ontario and Cancer Care Ontario

criticized the lack of evaluation on DPA implementation, feasibility, and quality. They stressed the importance of determining the types of interventions that have been employed to meet the policy's objectives, implementation facilitators and barriers, and whether the policy is achieving its intended outcomes (Cancer Care Ontario & Public Health Ontario, 2012). Additionally, two publications identified concerns regarding the policy at its release. Ramanathan, Allison, Faulkner, and Dwyer (2008) were concerned about DPA not being piloted prior to provincial implementation and the absence of resources for evaluation of the policy. Robertson-Wilson and Lévesque (2009) suggested that program resources might not be sustainable or sufficient, as early reports indicated that teachers were facing challenges with scheduling, space, and training. Researchers emphasize the importance of asking school stakeholders about their experiences implementing the policy and any challenges they have faced (Chorney, 2009; He, Piche, Beynon, Kurtz, & Harris, 2011; Ramanathan et al., 2008; Robertson-Wilson & Lévesque, 2009).

To date, only two studies in the literature have evaluated Ontario's DPA Policy. In a study involving students from 16 Toronto schools, Stone, Faulkner, Zeglen-Hunt, and Cowie Bonne (2012) found that less than half of participants received DPA daily, and no students engaged in sustained MVPA for the time outlined in the policy ( $\geq 20$  minutes). However, those who participated in DPA daily were more active; thus, Stone et al. (2012) argued that if implemented as intended, DPA can achieve its anticipated health benefits. Surveying 145 Thames Valley District School Board teachers, Patton (2012) found that more than half of the teachers were "sometimes" or "never or rarely" implementing DPA, citing time as the greatest barrier to implementation.

Although Stone et al.'s study found variation in DPA implementation and outcomes between schools, it did not investigate how or why this variation occurs. Patton (2012) began to

investigate these questions; however, the quantitative methods used prevented an in-depth understanding of the perspectives of teachers within the sample. Building from the Stone et al. (2012) and Patton (2012) studies, this thesis uses a qualitative approach to investigate the local-level factors that shape the implementation and perceived outcomes of DPA in classrooms. This research provides insight into how some schools are implementing the policy successfully and why other schools may not be.

### **1.3 Research Objectives**

With limited monitoring and evaluation of DPA reported, a question arises as to how the policy has been implemented at the local level, and whether the anticipated outcomes (e.g., student physical activity, behaviour, and learning) are being achieved. This thesis sought to investigate the local-level factors that shape the implementation of DPA in elementary schools. Two specific objectives are addressed:

1. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of front-line teachers; and,
2. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of school administrators.

### **1.4 Contributions**

This thesis makes theoretical, methodological, and substantive contributions to the school-based physical activity literature, and has implications for policy. The theoretical contribution is using the Analysis Grid for Environments Linked to Obesity (ANGELO) framework to evaluate a physical activity intervention (DPA) in elementary school classrooms. The ANGELO framework is a model that can be used to organize factors that promote or inhibit obesity within the environment. In this thesis, the framework was used to assess factors that influence DPA implementation and effectiveness. Adopting the framework allows the researcher



to identify facilitators and barriers at multiple environmental levels, thus informing stakeholders of areas of improvement to focus on at each level.

Methodologically, this thesis contributes by using a qualitative approach to understand teachers' and administrators' perspectives on DPA implementation at the school and classroom levels. The majority of studies on school-based physical activity policies have been quantitative in nature. Qualitative methods allowed an enhanced understanding of participant experiences in order to determine the specific factors that shape DPA implementation in individual schools and classrooms.

This thesis contributes substantively by exploring key informants' experiences implementing DPA in their schools and classrooms, including facilitators and barriers to achieving the policy's intended objectives. Researchers have stressed the importance of monitoring and evaluating the DPA policy to facilitate its success (Chorney, 2009; Patton & McDougall, 2009). This thesis adds to the limited literature regarding DPA evaluation by providing insight into teachers' and administrators' perspectives of DPA, the importance of which was emphasized by Cancer Care Ontario and Public Health Ontario (2012), Ramanathan et al. (2008), and Robertson-Wilson and Lévesque (2009). Although the findings are specific to a small sample of key informants, participants were chosen in order to increase transferability of the findings; that is, to increase the likelihood that the findings can be applied to individuals outside the sample (Baxter & Eyles, 1997).

Lastly, this thesis has policy implications as it provides a local-level perspective of whether DPA is being implemented as intended, the strategies being used, as well as facilitators and barriers at the school board, school, and class levels that influence implementation. These findings contribute evidence to the limited evaluation of the DPA policy in Ontario.

## **1.5 Chapter Outline**

This thesis is organized into five chapters. The following chapter reviews the relevant theoretical, methodological, and substantive literature that informs this research. The third chapter outlines the research design and methodology, including recruitment, the interview process, and qualitative analysis. Chapter four describes the qualitative findings. The final chapter discusses the substantive, methodological, and theoretical contributions of the thesis, as well as policy implications, limitations, and suggestions for future research.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The following chapter reviews the theoretical, methodological, and substantive literature that informs this thesis and its objectives:

1. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of front-line teachers; and,
2. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of school administrators.

The chapter opens with a description of the current school-based policies for daily physical activity in Canada. Next, literature investigating the link between physical activity and academic outcomes will be reviewed. The theory and theoretical framework informing this thesis will be outlined, followed by research on the school environmental factors linked to school-based physical activity and student physical activity levels. Lastly, studies on Canadian and international school-based physical activity policies, including methodological approaches and findings will be examined.

### **2.2 School-Based Policies for Daily Physical Activity in Canada**

Currently, in Canada, there are three provinces with provincially mandated policies for daily physical activity in schools: Ontario, Alberta, and British Columbia (BC). This section will overview the requirements of these three policies. Evaluations of the policies will be reviewed in Sections 2.6.1 and 2.6.2.

The Alberta Ministry of Education implemented its Daily Physical Activity (DPA) policy in September 2005 (Alberta Education, 2008). This policy mandates 30 minutes of physical activity per day for grade 1-9 students through school-organized activities (Alberta Education, 2012). These 30 minutes can occur during instructional and/or non-instructional time; thus, both physical education class (Alberta Education, 2012) and recess (Alberta Education, 2006) can

contribute. Responsibilities for monitoring policy implementation are also outlined: “school authorities will monitor the implementation of DPA to ensure that all students are active for a minimum of 30 minutes daily”, where “school authorities” are defined as school boards (Alberta Education, 2006, p. 2).

In September 2008, the BC Ministry of Education mandated several DPA requirements for students from kindergarten to grade 12 (Province of British Columbia, 2013). Similar to Alberta, all requirements can be fulfilled in instructional and/or non-instructional time, including recess and after school (Province of British Columbia, 2013). Students in kindergarten to grade 7 are to receive 30 minutes of physical activity daily. For grade 8 and 9 students, schools can choose whether to provide 30 minutes of physical activity per day or have students document and report 150 minutes of moderate to vigorous intensity physical activity (MVPA) per week; the weekly 150 minutes of MVPA is also the requirement for students in grades 10-12 (Province of British Columbia, 2013). School boards are “responsible for developing policies and procedures to track daily physical activity of all students” (British Columbia Ministry of Education, 2011, p. 7). Additionally, DPA participation is included in the report cards of kindergarten to grade 9 students; teachers report whether the student is meeting the DPA requirement (British Columbia Ministry of Education, 2011).

As outlined in Chapter 1, the Ontario Ministry of Education’s DPA Policy mandates that all grade 1-8 students receive 20 minutes of sustained MVPA per day during instructional time. The policy was released in 2005 and schools were expected to meet the guideline by the end of the 2005-2006 school year (Ontario Ministry of Education, 2005). It has since been included in the 2010 Ontario Health and Physical Education (Grades 1-8) Curriculum as a mandatory

component (Ontario Ministry of Education, 2010). The goal of DPA is expanded from the original policy memorandum in the curriculum (additions and changes are underlined):

The goal of daily physical activity is to instill the habit of activity and enable all elementary students to be active on a daily basis in order to maintain or enhance their physical fitness, their overall health and wellness, and their ability and readiness to learn. (Ontario Ministry of Education, 2010).

The policy states that on days when there is no Health and Physical Education class or when the Health and Physical Education class does not involve physical activity (i.e., health), twenty minutes of sustained MVPA must be provided during instructional time (Ontario Ministry of Education, 2005). Suggested strategies include integrating the physical activity into other subjects, and combining short sessions (of at least 10 minutes each) to reach the 20 minutes. In terms of implementation responsibilities, the policy states “school boards will monitor the implementation of the policy on daily physical activity to ensure that all elementary students are provided with the opportunity to be active for at least twenty minutes each day during instructional time” (Ontario Ministry of Education, 2005, p. 22). Additionally, the 2010 Health and Physical Education Curriculum also outlines the principal’s role: “It is the principal’s responsibility to ensure that adequate time for health and physical education is included in each day’s timetable and that students have an opportunity for daily physical activity” (Ontario Ministry of Education, 2010, p. 12).

Although the three policies are similar, they apply to different age groups (Ontario: grades 1-8, Alberta: grades 1-9, BC: grades K-12). Ontario is the only province that requires students to reach MVPA each day (although BC’s weekly requirements for grades 8-12 include MVPA). Further, Ontario’s policy is the only one that involves sustaining MVPA over a period of time. Ontario’s time requirement is also different, mandating 20 minutes during instructional time, whereas Alberta and BC require 30 minutes that can occur during or outside of

instructional time. All three policies assign monitoring responsibilities to the school boards; however, Ontario also delegates some monitoring duties to principals, while only BC requires DPA participation to be recorded on report cards. Although the three policies aim to increase students' daily physical activity, their requirements differ. Ontario's guidelines appear to be more structured regarding both the intensity level and instructional time requirements compared to the other provinces' policies. That is, only the Ontario policy specifies the sustained MVPA requirement and that the guidelines must be met during instructional time.

### **2.3 Association between Physical Activity, Behaviour, and Academic Attainment**

As mentioned in the previous chapter, an emerging area of research is investigating the link between physical activity and academic outcomes. Several review studies have supported a positive association between these two variables (Efrat, 2011; Fedewa & Ahn, 2011; Mahar, 2011; Rasberry et al., 2011; Singh et al., 2012). Studies in this section were identified using a search of three electronic databases (PubMed, ERIC, and Google Scholar) using the search terms “physical activity”, “physical fitness”, “exercise”, “schools (Limit: Child 6-12 years)”, “educational status”, “educational achievement”, “cognition”, “classroom behavio(u)r”, and “attention”. Only English language studies published in the last five years were included. Detailed summaries of the studies in this section can be found in **Appendix A**.

Fedewa and Ahn (2011) conducted a meta-analysis of 59 studies examining the relationship between physical activity and cognitive functioning in school-aged children. Physical activity outcomes (the type, frequency, and length of the physical activity intervention) and cognitive outcomes were coded. The authors concluded that physical activity has academic benefits, especially in math and reading, and found that aerobic fitness had the greatest effect on achievement outcomes. Trudeau and Shephard (2008) reviewed 17 articles related to participation in school-based physical activity (physical education, school physical activity

programs, and sports) and academic achievement. After reviewing both quasi-experimental and cross-sectional studies, the authors concluded that physical activity provided by trained instructors could be added to the curriculum, subtracting time from other subjects, with no negative influence on academic attainment. The authors also reported that physical activity leads to benefits in concentration, memory, and classroom behaviour.

Rasberry et al. (2011) conducted a systematic review of 43 articles examining the association between physical activity and academic outcomes in school-aged children. Of all of the associations included in the review, just over half were positive, 48% were non-significant, and 1.5% were negative. Rasberry et al. (2011) concluded that physical activity has either a positive or neutral effect on academic achievement, and physical activity during the school day will not negatively impact, and may enhance, academic achievement. Singh et al. (2012) reviewed 14 articles (ten observational and four intervention studies) to investigate the association between physical activity and academic outcomes in children and youth and also assessed the quality of the methods used in the studies. Only two studies were assessed as high quality; however, they concluded that there was evidence of a “significant longitudinal positive relationship between physical activity and academic performance” (Singh et al., 2012, p. 53). The authors called for additional high-quality studies to examine the dose-response relationship between physical activity and academic outcomes.

Efrat (2011) specifically analyzed the association between physical activity and/or fitness and academic outcomes in low-income and minority children. The article reviewed seven studies specific to low-income and minority children; 57% reported a positive association between physical activity and academic outcomes, 29% reported a neutral association, and 14% reported a negative association. Furthermore, the studies that found a positive association used objective

measurements of the two variables, whereas those that found a neutral or negative association used less accurate measures, such as physical activity recall data and grades rather than standardized test results. Efrat (2011) concluded that increasing minority and low-income students' aerobic fitness and MVPA levels may positively influence academic outcomes. Given the lower physical activity, aerobic fitness, and academic outcomes seen in these groups, Efrat argued that increasing physical activity opportunities in schools could reduce disparities in both health and academic outcomes. Lastly, Mahar (2011) conducted a literature review to investigate the link between school-based physical activity breaks and on-task behaviour (i.e., paying attention and concentrating on the given activity as opposed to being off-task and doing something else). He reviewed seven studies that directly observed attention-to-task behaviour in elementary students and concluded that based on these studies, evidence was “moderate to good” (Mahar, 2011, p. S64) that physical activity during school could increase on-task behaviour.

Studies have also investigated the links between fitness and academic achievement. Chomitz et al. (2009) compared the academic and fitness scores of grade 4, 6, 7, and 8 students (n=1841). Fitness was measured through five tests, while academic outcomes were assessed by whether or not a student passed a standardized test in math and/or English. Chomitz et al. (2009) found that the odds of passing the standardized test increased with the number of fitness tests passed. Fitness scores were more strongly associated with math scores than English scores. In a similar study, Bass, Brown, Laurson, and Coleman (2013) investigated whether aerobic capacity, muscular strength, muscular endurance, flexibility, and BMI were individually linked to academic achievement in grade 6-8 students (n=838). Students were assessed as to whether or not they met the standard for five fitness tests as measured by the Fitnessgram assessment. Academic outcomes were measured by whether or not students met the standards for reading and



math on a standardized test. Bass et al. (2013) found that aerobic capacity, muscular endurance, and muscular strength were significantly associated with academic achievement. Those that met the standard for aerobic fitness were two to four times more likely to pass the standardized tests for reading and math than those who did not meet the standard.

Donnelly and Lambourne (2011) reported on a three-year study that investigated the effects of a classroom physical activity intervention on academic achievement. Twenty-four elementary schools were assigned to an intervention or control condition. Intervention classes were to receive 90 minutes of MVPA per week in the classroom, hallways, and/or outdoors. However, teachers reported that their classes were not receiving 90 minutes of MVPA each week, with only 64% of intervention classes receiving at least 75 minutes per week (Donnelly & Lambourne, 2011). Physical activity levels were measured by accelerometry and academic outcomes were measured by the Wechsler Individual Achievement Test- 2<sup>nd</sup> Edition, by a blinded third-party. Despite intervention classes not achieving the MVPA guidelines, improvements in the overall, reading, math, and spelling scores for the intervention group were significantly greater than the control group after the three-year period. The authors concluded that classroom-based physical activity could improve academic scores.

Lastly, Telford, Cunningham, Telford, and Abharatna (2012) investigated the relationship between academics and physical activity at both the school and individual level. The sample included grade three and five students (n=757) in 29 Australian elementary schools. They compared student scores on government literacy and math tests to their physical activity and fitness. Stronger relationships between physical activity, fitness, and the academic scores were found at the school-level compared to the individual level. Therefore, the authors concluded that a school culture where both physical activity and academic achievement are emphasized might

partly explain the relationship between physical activity and academic achievement. This finding is consistent with the approach of the current thesis, which will examine the local-level factors that influence implementation and outcomes.

Although the studies above called for further research to investigate this topic, they identify a positive association between physical activity and academic attainment, providing further evidence for implementing school-based physical activity opportunities. The literature regarding school-based physical activity policies will be reviewed in Section 2.6.

## **2.4 Theoretical Context**

### **2.4.1 Social Ecological Theory**

Social ecological theory assumes that changes made to the social environment will lead to changes at the individual level (McLeroy, Bibeau, Steckler, & Glanz, 1988). Bronfenbrenner (1977) introduced the concept of social ecological theory, suggesting that behaviour is affected by multiple levels within an environment, from face-to-face interactions (microsystem) to cultural beliefs and values within a population (macrosystem). When applied to health promotion, social ecological theory implies that alterations to the environment can lead to improved health of individuals. The underlying assumption of the Ontario DPA Policy (herein referred to as DPA) is that mandating schools to provide students with 20 minutes of physical activity per day will lead to more active and healthier students. Social ecological theory suggests that factors at the classroom, school, school board, and provincial levels influence DPA implementation and outcomes.

The theory also assumes that individuals within each level influence the environment (Green, Richard, & Potvin, 1996). In order to implement environmental changes, individuals within that population must be supportive (McLeroy et al., 1988). The effectiveness of an intervention depends on the fit between individuals and their environment, as well as the

characteristics of the setting where it takes place (Green et al., 1996; Stokols, 1996). If individuals at the school board, school, or class level do not value the importance of physical activity, DPA may not be implemented as intended in classrooms. This project seeks to explore the local environmental factors in the school setting that affect DPA implementation, and whether changes can be made at the various environmental levels in order to improve school- and student-level outcomes. Hence, social ecological theory will inform this thesis.

Social ecological theory has been used in other studies of school-based physical activity. Langille and Rodgers (2010) used the social ecological model to investigate how various environmental levels (provincial, school board, school, and classroom) influence physical activity promotion in elementary schools. They found that all four levels influenced school-based physical activity availability and accessibility, and the between-level interactions were multi-directional, acting both top-down and bottom-up. Robertson-Wilson, Lévesque, and Richard (2009) also used the social ecological model to inform their study, which involved conducting focus groups with middle school students to determine perceived facilitators and barriers to school-based physical activity. However, the findings only focused on school-level influences.

#### **2.4.2 Analysis Grid for Environments Linked to Obesity Framework**

In order to organize the factors acting at each environmental level, the findings from this thesis were organized using the Analysis Grid for Environments Linked to Obesity (ANGELO) framework, as described by Swinburn, Egger, and Raza (1999). The ANGELO framework divides the environment into two scales: micro (known as “settings”, including classrooms and schools) and macro (known as “sectors”, such as levels of government and the education system). Within the micro- and macroenvironments, there are physical, economic, sociocultural, and political environments, and factors within each contribute to DPA implementation, effectiveness, and sustainability. The physical environment describes what is available, while the

economic environment includes the costs. The sociocultural environment reflects the values, beliefs, and attitudes of a group towards physical activity, and the political environment refers to “laws, regulations, policies (informal or formal), and institutional rules” (Swinburn et al., 1999, p. 567).

The framework has been used to evaluate the implementation of an obesity intervention. Lloyd and Dumbrell (2011) used the framework to assess the factors that influenced the implementation of a nutrition program at a community swimming pool canteen. Lloyd and Dumbrell’s (2011) approach viewed implementation problems as barriers that could be overcome by adapting strategies for specific implementation settings; the current research will adopt a similar view. This differs from the approach that sees implementation problems as a failure to implement the program “correctly”. Consistent with their approach, Lloyd and Dumbrell (2011) used the ANGELO framework in order to understand how the physical, economic, political, and sociocultural environments influenced implementation. After interviewing key informants and consulting project records and media articles, the authors found that factors within the sociocultural and political environments of the program settings influenced implementation. They concluded that understanding the setting of an intervention is essential for implementation. Specifically, after stakeholder consultation, the authors realized their intended intervention goal of a menu consisting of only healthy food was not feasible. Hence, they compromised to increase the availability of healthy foods and reduce unhealthy options in stages. Lloyd and Dumbrell (2011) recommended that stakeholders involved with implementation be open to changing intervention objectives and strategies to fit individual settings as needed.

Additionally, the framework has been used to inform other school-based primary research studies. Hennessy et al. (2010) used the ANGELO framework to organize parents' and teachers' perceptions of facilitators and barriers to physical activity opportunities for children in four U.S. rural communities. Teachers and parents identified factors within the home, school, and community that influenced physical activity. Within schools, they identified factors within each of the four environment types. Facilitators and barriers included funding for physical activity and physical education programming, child motivation to be active, available physical activity programming, physical education and recess time, school layout and location, weather, and available equipment. Lastly, Carter and Swinburn (2004) characterized the school nutrition environment of 200 New Zealand primary schools. They specifically examined the types of food available in schools, the cost of food items, whether the schools had nutrition policies, and key informants' thoughts on the nutritional environment of the school.

Drawing from the published literature and committee input, Table 2.1 provides an example of how the ANGELO framework could be adapted to assess the factors that influence DPA implementation and effectiveness in individual schools and classrooms.

**Table 2.1. Example of how the ANGELO framework could be adapted for DPA in elementary schools (adapted from Swinburn et al., 1999).**

	<b>Physical Environment</b>	<b>Sociocultural Environment</b>	<b>Economic Environment</b>	<b>Political Environment</b>
<b>MICRO (settings)</b>				
Schools and Classrooms	<ul style="list-style-type: none"> <li>• PA equipment</li> <li>• Space/facilities for PA</li> <li>• Time available to dedicate to PA</li> <li>• Training opportunities for teachers, initiated by school</li> <li>• Training opportunities sought by teachers, not initiated by school or school board</li> </ul>	<ul style="list-style-type: none"> <li>• School-specific views on importance of PA</li> <li>• Teacher-specific views on importance of PA</li> <li>• Teachers as role models for regular PA</li> <li>• Teacher’s comfort in teaching PA to students</li> <li>• Socioeconomic (i.e., family, neighbourhood) factors that influence students’ PA participation</li> <li>• Parents’ views on importance of PA at school</li> <li>• Community characteristics, organizations, or opportunities that influence students’ PA participation</li> </ul>	<ul style="list-style-type: none"> <li>• Available financial resources for school (D)PA equipment, resources, and facilities</li> </ul>	<ul style="list-style-type: none"> <li>• School-specific policies on (D)PA</li> <li>• School-specific policies on use of PA facilities</li> <li>• School-specific policies on monitoring DPA implementation and continuity</li> <li>• Curriculum</li> </ul>
<b>MACRO (sectors)</b>				
Education System (School Boards and Ontario Ministry of Education)	<ul style="list-style-type: none"> <li>• Training opportunities available through the school board or Ministry (for school board personnel, administrators, and teachers)</li> <li>• Availability of PA experts at school board</li> </ul>	<ul style="list-style-type: none"> <li>• Local school board’s view on importance of PA</li> <li>• Community organizations or opportunities partnered with school boards that influence students’ PA participation</li> </ul>	<ul style="list-style-type: none"> <li>• Available financial resources to allocate to school (D)PA equipment, resources, and facilities</li> </ul>	<ul style="list-style-type: none"> <li>• School board-specific policies on (D)PA</li> <li>• School board-specific policies on monitoring DPA implementation and continuity</li> <li>• School board’s accountability (e.g., reporting) to Ontario Ministry of Education</li> <li>• Curriculum</li> </ul>

\*Note: PA: physical activity

## **2.5 Environmental Influences on School-Based Physical Activity**

Both social ecological theory and the ANGELO framework are consistent with the view that factors within the environment influence health behaviours as well as intervention implementation and effectiveness. Hence, the following section reviews studies that have investigated the links between school environmental factors and physical activity behaviours and programs. Further details of these studies are included in **Appendix B**.

### **2.5.1 Implementation of School-Based Physical Activity**

Langille and Rodgers (2010) conducted interviews with government (n=4) and school board (n=3) representatives, principals (n=3), and teachers (n=4) in a large Canadian city to investigate how different environmental levels influence school-based physical activity promotion. The interview questions focused on the influences of four levels (classroom, school, school board, and province) on physical activity in schools; this study was not related to a specific policy or intervention. They found that the four levels interacted to influence school-based physical activity, emphasizing the importance of direction from macro-level stakeholders (i.e., province and school boards) and support from micro-level stakeholders (i.e., teachers and principals) for effective implementation. The authors stressed the inclusion of enforcement and monitoring provisions when developing school-based physical activity policies. Langille and Rodgers (2010) provide a useful framework for the current thesis due to their emphasis on factors at multiple scales that influence school-based physical activity. However, the teachers (n=4) included in the study were either physical activity/physical education specialists or teachers who had a “strong interest in physical activity” (Langille & Rodgers, 2010, p. 882); hence, their views may not be reflective of all elementary school teachers, limiting the transferability of these findings.

A similar study was conducted in Belgium by Cardon et al. (2012). Researchers were interested in identifying strategies used to implement school-based physical activity promotion initiatives and environmental facilitators. Administrators and physical education teachers from 111 elementary and 125 secondary schools completed an online survey. Attending training on school-community partnerships and physical activity promotion as well as greater perceived parent and school board interest in physical activity were associated with higher implementation. Additionally, in high schools, prioritizing initiatives other than physical activity had a negative influence on physical activity provision. Larger schools were found to have higher implementation, presumably due to a greater number of physical education teachers. The authors concluded that providing physical activity-related training and program resources are necessary to improve implementation.

### **2.5.2 Environmental Characteristics and Student Physical Activity Levels**

Three Ontario studies have used quantitative school surveys to examine the relationship between school-level characteristics and student physical activity. Hobin et al. (2012) investigated the association between the amount of time Ontario high school students (n=22 117) spent in MVPA and characteristics of the school built and social environments. They found that students attending schools with daily physical education class or an extra room where physical activity could take place accumulated more MVPA. Thus, they concluded that daily physical education class and extra school facilities for physical activity increase the time students spend in MVPA. However, it is important to note that time spent in MVPA was measured via self-report, and represented daily amounts rather than MVPA occurring at school specifically.

Leatherdale et al. (2010) used the School Health Environment Survey to explore how elementary school (n=30) characteristics influenced student (n=2379) physical activity levels. Schools were categorized as low- or high-risk based on their implementation status for four



areas: quality instruction and programs, healthy physical environment, supportive social environment, and community partnerships. Students at schools at higher stages of implementation were more likely to be moderately and highly active than those at schools at lower implementation stages. Students were more likely to be moderately active if their school was in the higher implementation phases for using physical activity as a reward, and were more likely to be highly active if their school allowed student access to facilities and equipment outside school hours or had community partnerships.

Leatherdale (2010) used the Healthy School Planner to determine school characteristics associated with students being overweight. The sample included 1264 grade 5-8 students and 30 Ontario elementary schools. Using a similar approach to Leatherdale et al. (2010), the implementation status of the four areas and indicators within them were compared to the odds of a student being overweight. The main finding of the study was that students were less likely to be overweight if their school had interschool programs, that is, if the school was involved in athletic competitions against other schools. The Hobin et al. (2012), Leatherdale et al. (2010), and Leatherdale (2010) studies provided school-level facilitators and barriers to school-based physical activity, although they did not evaluate specific policies or consider factors at the school board or provincial levels.

## **2.6 School-Based Physical Activity Policy Literature**

In the following section, quantitative, qualitative, and mixed methods studies that evaluated Canadian and international school-based physical activity policies are reviewed. Studies were identified through a search of three electronic databases (PubMed, ERIC, and Google Scholar) using the search terms “physical activity”, “physical fitness”, “exercise”, “daily physical activity”, “schools (Limit: Child 6-12 years)”, and “health policy”. An additional search was conducted for daily physical activity policies in i) Ontario and ii) Canada (“daily physical

activity”, “schools [Limit: Child 6-12 years]”, and “Ontario” or “Canada”). Only English language studies published in the last ten years were included. As school policies vary by geographic region (for example, in Canada, school policies are established by provincial governments and school boards), a geographical approach will be used to organize the following section: beginning with Ontario, followed by other Canadian provinces, and international studies. Many of these studies investigated implementation facilitators and barriers; thus, these findings are summarized at the end of the section. Details of the articles presented in this section are provided in **Appendices B and C** (Appendix C is specific to studies of the Canadian provincial DPA policies).

## **2.6.1 Ontario**

### ***2.6.1.1 The Daily Physical Activity Policy***

Robertson-Wilson and Lévesque (2009) examined publically available DPA documents in order to assess whether the policy was ready for implementation. They identified three areas that needed further consideration for effective implementation: resources, the value placed on DPA, and evaluation. The authors noted that school board and principal resources and professional development training were not available before the policy’s implementation, which likely influenced policy uptake. They were concerned that the absence of a “long-term funding strategy” (Robertson-Wilson & Lévesque, 2009, p. 126) would limit ongoing implementation due to limited funds for resources and training. Further, the lack of a DPA evaluation plan and the multi-stage communication process (Ministry to school boards to principals to teachers) were identified as barriers to the policy’s success. Robertson-Wilson and Lévesque (2009) called for future research to include stakeholder interviews with teachers to explore their perspectives and the value they place on DPA.

Stone et al. (2012) conducted a study with grade five and six students (n=856) in 16 Toronto schools to determine the proportion of students participating in DPA and whether children were achieving MVPA. Classroom schedules were used to report DPA frequency and students wore accelerometers to measure MVPA. Less than half of participants (49%) received DPA daily, and no students engaged in sustained MVPA for the time outlined in the policy ( $\geq 20$  minutes). However, those who participated in DPA daily were more active; thus, Stone et al. (2012) argued that if implemented as intended, DPA can achieve its anticipated health benefits. Although Stone et al. (2012) provided an evaluation of implementation and outcomes, the study did not consider implementation strategies, facilitators, or barriers; the authors suggested that future studies investigate these variables. In order to improve DPA outcomes, it is necessary to understand how the policy has been implemented in schools and the factors that influence implementation.

Patton (2012) investigated Thames Valley District School Board teachers' (n=145) views on implementation, supports, barriers, and overall thoughts on DPA. Teachers responded to a closed-ended questionnaire based on pre-determined response scales. Over half of participants reported sometimes (39%) or never or rarely (16%) running DPA sessions. Time constraints were seen as the greatest barrier, with teachers responding they had limited time for planning and conducting DPA, and that DPA "diverted time away from other subjects" (Patton, 2012, p. 18). A lack of accountability was identified, with 65% of participants reporting that administration rarely or never monitored DPA. Patton (2012) concluded that increased teacher training and school monitoring of DPA were necessary to improve policy implementation, noting that DPA is the only "subject" that teachers are not held accountable for, despite being part of the curriculum.

Patton's (2012) sample consisted of teachers from only one school board, and did not have representation from the school administration or school board levels. Although Patton (2012) is one of the first studies to assess DPA implementation at the class level, the use of a questionnaire has limitations. Firstly, since the questions were not open-ended, potential barriers and facilitators were pre-determined; thus, teachers could not provide options other than those included in the questionnaire and were not able to explain their answers. Open-ended qualitative questions are useful for understanding others' experiences and perspectives (Patton, 1990). In order to further explore Patton's findings and gain a more in-depth understanding of teachers' experiences with DPA implementation, qualitative methods are needed.

Outside the academic literature, some of the only reports to evaluate DPA have been provided by People for Education (Robertson-Wilson & Lévesque, 2009), an advocacy organization that surveys Ontario elementary and secondary school principals and school councils annually. However, these surveys have limitations, as they cover a variety of educational topics and thus contain few questions related to physical activity (e.g., the 2012 survey included two questions on DPA). The only DPA data included in these reports have been related to implementation barriers, which will be summarized later in this chapter (see Section 2.6.4). Additionally, the surveys do not gather input from teachers, providing limited insight into key stakeholders' experiences with DPA.

Overall, the limited literature regarding DPA suggests that the policy is not being implemented as intended and there is a need for further investigations to gain insight into the experiences of school stakeholders implementing DPA.

### ***2.6.1.2 Other School-Based Physical Activity Studies***

Although not specific to DPA, two qualitative studies and one quantitative study have investigated Ontario teachers' views of school-based physical activity opportunities. Dwyer et al.

(2003) conducted focus groups with Toronto teachers (n=45) regarding the barriers to implementing the 1998 physical education guidelines. The sample consisted of grade 1-6 teachers from five schools, and 80% of these teachers had no specialist training in physical education, yet were responsible for implementing the curriculum. Three main barriers were found: i) physical education was seen as a lower priority than other subjects, ii) expectations were not as clearly defined for physical education compared to the other subjects, and iii) inadequate facilities and equipment. He et al. (2011) interviewed elementary school principals (n=14) and grade 5-6 teachers (n=39) from 14 schools in the Thames Valley District School Board regarding screen-related sedentary behaviour. Principals and teachers were concerned about students' sedentary behaviour; however, they emphasized barriers to increasing physical activity opportunities in schools and identified the home environment as an important target for change. Similar to Dwyer et al. (2003), participants cited the demands of other subjects as well as limited facilities and equipment as barriers to increasing physical activity at school. Although the study did not specifically evaluate DPA, participants mentioned that implementing DPA was difficult and they would prefer daily physical education (He et al., 2011).

Lastly, Manske and Nowaczek (2011) presented the results of a study conducted by the Ontario Physical and Health Education Association (Ophea) that surveyed board representatives (n=29), principals (n=92), and teachers (n=159) about the implementation of the 2010 Elementary Health and Physical Education Curriculum and Ophea support resources. Teachers reported the top three facilitators to implementing the 2010 Health and Physical Education Curriculum were having time to review the curriculum (72%), being comfortable teaching physical education (65%), and experience teaching Health and Physical Education (60%). Teachers reported using DPA activity cards and the Ophea website, although the frequency of

use was unclear. Over half (56%) of the principals surveyed said DPA was a high priority; in contrast, over half (54%) of board representatives said DPA was a low priority. One limitation is because Ophea conducted the study participants may have felt inclined to answer positively regarding Ophea resources and supports. Additionally, the low participation rates across the three levels may have resulted in a sample consisting of individuals with strong relationships with Ophea, which could have biased the results. In summary, the findings from Dwyer et al. (2003), He et al. (2011), and Manske and Nowaczek (2011) provide facilitators and barriers that Ontario teachers and principals are facing regarding school-based physical activity. The current thesis will explore whether the same factors influence DPA.

## **2.6.2 Other Canadian Provinces**

### ***2.6.2.1 Alberta's Daily Physical Activity Policy***

Two evaluations of the Alberta DPA Policy have occurred. In 2007, Alberta Education conducted a survey with teachers and principals (n=1025) from 83 school boards. More than half of respondents reported their schools had provided additional resources to provincial DPA funding in order to implement DPA (Alberta Education, 2008). Seventy percent of participating schools provided daily physical education class, and 58% of respondents reported that the DPA requirement is met through these classes (Alberta Education, 2008). Participants reported that DPA was beneficial to student learning, student wellness, and the school environment. However, it should be noted that these three variables were not defined. Participants answered closed-ended statements using a five-point Likert scale, such as: "DPA has contributed to increased student learning"; "DPA has contributed to improved student wellness"; and "DPA has made a positive impact on the school environment" (Alberta Education, 2008, p. 35). Thus, it is difficult to determine the specific outcomes that teachers were referring to for these broad categories. The main challenges identified were allotting time for and scheduling DPA, as well as limited

facilities and space. Particularly interesting was the finding that teachers reported more barriers than principals, and that principals were more likely to respond positively about DPA than teachers. DPA monitoring was also investigated; 64% of respondents indicated that this was done through scheduling daily physical education. Additionally, 32% of principals reported that school-specific DPA information was required in their annual reports to school boards (Alberta Education, 2008).

Kennedy, Cantell, and Dewey (2010) surveyed principals and vice-principals of 55 Calgary schools regarding DPA strategies and barriers. One hundred percent of participants reported that they believed their school was “successful in implementing” DPA (Kennedy et al., 2010, p. e20). Daily physical education was present in 80% of schools and was the most frequently reported facilitator for DPA. Limited time available for DPA in the curriculum, space, and funding were identified as barriers. Kennedy et al. (2010) suggested increased training and funding for physical education specialists should be considered; however, they concluded that according to administrator reports, DPA implementation was successful in the sample schools.

Neither of these studies used an objective measure of implementation. Kennedy et al. (2010) asked “Do you think your school has been successful at implementing this [DPA] guideline?” (p. e23), while Alberta Education (2008) asked, “Which of the programming strategies below indicates how DPA is offered at your school?” (p. 64) with an option to answer that the school had not implemented DPA. Alberta Education (2008) also asked respondents to estimate the percentage of students in the school that were achieving 30 minutes of physical activity per day; however, this does not necessarily reflect DPA implementation, as it was not specified that physical activity needed to occur within the school day. Additionally, there is a potential bias associated with the results of the Alberta Education (2008) study since the

evaluation was conducted by the organization that created the policy. Despite these limitations, the results of these studies will be useful to compare to the current thesis' findings.

#### **2.6.2.2 BC's DPA Policy**

A recent qualitative study by Mâsse, Naiman, and Naylor (2013) evaluated the BC DPA and nutrition policies. Fifty principals (n=17), teachers and school staff (n=33) from 17 elementary and secondary schools were interviewed. Ten of the schools included were considered elementary schools. The sample consisted mainly of generalist teachers (n=21) but there were also nine physical education specialists. Half of the interview time involved questions related to DPA, including perceived implementation, strategies, impacts, facilitators, and barriers. Higher perceived implementation was noted for elementary schools compared to middle and high schools; additionally, principals reported higher implementation than teachers.

Facilitators included the availability of resources and facilities, having a school champion, and prioritizing physical education before the guidelines were mandated. Barriers included other subject demands, feeling inadequately trained to provide physical activity, and poor weather. Increased focus, improved academic performance and behaviour, student enjoyment, and increased positive classroom interactions were perceived as positive outcomes of the policy. Negative outcomes included teachers feeling they had less control over their schedules and an increased workload. Mâsse et al. (2013) recommended increased monitoring, providing support for schools having difficulty with implementation, and evaluating the outcomes of DPA.

Mâsse et al.'s (2013) findings will provide a valuable comparison for the results of the current thesis since the policies are similar. However, as discussed in Section 2.2, there are considerable differences between the two policies, including time and intensity requirements. Additionally, the BC guidelines apply to both high school and elementary students, can be met



during instructional and non-instructional time, and BC teachers are required to report on DPA participation, which is not a requirement in Ontario. One limitation of Mâsse et al.'s (2013) study is that it evaluated the provincial nutrition policy in addition to DPA, which may have led to a weaker understanding of the issues specific to DPA.

### ***2.6.2.3 Other School-Based Physical Activity Interventions***

Mâsse, McKay, Valente, Brant, and Naylor (2012) investigated implementation facilitators for the Action Schools! BC program four years after dissemination. Action Schools! BC included 15 minutes of physical activity per day in addition to physical education classes. The sample consisted of 133 elementary school principals and 587 grade 4-7 teachers. They found that three variables facilitated implementation: teacher self-efficacy, training, and level of institutionalization. Self-efficacy referred to “teachers’ understanding of AS!BC concepts, confidence in their skills and ability to implement AS!BC, ability to dedicate time to the initiative, and ability to motivate students” (Mâsse et al., 2012, p. 371). Therefore, this concept referred to individual teacher characteristics that helped them implement the program. Level of institutionalization referred to “whether the school had made AS!BC part of school culture (routinized); established guidelines/policies for its implementation; adapted the concepts to suit school needs; and ensured teachers had resources” (Mâsse et al., 2012, p. 371). Essentially, this concept referred to how the school adapted to implement the program. Finally, the researchers found that teachers who attended program training were more likely to implement it compared to those who had no training.

This study was conducted the same year that the BC DPA Policy was mandated. The majority (81%) of teachers indicated that they planned to use Action Schools! BC for DPA. This was further supported by Mâsse et al.'s (2013) findings that Action Schools! BC resources were a frequently reported facilitator for DPA implementation. Hence, the facilitators identified by

Mâsse et al (2012) likely also apply to DPA policies. The authors emphasized the importance of training for teachers and schools, and that school-level policies and guidelines are necessary for successful implementation.

### **2.6.3 International**

This section summarizes the findings of school-based physical activity studies outside of Canada. Robertson-Wilson, Dargavel, Bryden, and Giles-Corti (2012) conducted a review of 13 studies that evaluated government policies for school-based physical activity. All studies investigated policies from the United States; seven studies focused on federal policy and six focused on state policy. Articles evaluated policy implementation, outcomes, or both. The review identified two concerns: limited funding to support evaluation and the absence of mandated evaluation leading to limited accountability. The authors concluded that school-based physical activity policies could lead to increased physical activity levels; however, they emphasized the importance of providing funding for, and conducting, implementation and outcome evaluations.

Several studies related to school-based physical activity policies have occurred outside of Canada, the majority of which have been in the United States. Barroso et al. (2009) and Kelder et al. (2009) conducted similar projects that assessed awareness, implementation, and outcomes of Texas Senate Bills 19 and 42, which mandate that students in grades 1-6, and 6-8, respectively, receive 30 minutes of structured physical activity daily. The researchers used a mixed methods approach that included key informant interviews with school administrators, physical education teachers, school nurses, and other personnel (Barroso et al., 2009: n=112; Kelder et al., 2009: n=169). Both studies found high awareness and adherence to the physical activity components of the policy. However, Barroso et al. (2009) emphasized the need for further research to determine facilitators and barriers to policy implementation, and Kelder et al. (2009) stressed the

importance of ongoing policy funding in order to conduct evaluation and monitoring of implementation and outcomes.

Evenson, Ballard, Lee, and Ammerman (2009) surveyed school board representatives (n=106) regarding successes and challenges of implementing North Carolina's Healthy Active Children Policy, which states that all students from kindergarten to grade eight receive 30 minutes of MVPA each school day. Strategies for implementing the policy included recess, physical education, classroom physical activity breaks, and intramural sports. Reported benefits of the policy included increased student focus, alertness, physical activity participation, and staff involvement (Evenson et al., 2009). A limitation of this study was that because only school board representatives were surveyed, the study did not assess multiple environmental levels; therefore, the experiences and perceptions of those who were actually implementing the policy at the school and class levels were not captured.

Sanchez-Vaznaugh, Sánchez, Rosas, Baek, and Egerter (2012) compared school board (n=55) compliance with the California physical education policy and fitness data (measured by the Fitnessgram assessment) for grade five students (n=91 236). The study found that 50% of school boards met the policy guidelines, and students from policy-compliant boards were more likely to meet or exceed fitness standards. However, compliance was based on school board self-report; this study did not examine school-level policy fulfillment. Thus, it is possible that some non-compliant schools were classified as compliant based on school board reports and vice versa. Sanchez-Vaznaugh et al. (2012) did not look at school-level characteristics related to policy implementation or outcomes, which the current research will focus on.

Other studies have evaluated the implementation of combined school-based nutrition/physical activity policies. Pitt Barnes et al. (2011) interviewed key informants (n=88,

including school board staff, principals, teachers, parents, and community partners) from six US school boards regarding the implementation and evaluation of their board's federally mandated Local Wellness Policy, related to nutrition and physical activity. They found that schools had made fewer changes related to physical activity compared to nutrition as a result of the policy. However, since this study was cross-sectional and no baseline data were collected, it is impossible to determine the reason for the discrepancy between physical activity and nutrition. Similarly, Belansky et al. (2009) interviewed principals and school board administrators in 45 rural Colorado elementary schools regarding the Local Wellness Policy; however, these interviews focused on the barriers to implementation. The findings are provided later in the chapter (see Section 2.6.4).

Lanier, Wagstaff, DeMill, Friedrichs, and Metos (2012) used an online survey to explore teachers' (n=1243) awareness and implementation of school food and physical activity policies in Utah. Less than half (44%) of respondents were aware of each policy, and only one-quarter (26%) of respondents were aware of both policies. Lanier et al. (2012) concluded that establishing school health policies does not necessarily lead to teacher awareness or implementation; this finding emphasizes the importance of evaluating DPA. Although this study gained insight into teachers' policy awareness and implementation status, it did not capture teachers' experiences implementing the policy.

Finally, Tjomsland (2010) used a longitudinal case study approach to investigate a Norwegian elementary school that had sustained a physical activity promotion program for over a decade, where students' weekly physical activity levels were higher than national standards. The study used mixed methods (school, teacher, and student surveys, a focus group, and school document review); however, their focus group consisted of only three teachers, one of which was

a healthy school coordinator, and the other two were physical education teachers. Although the purpose of the study was to explore the factors that influenced physical activity at the case school, it is important to note that the views of focus group participants are not likely reflective of all teachers. The main findings were factors that facilitated the physical activity program, which are described in the next section. Overall, the international studies provide insight into methods used to evaluate school-based physical activity interventions as well as the facilitators and barriers to implementation, summarized below.

#### **2.6.4 Facilitators and Barriers to School-Based Physical Activity Implementation**

Tjomsland (2010) found that the key to the case program's success was the school's highly motivated teachers. The teachers believed in the benefits of school-based physical activity and there was strong collaboration between the teachers and administrators to implement the program. Tjomsland (2010) concluded that in order to be successful, school staff must be interested in increasing physical activity, administration should be supportive, the intervention should be managed at the school level, and monitoring and evaluation must be conducted. Lanier et al. (2012) found that policy awareness, being reminded of the policy at least once per term, and believing that there was enough time for physical activity were significantly associated with teachers successfully implementing physical activity policy. They argued that teachers should be involved in policy development, and educated and reminded about policies. Physical activity training for teachers is essential for effective school-based physical activity implementation (People for Education, 2009, 2012; Tjomsland, 2010). Overall, implementation facilitators identified in the literature have focused on the individuals within the school environment and the value they assign to physical activity.

Many of the studies previously mentioned have assessed barriers to the implementation of school-based physical activity initiatives. One of the most-commonly cited barriers to policy

implementation was timing conflicts. These included limited time during the school day (Evenson et al., 2009; Kennedy et al., 2010; Mâsse et al., 2013; People for Education, 2012), scheduling conflicts (Alberta Education, 2008; He et al., 2011), and competing pressures between providing physical activity and other academic subjects (Belansky et al., 2009; Dwyer et al., 2003; Evenson et al., 2009; He et al., 2011; Langille & Rodgers, 2010; People for Education, 2010). Teachers stated that the strong monitoring of academics compared to the poor monitoring of physical activity initiatives leads to the prioritization of academics (Langille & Rodgers, 2010). Additionally, Langille and Rodgers (2010) noted that schools teaching English as a Second Language (ESL) students had to prioritize teaching English over physical activity initiatives. Secondly, inadequate resources, facilities, space, equipment, and funding have all been cited (Alberta Education, 2008; Belansky et al., 2009; Dwyer et al., 2003; Kennedy et al., 2010; People for Education, 2012; Pitt Barnes et al., 2011). In the People for Education (2010) survey, 72% of elementary school principals reported that additional supports were needed to provide DPA in classrooms. Finally, teachers' poor knowledge and confidence related to physical activity (Belansky et al., 2009; Mâsse et al., 2013; People for Education, 2009) likely lead to poor teacher commitment and participation (Evenson et al., 2009; People for Education, 2012). Overall, factors within the school environment as well as higher levels (e.g., school board and province/state) have been identified as barriers within the literature.

## **2.7 Problem Description**

As is evident, the majority of studies on school-based physical activity policies have been quantitative in nature, although there are some exceptions (see Belansky et al., 2009; Dwyer et al., 2003; He et al., 2011; Langille & Rodgers, 2010; Mâsse et al., 2013; Pitt Barnes et al., 2011). The current thesis aims to explore the experiences of various individuals implementing DPA at the school and class levels, in order to learn about the barriers they have faced and the specific

strategies they have employed. While many barriers have been described for school-based physical activity, Patton (2012) is the only study that has identified barriers for the Ontario DPA policy.

Although Patton's study identified barriers, the quantitative methods chosen prevented an in-depth understanding of these barriers. In order to understand the challenges that teachers and administrators face and consult these stakeholders regarding how to improve implementation, qualitative methods are needed. This thesis will use qualitative methods to investigate DPA implementation facilitators and barriers acting at multiple levels, as well as the strategies teachers and administrators employ to overcome these barriers. This information will be used to determine the specific factors that shape DPA implementation in individual schools and classrooms. Researchers have stressed the importance of monitoring and evaluating the DPA policy to facilitate its success (Chorney, 2009; Patton & McDougall, 2009); thus, this thesis will contribute to the limited literature regarding DPA evaluation.

## **2.8 Chapter Summary**

This chapter included a summary and comparison of the three provincial DPA policies in Canada. Literature investigating the links between physical activity and academic outcomes was also reviewed. Next, social ecological theory and the ANGELO framework were described as the theoretical perspectives that will inform this research. Finally, the substantive and methodological literature related to the school environmental factors influencing physical activity as well as Canadian and international school-based physical activity policies were examined. This review identified the importance of evaluation and that limited qualitative research has been conducted related to school-based physical activity policy. Thus, this thesis will use a qualitative approach to understand the experiences of teachers and administrators implementing DPA as well as the factors that influence implementation.





## **CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY**

### **3.1 Introduction**

This chapter describes the research design and methodology used to address the objectives as described in the first chapter:

1. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of front-line teachers; and,
2. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of school administrators.

As described in Chapter 2, this thesis and its methods are informed by social ecological theory and the Analysis Grid for Environments Linked to Obesity (ANGELO) framework.

### **3.2 Rationale**

Social ecological theory suggests that multiple levels within the environment influence behaviour. A qualitative approach was used to understand the local-level factors that shape DPA implementation. The researcher was interested in understanding how DPA is being implemented within the microenvironment, at the school and class levels. These two levels were chosen since teachers are directly responsible for delivering the policy and administrators could provide insight into factors at the class, school, and school board levels given that they transfer DPA information from the school board to their staff. Patton (1990) argues that qualitative methods are ideal when evaluating program implementation, as they are open-ended and exploratory. In-depth interviews with key informants from the school and class levels (i.e., grade 1-8 teachers and elementary school administrators) were selected in order to gain an in-depth understanding of individual experiences related to DPA implementation (Crabtree & Miller, 1999). Interviews were chosen instead of focus groups because the researcher was interested in teachers' and administrators' stories of how the policy was implemented in their individual schools and classrooms, rather than the interactions between multiple participants (Crabtree & Miller, 1999).

From their school-based physical activity promotion study, Langille and Rodgers (2010) identified principals as the “gate keepers” to schools and emphasized the strong influence teachers have on the provision of physical activity opportunities. Thus, these individuals have critical roles in DPA implementation.

### **3.3 Recruitment**

After ethics clearance was received from the University of Waterloo Office of Research Ethics, participants were recruited through online advertisements and snowball sampling. Any grade 1-8 teacher or administrator (i.e., principal or vice-principal) at a publically funded elementary school in Ontario was eligible to participate. Online advertisements were posted on [www.kijiji.ca](http://www.kijiji.ca) for the areas of Kitchener, Guelph, London, Toronto, and Ottawa. An advertisement was posted in October 2012 for both teachers and administrators (**Appendix D**), and a subsequent advertisement was posted in January 2013 for administrators only (**Appendix E**). Additionally, the research team (i.e., student investigator, Drs. Elliott, Leatherdale, and Manske) forwarded the October 2012 advertisement to their networks. Interested individuals contacted the student investigator by phone or email, who then asked the potential participant to provide the names of the school and school board where they were employed. Once this information was provided, the researcher verified the potential participants’ credentials (i.e., to make sure they were actually employed at an Ontario elementary school) using school and school board websites.

As the researcher was interested in gaining insight into many different perspectives, the purposeful sampling strategy of maximum variation was used. Maximum variation sampling allows the researcher to gain a broad range of perspectives related to their research question, by including participants across the spectrum within the group of interest (Crabtree & Miller, 1999). Using multiple recruitment strategies, creating online advertisements targeted to different

geographic areas in Ontario, and recruiting through the research team's networks increased the likelihood of achieving maximum variation. Additionally, participant characteristics were collected at the end of each interview. This sampling strategy captures detailed experiences of each participant and key themes that apply across the sample; these common issues are considered important to answering the research question (Patton, 1990). Although maximum variation sampling will not yield findings that can be generalized to all DPA teachers in Ontario, it allows us to determine the local-level factors that cause variation in DPA implementation and common patterns that teachers across the spectrum experience (Patton, 1990). Using this sampling strategy increases qualitative rigour and the transferability of the findings.

Snowball sampling was also used, which allows the researcher to find information-rich participants by asking others to suggest valuable informants (Patton, 1990). At the end of both teacher and administrator interviews, participants were asked, "Is there anyone else you think I should talk to regarding DPA implementation?". Participants who recommended potential contacts either provided the researcher with their contact information or approached the individuals and provided them with the researcher's information.

Upon credential verification, the researcher emailed the Recruitment Letter of Information (**Appendices F and G**) to inform the potential participant of the study details. Once the individual agreed to participate, an interview was scheduled, and the Interview Letter of Information and Consent (**Appendices H, I, and J**) was emailed so the participants could review this information prior to their interviews. Sampling to the point of saturation (i.e., where no new themes emerged with additional participants) was used to determine the final sample size for each key informant group. Nine (47%) participants were recruited through snowball sampling, eight (42%) through the research team's networks, and two (10%) were recruited through the

online advertisement. All participants were given a \$20 gift card to a bookstore in appreciation of their time.

### **3.4 Sample**

Semi-structured interviews were conducted with 19 key informants: grade 1-8 teachers (n=14) and elementary school principals (n=5). Teachers and administrators of schools that had and had not implemented DPA were eligible. Both implementing and non-implementing teachers were included in the sample in order to gain perspectives from teachers across the spectrum and fully understand barriers to implementation. The teacher sample consisted of eleven (78%) females and three (21%) males, from seven school boards and twelve schools. Two (40%) of the principals were female and three (60%) were male; they were from three different school boards and five different schools. There was only one teacher-principal pair from the same school. In total, teacher and principal participants represented sixteen elementary schools from eight school boards in Southwestern, Central, Eastern, and Northern Ontario.

Teacher characteristics are shown in Tables 3.1 and 3.2. It is important to note that only three teachers (21%) had an undergraduate or teachers' college degree in Health and Physical Education. However, 64% (n=9) of teachers had attended Professional Development session(s) related to DPA or physical education. Principal characteristics are shown in Tables 3.3 and 3.4. Only one of the principals had specialized training in Health and Physical Education (i.e., teachers' college degree). Lastly, teachers and principals were asked to comment on their physical activity levels in order to assess the value they placed on physical activity in their own lives. Seventy-nine percent (n=10) of teachers said they were physically active or very physically active, and 60% (n=3) of principals said they were physically active.

**Table 3.1. Characteristics of teacher sample.**

<b>Personal Characteristic</b>	<b>Number of Teachers (% of total)</b>
<b>Current Grade Taught</b>	
Primary (Grade 1-3)	5 (36)
Junior (Grade 4-6)	4 (29)
Intermediate (Grade 7-8)	3 (21)
Special Education	2 (14)
<b>Number of Years of Teaching Experience</b>	
0-5 years	2 (14)
6-10 years	3 (21)
11-15 years	5 (36)
More than 15 years	4 (29)
<b>Number of Years Since Last Post-Secondary Training (i.e., teachers' college, university course(s))</b>	
Within last 5 years	3 (21)
Within last 10 years	4 (29)
Within last 15 years	4 (29)
More than 15 years ago	3 (21)
<b>Specialized Training in Health &amp; Physical Education (i.e., undergraduate, teachers' college degree)</b>	
No	11 (79)
Yes	3 (21)
<b>Has Attended Professional Development Session(s) for DPA/Physical Education</b>	
Yes	9 (64)
No	5 (36)
<b>Self-Reported Physical Activity Status</b>	
Very physically active	4 (29)
Physically active	7 (50)
Not very physically active	3 (21)
<b>Total</b>	<b>14 (100)</b>

**Table 3.2. Characteristics of teachers' schools.**

<b>School Characteristic</b>	<b>Number of Teachers (% of total)</b>
<b>Type of School Board</b>	
Public	12 (86)
Catholic	2 (14)
<b>Grades in Current School</b>	
JK-8	8 (57)
JK-6	4 (29)
JK-4	2 (14)
<b>Number of Students in Current School</b>	
Less than 300	4 (29)
400-600	7 (50)
More than 600	3 (21)
<b>Location of School</b>	
Urban	11 (79)
Rural	3 (21)
<b>French Immersion Program(s) Available at School</b>	
No	9 (64)
Yes	5 (36)
<b>Total</b>	<b>14 (100)</b>

**Table 3.3. Characteristics of principal sample.**

<b>Personal Characteristic</b>	<b>Number of Principals (% of total)</b>
<b>Number of Years as Administrator (i.e., Vice-Principal &amp; Principal)</b>	
5-9 years	3 (60)
10-15 years	2 (40)
<b>Number of Years as Administrator at Current School</b>	
1-2 years	3 (60)
3-5 years	2 (40)
<b>Number of Years Since Last Post-Secondary Training (i.e., teachers' college, university course(s), graduate school)</b>	
Less than 10 years	2 (40)
10-15 years	2 (40)
Unknown	1 (20)
<b>Specialized Training in Health &amp; Physical Education (i.e., undergraduate, teachers' college degree)</b>	
No	4 (80)
Yes	1 (20)
<b>Self-Reported Physical Activity Status</b>	
Physically active	3 (60)
Not very physically active	2 (40)
<b>Total</b>	<b>5 (100)</b>

**Table 3.4. Characteristics of principals' schools.**

<b>School Characteristic</b>	<b>Number of Principals (% of total)</b>
<b>Type of School Board</b>	
Public	4 (80)
Catholic	1 (20)
<b>Grades in Current School</b>	
JK-8	4 (80)
Alternative elementary school	1 (20)
<b>Number of Students in Current School</b>	
Less than 400	3 (60)
400-600	2 (40)
<b>Location of School</b>	
Urban	5 (100)
<b>French Immersion Program(s) Available at School</b>	
No	4 (80)
Yes	1 (20)
<b>Total</b>	<b>5 (100)</b>

### **3.5 Data Collection**

Data collection occurred between October 2012 and January 2013. Each key informant was interviewed individually at a time and location of their choice. Participants were given the option of being interviewed by phone or in-person (i.e., at their home or at a community location such as a coffee shop). The majority of participants (n=16, 84%) chose to participate by phone, as it was more convenient for them and allowed those who were unable to meet in person the opportunity to participate. Trier-Bieniek (2012) suggests that phone interviews may allow participants to be more truthful when sharing their experiences due to increased anonymity and the ability to participate while in familiar settings. Teacher interviews were conducted after school or on weekends to avoid disrupting instructional time. Interviews lasted from 25-75 minutes and were digitally audio-recorded with permission (**Appendix J**).

The interviews consisted of open-ended questions, which allowed the researcher to explore participants' perspectives without trying to fit them into preselected categories (Patton, 1990). Following social ecological theory, the interviews focused on factors within the micro- and macroenvironments that influenced implementation. Interviews with teachers covered DPA strategies and activities, facilitators and barriers, DPA monitoring and evaluation, perceived outcomes, and suggestions for improvement (**Appendix K**). Principal interviews included topics such as the value the school attributes to physical activity and DPA, the facilitators and barriers schools face implementing the policy, DPA monitoring and evaluation, perceived outcomes, and suggestions for improvement (**Appendix L**). Key informants were asked to complete a background questionnaire (**Appendices M and N**) immediately following the interview to provide relevant demographic information. Participants interviewed in-person completed a paper copy while the interviewer asked phone interview participants to answer the questions verbally at the end of the interview. During and after each interview, the researcher made notes regarding



observations, follow-up thoughts, and themes that emerged during the interview. These notes were used to provide context for the qualitative analysis.

### **3.6 Analysis**

Interviews were transcribed verbatim and proofed for accuracy prior to thematic analysis using computer assisted qualitative data analysis software, NVivo9. A template organizing style was used to code the transcripts, which involved developing a set of codes to identify relevant data (Crabtree & Miller, 1999). Transcripts were read in order to determine codes to compose a coding manual for each key informant group (**Appendices O and P**), which were then used to code the transcripts. A deductive approach was employed to explore the data for themes related to the thesis objectives (including implementation facilitators, barriers, and perceived outcomes [e.g., physical activity, academic, and behavioural]), complemented by an inductive approach used to determine themes that arose from the data. Resulting themes were organized using the ANGELO framework.

Both intra- and inter-rater reliability were assessed by determining within- and between-researcher agreement using the methods described by Miles and Huberman (1984, 1994). Intra-rater reliability was assessed by the researcher re-coding earlier transcripts and comparing the new coding to the initial coding of the same transcript. Inter-rater reliability was tested by having a second researcher use the coding manual to code two transcripts and comparing each researcher's coding of the same transcript. These comparisons were used to calculate agreement between the two codings using the formula described by Miles and Huberman (1984, 1994):  $(\# \text{ of agreements}) / (\text{Total } \# \text{ of agreements} + \text{disagreements})$ . Agreements were defined as the same code applied to the exact same section of text. When there was a disagreement, the two researchers discussed why they applied each code and came to a resolution. After the inter-rater reliability testing was completed, changes were made to the coding manual before the remaining

transcripts were coded. Intra-rater reliability was calculated as 77% (teacher interviews) and 85% (principal interviews) and inter-rater reliability was 76% (teacher interviews) and 80% (principal interviews).

### **3.7 Establishing Qualitative Rigour**

The criteria for evaluating qualitative research (credibility, transferability, dependability, and confirmability) were used to establish rigour (Baxter & Eyles, 1997; Lincoln & Guba, 1985). Credibility refers to the “authentic representations of experience” (Baxter & Eyles, 1997, p. 512). Essentially, this means the degree that a description could be recognized by those who have experienced it and understood by those who have not. Credibility was ensured through four methods. Firstly, including the perspectives of two groups of key informants (i.e., teachers and principals) allowed for an increased understanding of the school environment as it relates to DPA, thus strengthening the comprehensiveness of the results (Crabtree and Miller, 1999; Gatrell & Elliott, 2009; Patton, 1990). Secondly, purposeful sampling was used to gain a variety of perspectives from key informants from different schools and school boards, with and without expertise in physical activity and physical education. Thirdly, interviews continued until the point of saturation, meaning that no new themes emerged with subsequent interviews (Crabtree & Miller, 1999), to ensure that the small sample size did not weaken credibility. Lastly, inter-rater reliability testing and peer evaluation of the theme code set were conducted (Baxter & Eyles, 1997).

Transferability is the extent to which the findings can be applied to individuals and situations outside the specific study (Baxter & Eyles, 1997). Thick description was used to describe the study context as thoroughly as possible (without providing identifying information), so that others can determine whether the findings apply to additional settings (Baxter & Eyles, 1997). Maximum variation sampling was used in order to gain views from teachers and

principals across the spectrum, and was achieved since participants came from sixteen schools from eight school boards across Ontario. Dependability refers to the consistency of the findings across space and time, focusing on the design and analysis (Baxter & Eyles, 1997). All interviews were conducted and coded by one researcher, digitally recorded, and transcribed verbatim. Additionally, the theme code set was peer examined (Baxter & Eyles, 1997).

Finally, confirmability is the influence of the researcher's biases on the interpretations of the results (Baxter & Eyles, 1997). The researcher maintained a journal during the analysis to keep notes regarding her perspectives and interpretations (Baxter & Eyles, 1997). Thick description of the study context and the researcher's background were also used to establish confirmability. I am not a teacher or a principal and I do not have a degree in education. Thus, I have not implemented DPA in an elementary school or classroom. Since I am educated in population health and physical activity interventions, I had to be aware of my perspective and remove this bias in order to listen and understand participants' viewpoints on this issue. It is possible that participants saw me as an outsider; however, because I was not affiliated with the education sector and ensured anonymity, participants may have felt more comfortable sharing their experiences as the information would not be used for individual assessment. By listening to participants' stories, showing empathy and genuine interest, participants felt comfortable sharing their experiences and the challenges they had faced. Some interviews extended beyond the planned length and many participants expressed their appreciation for having the opportunity to share their thoughts regarding DPA.

### **3.8 Chapter Summary**

This chapter outlined the research design and methodology, including recruitment, qualitative data collection, and analysis. Sample characteristics and considerations for

establishing qualitative rigour were also discussed. The results of the qualitative analysis will be presented in the following chapter.

## **CHAPTER FOUR: RESULTS**

### **4.1 Introduction**

This chapter presents the results from the analysis of semi-structured interviews with fourteen teachers and five principals. The interviews were conducted to address the following research objectives:

1. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of front-line teachers; and,
2. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of school administrators.

Specifically, the interviews focused on whether and how DPA has been implemented, the strategies being used, facilitators and barriers to implementation, perceived outcomes, monitoring and evaluation of the policy, and suggestions for improvement. Since teachers directly lead DPA activities and they comprised the majority of the sample, the findings from the teacher interviews will be presented first, followed by the principal interviews.

### **4.2 Teachers' Perspectives**

#### **4.2.1 DPA Implementation Status**

Teachers were asked to share the weekly frequency of physical education their class received, as well as the length of these periods (Table 4.1). The majority (n=10, 71%) of teachers' schools had physical education class every other day (2-3 days per week). Only two of the teachers (14%) stated that students at their schools received physical education daily. The most common length of physical education class was 30-40 minutes (n=9, 64%). Although two teachers (14%) said their sessions were less than 30 minutes, their classes received daily physical education. One of their schools had 25-minute classes every day, while the other had only one day where the gym period was less than 30 minutes:

[Gym periods] range from thirty-five to forty minutes. Yeah, and then the odd day it is twenty, because they split [to] make sure we get it in so it is good. (Teacher 7, female)

**Table 4.1. Physical education frequency and period length for teachers' classes.**

<b>Number of Teachers (% of total)</b>	
<b>Frequency per week</b>	
2-3 times	10 (71)
4 times	2 (14)
5 times	2 (14)
<b>Total</b>	<b>14 (100)</b>
<b>Length of physical education period</b>	
30-40 min	9 (64)
45-50 min	3 (21)
Less than 30 min	2 (14)
<b>Total</b>	<b>13 (93)*</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

Of the 14 teachers interviewed, 12 (86%) had implemented DPA in their classes. Two of the teachers (14%) had not implemented DPA, one of whom was a special education teacher who rotated between classes and had not been a homeroom teacher since the policy was mandated. All of the participants who discussed their school's implementation (n=12, 86%) indicated their schools had implemented DPA. However, several teachers (n=6, 43%) mentioned that even though DPA had been implemented, students were not necessarily meeting the guidelines daily:

I mean I can't say that I do DPA every single day. That is sometimes a stretch.  
(Teacher 14, female)

Results from the background questionnaire supported this. When teachers were asked to estimate how many days per week students in their classes received 20 minutes of physical activity during instructional time, five teachers (36%) responded every day, eight reported (57%) three to four days, and one (7%) teacher said one to two days. This indicates that although teachers are trying to implement DPA, they are not necessarily meeting the guidelines outlined in the policy. Lastly, two teachers (14%), who both had specialized training in physical education, mentioned that even though they were implementing DPA, they knew of several teachers who were not:

I have so many friends that are teachers and I hardly talk to a single one who's got this going on at their school. Most people I know, I'd say don't do DPA. (Teacher 1, female)

And again it is in pockets because we go to grade four and the school that is down the road that is the five to eight school, really doesn't do anything. So it is always a disappointment when we hear, yeah, they just do phys. ed. on their phys. ed. days and that is it. (Teacher 13, female)

#### **4.2.2 DPA Implementation Characteristics**

Students in two of the teachers' schools met the DPA time requirement entirely through physical education class. In the eleven teachers' (79%) schools that did not have daily physical education, students participated in additional activities on days when the class did not have physical education in order to meet the time requirement:

So I have a copy of every teacher's timetable that I support, and on their timetable they have [DPA], that is usually like a subject/[DPA], so they do [DPA] for part of that period, and it is supposed to be happening on days where the students do not have gym class so they are able to remain active every day. (Teacher 5, female)

Teachers (n=6, 43%) discussed meeting the DPA time requirement through multiple breaks during the day that sum to 20 minutes, instead of one 20-minute period:

But over the course of the day there is probably twenty minutes of physical activity on non-phys. ed. days. And most classes, they just either incorporate it into other lessons that they are moving in, or they will take a ten-minute break here and then a ten-minute break later. (Teacher 13, female)

When asked where they conduct DPA, teachers identified three locations. Twelve teachers (86%) mentioned large spaces indoors (i.e., gyms, activity rooms, large hallways) and outdoors, and ten teachers (71%) mentioned the classroom. Several teachers discussed their preference for conducting DPA outside the classroom:

If the weather is nice, the ideal based on safety and the small space of a portable is to be outside. And then yes, if the weather is not going to be conducive, I will do it inside. (Teacher 8, female)

I mean definitely we have done DPA in the classroom. Sometimes I take them down the hall to the gym hall because that is a bigger area. (Teacher 14, female)

Teachers (n=10, 71%) discussed the role scheduling plays in implementation. Five teachers (36%) mentioned that some classes were combined for physical education in order to increase access to the gym; teachers described having two or three classes in the gym at once. Some teachers spoke positively about the combined classes because it increased the amount of time students received in the gym:

I know in a lot of schools, kindergartens don't get phys. ed., but we make it so that every grade gets three periods of phys. ed. a week, by having a number of classes together at the same time so that we can have more gym time. (Teacher 1, female)

Others discussed the disadvantages to this approach:

If you are in grades one, two, three, you only get half a gym and you share it with another class. So then, and there is sort of a screen that you can lower down between the two halves, sort of a plastic material that comes down a rope, but the noise is really difficult. (Teacher 4, female)

The time of day that DPA and physical education class were scheduled was also discussed (n=5, 36%). One teacher mentioned how she leaves DPA until the end of the day to decrease the time taken away from other subjects:

I purposefully leave DPA to the end of the day so that we can have that last bit of time and they are already in their gear to go home, so that we're not losing [transition] time too. (Teacher 8, female)

Other teachers argued that even though a class is scheduled for a full period of gym, they are unlikely to receive physical activity for the entire duration at certain times during the day:

But remember if your gym class is first thing in the morning, as mine was two years ago, you are losing ten minutes automatically. For them to come in, to the bell, you know unpack their backpack, their lunch, change their shoes, take their winter clothes off. Go into the school. (Teacher 4, female)

Finally, four teachers (29%) emphasized that DPA implementation is teacher-dependent:

It is very teacher driven and some teachers do it, some teachers don't. It is all a matter of who values the outcome. (Teacher 14, female)



### 4.2.3 Implementation Strategies

Teachers (79%) discussed strategies they had employed for DPA (Table 4.2). The most frequently discussed techniques were using student leaders (n=10, 71%), school-wide DPA (n=7, 50%), and integrating DPA into other subjects (n=5, 36%). With respect to student leaders, seven teachers described students generating DPA activity ideas and leading activities in their class and other classes. Two teachers, both with specialized training in physical education, discussed programs at their schools that involved older students leading DPA sessions in the younger classes:

We have [DPA] Leaders in grade 5 and 6 who go and provide [DPA] for all the classes from K to 6, when they don't have phys. ed. So the kids go in, they have all of these activities that they plan, paired with CDs, and they go in and lead them

.....  
So I think the fact that we have these kids that know how to do it, and want to do it, and love doing it, is a big relief to the teachers because their students get [DPA], and they don't have to, kind of, figure it out on their own. (Teacher 1, female)

Well I would come in with some crazy dance to a song, and I would teach it to them, . . . if you show me you and your group can do it, I am going to send you now to the grade four class, . . . and so then I would send little groups of four students into each class in the whole school and teach it to them. And then at the next assembly I would send my class up on stage and then they would lead the song, and then of course everyone in the whole school would have known it. (Teacher 9, female)

The researcher asked seven other teachers whether they thought this strategy would work in their schools. Four teachers (29%) discussed the barriers associated with implementing a leader program, including the teachers committing time to train the leaders and the instructional time leaders would miss when they went to other classes. Three teachers (21%) said that although they had not implemented a student leader program for DPA, they thought it could work in their schools.

Secondly, half of the teachers discussed holding school-wide DPA sessions. Five teachers (36%) were in favour of school-wide DPA activities:

Maybe to designate time, like the bell rings or [there is] a buzzer, whatever, and everyone does it school wide with a list [of activities] . . . already planned for you. We are doing this [activity] today. (Teacher 2, male)

Two (14%) mentioned that it depended on the students involved as to whether school-wide DPA would work (14%):

Actually one thing that doesn't work very well is doing a school-based, like the entire division, primary/junior [classes] get together and do a fitness video. I have seen that, and it is too hard to control all the kids at the same time, to make sure they're all doing it. . . . But I think again it depends on the group you have too. (Teacher 7, female)

Lastly, five teachers described how they integrated DPA into other subjects in order to meet the time requirement:

Well you try and integrate your DPA with, you know, with your art, with your drama, with movement, with music. All of those things, right, because you are trying to, you can't discretely teach each individual subject or you would never get everything taught. You have to integrate. That is the only way we can do it. (Teacher 4, female)

For me, I always try to incorporate it into the lessons as well, as much as you can into literacy and math, and add activity so it is not always like I say, a twenty minute workout, but over the day you'd get that activity. (Teacher 13, female)

**Table 4.2. Strategies used to implement DPA, as reported by teachers.**

<b>Strategy</b>	<b>Number of Teachers (% of total)</b>	<b>Mentions (% of total)</b>
Student Leaders	10 (71)	24 (38)
<i>Teacher uses student leaders for DPA</i>	7 (50)	17 (27)
<i>Barriers to implementing student leader program for DPA</i>	4 (29)	4 (6)
<i>Teacher not currently using student leaders, but thinks they could work</i>	3 (21)	3 (5)
School-wide DPA	7 (50)	9 (14)
<i>Yes (teacher thinks school-wide DPA is a good idea)</i>	5 (36)	7 (11)
<i>Barriers associated with school-wide DPA</i>	2 (14)	2 (3)
Integrating DPA into Other Subjects	5 (36)	12 (19)
Adapting Activities on-the-spot	3 (21)	4 (6)
Class Competition (House Points)	2 (14)	9 (14)
Rewards for Students	2 (14)	5 (8)
<b>Total</b>	<b>13 (93)*</b>	<b>63 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### 4.2.4 Activities Used for DPA

Teachers were asked to describe the activities they had used in their classrooms, in the gym, and in other indoor and outdoor activity spaces (Table 4.3). The most common activities in the classroom were dancing and games (n=8, 57%), followed by stretching, yoga and those that included music (n=6, 43%), and fitness circuits (n=5, 36%). Many teachers discussed using YouTube for activities:

They will do lots of YouTube kind of stuff. You will do five minutes of dance party.  
(Participant 4, female)

Several teachers described games that they played in the classroom:

It is one of the best ones I think for the older kids. It is called “Koosh Rally” and basically you are throwing a koosh ball in a pattern between your seven people on your team. So you spread them out in the classroom, and one throws to two, two throws to three, to four, and then seven throws back to one, and then they change the activity that they are doing and so it might have been squats, and then when it gets back to number one they shout out the next thing on the list, and it might have been arm circles or something like that. And so by the end it is whichever team gets the koosh back to number one, and they have done all the activities. And it is crazy. It is chaotic. There are four koosh balls going around in the classroom, but the activity level is insane.  
(Teacher 9, female)

Other teachers described activities of a lower intensity level:

We do a lot of little dances or sort of minor aerobic activities. We are doing sort of, you know, not a step class, but something like that. And you know, sometimes I even, on the way back from the gym, I have ten minutes where we do yoga poses and that type of thing. (Teacher 11, female)

In large indoor and outdoor spaces, the most common activities discussed were running (n=5, 36%) and sports (n=4, 29%):

I think the type of activity I prefer is one where everyone participates and that you are not out. . . . So rather than if you get hit with the ball sometimes, you just have to sit down, right. What we do is if you get hit with the ball, you have to run a lap, and then you can join in again, or if you get hit with a ball, and you cheat, you have to run ten laps. So they are very good at running their laps. (Teacher 3, female)

As mentioned in earlier chapters, the DPA guidelines specify that students must receive 20 minutes of sustained moderate to vigorous intensity physical activity (MVPA). Twelve teachers (86%) discussed the intensity level of activity during DPA within the classroom (n=10, 71%) and larger spaces inside and outside (e.g., gyms, activity rooms, and fields) (n=8, 57%). Six teachers (43%) discussed activities they used in the classroom to achieve MVPA:

The dancing ones, for example, they just keep going and going, there's not much of a break so usually a lot of them, by the end of it, they're sweating, have red faces. That's when we tell them, we say, "If you're not sweating, if you're not breathing hard, you're not working hard enough". (Teacher 1, female)

Seven teachers (50%) mentioned that most activities in the classroom were at a lower intensity level and children were not achieving MVPA. Teachers discussed how it was easier to achieve MVPA in larger spaces than in the classroom:

So when I do take them outside or I do have more space, I can engage them more to get their heart rates up. But in the classroom I definitely have a hard time with that, because like I say they are juggling, they are doing, you know, maybe high steps beside their desk, high knees or things like that. But they are marching. They are not running. (Teacher 14, female)

**Table 4.3. Activities used to implement DPA, as reported by teachers.**

<b>Activity</b>	<b>Number of Teachers (% of total)</b>	<b>Mentions (% of total)</b>
In Classroom	13 (93)	56 (64)
<i>Dance</i>	8 (57)	15 (17)
<i>Games</i>	8 (57)	14 (16)
<i>Music</i>	6 (43)	10 (11)
<i>Stretching, yoga, aerobics</i>	6 (43)	9 (10)
<i>Fitness circuits</i>	5 (36)	8 (9)
In Large Indoor or Outdoor Space	10 (71)	26 (30)
<i>Running</i>	5 (36)	8 (9)
<i>Sports</i>	4 (29)	4 (4)
<i>Relays</i>	3 (21)	5 (6)
<i>Tag</i>	3 (21)	3 (3)
<i>Skipping</i>	2 (14)	3 (3)
Competition	4 (29)	5 (6)
<b>Activities that teacher would not recommend</b>	<b>2 (14)</b>	<b>3 (3)</b>
<b>Total</b>	<b>13 (93)*</b>	<b>87 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.2.5 Teacher Participation during DPA**

Nine teachers (64%) said they participate during DPA, eight (57%) of whom explained that they participate in order to be a role model for and/or motivate students to participate:

I think it motivates them to try. So, you know, those that may be less likely to participate will be more inclined to participate if they see the teacher is actually doing it too.  
(Teacher 10, male)

Six teachers (43%) mentioned they were not always able to participate, as they had to supervise their students:

I love to run with the kids, or for ultimate [Frisbee], but realistically from the safety standpoint, most of the time I can't because I have to have my eyes on all of the kids to ensure that, you know, physical contact isn't happening, someone isn't upset. . . . When I am involved it's hard, because then I can't have my eyes on the kids and maintain behaviour. (Teacher 8, female)

Six teachers (43%) discussed additional barriers to participation. Some mentioned their work clothes prevented them from participating and that they were not confident in their athletic skills:

I don't have the right shoes, I am not changed, it's just not easy. And it is also, you don't want to put yourself out there, like you need to know everything and be good at everything so they will listen to you, and you are out there shooting a basketball and you keep missing it. (Teacher 2, male)

Others mentioned that some teachers were not able to lead physical activity due to health reasons:

Being perfectly honest we have, well we had several teachers . . . at my own school, that are physically not able to do activity, so for them to lead it was very, very difficult. . . . So that is definitely a barrier if they can't physically lead it themselves. Kids are not really going to buy into it if you're not leading it. (Teacher 9, female)

#### **4.2.6 Perceived Facilitators for Implementation**

Six themes related to implementation facilitators were found (Table 4.4). Teacher-specific factors were emphasized, with many participants indicating that the classroom teacher was the strongest influence on DPA implementation for their classes. All participants (n=14, 100%) mentioned that teachers must be motivated to successfully implement DPA:

I think any activity can work as long as the person who is delivering the [DPA] is enthusiastic and energetic, does it with the kids. (Teacher 6, male)

Half the teachers (n=7, 50%) said they were comfortable or enjoyed teaching physical activity. Teacher 14 (female) said the main facilitator for her implementation was the value she placed on physical activity:

Well probably because I am physically active. And so I instill that in my students. Really that is the bottom line. It is something that I value. It is something that I know is valuable to them as well. So yeah, it is something that I do, so my kids do it.

Twelve teachers (86%) discussed resources as a facilitator for DPA implementation. Having ideas for activities (n=11, 79%) was one of the main resources described:

And I use the "heart raisers" from Ophea all the time. They have come up with fifty different activities that you can do that get your heart beating and they have made posters, and little task cards that you can post. I am trying to get them on the Smart Board now too, so you know you can use them for anything. (Teacher 13, female)

Some teachers mentioned that they had received activity ideas from their school boards:

When DPA first came out, there were regular emails that came out with ideas and suggestions. . . . they were really useful, because it gave you something practical that you could use and implement. I mean some of them not so much, but there were some new ideas, and it was easy, right. It was email. It was easily accessible. Easy to read and implement. (Teacher 12, female)

Eight teachers (57%) discussed having access to equipment as a facilitator:

Equipment, yeah. Quick and easy to use. Quick and easy to put away, because you want to get them out in twenty minutes, right, then get them back in. (Teacher 6, male)

Some teachers described “DPA kits” assembled by their schools or school boards that included equipment and activity ideas:

They called them treasure boxes, and they were just basically the large size Rubbermaid bins, and there was one for primary, one for junior, one for intermediate, and it came with a booklet of all kinds of activities that you could do in your classroom. It came with a whole set of dyna bands, you know, the things that you use at physio. And a thing of pom poms, big size skipping ropes, soft footballs, different things you could use [in] the classroom. (Teacher 9, female)

Attending training workshops related to DPA (n=6, 43%) was a perceived facilitator, although teachers also noted that many DPA training opportunities were optional and offered infrequently:

In a one-and-a-half/two hour PD session, professional development session, an instructor can go through literally dozens of different little activities that you can do. And I mean, we all know that is way more helpful than, here is a book or here is a website link

. . . .

But the PD session was entirely voluntary. Our board used to do a PD day where you could select from literally, you know, dozens and dozens of different PD sessions, and you could choose the one that could fit your needs for the moment. If it was math, if it was drama, if it was [DPA]. And I can remember doing one of the [DPA sessions], so I probably was one or two of the only teachers in our school that did it. (Teacher 6, male)

Twelve teachers (86%) discussed aspects of the school social environment. Nine teachers (64%) emphasized that sharing ideas between teachers was an important facilitator:

Talking to your colleagues. “What do you do?” That is the biggest support in teaching, is just, “what do you do? Have you tried this?” And you know, when you get a good idea, share it. (Teacher 4, female)

Five teachers (36%) discussed the importance of staff support of DPA and having a school champion (i.e., someone who takes a leadership role in DPA implementation) as facilitators:

I think every school has to have a champion for it. Somebody that can, you know, even gather resources to share or find ways to teach people it is not that hard to do, and you are not going to lose control of the class. (Teacher 13, female)

Ten teachers (71%) discussed how the school physical environment (i.e., available facilities and outdoor space) was an asset to implementation:

We have so much access to space, and even outside, we have infinite amount of space, even if we didn't have the gym, to get them out to do it. They could stay outside for ten minutes after recess, and run two laps, we have a giant field. (Teacher 7, female)

Support from administrators (n=7, 50%) and school boards (n=6, 43%) were also mentioned.

And then just to have support from administration to give you the time... like from [administrator name], she gives us the gym every day, right, so that really helps us. And she thinks it is important too, so then we are more likely to do it too. (Teacher 7, female)

He just really believes in this and so having a principal who supported it and didn't mind to walk by your classroom and hear craziness going on. He was happy. You know, he would come in and just be like, "awesome, I am so glad you guys are doing this!" And he would let us come out in the hall and do stuff and he never thought that that was [a] distraction to other classes. He thought it was just great that we were doing things. Yeah, so supportive principal for sure. (Teacher 9, female)



**Table 4.4. Perceived facilitators for DPA implementation (Teachers).**

<b>Facilitator</b>	<b>Number of Teachers (% of total)</b>	<b>Mentions (% of total)</b>
Teacher-Specific Factors	14 (100)	58 (27)
<i>Teacher motivation to implement</i>	14 (100)	34 (16)
<i>Teacher feels comfortable teaching physical activity</i>	7 (50)	10 (5)
<i>Teacher as physical activity role model for students</i>	4 (29)	5 (2)
<i>Teacher's physical activity experience</i>	3 (21)	9 (4)
Resources	12 (86)	65 (30)
<i>Activity ideas</i>	11 (79)	28 (13)
<i>Equipment</i>	8 (57)	14 (6)
<i>Training and workshops</i>	6 (43)	17 (8)
<i>Technology (e.g., computers, smart boards)</i>	4 (29)	6 (3)
School Social Environment	12 (86)	35 (16)
<i>Staff sharing activity ideas</i>	9 (64)	18 (8)
<i>School champion</i>	5 (36)	7 (3)
<i>Staff support of DPA</i>	5 (36)	6 (3)
School Physical Environment	10 (71)	18 (8)
<i>Indoor activity facilities at school or nearby</i>	9 (64)	12 (6)
<i>Parks and large fields at school or nearby</i>	4 (29)	6 (3)
Support	8 (57)	28 (13)
<i>Administrator(s)</i>	7 (50)	12 (6)
<i>School Board</i>	6 (43)	16 (7)
Scheduling	7 (50)	12 (6)
<b>Total</b>	<b>14 (100)*</b>	<b>216 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

In summary, teachers reported that aspects of the sociocultural and physical environments act as facilitators for implementation. Within the sociocultural environment, teachers' positive attitudes and motivation to implement DPA were believed to be important factors, as well staff sharing activity ideas and support from administrators. Within the physical environment, teachers discussed resources such as activity ideas, equipment, and training, as well as access to facilities for physical activity and a school champion. Most facilitators were within the microenvironment (i.e., classrooms and schools), although teachers did discuss some factors such as available training opportunities and school board support within the macroenvironment (i.e., school boards).

#### 4.2.7 Perceived Barriers to Implementation

Table 4.5 presents the nine themes related to implementation barriers. All teachers (n=14, 100%) mentioned features of the school physical environment as barriers. Twelve (86%) discussed lack of facilities:

The school has nine portables and we are up to around six hundred and twenty students, and for next year we are projected for a thousand students. So all of that with the same gym facilities that we had when we opened for three hundred and seventy-five students.  
(Teacher 4, female)

Teachers (n=11, 79%) emphasized limited classroom space as a major barrier, since there was not enough room for students to perform DPA activities:

At our particular school we have enormous double desks that are in portables. We don't have enough room within our portables to have computers in the classroom. They barely have enough room to get to their backpack and back to their desk

....

So to reiterate, space I think is important. Space for safety. (Teacher 6, male)

Eleven teachers (79%) said it was difficult to achieve MVPA in the classroom:

Absolutely, it is a matter of just getting their blood flowing. I can't get their heart rate up for five or ten minutes in that space. It is too dangerous with that many bodies, and that little clearance of furniture. (Teacher 8, female)

The second-most frequent theme related to barriers was curricular demands (n=13, 93%).

Teachers discussed how the expectations for other subjects made it difficult to find time in the day for physical activity:

I think time is just the biggest thing. I know when I did it at my old school, I was like, "I haven't even taught certain math strands, I have to get this done, and I really want to do 20 minutes, but in a day, that's a lot of time". I think time is the biggest thing, finding that time. (Teacher 1, female)

Seventy-one percent of teachers (n=10) emphasized that DPA is considered a lower priority than the rest of the curriculum:

I would just say the pressures of the other school subjects, they are so dense. The curriculum is so dense, and you know a parent will really, really care if their child isn't reading, when they are leaving elementary school, and they really, really care if they can't do math. They are not quite as concerned, you are not going to get the parent pressure, if they are not able to shoot a basket. (Teacher 4, female)

It is last on my list of things to do to be quite honest. We have so much to cover that DPA is kind of a "fly by the seat of your pants" [activity] often. . . . So yeah, I find it is kind of, not an afterthought but it is definitely last on my list of things, my priority list, I guess. (Teacher 12, female)

The main reasons teachers provided to explain why DPA was a lower priority than other subjects were because i) DPA is not included in the report card, and ii) they are not held accountable for meeting the DPA guidelines (i.e., there is no consequence if they do not provide DPA).

Because you are not being marked. The kids are not being marked on [DPA] either, so there is no grade that you have to give them. It is just something that you would hope is being done. (Teacher 5, female)

Furthermore, six teachers (43%) highlighted how the priority given to DPA has decreased over time:

We all felt like there was a fizzle of the whole push of DPA. . . . There has been no [Professional Development]. There has been nothing really in our board for the last few years. So I don't know, I thought it was maybe coming from higher up that they are saying we are not going to put any money towards this anymore, but I don't know. (Teacher 9, female)

Interestingly, although five teachers (36%) recommended integrating DPA into other subjects as an implementation strategy, three (21%) discussed that the emphasis on integration (through suggestions from principals or school boards) presented an implementation barrier for teachers:

An automatic barrier is when a teacher, especially a grade six to eight teacher, is being asked to incorporate curriculum into daily physical activity, and I think that becomes a huge roadblock to a teacher. How am I supposed to do that? I haven't seen any resources that help to do that. (Teacher 6, male)

Throughout the interviews, thirteen teachers (93%) discussed time as a barrier. Many teachers felt that they did not have enough time to complete everything they needed to in a day. As well,

five teachers (36%) expressed a sense of losing control over their days due to disruptions and unexpected events:

It would be a week like we didn't make it to the gym at all. Partly because it is a really busy school, and I just pray for one regular day. It doesn't happen. (Teacher 2, male)

Twelve teachers (86%) mentioned that DPA is more difficult to implement in the older grades, due to issues such as greater curricular demands, difficulty engaging the older students, and rotary:

For the junior student and the intermediate student, you have to make it engaging for them. You have to do something that they are going to buy into, and they don't always buy into "okay, we are going to roll the dice and if we roll five, now we are going to do five chicken jacks and if we roll four, we are going to do four coffee grinders". (Teacher 6, male)

With my grade sevens I was on rotary, so I saw a lot of groups and I had my own home room, but I had much less time with them. Whereas my grade fives . . . I spend more than half my day with them, so there is more flexibility, so it is easier to do it, and yeah just to fit in. (Teacher 12, female)

Lack of student motivation was identified by eleven teachers (79%); teachers discussed how some students did not want to participate, or that it was difficult to keep the activities "fresh" to prevent students from getting bored:

It also depended on the mood of the students, whether or not they were motivated to, or whether or not they were more engaged in something else, you know. (Teacher 10, male)

Resources also presented a barrier (n=11, 79%). Teachers discussed having limited equipment or funds to buy equipment:

I just find sometimes we don't have all the resources that you might like, like even for our phys. ed. program, just our budget is smaller in a rural school. (Teacher 3, female)

Teachers cited limited activity ideas and training opportunities, as well as poor access to resources:

It's not that they don't want to do it. Almost every teacher at my school wants to, but they don't know what to do, they're out of ideas. So I think that's the biggest roadblock, if there is one. You know, finding a way to give teachers pre-made activities.

(Teacher 1, female)

Ten teachers (71%) discussed teacher-specific characteristics that influenced implementation. Participants mentioned that some teachers are not comfortable teaching physical activity and others are unmotivated to implement DPA:

Your feeling of competence. That is why I make the analogy in music, because if you are not comfortable teaching something, you are not going to do it. (Teacher 4, female)

Five teachers (36%) argued that although the policy is well intended, its implementation could have been improved. For example, teachers discussed how although 20 minutes of daily physical activity was added, the time requirements of other subjects and the length of the school day remained the same:

If they want us to do twenty minutes a day, then they need to say, "okay and then we are going to scale back the expectations required for this particular subject area".

(Teacher 6, male)

Teachers argued that implementation was not necessarily feasible in existing school environments:

I really like the idea of kids being active, and definitely believe it benefits their learning, but I don't think it has been well thought through as to how does that actually work in a regular day in a regular classroom, which may or may not be in a school building, with or without access to a gym. (Teacher 4, female)

Lastly, about one third of teachers (n=4) identified lack of administrator support as a barrier.

In summary, aspects of the physical, political, and sociocultural environments were perceived as barriers. Within the physical environment, teachers identified a lack of facilities and limited classroom space as barriers to both implementation and achieving the required 20 minutes of sustained MVPA. Teachers also mentioned limited resources including activity ideas, equipment, and training opportunities. Within the political environment, teachers discussed

curriculum demands, the low priority assigned to DPA compared to other subjects, and that it was more difficult to implement in older grades. Lastly, within the sociocultural environment, teachers identified student and teacher characteristics that presented barriers, such as discomfort with physical activity and lack of motivation. Additionally, poor support from staff and administrators was cited. Barriers focused on both the microenvironment (i.e., classrooms and schools) as well as the macroenvironment (i.e., school boards and Ministry of Education), indicating that several environmental levels influence implementation.

**Table 4.5. Perceived barriers to DPA implementation (Teachers).**

<b>Barrier</b>	<b>Number of Teachers (% of total)</b>	<b>Mentions (% of total)</b>
<b>School Physical Environment</b>	<b>14 (100)</b>	<b>113 (31)</b>
Lack of Facilities	12 (86)	31 (8)
Classroom Space	11 (79)	58 (16)
<i>Achieving MVPA in classroom</i>	11 (79)	16 (4)
<i>Portables</i>	5 (36)	12 (3)
<i>Safety</i>	4 (29)	10 (3)
Weather	8 (57)	16 (4)
<i>Can't go outside (due to rain, snow)</i>	8 (57)	14 (4)
Noise (disturb other classes)	5 (36)	8 (2)
<b>Curricular Demands</b>	<b>13 (93)</b>	<b>60 (16)</b>
Lower Priority than Other Curriculum Subjects	10 (71)	36 (10)
<i>Initial "push" for DPA has declined over time</i>	6 (43)	6 (2)
<i>DPA not reportable (i.e., not on report card)</i>	4 (29)	6 (2)
<i>Not held accountable for providing DPA</i>	4 (29)	6 (2)
Emphasis on Integrating DPA into Other Subjects	3 (21)	8 (2)
<b>Time</b>	<b>13 (93)</b>	<b>50 (14)</b>
Not Enough Time for DPA Activities	12 (86)	35 (10)
Disruptions During the Day	5 (36)	10 (3)
Not Enough Time for Planning DPA	3 (21)	5 (1)
<b>More Difficult to Implement in Older Grades</b>	<b>12 (86)</b>	<b>28 (8)</b>
Difficulty Engaging Older Students	5 (36)	8 (2)
Rotary	3 (21)	5 (1)
Students Have to Change Clothes	3 (21)	7 (2)
<b>Student</b>	<b>12 (86)</b>	<b>27 (7)</b>
Lack of Student Motivation	11 (79)	16 (4)
Student Abilities	5 (36)	7 (2)
Poor Student Behaviour	3 (21)	4 (1)
<b>Resources</b>	<b>11 (79)</b>	<b>37 (10)</b>
Lack of Equipment or Funds for Equipment	6 (43)	16 (4)
Lack of Activity Ideas	6 (43)	10 (3)
Lack of Available Training for Teachers	4 (29)	4 (1)
Resources not Available or Accessible	4 (29)	4 (1)
Resources not Useful or Practical	3 (21)	3 (1)
<b>Teacher-Specific Factors</b>	<b>10 (71)</b>	<b>35 (10)</b>
Discomfort Teaching Physical Activity	8 (57)	15 (4)
Lack of Teacher Motivation to Implement	5 (36)	12 (3)
Lack of Staff Support for DPA	5 (36)	8 (2)
<b>Practicality of Implementation was not Considered</b>	<b>5 (36)</b>	<b>14 (4)</b>
Didn't Remove Anything to Compensate for Added 20 minutes	3 (21)	6 (2)
<b>Lack of Support from Administrators</b>	<b>4 (29)</b>	<b>4 (1)</b>
<b>Total</b>	<b>14 (100)*</b>	<b>368 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### 4.2.8 Perceived Outcomes

All teachers discussed positive outcomes of DPA. Most focused on student outcomes; however, class, school, and teacher outcomes were also reported (Table 4.6). Twelve teachers (86%) stated that DPA provides students with a break during the school day:

I would be half way through a language lesson and I am starting to lose some of the kids, and I would be like, “alright we are going to switch it up. We are going to do some DPA here, and then we will finish off our language later”. Because you just see the kids starting to zone out and you know you need to get them up and moving, especially the grade eights.  
(Teacher 9, female)

Although they only had experiential evidence for a link between DPA and academic outcomes, almost 80% of teachers (n=11) said that DPA had a positive impact on students’ focus and attention in other subjects:

If they are moving and active, they are better able to focus on the language and the math.  
(Teacher 3, female)

The same percentage of teachers (n=11) said that students enjoy DPA:

They would never call you on, “oh Madame, you forgot French, but oh I missed science”, but they are like, “aren’t we supposed to be doing DPA right now”? (Teacher 11, female)

Over half of the teachers (n=8, 57%) discussed leadership as an outcome of DPA, with some teachers providing examples of students leading their peers in activities, and others describing how students share ideas for DPA activities:

The kids never, at the age group I am working with [grade 5], they never run out of options to bring forth. They love the idea that they get to suggest the game and get selected. That is a big thing for them. (Teacher 8, female)

Five teachers (36%) discussed outcomes for the class as a whole. Teachers mentioned that DPA improved the overall class environment and provided an opportunity for students to interact with each other in an informal, fun environment:

The general mood of the class, like doing a physical activity together is kind of a bonding time for a class. Like if you are all learning kung foo fighting DPA together, you know dance party thing, they laugh, and it is fun, and they feel good. (Teacher 4, female)



Similarly, three teachers (21%) mentioned that these positive class outcomes could spread throughout the school, especially when there are student leaders or DPA activities at assemblies. Lastly, two teachers mentioned that they personally gained increased energy from DPA.

Teachers discussed only two negative outcomes of DPA. Firstly, teachers said it was sometimes difficult for students to settle down after DPA (n=6, 43%):

There are other students that, you know, they get out and they go, “wow this is fun”, and they might blow off a little bit of steam. But they still have a lot of energy when they come back into the classroom, and it is hard for them to settle back down. (Teacher 14, female)

Secondly, four participants (29%) said that DPA caused increased stress on teachers:

What it did is served to put more pressure on the backs of an already stressed teaching group. And I don't think any one of us would argue that we don't think it is a good thing, or we don't want to do more of it. But there is that conflict of where do we find the time and the energy to learn, you know, a variety of games. And I am not an old teacher or “washed up” just yet, I mean I have kids giving ideas and I have myself researching but even in the context of that, I find it a struggle to come up with new and quick and easy things that are fun and fresh. (Teacher 8, female)

One interesting note was that teachers did not mention increased physical activity levels as a positive outcome of DPA implementation. In fact, four teachers (29%) questioned whether DPA was actually increasing student physical activity levels, the intended goal of the policy:

The original thought that “oh, we are going to implement this twenty minutes a day and it is going to get kids active and you know it is going to decrease the obesity rate and all this”, I think that was bit much. (Teacher 9, female)

**Table 4.6. Perceived outcomes of DPA (Teachers).**

<b>Outcome</b>	<b>Number of Teachers (% of total)</b>	<b>Mentions (% of total)</b>
<b>Positive Outcomes</b>	<b>14 (100)</b>	<b>119 (80)</b>
Student	14 (100)	103 (69)
<i>Provides a break</i>	12 (86)	29 (19)
<i>Behaviour</i>	11 (79)	22 (15)
<i>Improved focus and attention</i>	11 (79)	19 (13)
<i>Enjoyment</i>	11 (79)	22 (15)
<i>Leadership</i>	8 (57)	12 (8)
<i>Increased self-esteem</i>	4 (29)	4 (3)
<i>Increased energy</i>	4 (29)	5 (3)
<i>Instills the importance of physical activity</i>	3 (21)	3 (2)
<i>Trust and appreciation for teacher</i>	2 (14)	2 (1)
<i>Students with Special Needs</i>	2 (14)	2 (1)
Class	5 (36)	6 (4)
<i>Social interaction opportunity for class</i>	3 (21)	3 (2)
<i>Positive mood and positive class environment</i>	3 (21)	3 (2)
School Community Building	3 (21)	6 (4)
Teachers (increased energy, opportunity for physical activity)	2 (14)	4 (3)
<b>Negative Outcomes</b>	<b>12 (86)</b>	<b>25 (17)</b>
Yes	8 (57)	19 (13)
<i>Difficult for students to settle down after DPA</i>	6 (43)	8 (5)
<i>Added stress on teacher</i>	4 (29)	11 (7)
None	6 (43)	6 (4)
Questioned Whether DPA Is Changing Student Physical Activity or Obesity Levels	4 (29)	5 (3)
<b>Total</b>	<b>14 (100)*</b>	<b>149 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.2.9 Perceived School and School Board Monitoring and Evaluation**

Teachers were asked whether they were aware of any monitoring or evaluation of DPA occurring at their schools and within their school boards. Seven teachers (50%) discussed school-level monitoring and/or evaluation. Six (43%) said they were unaware of any monitoring, while two (14%) said some evaluation was occurring:

I mean no one cared, no one checked. And even now, I mean it is on my schedule, but I submit it to the office, and I mean I always do it, so I don't know if I didn't do it if someone would become aware of it. But there is no, no one checks. (Teacher 12, female)

Teachers speculated that the main reason for this lack of monitoring was because of the low priority assigned to DPA:

I mean I am sure it is seen as a valued part [but] maybe because it has been around for a few years now too, it is assumed that the teachers are going to be doing it, and the administration is probably more concerned with other things than the [DPA]. (Teacher 5, female)

Two teachers said there was some evaluation of DPA occurring at their schools, which specifically looked at how the policy was being implemented rather than outcomes. Both teachers had specialized training in physical education, and described staff meeting to review implementation:

For example, when we were trying to figure [DPA] out for rotary, we had all the grade 7 and 8 teachers sit down, everyone brought their schedules and then we tried to take a look and figure out, “okay, which are the days that each of these six intermediate classes don’t have phys. ed. and what teachers are they with, and who is best suited to provide [DPA]?” (Teacher 1, female)

The reason for why evaluation occurred at these schools was because of the priority the staff or administration assigned to DPA:

It’s because there are a lot of teachers, like myself, who, that’s our background, I have phys. ed. (Teacher 1, female)

All teachers who discussed monitoring at the board level (n=5, 36%) said they were not aware of any monitoring taking place:

Well no that is a good point actually. I don’t think anyone has checked in with us for many years since we have implemented it. (Teacher 8, female)

#### **4.2.10 Suggestions for Change to Improve Implementation**

Although DPA was considered a lower priority than other subjects, all teachers (n=14, 100%) discussed the importance of increasing physical activity levels in children. One of the teachers discussed the variation in physical activity opportunities between schools, and argued that all students should have an equal chance to be physically active at school:

I am sure physical activity is valued, but it depends on the school that you are at, and I think probably trying for more consistency amongst schools would be best. Because it shouldn’t matter what school a child goes to. They should have just as much physical activity at that school versus another school. So try to get the consistency there somehow. (Teacher 5, female)

Six teachers (43%) discussed the link between physical activity and learning:

Our school is [really] into physical activity because we know that that helps to stimulate the minds of students and makes [a] positive [impact] for learning in other subjects as well.  
(Teacher 1, female)

Within this topic, four teachers (29%) specifically discussed kinesthetic learners:

Well I think for a lot of the students they simply need that movement. I do multiple intelligences testing with my kids at the beginning of the year, and so many of them are kinesthetic learners. They need to move, and so you accommodate them as best you can in the class, like let them stand, let them move, you know, give them opportunities to move as they work. But if you can give some of those kids the reason to run around, get their heart rate up during the day, they are going to produce better. They are going to be able to settle better. (Teacher 4, female)

Teachers also discussed the health impacts of physical activity, including reducing obesity rates (n=5, 36%):

Do I value DPA? Absolutely. Do I think that we should have an hour of physical activity every day? I absolutely do. Do I think the kids are now overweight, unfit, basically living the video game lifestyles, even in the rural area that I work, absolutely! (Teacher 6, male)

Teachers debated whose responsibility it was to increase children's physical activity levels.

Some teachers highlighted the importance of providing physical activity opportunities in schools, since students are often inactive after school:

It is important for these kids to be physically active, because a lot of them don't play as much as they used to after school. So I think putting it within the school day is important.  
(Teacher 11, female)

Further, teachers discussed the importance of teachers being physical activity role models for students:

So I think getting them moving at school is very important. It is not just, it is not only our role, but I think if they are getting it from us, and they see us being active and it makes an impact, and it kind of encourages them to keep moving. So I think they need it. They need a daily physical something. DPA, I realize is because we can't fit it in that other block of phys. ed., but I think it is important. (Teacher 12, female)

Two teachers (14%) addressed the role of family in increasing physical activity levels:

And I also think another challenge too is that though the program is excellent in theory, there is something to be said that the kids that are [sedentary] and don't have that lifestyle that is promoted at home, that [twenty] minutes, that two blocks a week may or may not be life changing. But I would argue [that] it has to do with the parent climate of the house and the nutrition, and the attitudes towards being fit

....

I can't, in the time that I have been given, fully change their attitudes if it is not happening at home. You know I can't make them physically fit or less obese. I can't combat child obesity by my small little sessions in my school. I think it is helpful for sure. I don't mean to say that I can't alter their perspective at all, but I think it is a drop in the bucket.

(Teacher 8, female)

Teachers were asked whether they had any suggestions for changing how DPA was implemented (Table 4.7). Eight teachers (57%) discussed increasing resources, equipment, and activity ideas:

Well I would say put money into resources, so each classroom could have like just a big mesh bag full of DPA equipment that you could grab. Because the way it is at any school I have been at, the gym equipment is all stored centrally, and we have talked about creating those at our school, but budgets are incredibly limited. I bring basketballs from my own house just so the kids can play basketball at recess, because you know there aren't any. They are lost, the ones that belong to the school. (Teacher 4, female)

Teachers discussed that resources need to be accessible and easy to use, and activity ideas need to be feasible in classrooms:

And because [DPA] is not ranked really high on the totem pole, in my opinion, it needs to be very accessible to us, so if I can just click on this website or have this really great document that is super-at-a-glance. Here is what we need, and this is how you play the game. It would be much easier to incorporate

....

And then obviously a whole bunch of ideas for indoor, low volume of space, kind of games. (Teacher 8, female)

Six teachers (43%) emphasized the need for more space to implement the policy. They suggested increasing the frequency of physical education in the gym or providing another space in the school (such as an empty classroom) for DPA when the gym was not available:

Gym every day, or if we didn't have gym every day, at least have a vacant classroom where you could take the kids and they could do DPA, and then you would, everybody would be able to [use] that space for DPA. And they would probably, you could make up a schedule and it would work much more effectively and I think teachers would be more open to it. But convincing the board or anyone to allow that space is going to be a really, really tough battle. (Teacher 14, female)

One of the teachers' main suggestions to improve DPA implementation was to hold teachers accountable for providing DPA. Teachers proposed this could be done through monitoring whether DPA is happening or by including it in student report cards:

So I think once you start, once there is that accountability piece, then oh, you better believe you will have teachers doing twenty minutes of [DPA]

.....

So it really has to be like anything else, it is the principal that holds the teachers accountable to the curriculum, that would hold the teachers accountable for the [DPA].

(Teacher 6, male)

Six teachers (43%) recommended having a physical activity expert, either a teacher or fitness instructor, available at the school or board level to help teachers implement DPA and provide resources:

It would be really nice to have somebody who was the expert. . . . They come in and they teach you how you can implement DPA into your classroom and do a sample lesson, right? And then go around to all the different schools, and provide that support, and we could contact them at any time; "can you come in and give us some more ideas?"

(Teacher 7, female)

One of the teachers filled a similar role in her school board shortly after DPA was first mandated:

Each school has a rep. for DPA in our area. And so I would make an appointment to travel to each school, and spend about an hour with, sometimes with the principal and the person in charge of the school, and sometimes just the person in charge, and we would sit down and chat and I would bring them some equipment, some resources. And then usually I would try to schedule me coming in to their school on another day, so somewhere a couple of months down the line, I would schedule a full day that I would come into their school and what I would do is I would spend twenty minutes in each of the classrooms in their school, and basically lead a [DPA] session, so that the teachers could [watch]. And then I would give them some resources and leave, and then I would go to the next class, and I would do that all day. (Teacher 9, female)

However, the role only lasted for less than a year, and there was no evaluation of the position to assess its impact:

You know I wish we had. That would have been a really good idea. I would have liked to see what people thought, if it was a good use of the money, but no, I just went back into the classroom. (Teacher 9, female)

**Table 4.7. Suggestions for changes to improve DPA implementation (Teachers).**

<b>Suggestion for Change</b>	<b>Number of Teachers (% of total)</b>	<b>Mentions (% of total)</b>
<b>Important to Increase Student Physical Activity Levels</b>	<b>14 (100)</b>	<b>45 (42)</b>
Who should play a role in teaching students a healthy lifestyle?	6 (43)	13 (12)
<i>Teachers</i>	3 (21)	3 (3)
<i>Parents</i>	2 (14)	6 (6)
Aware of link between physical activity and learning	6 (43)	8 (7)
Aware of positive chronic disease prevention impacts	5 (36)	7 (6)
<b>Changes to Implementation</b>	<b>11 (79)</b>	<b>33 (31)</b>
Increase activity space	6 (43)	11 (10)
Increase frequency of physical education	6 (43)	8 (7)
Increase accountability and reportability	5 (36)	8 (7)
Changes should be school-specific	4 (29)	4 (4)
<b>Resources, Equipment, and Activity Ideas</b>	<b>8 (57)</b>	<b>16 (15)</b>
Increase accessibility of resources	6 (43)	8 (7)
<i>Centralized database for activity ideas</i>	2 (14)	2 (2)
Activity ideas should be presented in simple format so they are easy to implement	2 (14)	5 (5)
<b>Physical Activity Expertise Available</b>	<b>6 (43)</b>	<b>10 (9)</b>
At school board	3 (21)	5 (5)
At school	3 (21)	5 (5)
<b>Increase Training for Teachers</b>	<b>3 (21)</b>	<b>4 (4)</b>
<b>Total</b>	<b>14 (100)*</b>	<b>108 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.2.11 Summary of Findings from Teacher Interviews**

In summary, twelve of the fourteen teachers had implemented DPA in their classrooms. Eleven teachers said their schools met the time requirement through a combination of physical education and additional activities on days that their classes did not receive physical education. Two of the teachers' schools met the time requirement exclusively through daily physical education. Teachers discussed strategies and activities they used to implement DPA in their classrooms as well as indoor and outdoor facilities. Two of the most frequently discussed strategies were using student leaders and integrating activity into other subject areas.

Teachers discussed both facilitators and barriers to DPA implementation. Teachers focused on factors within the physical, sociocultural, and political environments at both the

microenvironment (i.e., classroom and school) and macroenvironment (i.e., school board) levels. However, they emphasized factors within the microenvironment. Teachers highlighted many positive outcomes of DPA, mainly for students, including increased focus and attention, enjoyment, and leadership. Two negative outcomes were discussed: it was sometimes difficult for students to settle down after DPA and that DPA increased teachers' workloads.

Teachers reported that limited monitoring and evaluation was occurring at the school and school board levels, with only two teachers discussing informal implementation evaluation occurring in their schools. Teachers were unaware of any monitoring occurring within either the schools or school boards. When asked whether they had any suggestions for changing DPA implementation, teachers focused on factors within the physical, sociocultural, and political environments. These included improving access to resources, activity space, and physical activity experts, as well as increasing accountability and reportability in order to prioritize DPA.

All teachers felt that increasing physical activity levels among students was important, with some mentioning the links between physical activity and learning as well as chronic disease prevention. Teachers emphasized that DPA is a lower priority than the rest of the curriculum, and the initial momentum behind DPA has decreased over time. Teachers discussed whether increasing physical activity levels was the responsibility of schools, parents, or both. Lastly, teachers emphasized that implementation is highly dependent on individual teachers, including their motivation and the value they assign to it. Although the majority of the teachers saw the value in DPA, they emphasized implementation challenges that made it difficult to meet the policy guidelines.



## 4.3 Principals' Perspectives

### 4.3.1 DPA Implementation Status and Characteristics

All principals (n=5, 100%) reported that classes within their schools received physical education two or three times per week. Three principals stated that these periods were between 45-60 minutes in length, while the other two reported the periods were 30-40 minutes. All five principals indicated that their schools had implemented DPA; however, four (80%) mentioned that DPA did not necessarily occur every day. One principal suggested that DPA occurred more frequently in the younger grades than the older grades:

Particularly with the primary and the junior grades, I would say more for the primary grades, you will see them involved daily in physical activity. . . . and the only grades I think they don't have a consistent use of [instructional time for DPA] would be the intermediates.  
(Principal 2, male)

All principals stated that the time requirement was met through a combination of physical education and additional activities completed on days when classes did not have physical education. The majority of principals (n=4, 80%) said that teachers scheduled DPA. Some principals required teachers to include DPA on the timetables they submitted to the principal:

It is on the timetable. The students are engaged in a variety of activities in regards to DPA daily in the classroom. So when they are not at the gym, there is about twenty minutes each day that is allotted in the classroom for students as well as twice a week for the [physical education] times in the gym, and then opportunities for outside as well at the discretion of the teacher. (Principal 1, female)

Others mentioned that teachers did not have to include DPA on their timetables and could decide when to complete it:

So they are given the flexibility to set it in the day with the understanding that it is there, and I can't really think of any teachers that don't do it at some point in time, but again it is not one of the things at the beginning of the year that I say I want to see the twenty minutes here.  
(Principal 2, male)

Two principals (40%) indicated that they scheduled some aspects of DPA. One of these principals initiated an expectation that teachers in his school provide DPA in health and language periods on the two days classes did not receive physical education. He designed the schedule so that each class

had health once per week on a day that they did not have physical education:

Every student in our school gets three gym classes in the big double gym, even kindergarten. And then everybody gets one health class on top of that, and that health class must begin with [DPA], so there is your four in a week. And then the fifth one has to come out of a day when you don't have [health or physical education], to do it out of your language time, just fifteen minutes or so of [DPA]. (Principal 3, male)

He discussed how this allowed for the responsibility of DPA implementation to be distributed between multiple teachers:

And the classroom teacher only has to do one of them. Three of them are gym, one of them is health, and then the last one is up to the classroom teacher. Now the classroom teacher might be the health teacher, but in a lot of cases it isn't. (Principal 3, male)

When asked where DPA occurred, all principals mentioned classrooms, outside, and gyms or activity rooms. Two principals (40%) said activities also occur in the hallways:

For the most part, when the weather is nice, we try and do things outside as much as possible, and of course during the winter months, either in their classroom or in the hallways. (Principal 5, female)

Some principals (n=4, 80%) briefly described activities they had seen students participate in; however, these explanations were much simpler than those given by teachers:

So I know one class stays out after recess every single day and does a walk-about and other classes will build songs and dance exercises into their class. (Principal 2, male)

One principal discussed older students leading DPA activities in other classes, similar to the activities described by two of the teachers:

At one of my former schools, we had grade six kids go into a class. They had CDs and they would lead the class. It was fantastic. As a leadership role they would go and get the other classes doing dancing and, you know, moves to a CD that had music, and they knew how to do all [of the] actions to it. (Principal 4, male)

Two principals (40%) discussed the process of teachers adopting DPA:

At first it was like, "oh my god, now we have to do DPA. What else are they going to put on our plates?". So like most initiatives, I think once people started to realize it was a good thing and it was helping kids to learn and it was helping the school scores, you know, I think it has grown over time. (Principal 3, male)

Lastly, one principal identified that the quality of DPA students receive varies based on the teacher implementing the activities:

And there is also, I think, a huge piece here. How well is it happening? Do you know what I am saying? If it's just going out to play on a playground. Wow that is not [DPA], right? You know, so how is that time being used? (Principal 4, male)

In summary, all principals reported that DPA had been implemented in their schools; however, the majority mentioned that it was not necessarily occurring every day. Classes within the principals' schools implemented DPA through a combination of physical education and additional activities that occurred on days that classes did not have physical education. The majority of principals reported that teachers scheduled DPA; however, one principal scheduled DPA in his school, outlining the periods that DPA should occur within. This allowed for the responsibility of DPA to be dispersed between multiple teachers, reducing the time requirements for each teacher. Principals stated that DPA occurred in gyms, activity rooms, classrooms, hallways, and outdoors.

#### **4.3.2 Perceived Facilitators for Implementation**

When asked about the factors that aided implementation in their schools, principals discussed seven themes (Table 4.8). All principals discussed resources as a facilitator, including training opportunities for teachers, activity ideas, and equipment:

[The teachers] are also good at, you know, attending workshops or in-services that create new ideas, and then they are open to sharing because we share at staff meetings.

(Principal 1, female)

I think print resources, so you know hey maybe you can't get outside today and the gym is being used. What can we do in our classes? Also actual physical resources, like actual materials to use. Hear me out. A rubber chicken, a bin that goes around to different classrooms. (Principal 4, male)

Principals discussed facilitators within the school social environment (n=5, 100%), such as having a school champion (i.e., a teacher who provides leadership to facilitate school implementation), staff support of DPA, and sharing activity ideas between staff:

We have a female [whose teaching responsibility is] more than half phys. ed. She has been running the DPA program, giving teachers ideas. We have little bags that you can take. So there might be one that is full of Frisbees. There is one that has skipping ropes in it, and you can grab a DPA bag. . . . And there are sheets of paper in those bags that have the ideas of what you can do. (Principal 3, male)

So when a teacher hears of a new idea, word of mouth is a great way of transferring that information. And you will see it spread between people who are not only colleagues but that you now know are friends, because they will be having the hallway discussions in between classes and then they will be meeting for ten, fifteen minutes afterwards and you will see them [borrowing] from each other. (Principal 2, male)

Teacher-specific characteristics (n=5, 100%) were seen as facilitators, including motivation to implement DPA, participation, and physical activity experience and training:

Probably how fit the teacher is, how active the teacher is, how well the teacher has been educated. Would you be willing to give up twenty minutes of science time, just hear me out, for [DPA], knowing that those remaining forty minutes, the kids are just going to be on fire? Right? And so recognizing that, you know, the brains click in, endorphins are going, kids are excited, right? So you have to be able to buy in[to] that in your own personal mantra or belief system to really value that [DPA] time. (Principal 4, male)

I think the biggest thing quite honestly is the buy-in of staff. They have to see the benefits that it has for the students and their ability

. . . .

So if you see the benefits of that physical activity, you are definitely going to put it to use much more. (Principal 5, female)

Four principals (80%) discussed school board support as a facilitator. Three principals (60%) highlighted the benefit of physical activity experts at their school boards, while others mentioned access to DPA resources or funding for them:

Our board has done a good job. Like we have had workshops for admin, workshops for phys. ed. teachers, and staff contacts, so I think there is a real push you know from the senior folks at our board to make sure that we are doing it, and that probably comes from the Ministry, right? (Principal 3, male)

A couple of years ago [we received] some funding through, it is called a S'cool Life Fund. And so with that we were able to buy some equipment for outdoors. So we were able to get tetherballs, and posts, and we were able to get some soccer nets, so that kids would have more access to activities outside. So you know funding is always huge. (Principal 5, female)

Support from administrators was also seen as a facilitator (n=4, 80%). Principals discussed that implementation improved when administrators were involved in DPA scheduling. For example,

some principals tried to increase students' weekly gym access or asked teachers to include DPA in their timetable:

But that is all driven from principals who are asking for where [DPA] is on the timetable. So I can't speak for all, but if principals are not asking, right, "hey tell me where, when is [DPA] happening". Then there is a good chance that it is not. (Principal 4, male)

Additionally, physical activity was important to one of the principals, which contributed to the priority he assigned to DPA in his school:

Yeah I am a big believer in phys. ed. Lots of phys. ed. So while a lot of schools, I think, the trend was for a while to cut back on phys. ed. classes, and do more math and more English to try to improve those EQAO scores. I have always gone the opposite direction and try to increase physical activity, music, and the arts, in the hope that, and everything that I have read sort of says that, when kids are really well rounded they are going to learn more. (Principal 3, male)

Lastly, principals (n=4, 80%) identified features of the school physical environment that facilitated DPA, such as available facilities at the school or nearby:

However, there are also opportunities because we are by a park and we are by a high school, so there are always opportunities to have daily physical activity outside on a nice day. So then that is [in addition to] the two gym times. (Principal 1, female)

One of the principals discussed a unique program at her school that allowed students to swim regularly at a nearby pool. This greatly increased the opportunities for physical activity at her school:

Our building is conjoined with one of the city pools, and so I mean it is a city-owned pool. So through our school budget we pay for the use of the lifeguards in the pool, and so many of our students swim every day. Some of them swim two to three times a week. . . . so we are very fortunate to be able to do that. (Principal 5, female)

In summary, principals suggested that factors within the physical, sociocultural, political, and economic environments were implementation facilitators. Within the physical environment, principals discussed available resources (i.e., activity ideas, training opportunities, and equipment) and access to facilities for physical activity. Principals also described having physical activity experts available at the school and school board levels as facilitators. Within the sociocultural environment, staff sharing activity ideas, teacher-specific characteristics, and support from the

school board and administrators were mentioned. Administrators and school boards prioritizing DPA was a facilitator within the political environment. Lastly, available funding for resources was described within the economic environment. Principals discussed factors within both the microenvironment (i.e., classes and schools) and macroenvironment (i.e., school boards), indicating that multiple environmental levels influence DPA implementation.

**Table 4.8. Perceived facilitators for DPA implementation (Principals).**

<b>Facilitator</b>	<b>Number of Principals (% of total)</b>	<b>Mentions (% of total)</b>
Resources	5 (100)	19 (28)
<i>Training and workshops</i>	4 (80)	9 (13)
<i>Activity ideas</i>	4 (80)	5 (7)
<i>Equipment</i>	3 (60)	5 (7)
School Social Environment	5 (100)	13 (19)
<i>School champion</i>	3 (60)	4 (6)
<i>Staff support of DPA</i>	3 (60)	4 (6)
<i>Staff sharing activity ideas</i>	2 (40)	5 (7)
Teacher-specific	5 (100)	9 (13)
<i>Teacher motivation to implement</i>	3 (60)	6 (9)
<i>Teacher participation</i>	2 (40)	2 (3)
<i>Teacher's physical activity experience and training</i>	1 (20)	1 (1)
School Board Support	4 (80)	11 (16)
<i>Physical activity expert at board level</i>	3 (60)	5 (7)
<i>Resources provided or physical activity funding available</i>	2 (40)	3 (4)
<i>DPA considered a priority by school board</i>	1 (20)	3 (4)
Administrator Support	4 (80)	8 (12)
<i>Scheduling by administrator</i>	3 (60)	4 (6)
<i>Administrator reminders to staff</i>	2 (40)	2 (3)
<i>Physical activity important to administrator</i>	1 (20)	2 (3)
School Physical Environment	4 (80)	6 (9)
<i>Indoor activity facilities at school or nearby</i>	3 (60)	3 (4)
<i>Parks and large fields at school or nearby</i>	3 (60)	3 (4)
Physical Activity Seen as Important Societal Issue	1 (20)	1 (1)
<b>Total</b>	<b>5 (100)*</b>	<b>67 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

### 4.3.3 Perceived Barriers to Implementation

Barriers identified by principals fell under four themes: curricular demands, time, resources, and teacher-specific characteristics (Table 4.9). Four principals (80%) identified the demands of the other curriculum subjects as a major barrier, stating that DPA was considered a lower priority:

We have so much to fit in curriculum-wise, that it is really difficult sometimes. And you have to think, “We are going to balance this out. What am I going to give up today? Am I going to give up that twenty minutes of DPA or am I going to give up, you know, that twenty minutes of math that we didn’t quite get to?” So I mean that is a huge challenge.  
(Principal 5, female)

Principals gave the same reasons as teachers to describe why DPA was considered a lower priority:

i) teachers are not held accountable for providing DPA, and ii) DPA is not included in students’ report cards:

I have to be honest, while I value it in terms of my day, it is not reportable, it is not, please do not be offended, it is not a priority for me. (Principal 4, male)

Similar to some of the teachers, two principals indicated that the initial motivation behind DPA has declined over time:

[DPA] has, in all honesty, fallen off the radar. And not just this year, in the last couple of years. It came in with a great implementation but that, sort of, implementation curve has dropped, right? So I think that would be pretty consistent across the system.  
(Principal 4, male)

However, one principal, who had specialized training in physical education, argued that the momentum behind DPA was increasing in his board:

But I would say it has been steadily growing to be honest, because people hear of good ideas, and there are more workshops, and you know, so I think it is getting easier and easier to do. (Principal 3, male)

This discrepancy may be due to the different interests of these three principals. Because the third principal values physical activity and has a physical education background, he may be more knowledgeable of DPA initiatives in his school board compared to the other two principals.

Principals also discussed time as a barrier, indicating that there was not enough time for all classes to have daily access to the gym or DPA training for staff:

For example, we are now mandated to an hour and fifteen minutes per month of staff meeting time. If that is the only instructional time you have with the staff, and they have the Ministry saying that your literacy strategies should resemble A, B, C, D and your mathematics strategies should be something else. So you are trying to fit all those in, in addition to the DPA and the food and nutrition policy, the safe schools with lockdown policies, and things like that. So it really comes down to time. (Principal 2, male)

Two principals (40%) discussed the obstacle that rotary presents to DPA, since individual teachers have less time with their classes:

In schools where you have high rotary, and this has been my experience, you see less [DPA], because you don't want to give [the time] up, or I don't want to give it up

.....

Now remember, I am also teaching four classes, so I want to keep everybody at the same pace, give or take, right. So I don't want to lose twenty minutes out of my science, you know. (Principal 4, male)

Three principals (60%) discussed limited resources as a barrier. They mentioned inadequate finances to support DPA, poor access to facilities and resources, and limited equipment and training opportunities for teachers:

For the most part I would say we have adequate equipment [but] that is always a challenge. You know as I mentioned, many things tend to disappear. (Principal 5, female)

For us, time is always equated into, "will the board supply dollars for supply teachers?". Because when a supply teacher comes in, I can send teachers off to do in-services and various things. So with any new initiative you always get an infusion of capital, and then it tends to level out because their understanding of it becomes part of your daily practice. (Principal 2, male)

Lastly, three principals (60%) identified teacher-specific characteristics that pose a barrier to DPA implementation. These included lack of teacher motivation, a teacher's ability (i.e., health status or fitness level), and discomfort teaching physical activity:

A teacher's comfort or maybe priority with fitness, general fitness. I am not talking [about DPA]. I am just talking [about] fitness in general. (Principal 4, male)

One principal suggested that the current implementation model for school-based health policies might not be the most effective. Specifically, he identified that teachers responsible for implementing DPA and the School Food and Beverage Policy are not trained experts:



But you are putting health and nutrition into the hands of people that didn't necessarily study health and nutrition. So you have music teachers, and you have people who went to university for language and for math. And although everybody has a base level of understanding, it is quite easy to see that those that have expertise in food and nutrition are going to be able to deliver much better programs or even understand the need for it better, and to give the proper emphasis. So because they keep bringing in policies and giving them to lay people to administer, I don't know if that is always going to be the most effective.  
(Principal 2, male)

When asked how to overcome these barriers, principals discussed meeting with their staff to create solutions to implementation barriers (n=3, 60%), offering training workshops (n=1, 20%), and increasing resources (n=1, 20%):

P<sup>1</sup>: Over time things can die off if you don't keep "feeding the fire".

R: Right and how would you say you "feed the fire" at your school?

P: Well, like I say, some of it is sharing stuff at staff meetings. Some of it is sending people out to workshops when they are offering them. Some of it, our board has kits we can sign out, like omnikin balls and different [equipment] that we may not have, aerobic steps.  
(Principal 3, male)

Overall, principals discussed barriers within the political, physical, economic, and sociocultural environments. Within the political environment, principals highlighted curricular demands, the low priority assigned to DPA, and limited time for addressing DPA in staff training. Limited resources, funds, access to facilities, and training were identified within the physical and economic environments. Lastly, teacher-specific factors such as motivation, physical ability, and discomfort teaching physical activity were mentioned within the sociocultural environment. Principals discussed barriers at both the microenvironment (i.e., classrooms and schools) and macroenvironment (i.e., school board and Ministry of Education) levels.

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<sup>1</sup> For quotes within this chapter, "R" indicates the researcher is speaking and "P" indicates a principal is speaking.

**Table 4.9. Perceived barriers to DPA implementation (Principals).**

<b>Barrier</b>	<b>Number of Principals (% of total)</b>	<b>Mentions (% of total)</b>
Curricular Demands	4 (80)	29 (47)
<i>Not enough time for DPA amongst other curriculum subjects</i>	4 (80)	12 (19)
<i>Lower priority than other curriculum subjects</i>	4 (80)	17 (27)
<i>Do not have to report about DPA on report card</i>	2 (40)	3 (5)
<i>Not held accountable for providing DPA</i>	2 (40)	2 (3)
<i>Priority of DPA has decreased over time</i>	2 (40)	2 (3)
Time	4 (80)	11 (18)
<i>Difficulty scheduling time in gym</i>	3 (60)	4 (6)
<i>Rotary</i>	2 (40)	5 (8)
<i>Not enough time for DPA staff training</i>	2 (40)	2 (3)
Limited Resources	3 (60)	12 (19)
<i>Limited finances for resources</i>	3 (60)	4 (6)
<i>Poor access to facilities and resources</i>	3 (60)	3 (5)
<i>Lack of equipment</i>	2 (40)	4 (6)
<i>Lack of available training</i>	1 (20)	1 (2)
Teacher-Specific Factors	3 (60)	10 (16)
<i>Lack of teacher motivation</i>	3 (60)	3 (5)
<i>Teacher ability (i.e., health, fitness level)</i>	2 (40)	4 (6)
<i>Teachers not trained in health and physical education, yet in charge of implementation</i>	1 (20)	2 (3)
<i>Discomfort teaching physical activity</i>	1 (20)	1 (2)
<b>Total</b>	<b>5 (100)*</b>	<b>62 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.3.4 Perceived Outcomes**

All of the positive outcomes identified by principals were for students. Principals discussed the positive impacts of DPA on learning, specifically related to focus and attention. They also identified social outcomes such as social interaction with other students, increased self-esteem, and learning about the lifelong importance of physical activity (Table 4.10):

It has increased student achievement. It has increased student self-esteem, and certainly readiness to learn, because after the students have participated in some sort of activity where they have been actively engaged, then when we transition to complete a task or a group assignment, they tend to be more focused and ready to learn and participate.

(Principal 1, female)

So physical activity is important because not only does it have all those inherent health effects, just being active yourself, but it also allows them to develop their social skills when they are in motion with each other. [It] is a lot better than sitting down in class where you don't really have that interchange. (Principal 2, male)

One principal specifically discussed the positive outcomes of physical activity for students with special needs. In addition to some of the outcomes listed above, the principal highlighted that physical activity provided a physical release for students, improved their fitness and health, taught them life skills (e.g., changing their clothes) and provided them with new experiences they would not otherwise encounter:

Physical activity is very important for our [special needs] students, as far as keeping them in good physical condition. And for a lot of them it also meets the requirements of their physiotherapy programs, so we try to incorporate that into their physical education. And also for many of the students, it is an outlet for students who have issues with behaviour. For some of our students with [Autism Spectrum Disorder] who become over stimulated, it is an outlet for them. (Principal 5, female)

Only one negative outcome was identified by one principal. He mentioned that some teachers view DPA as a break from instruction:

I think one of the concerns is that we have teachers who are not physically fit themselves or don't know how to handle that unstructured time. And so what will happen is if they don't have a plan [for DPA] and they go out, sometimes kids are just playing on the monkey bars or on [playground] equipment rather than organizing a quick game in the classroom.  
(Principal 4, male)

**Table 4.10. Perceived outcomes of DPA implementation (Principals).**

	<b>Number of Principals (% of total)</b>	<b>Mentions (% of total)</b>
<b>Positive Outcomes</b>	<b>4 (80)</b>	<b>28 (88)</b>
Student	4 (80)	28 (88)
<i>Focus and attention</i>	3 (60)	6 (19)
<i>Social interaction</i>	3 (60)	3 (9)
<i>Learning the importance of lifelong physical activity</i>	2 (40)	4 (13)
<i>Increased self-esteem</i>	2 (40)	3 (9)
<i>Students with Special Needs</i>	1 (20)	9 (28)
<i>Students aware of what DPA is</i>	1 (20)	1 (3)
<b>Negative Outcomes</b>	<b>3 (60)</b>	<b>4 (13)</b>
Yes	1 (20)	2 (6)
<i>Some teachers see DPA as unstructured break from instructional time</i>	1 (20)	2 (6)
None	2 (40)	2 (6)
<b>Total</b>	<b>5 (100)*</b>	<b>32 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.3.5 Perceived School and School Board Monitoring**

Principals were asked whether they were aware of any evaluation and/or monitoring of DPA occurring at their schools or school boards (Table 4.11). Two principals (40%) indicated that they conduct some monitoring through observation:

- P: When I go into the gym, when I go into the classrooms, I have their schedule. So then where it says DPA on this sort of day or this sort of time, I will take a walk through and see how the students are engaged.
- R: Right, so kind of like observation to make sure it is going on?
- P: Yeah.
- R: And is that a sporadic-type frequency?
- P: Yes. (Principal 1, female)

Three of the principals (60%) said that no monitoring occurred at their schools. Additionally, one of the principals who conducted DPA observations said that these observations were not recorded and thus were not used for reporting on DPA. Eighty percent of principals (n=4) were unaware of any monitoring occurring at the school board level:

R: So is there any monitoring going on at your school?

P: Not that I know of, no. Like that is a good point. You know they often say, that which gets evaluated gets done. And are we checking with teachers to make sure they are doing it? No. Is the board checking with us to make sure we are doing it? Not that I know of.

(Principal 3, male)

One of the principals described that when the school board superintendent visits they discuss DPA:

Now certainly when we have visits from the superintendent, who comes to the school a number of times during the course of the year, and we do our walk-throughs, that is one of the things that we look at: where DPA is in the schedule. (Principal 1, female)

Two principals stated that although monitoring was not occurring at their schools or school boards, they understood the value of monitoring:

Anything you want completed requires monitoring. And that is no different than guided reading, or instructional strategies we do with all our staff, and the question comes back to principals all the time, how do we monitor "it"? "It" being myriad of things, but yeah, without the monitoring it will not happen. (Principal 4, male)

Principals discussed that in general, DPA was something they simply expect to be completed, because it was a lower priority than their other responsibilities:

I think you are going to find that from most schools it is just an accepted fact that it is there. (Principal 2, male)

Lastly, although DPA is not directly assessed on the report card, two principals (40%) mentioned that DPA was indirectly reported in the learning skills section:

P: Certainly the teachers' DPA is put on the report card, so there is mention of student's growth in that area.

R: Okay, so is that a participation comment or -

P: Participation certainly and certainly engagement.

R: Okay, and is that in the physical education part of the report card?

P: We can, depending on the expectations that are being covered in the curriculum document. But then it is also in terms of learning skills. (Principal 1, female)

**Table 4.11. School and school board monitoring of DPA, as perceived by principals.**

<b>Monitoring</b>	<b>Number of Principals (% of total)</b>	<b>Mentions (% of total)</b>
School	5 (100)	7 (30)
<i>No</i>	4 (80)	5 (22)
<i>Yes (observation by principal)</i>	2 (40)	2 (9)
Board	4 (80)	7 (30)
<i>No</i>	4 (80)	6 (26)
<i>Yes</i>	1 (20)	1 (4)
Importance of Monitoring	2 (40)	2 (9)
Expected that DPA is Happening	2 (40)	4 (17)
DPA Reported in Learning Skills Section	2 (40)	3 (13)
<b>Total</b>	<b>5 (100)*</b>	<b>23 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.3.6 Suggestions for Change to Improve Implementation**

Despite the majority considering DPA a low priority, all principals thought it was important to increase children’s physical activity levels:

The long range [benefit] of showing kids that being active is a way of life. It is not a chore. And it is good for you and you are going to live longer if [you] do it, and [be] healthier and cost the system less. (Principal 3, male)

Three principals (60%) discussed the link between physical activity and learning:

So that is the problem: trying to show people that you know, there is value in it from a healthy active lifestyle perspective, but also from an academic one. Kids [who] are active do better in school and pay attention better. (Principal 3, male)

Similar to the teachers, principals also debated whose role it was to increase students’ physical activity levels, focusing on parents and society:

And I think maybe a lot of the onus is falling on schools, and maybe we shouldn’t be putting that onus on schools. Because I know with my own children, that was something that I took upon myself, to ensure that they had enough physical activity and that they were involved in different activities. . . . [But] we have the means to be able to provide them with those experiences. [Society needs] to ensure that there are ways for students who don’t have the means, for families who don’t have the means to pay to have students involved in activities. So making things affordable or free, you know, having programs for kids so that they can access different sports and activities after school hours, and I think that would be of great benefit, more than putting the onus on the school to do that. (Principal 5, female)

Three principals (60%) made suggestions for DPA implementation changes (Table 4.12); however, there was little consensus between them. Suggestions included increased accountability (n=2, 40%), training and financial resources (n=1, 20%), talking to teachers about how to improve DPA (n=1, 20%), and targeting sedentary individuals (n=1, 20%). One principal described how it was especially important to focus on increasing the physical activity levels of children who are physically inactive:

The same kids who play hockey [also] play soccer [and] play on my volleyball team. . . . Your true athletes are true athletes, and it is really the [DPA], I think, needs to be targeted [to], and beneficial for, those kids that are couch potatoes, [who] leave here and watch TV or, you know, some form of screen time in the evening. So really until it is monitored, whether by check mark or, you know, reported on, I doubt we will see a change in it.  
(Principal 4, male)

Additionally, one principal indicated that suggestions for change would be different for individual schools and school boards, since there is variation between schools. This implies that the local environment influences implementation.

**Table 4.12. Suggestions for changes to improve DPA implementation (Principals).**

<b>Suggestion for Change</b>	<b>Number of Principals (% of total)</b>	<b>Mentions (% of total)</b>
Important to Increase Student Physical Activity Levels	5 (100)	21 (72)
<i>Aware of link between physical activity and learning</i>	3 (60)	6 (21)
<i>Who should play a role in teaching students a healthy lifestyle?</i>	2 (40)	3 (10)
<i>Society</i>	2 (40)	2 (7)
<i>Parents</i>	1 (20)	1 (3)
<i>Aware of positive chronic disease prevention impacts</i>	1 (20)	1 (3)
Increase Accountability	2 (40)	2 (7)
Increase Training and Funding for DPA	1 (20)	3 (10)
Suggestions/Changes will be School, Board, Teacher Specific	1 (20)	2 (7)
<i>Talk to teachers about how to help improve DPA</i>	1 (20)	1 (3)
DPA Should Target Sedentary Individuals	1 (20)	1 (3)
<b>TOTAL</b>	<b>5 (100)*</b>	<b>29 (100)</b>

*\*This is not equal to the sum of the numbers in the column due to multiple responses.*

#### **4.3.7 Summary of Principal Interviews**

In summary, all principals reported that DPA had been implemented in their schools through a combination of physical education and additional activities. Most principals said that teachers scheduled DPA, while one principal outlined the specific subjects in which DPA was to be provided in his school. The facilitators and barriers identified by principals fell within all four types of environments (physical, sociocultural, political, and economic). Additionally, principals discussed factors within both the microenvironment (i.e., classes and schools) and macroenvironment (i.e., school boards and the Ministry of Education). Principals noted positive outcomes for students, including academic and social skills. Only one principal identified a negative impact: some teachers viewed DPA as a break from instruction, which is not its intended purpose.

Some principals mentioned that administrators or school board superintendents conducted monitoring of DPA through observation. The majority of principals, however, stated that they were unaware of any monitoring occurring in their schools or school boards. Principals made a variety of suggestions for improving implementation, including increasing accountability. Lastly, all principals indicated the importance of increasing physical activity levels, with some discussing the link between physical activity and learning. Although the majority of principals viewed DPA as a low priority, there was some discrepancy in whether the momentum behind DPA was increasing or decreasing. Additionally, one of the principals questioned why teachers who do not have training in health are responsible for implementing health-related policies.

#### **4.4 Chapter Summary**

This chapter presented the results of the qualitative data analysis of semi-structured interviews with teachers and principals. All principals and the majority of teachers had implemented DPA. With the exception of two teachers' schools that had daily physical education, schools were using a combination of physical education and additional activities to meet the time requirement. However, many participants indicated that they were not necessarily meeting the DPA requirements



every day.

With respect to implementation facilitators, both key informant groups emphasized teacher characteristics, the school social environment, and resources. Teachers focused on aspects of the sociocultural and physical environments within the microenvironment (i.e., classrooms and schools). Principals discussed the physical, sociocultural, political, and economic factors at both the microenvironment and macroenvironment (i.e., school board) levels. In terms of barriers, both teachers and principals emphasized that DPA was considered a low priority compared to other curriculum subjects since it was not included in report cards and teachers were not held accountable for providing it. Teachers identified barriers within the physical, political, and sociocultural environments at both the micro- and macroenvironment (i.e., school board) levels. Principals mentioned factors within all four environment types at all environmental levels (i.e., classroom, school, school board, and Ministry of Education). Overall, principals tended to identify barriers from a broader range of environment types and levels.

Teachers and principals focused on various positive outcomes for students including that DPA provided a break for students, increased focus and attention, and provided opportunities for social interaction and leadership. A few participants discussed negative outcomes: it was difficult for students to settle after the activities, DPA increased stress on teachers, and some teachers viewed DPA as a break from instruction. The majority of participants were unaware of any monitoring occurring at the school or school board levels, which presents a concern for the sustainability of implementation. When asked to suggest changes to improve implementation, both groups discussed increasing accountability, resources, and training. Teachers also suggested increasing activity space and access to physical activity experts. Overall, participants reported that although they are trying to implement DPA and think it is important to increase children's physical activity levels, many considered DPA a low priority. Despite identifying positive outcomes, participants emphasized implementation barriers.

The results provide evidence that the local environment influences DPA implementation. The following chapter will discuss these findings in the context of previous literature. The limitations and contributions of this thesis and directions for future research will also be presented.

## **CHAPTER FIVE: DISCUSSION AND CONCLUSIONS**

### **5.1 Introduction**

This concluding chapter begins with a summary of the main findings of this qualitative research, which aimed to answer the following objectives:

1. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of front-line teachers; and,
2. To explore local-level factors affecting implementation of the Ontario DPA Policy from the perspective of school administrators.

Findings will be contextualized using the existing literature. Next, theoretical, substantive, and methodological contributions, as well as policy implications of this thesis are discussed. Lastly, limitations and directions for future research are considered.

### **5.2 Summary of Key Findings**

Although all but two of the teachers and principals indicated they had implemented DPA, the majority of teachers (64%) said their students were not receiving 20 minutes of physical activity during instructional time every day. This finding is consistent with those of Patton (2012) and Stone et al. (2012). Of the nineteen participants from sixteen schools in this research, only two participants' schools had daily physical education. Teachers discussed strategies and activities they used to implement DPA, including multiple breaks throughout the day that sum to the 20-minute requirement, students leading activities, and integrating physical activity into other subjects. However, some teachers discussed the barriers associated with using student leaders and the emphasis on integrating physical activity into other subjects. One principal discussed how classes' weekly schedules included three physical education periods and one health period in which the teacher led 20 minutes of DPA. That way, many homeroom teachers were only responsible for implementing DPA in their classrooms once per week. Overall, almost all participants were trying to meet the guidelines; however, they were not necessarily met every day.

### **5.2.1 Perceived Facilitators**

Teachers and principals discussed similar themes for implementation facilitators. All principals and teachers highlighted teacher-specific factors that influenced delivery, including motivation and physical activity experience. Teachers also mentioned a teacher's comfort level with physical activity and his/her ability to be a physical activity role model for students. The positive influence of teachers aligns with extant literature (Langille & Rodgers, 2010; Mâsse et al., 2012; Mâsse et al., 2013; Tjomsland, 2010). The majority of participants indicated that resources, including activity ideas, equipment, and training opportunities, facilitated implementation, as reported by Cardon et al. (2012), Mâsse et al. (2012), People for Education (2009, 2012), and Tjomsland (2010). Features of the school social environment were also discussed, including staff support and the presence of a school champion. Teachers emphasized sharing activity ideas with their colleagues as an important asset to implementation, which was also reported in the Tjomsland (2010) case study. Support from the school board and administrators were mentioned by both groups. Administrator support has been identified as a facilitator by Abbott, Macdonald, Hay, and McCuaig (2011) and Tjomsland (2010), while school board support was reported by Cardon et al. (2012). This is one of the first studies to identify facilitators for DPA implementation. The majority of facilitators cited by participants focused on the class and school levels; thus, the findings suggest that successful implementation of DPA is highly dependent on individual school environments and the teachers within them. This is consistent with social ecological theory; individuals within a population must be supportive of interventions in order for change to occur (McLeroy et al., 1988).

### **5.2.2 Perceived Barriers**

Teachers and principals identified similar barriers; however, teachers discussed more barriers than principals. Both teachers and principals highlighted curricular demands as a prominent implementation barrier, emphasizing that DPA is considered a lower priority than other curriculum subjects, mainly because it is not included on the report cards and there is no consequence if DPA is

not provided. These findings are consistent with many studies of school-based physical activity interventions that identify the lower priority of physical activity compared to other subjects (Belansky et al., 2009; Dwyer et al., 2003; Evenson et al., 2009; He et al., 2011; Langille & Rodgers, 2010; Patton, 2012). Both groups also discussed how there was limited time for DPA activities, planning, and training, which have been cited by Evenson et al. (2009), Kennedy et al. (2010), Mâsse et al. (2013), and People for Education (2012). Some teachers highlighted that although some training was available, it was often infrequent and optional. For example, teachers mentioned that DPA training was offered at the same time as training for other subjects, and they were more likely to choose those workshops than DPA. Limited resource accessibility, finances, and training, as well as poor access to physical activity facilities were mentioned. Inadequate resources and facilities have been identified for a variety of school-based physical activity interventions (Alberta Education, 2008; Belansky et al., 2009; Dwyer et al., 2003; Kennedy et al., 2010; People for Education, 2012; Pitt Barnes et al., 2011). Additionally, teachers indicated that limited activity ideas were a major barrier and mentioned the limitations of the current resources available. Lastly, both groups discussed teacher-specific factors such as discomfort teaching physical activity and lack of motivation, consistent with the findings from Belansky et al. (2009), Mâsse et al. (2013), and People for Education (2009).

Teachers identified additional barriers that were not mentioned by principals. Teachers emphasized barriers within the physical environment, specifically related to limited classroom space for activities. They highlighted how this limited space reduced the students' ability to meet the policy requirements for moderate to vigorous intensity physical activity (MVPA), discussing how students often performed low-intensity activities in the classroom. Limited space was identified as a barrier in the Patton (2012) study as well as the two evaluations of the Alberta DPA policy (Alberta Education, 2008; Kennedy et al., 2010). This finding also confirms Stone et al.'s (2012) proposition that achieving the sustained MVPA component of the policy could be "logistically challenging" (p.

173). Teachers discussed how the limited classroom space presents a safety concern. Three other barriers were mentioned by teachers but not principals: DPA was more difficult to implement in older grades, the logistics of implementation were inadequately considered, and poor support from administrators. Difficulty implementing in older grades has not been previously reported as a barrier for the Ontario or Alberta DPA policies; however, Mâsse et al. (2013) reported lower implementation in middle schools (grades 8-10) than elementary schools (grades 7 and under). Given that the BC DPA policy allows students in grade eight and above to simply report their physical activity, it is difficult to compare the lower implementation in older grades found in the current research and Mâsse et al. (2013).

The barriers identified in Patton (2012) were consistent with those found in this research; however, the qualitative methods used provided further understanding of why these factors were considered barriers and identified additional obstacles. In his article, Patton (2012) poses a question:

So why do teachers find it so hard to find the time to conduct the program and why do so many teachers report that DPA takes valuable time away from other subjects? . . . This misunderstanding of the impact of DPA must be addressed. (p. 20)

The findings of this thesis begin to answer this question, identifying many factors that influence the feasibility of implementation. Many teachers discussed disruptions during the day that take time away from the curriculum, such as distributing and collecting student forms, assemblies, and field trips. These activities are not included in the time allocations suggested for each subject by the school boards. Additionally, teachers are held accountable for the other subjects by report cards and standardized testing; therefore, these subjects are likely to take priority over DPA. It is important to remember that many teachers are not trained in physical activity or physical education and DPA is only one of many responsibilities in their roles as teachers. This thesis provides insight into the obstacles teachers face, showing that teachers are trying to meet the guidelines, but there are many factors that prevent them from meeting the requirements daily.

### 5.2.3 Perceived Outcomes

Teachers and principals both focused on positive student outcomes of DPA; however, teachers also discussed some outcomes for classes, schools, and teachers. Both groups identified increased focus and attention; the main outcome described by teachers was that DPA provides students with a break from academics during the school day, as found by Evenson et al. (2009) and Mahar (2011). Consistent with Mâsse et al. (2013), teachers highlighted that students enjoy DPA and it provides leadership opportunities. Both groups mentioned increased social interaction, with teachers discussing how this creates a positive class environment. Although members of both key informant groups mentioned negative outcomes, they were different. Teachers discussed how it was sometimes difficult for students to settle down after DPA and that the policy adds stress on teachers, while one principal discussed how some teachers misuse DPA as a break they do not have to instruct. Mâsse et al. (2013) also identified added stress on teachers; however, the other negative outcomes have not been identified in other studies of Canadian provincial DPA policies.

One interesting finding was that the perceived outcomes discussed by both key informant groups did not focus on physical activity or fitness, consistent with Mâsse et al. (2013). In fact, some teachers actually questioned whether DPA was increasing student physical activity levels or lowering obesity rates. As described in the DPA memorandum (Ontario Ministry of Education, 2005) and the Health and Physical Education Curriculum (Ontario Ministry of Education, 2010), the anticipated goals of DPA are to:

- i. Improve or maintain physical fitness;
- ii. Improve or maintain overall health and wellness;
- iii. Enhance learning opportunities, students' ability and readiness to learn; and,
- iv. Instill the habit of activity.

(Adapted from Ontario Ministry of Education [2005, 2010]).

Based on the research findings, teachers and principals did not seem to think DPA impacted students' physical fitness; however, the themes of the other three goals were apparent. Additionally, teachers discussed how students were not likely meeting the sustained MVPA requirement each

day, especially during classroom DPA activities. The findings suggest that DPA is having a positive impact on students, although it may not be improving their physical fitness as policy makers intended. The inability of students to reach the sustained MVPA requirement is consistent with the findings of Stone et al. (2013); however, their study found that students who achieved sustained MVPA for at least 5 minutes had higher physical activity levels and lower BMI scores. Future research is needed to determine strategies to increase MVPA during DPA.

#### **5.2.4 Perceived Monitoring, Evaluation, and Suggestions for Change**

The majority of participants were unaware of monitoring occurring within schools or school boards. The few participants who discussed monitoring and evaluation mentioned holding meetings to evaluate implementation of the policy and conducting observations to assess whether DPA was occurring. Although the Ontario Ministry of Education outlined school board and principal responsibilities for monitoring implementation (Ontario Ministry of Education 2005, 2010), it is apparent that school boards and principals may not be held accountable for these responsibilities.

Both groups discussed the importance of monitoring and accountability and suggested that in order to improve DPA implementation, accountability should be increased and DPA should become a reportable subject, similar to BC. These recommendations align with Patton's (2012) suggestion to increase the accountability of teachers and principals regarding DPA and Mâsse et al.'s (2013) call for increased monitoring. However, despite DPA being included on BC report cards, Mâsse et al. (2013) found that teachers and principals still had difficulty finding time for DPA among other subjects. This indicates that including DPA participation in report cards may not be enough to increase implementation. All participants emphasized that they thought it was important to increase student physical activity levels; however, there was some discussion as to whether it should be the responsibility of schools. This theme also arose in the findings of Mâsse et al. (2013).

Participants called for increased resources, funding, and training opportunities, consistent with Kennedy et al. (2010). Teachers specifically recommended opening up additional space for



physical activity (i.e., designating an empty classroom) as well as increasing the weekly frequency of physical education, even if it meant shortening each individual period. These recommendations are supported by Hobin et al. (2012), who found that students in high schools with daily physical education or an extra room spent more time in MVPA than students in schools that did not have these features. Further, the current Physical Education/Health Education Curriculum in Manitoba outlines mandatory time requirements for the subject in grades 1-6 and 7-8 (11% and 9% of all instructional time, respectively), including daily time allocations (Manitoba Education, 2007). Currently, the Ontario curriculum does not mandate a time allocation to Health and Physical Education specifically. Adopting a similar strategy to Manitoba's curriculum may provide a way to increase physical education and physical activity during instructional time.

Many of the research findings are consistent with previous literature of school-based physical activity interventions as well as the few studies of the Ontario, Alberta, and BC DPA policies. The findings suggest that the current status of DPA results from a failure of implementation as opposed to a failure of concept. That is, school stakeholders believe increasing physical activity levels is valuable; however, the current school setting (including physical, sociocultural, economic, and political factors) limits the feasibility of implementation. Additionally, participants reported that students were not meeting the sustained MVPA requirement and did not perceive fitness as an outcome, both of which were intended goals of the policy. In order to improve delivery, DPA must be seen as a priority at the class, school, school board, and provincial levels. This is consistent with social ecological theory. Further consideration of implementation logistics is necessary in order to increase the likelihood of meeting the policy requirements. However, one teacher raised a critical question to reflect upon:

And you wonder, if everyone acknowledges that [DPA] is a low priority then what are we doing implementing it? (Teacher 8, female).

If DPA is not seen as a priority in schools, then alternative policies and programs may need to be considered.

Recently, the Healthy Kids Panel appointed by the Ontario Ministry of Health and Long-Term Care released recommendations for interventions to decrease Ontario's childhood obesity rate by 20% in the next five years. Suggestions for DPA were included. The panel recommended extending DPA to 30 minutes per day, increasing resources for teachers, and incorporating play-based learning (e.g., integration of physical activity into other subjects) (Healthy Kids Panel, 2013). However, the findings from this thesis suggest these recommendations may not be feasible given the barriers indicated by participants. If teachers and principals see DPA as a low priority and are currently having difficulty meeting the 20-minute guideline, it is unlikely that the proposed 30 minutes will be achieved. Additionally, the emphasis on play-based learning will likely be met with hesitation from teachers of the older grades unless a curriculum outlining play-based learning for older grades is created. Lastly, play-based learning may not be implemented effectively given the limited access to facilities and inadequate classroom space.

### **5.2.5 Revisiting the ANGELO Framework**

Table 5.1 organizes the research findings using the Analysis Grid for Environments Linked to Obesity (ANGELO) framework. The local-level factors influencing implementation, based on the perceived facilitators and barriers reported by participants, have been arranged by environmental type and size. Principals discussed all four environment types for both facilitators and barriers. Teachers focused on facilitators within the sociocultural and physical environments at the microenvironment level. Both groups emphasized facilitators within the class, school, and school board levels and did not mention factors related to the Ministry of Education. However, when discussing barriers, they highlighted all four levels, including the Ministry of Education. Principals tended to mention factors within the political and economic environments more than teachers. This is likely due to the nature of the principal position and role in DPA implementation. From the

findings, it is evident that local-level factors influence delivery, especially at the class and school levels. Participants indicated that successful implementation is a result of individuals within the school who are motivated and value physical activity.

When comparing the results organized in Table 5.1 to the anticipated factors in Table 2.1, most of the predicted factors were found. However, participants did not mention socioeconomic or neighbourhood factors and few highlighted the influence of external community organizations on DPA implementation. Individual schools or school boards did not appear to have specific policies on DPA or physical activity, as participants simply discussed the DPA policy mandated by the Ministry. Additional implementation factors that were not considered in Table 2.1 are emphasized in bold text in Table 5.1. Within the microenvironment, additional physical environment factors included activity ideas, the weather, the presence of a school champion, and that increased noise associated with DPA could disturb other classes. Additional sociocultural factors were added: teachers' physical activity abilities and experience, staff sharing activity ideas, engaging older students, and student-specific factors. Lastly, within the political environment, the low priority assigned to DPA and limited monitoring at both the school and school board levels was included. The ANGELO framework proved useful for organizing the factors that influence DPA implementation.

**Table 5.1. Results organized using the ANGELO framework (adapted from Swinburn et al., 1999).**

	<b>Physical Environment</b>	<b>Sociocultural Environment</b>	<b>Economic Environment</b>	<b>Political Environment</b>
<b>MICRO (settings)</b>				
Schools and Classrooms	<ul style="list-style-type: none"> <li>• Available resources               <ul style="list-style-type: none"> <li>○ <b>Activity ideas</b></li> <li>○ PA equipment</li> <li>○ Training opportunities</li> <li>○ <b>Technology (e.g., computers, smart boards)</b></li> <li>○ <b>Usefulness/practicality of available resources</b></li> </ul> </li> <li>• Access to and availability of indoor facilities for PA</li> <li>• Available space for PA               <ul style="list-style-type: none"> <li>○ <b>Influences ability to achieve sustained MVPA requirement</b></li> </ul> </li> <li>• Limited time for DPA activities</li> <li>• <b>Weather</b></li> <li>• Scheduling (i.e., gym availability, including DPA in timetable, rotary)</li> <li>• <b>School Champion</b></li> <li>• <b>Noise (disturb other classes)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Teacher-specific factors               <ul style="list-style-type: none"> <li>○ Teacher motivation to implement DPA</li> <li>○ Teachers' comfort in teaching PA</li> <li>○ Teacher as role model for PA</li> <li>○ <b>Teachers' experience teaching PA</b></li> <li>○ <b>Teachers' ability to lead PA (e.g., physical fitness and health)</b></li> <li>○ Value and priority teacher places on PA</li> </ul> </li> <li>• <b>Staff sharing activity ideas</b></li> <li>• Staff supportive of (D)PA</li> <li>• Administrator support of (D)PA               <ul style="list-style-type: none"> <li>○ Value and priority administrator places on PA</li> </ul> </li> <li>• <b>Difficult to engage older students in DPA</b></li> <li>• <b>Student-specific factors</b> <ul style="list-style-type: none"> <li>○ <b>Lack of student motivation</b> <ul style="list-style-type: none"> <li>▪ Influence of home values</li> </ul> </li> <li>○ <b>Student abilities</b></li> <li>○ <b>Poor student behaviour</b></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Available school funds for equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>• Curriculum demands of other subjects</li> <li>• <b>DPA considered a lower priority than other subjects</b> <ul style="list-style-type: none"> <li>○ <b>DPA not included in report card</b></li> <li>○ <b>Schools and teachers not held accountable for providing DPA</b></li> </ul> </li> <li>• <b>Limited monitoring of DPA at school level</b></li> </ul>

\*Note: PA: physical activity. **Bold** terms indicate findings that were not included in the anticipated factors shown in Table 2.1.

	<b>Physical Environment</b>	<b>Sociocultural Environment</b>	<b>Economic Environment</b>	<b>Political Environment</b>
<b>MACRO (sectors)</b>				
<b>Education System</b> (School Boards and Ministry of Education)	<ul style="list-style-type: none"> <li>• Training opportunities available through school board</li> <li>• PA expert available at school board</li> <li>• Resources provided by/available through school board</li> </ul>	<ul style="list-style-type: none"> <li>• School board support of DPA</li> <li>• Priority assigned to DPA by school board</li> </ul>	<ul style="list-style-type: none"> <li>• Available school board funding for equipment and resources</li> <li>• Available funding from Ministry of Education for DPA equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>• Curriculum demands of other subjects</li> <li>• <b>DPA considered a lower priority than other subjects</b> <ul style="list-style-type: none"> <li>▪ <b>DPA not included in report card</b></li> <li>▪ <b>School board not held accountable for providing DPA</b></li> </ul> </li> <li>• <b>Nothing was removed from other subject requirements when 20 minutes of DPA was added</b></li> <li>• <b>Limited monitoring of DPA at school board level</b></li> </ul>

\*Note: PA: physical activity. **Bold** terms indicate findings that were not included in the anticipated factors shown in Table 2.1.

### **5.3 Contributions**

This thesis makes substantive, methodological and theoretical contributions, and provides implications for policy. Substantively, an enhanced understanding of a sample of teachers' and principals' perspectives regarding DPA implementation was gained. This research includes both principal and teacher perspectives of DPA, filling a gap previously identified in the literature (Patton, 2012; Ramanathan et al., 2008; Robertson-Wilson & Lévesque, 2009). Additionally, the majority of participants did not have specialized training in physical education, and thus provided the viewpoints of generalist teachers and principals responsible for delivering DPA. Participants were able to describe the implementation status, strategies, facilitators, barriers, outcomes, and monitoring of the policy by sharing their experiences. Techniques were shared (e.g., student leaders and having a weekly health class incorporating DPA) that other principals and teachers could use to deliver DPA. This thesis identifies DPA implementation facilitators and barriers, which have been requested in the literature (Cancer Care Ontario & Public Health Ontario, 2012; Stone et al., 2012). Specifically, this is one of the first studies to identify facilitators for DPA implementation, which were not identified by Patton (2012). Additionally, teachers and principals provided suggestions to improve DPA implementation. Overall, one of the main findings was that DPA delivery depends on the individuals within a school, including the teachers implementing activities in the classroom, the presence of a school champion, and the administrator. The findings show that although the DPA guidelines are the same across schools and school boards, the extent to which the policy is implemented and the strategies used are strongly influenced by the local environment.

Methodologically, this research used a qualitative approach to investigate DPA implementation. Qualitative methods allowed for an in-depth understanding of teacher and principal perspectives regarding the policy itself and its delivery. The knowledge gained from

this research could inform future evaluations of DPA and other school-based physical activity interventions.

Theoretically, this thesis provides an example of how social ecological theory and the ANGELO framework can be used to evaluate a physical activity intervention. Using this theoretical lens allowed for the identification of factors within the physical, sociocultural, economic, and political environments acting at four environmental levels (i.e., class, school, school board, and Ministry of Education). This information allows stakeholders at each level to identify modifiable factors that can be changed to improve implementation. The ANGELO framework was a useful tool for evaluating the implementation of a physical activity intervention. This is a key contribution as the framework has mainly been used to evaluate features that promote or inhibit obesity within an environment (see Carter & Swinburn, 2004; Dean & Elliott, 2012; Hennessy et al., 2010) and to organize studies within systematic reviews (see Ferreira et al., 2007; Kirk, Penney, & McHugh, 2010; van der Horst et al., 2007).

Lastly, this thesis provides insight into DPA from those responsible for local-level implementation, leading to policy implications. The findings suggest that stakeholders consider DPA a low priority, which negatively influences implementation. This work contributes to the limited evaluation of DPA and indicates that currently, the policy may not be implemented as intended and may not lead to the anticipated fitness outcomes. Thus, it suggests that although schools may be seen as ideal venues for physical activity interventions, opportunities for interventions outside of school instructional time should be considered.

#### **5.4 Limitations and Directions for Future Research**

There are limitations to this research. The sample consisted of 19 individuals: 14 teachers and five principals; thus, the findings are not generalizable to all elementary teachers and principals in Ontario. However, a maximum variation sampling strategy was used, including

online advertisements and snowball sampling, in order to include a spectrum of teachers and administrators. Views from individuals in sixteen schools and eight schools boards were represented in the sample. Sampling for each key informant group concluded when saturation was reached (i.e., when no new themes emerged with subsequent interviews). A second limitation is that the teacher sample was 78% female; however, this is fairly representative as the Ontario elementary teacher population is only 20-30% male (Bernard, Hill, Falter, & Wilson, 2004; Elementary Teachers' Federation of Ontario, 2003). Lastly, it is important to note that during the data collection period, The Elementary Teachers' Federation of Ontario was in labour negotiations with the provincial government. This likely influenced the participants that were recruited. However, those recruited were probably teachers and administrators who were motivated to discuss DPA; if these individuals considered DPA a low priority, others that were not included in the sample may also hold this view.

This thesis identifies several directions for future research. Firstly, a larger study is required to investigate whether the findings of the current research apply to teachers and administrators across Ontario. A quantitative survey informed by the findings of this thesis should be developed to evaluate implementation across Ontario. Further, qualitative methods should be used to investigate implementation and outcomes in schools that have high proportions of students from visible minorities and low-income families. Considering the perceived academic outcomes found in this research, it would be valuable to investigate whether DPA could be used to reduce academic and health gaps in these groups, as suggested by Efrat (2011). Secondly, perspectives of key informants from the school boards and Ontario Ministry of Education need to be investigated. These groups would likely identify additional macroenvironment factors affecting delivery, providing a full-scale perspective of DPA implementation. Individuals in



these groups may have different views of DPA compared to teachers and administrators. Furthermore, student perspectives should be explored, especially those in older grades since participants considered implementation more difficult at this level. Lastly, a large-scale study to objectively assess the outcomes of DPA is needed to determine whether the policy is achieving its intended outcomes.

In conclusion, the current research explored the perspectives of elementary teachers and principals implementing the Ontario Daily Physical Activity Policy. This thesis contributes to the limited literature regarding the evaluation of DPA implementation and outcomes. It is evident that delivery is influenced by local-level factors; although the policy applies across Ontario, implementation varies between classes, schools, and school boards. Additionally, DPA is considered a lower priority than other curriculum subjects, which influences implementation. While DPA is an excellent idea in theory, the logistics of delivery present a barrier to increasing student physical activity levels. Overall, when designing school-based physical activity policies, policy makers should consider the priorities of stakeholders within education as well as the local-level resources and expertise available for implementation.



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## APPENDIX A: Summary of Studies Investigating Physical Activity, Behaviour and Academic Attainment

Systematic Reviews, Literature Reviews, Meta Analyses				
Author(s)	Type of Review, Number of Studies Included	Inclusion & Exclusion Criteria	Measures	Key Findings
Efrat (2011)	Literature review -examined association between physical activity and/or fitness and academic outcomes in low-income and minority populations -7 studies from US and Canada	Inclusion: -school aged children (elementary, middle, or high school) -investigated link between physical activity or fitness and academic performance, intelligence, or cognitive ability Exclusion: -did not account for SES or ethnicity in analysis or less than 75% of participants were either minority or low-SES children -examined interschool or intramural sport only -focused on children with disability or clinical disorder	-Academic performance: “performance on non-standardized tests, GPA, performance on standardized tests, performance on general intelligence tests, performance on cognitive function tests”	-57% reported positive, 29% reported neutral, 14% reported negative association between physical activity and academic outcomes -studies that found a positive association used objective measures of physical activity and academic outcomes (therefore stronger support for association)
Fedewa & Ahn (2011)	Meta-analysis -examined relationship between physical activity and cognitive functioning in school-aged children -59 studies from US (n=52) and other countries (n=7) including Canada, China, and Australia	Inclusion: -dependent variable= children’s cognitive functioning -school age (3-18 years) -had to be able to calculate an effect size, no qualitative data included -data only published once Exclusion: -state-level data (since couldn’t compare effect size) -studies of single cases	-Physical Activity outcomes categorized as: “total physical fitness”, “development”, “strength”, “flexibility”, “cardio” -Type, frequency, length of physical activity intervention -Cognitive outcomes categorized as: IQ, “total achievement”, “vocabulary/language/art achievement”, “reading achievement”, “mathematics achievement”, “grade point average”, and “other”	-physical activity has academic benefits, especially in math and reading -aerobic fitness had greatest effect on academic achievement outcomes

<b>Systematic Reviews, Literature Reviews, Meta Analyses</b>				
<b>Author(s)</b>	<b>Type of Review, Number &amp; Location of Studies Included</b>	<b>Inclusion &amp; Exclusion Criteria</b>	<b>Measures</b>	<b>Key Findings</b>
Mahar (2011)	Literature review - investigated link between school-based physical activity breaks and on-task behaviour -7 studies from US	Inclusion: -direct observation of attention-to-task in elementary students -short physical activity breaks in school	-on-task behaviour or off-task behaviour that was directly observed	-evidence was “moderate to good” that physical activity during school can increase on-task behaviour
Raspberry et al. (2011)	Systematic review -examined association between physical activity and academic outcomes in school-aged children -43 articles from US (n=34) and other countries (n=16)	Inclusion: -school-aged children (5-18) -measure of school-based physical education or physical activity, extracurricular physical activities -measured academic performance using one or more educational or behavioural outcomes Exclusion: -studies that only measured fitness scores	-physical activity: school-based physical education, physical activity, and/or extracurricular physical activities -academic performance including “cognitive skills and attitudes, academic behaviour, and academic achievement”	-of all associations included in the review: 50.5% were positive 48% were not significant 1.5% were negative -physical activity has either a positive or neutral effect on academic achievement -physical activity during school has no negative impact on, and may improve, academic attainment
Singh et al. (2012)	Systematic review -investigated association between physical activity and academic outcomes -assessed quality of methods used -14 articles from US (n=12), Canada (n=1), and South Africa (n=1)	Inclusion: -at least one measure of physical activity or fitness and academic achievement or cognition during childhood or adolescence	-methodological quality assessed using criteria from Singh et al (2008), Tooth et al. (2005), and Hayden et al. (2006)	-only two studies scored as high quality -evidence of a “significant longitudinal positive relationship between physical activity and academic performance”

<b>Systematic Reviews, Literature Reviews, Meta Analyses</b>				
<b>Author(s)</b>	<b>Type of Review, Number &amp; Location of Studies Included</b>	<b>Inclusion &amp; Exclusion Criteria</b>	<b>Measures</b>	<b>Key Findings</b>
Trudeau & Shephard (2008)	Systematic review -examined relationship between school-based physical activity (physical education, school physical activity programs, sports) and academic achievement -17 articles from US (n=5), Canada (n=3), Australia (n=3), England (n=2), Iceland (n=1), China (n=1), and Israel (n=1)	Inclusion: -examine both physical activity and academic achievement (objective or self-reported) -programs had to be offered within the school	-physical activity programs within school= physical education, extracurricular physical activity (i.e., intraschool and intramural sports) -academic: GPA, concentration, learning, classroom behaviour, learning engagement, self-esteem	-physical activity provided by trained instructors can be added to curriculum (taking time away from other subjects) with no negative influence on academic attainment -physical activity leads to benefits of concentration, memory, and classroom behaviour

<b>Primary Research</b>			
<b>Study</b>	<b>Sample</b>	<b>Methods</b>	<b>Key Findings</b>
Bass et al. (2013)	-grade 6-8 students (n=838) from one (Illinois) school	-fitness: Fitnessgram tests for aerobic capacity, muscular strength, muscular endurance, flexibility, and BMI (assessed as to whether they met the standard for each measure above) -academic: whether or not a student met or exceeded the reading and math standards for the Illinois Standards Achievement test	-aerobic capacity, muscular endurance, and muscular strength were significantly associated with academic achievement -those that met standard for aerobic fitness were two to four times more likely to pass the standardized tests for reading and math than those who didn't meet the standard
Chomitz et al. (2009)	-grade 4, 6, 7, 8 students (n=1841) from one (Massachusetts) school board	-fitness: five tests: endurance, abdominal strength, flexibility, upper body strength, agility -academic: whether or not student passed Massachusetts Comprehensive Assessment System test in math (grades 4 & 7) and/or English (grades 4, 6, 8)	-odds of passing standardized test increased with number of fitness tests passed -fitness scores more strongly associated with math scores than English scores
Donnelly & Lambourne (2011)	-24 elementary schools in Kansas (intervention: n=14, controls: n=10) -academic achievement: n=452 -accelerometry: n=167	-physical activity: accelerometry (measured for 4 consecutive days every spring for 3 years) -academic outcomes: Wechsler Individual Achievement Test- 2 <sup>nd</sup> Edition (by blinded third-party), measures reading, writing, math, spelling, and oral language skills -both individual and overall score used	-children in intervention schools had higher physical activity levels during the school day and on weekends than control school students -children in intervention schools exhibited higher levels of MVPA than control school students -improvements in overall, reading, math, and spelling scores for intervention group were significantly greater than control group after 3-year period -classroom-based physical activity can improve academic scores
Telford et al. (2012)	-grade 3 and 5 students (n=757) -29 (Australian) schools	-physical activity: pedometers for seven consecutive days -fitness: 20m multistage run -academic outcomes: government standardized literacy and math tests	-found stronger school-level relationships between physical activity, fitness, and academic scores than at individual level -a school culture where both physical activity and academic achievement are emphasized may partly explain relationship between physical activity and academic outcomes

## APPENDIX B: Summary of School-Based Physical Activity Studies

Study	Location & Policy/Program	Sample	Purpose & Methods	Key Findings
Barroso et al. (2009)	Texas Senate Bill 42 (Grade 6-8)  -30 min of daily MVPA or 135 min of weekly MVPA or 225 min per 2 weeks	112 key informants (principals, physical education teachers, nurses)	-awareness of & adherence to policy -assess impact on physical activity provision in schools  Key informant interviews, direct observation of classrooms in 17 schools	-high awareness of policy -students exceeded physical activity requirements -observation showed that physical education frequency increased post-policy implementation
Belansky et al. (2009)	Colorado Local Wellness Policy (Elementary)  -school boards to set goals for physical activity and nutrition	Principals and school board administrators in 45 rural schools	-assess changes in policy and opportunities for physical activity -barriers to implementation  Key informant interviews	-time in physical education increased by 14 min/week and time for recess decreased by 19 min/week after policy -barriers: curriculum pressures, lack of resources, poor principal knowledge of policy, lack of accountability -authors suggested increased financial resources to aid implementation
Cardon et al. (2012)	Belgium  -physical activity component of government policy	Physical education teachers and school administrators from 111 elementary and 125 secondary schools	-investigated facilitators to implementation of physical activity policy  Online survey	-facilitators: -attending training on school-community partnerships and physical activity promotion -interest from parents and school boards in physical activity -barrier in high schools: prioritizing non-physical activity initiatives -larger schools had higher implementation
Dwyer et al. (2003)	Toronto, ON 1998 Health & Physical Education Curriculum (Elementary)	45 teachers from 5 schools	-asked teachers about perceived barriers to implementation of curriculum  Focus groups	-barriers: -lower priority than other subjects -more difficult to assess physical activity compared to other subjects -inadequate facilities and equipment

Study	Location & Policy/Program	Sample	Purpose & Methods	Key Findings
Evenson et al. (2009)	North Carolina Healthy Active Children Policy (K-8)  -at least 30 min of MVPA during school day	Key informants from 106 school boards	-facilitators and barriers to implementing 30 minutes of physical activity during the school day  Online survey	-positive outcomes: increased focus, alertness, enjoyment, staff involvement -barriers: not enough time, poor teacher participation, and other subject demands
He et al. (2011)	London, ON (and area)  -no specific policy or intervention	Elementary school principals (n=14) and grade 5-6 teachers (n=39)	Questions regarding students' sedentary behaviour and suggestions for solutions to reduce sedentary behaviour  Key informant interviews	-barriers to reducing sedentary behaviour: -limited resources and space -lack of control over students' choices at home -recommended increasing physical levels at school and at home and emphasized role of parents
Hobin et al. (2012)	Ontario (Secondary)  -no specific policy or intervention	Grade 9-12 students (n=22 117) in 76 schools	-examined environment- and student-level characteristics associated with time spent in MVPA  Surveys (School Health Action, Planning, and Evaluation System [SHAPES] and Canadian Lifestyle and Fitness Research Institute's School Capacity Survey) and GIS	-found significant variation in student MVPA between schools -students received more MVPA in schools that had daily physical education or an extra room for physical activity -students in schools in highly walkable neighbourhoods and higher land-use mix spent less time in MVPA
Kelder et al. (2009)	Texas Senate Bill 19 (Elementary)  -30 min of daily physical activity or 135 min per week	Elementary school principals or their designate (i.e., other school staff) (n=69)	-awareness and adherence to policy -assess impact of physical activity provision on schools  Phone interviews, direct observation of classes in 20 schools	-high awareness of policy -weekly structured student physical activity was greater than guideline -observation showed that physical education frequency increased post-policy implementation

Study	Location & Policy/Program	Sample	Purpose & Methods	Key Findings
Langille & Rodgers (2010)	Canadian city  -no specific policy or intervention	Key informants from provincial (n=3) and municipal (n=1) government, school board (n=3), principals (n=3), and teachers (n=4)	-investigated perspectives on school-based physical activity promotion  Key informant interviews	-local-level support needed for implementation of school-based physical activity policies -highlighted influence of individual schools and champions within them -barriers: curricular demands of other subjects
Lanier et al. (2012)	Utah Gold Medal Schools Program (elementary)  -promote food and physical activity policies based on Centre for Disease Control guidelines	1243 teachers (kindergarten to grade 6)	-investigated factors associated with awareness and implementation of policy  Online survey	-less than half (44%) of respondents were aware of each food and physical activity policy, only 25% aware of both policies -awareness of physical activity policy associated with having a phys. ed. specialist in school, being reminded of policy at least once per term, over 5 years of teaching experience, perception that school provided enough time for physical activity -for those who perceived an increased prevalence of overweight in students, awareness of physical activity policy was associated with knowing location of policy -implementation of physical activity policy associated with being reminded of policy at least once per term, being aware of policy, and perception that school provided enough time for physical activity
Leatherdale (2010)	Ontario (Elementary)  -no specific policy or intervention	Grade 5-8 students (n=1264) in 30 elementary schools	-examined school-level program/policy factors and student behaviours associated with being overweight -looked at phase of implementation of four physical activity categories -phases of implementation: initiation, action, maintenance  Surveys (Individual= SHAPES, School= Healthy School Planner)	-students were less likely to be overweight if their school had interschool programs (e.g., athletic competitions between schools)

Study	Location & Policy/Program	Sample	Purpose & Methods	Key Findings
Leatherdale et al. (2010)	Ontario  -no specific policy or intervention	Grade 5-8 students (n=2379) in 30 elementary schools	-examined school and student factors associated with physical activity -looked at phase of implementation of four physical activity categories -phases of implementation: initiation, action, maintenance  Surveys (Individual= SHAPES, School= School Health Environment Survey)	-student at school that used physical activity as a reward was more likely to be moderately active -student at school that had community partnerships related to physical activity was more likely to be highly active
Manske & Nowaczek (2011)	Ontario Health & Physical Education Curriculum (Elementary)	29 school board key informants, 92 principals, 159 teachers	-investigated implementation facilitators and barriers  Online survey	-facilitators: time to review curriculum (72%), comfortable teaching phys. ed. (65%), experience teaching Health & Physical Education -teachers and principals saw Ophea as important support; however, reported low frequency of contact -instead, reported frequently asking other members on staff for support -56% of principals considered DPA a high priority -54% of board representative said DPA was a low priority
Mâsse et al. (2012)	British Columbia Action Schools! BC  -15 min of classroom physical activity in addition to physical education	Elementary school principals (n=133) and grade 4-7 teachers (n=587)	-investigated facilitators four years after implementation  Online survey	-facilitators: -teacher self-efficacy (understanding, confidence in skills and ability to implement, giving time to initiative, ability to motivate students) -training -level of institutionalization (how it had been integrated into the school culture, guidelines for implementation in school, adapted for individual school, resources for teachers)



<b>Study</b>	<b>Location &amp; Policy/Program</b>	<b>Sample</b>	<b>Purpose &amp; Methods</b>	<b>Key Findings</b>
Pitt Barnes et al. (2011)	United States Local Wellness Policy  -school boards set goals for physical activity and nutrition	88 school and community stakeholders in 6 school boards in Wyoming, Arizona, Minnesota, New Mexico, Texas	-assess implementation through evaluability assessment  Key informant interviews	-schools had fewer improvements in physical activity than nutrition -few schools/districts met national recommendations for physical education -authors recommended increasing resources for implementation and evaluation of these policies
Robertson-Wilson et al. (2012)	13 articles regarding policies from the United States	-	-examined school-based physical activity policies for youth within last ten years  Systematic review	-7 federal policies and 6 state policies -8 articles evaluated policy implementation, 2 articles evaluated impact, 3 evaluated implementation and impact -found that policies were increasing physical activity levels -barriers: funding and absence of required evaluation -"urgent need" for implementation and outcome evaluation
Sanchez-Vaznaugh et al. (2012)	California physical education policy (grade 1-6)  -200 min of physical education per ten days	55 school boards Grade 5 students (n=91 236)	-compared school board compliance with physical activity policy to student fitness levels  Fitnessgram (student fitness) & school board compliance data	-students in school boards that complied with policy were more likely to meet or exceed standards
Tjomsland (2010)	Norway (case study of school that had successfully sustained physical activity program for 10 years)	1 school	-case study of physical-activity promoting school to investigate facilitators  Survey (teacher, student, and school level), document review, focus groups (three teachers)	-students at the case study school received more physical activity/physical education than national average -facilitators: -teachers' positive attitudes and beliefs in physical activity -leadership by principal and school champion -supportive teacher environment and sharing -incorporating physical activity into school curriculum

## APPENDIX C: Summary of Studies on Canadian Provincial Daily Physical Activity Policies

Study	Province & Policy	Sample	Purpose & Methods	Key Findings
Alberta Education (2008)	Alberta DPA Policy	1025 teachers and principals from 83 school boards	-investigated teacher and principal perceptions on facilitators and barriers, and opportunity for feedback regarding DPA  Survey (online)	-70% respondents had daily physical education at school -Facilitators: access to indoor and outdoor facilities -Barriers: scheduling, lack of facilities and/or space -Monitoring: scheduling PE and providing DPA information to school boards annually -Outcomes: positive impacts on “student learning”, “student wellness”, and the “school environment” -Principals more likely to give positive answers than teachers -Over half of respondents said they had to provide additional resources for DPA on top of provincial funding
Kennedy et al. (2010)	Alberta ( <i>Calgary</i> ) DPA Policy	55 principals/VPs from 55 schools in one school board	-investigated how DPA had been implemented in Calgary schools  Survey (online or phone)	-100% believed school was “successful in implementing” DPA -80% had daily physical education in their school -Barriers: limited time in curriculum, limited space, limited funding -Author suggestions: increased training and funding for physical education specialists
Mâsse et al. (2013)	British Columbia DPA (and Food Beverage Sales in Schools) Policy	33 teachers/school informants and 17 principals from 17 schools <i>-10 elementary (gr. 7 or less), 5 high schools (gr. 8-12), 1 junior high school (gr. 8-10) and 1 senior high school (gr. 10-12)</i>	-investigated facilitators and barriers to DPA implementation  Semi-structured interviews	-perceived implementation was greater in elementary schools than middle and high schools, and among principals than teachers (e.g., 90% of elementary principals, 43% of elementary teachers) -facilitators: availability of provincial resources, physical activity facilities at or nearby school, school champion, prioritizing physical education prior to guidelines being mandated -barriers: scheduling DPA amongst other demands, feeling inadequately trained to provide physical activity, poor weather -positive outcomes: increased alertness and focus, improved academic performance, improved behaviour, student enjoyment, increased positive interactions in classroom -negative outcomes: teachers feeling they had less control over their schedules, increased workload in elementary schools -recommended increased monitoring, support for schools having difficulty with implementation, evaluate outcomes of DPA

Patton (2012)	Ontario ( <i>London/Middlesex</i> ) DPA Policy	145 teachers from one school board	-determined teacher perceptions on DPA implementation  Survey	-Over half reported sometimes (39%) or “never or rarely” (16%) running DPA sessions -Barriers: time constraints, curricular demands of other subjects -Monitoring: 65% reported that administrators rarely or never monitored DPA -Author recommended increasing teacher training and monitoring
Robertson-Wilson & Lévesque (2009)	Ontario DPA Policy	-	-assessed whether conditions for “perfect implementation” had been considered for DPA  Review of publically-available DPA documents	-Identified three areas for further consideration: i) resources: training, absence of long-term funding ii) value placed on DPA: suggested stakeholder interviews to investigate teachers’ view of DPA iii) evaluation: lack of evaluation plan for policy
Stone et al. (2012)	Ontario ( <i>Toronto</i> ) DPA Policy	856 grade 5 & 6 students from 16 schools in one school board	-determine proportion of students participating in DPA and achieving MVPA  Classroom schedules to assess DPA frequency Accelerometry	-49% of participants received DPA daily -No students achieved sustained MVPA for $\geq 20$ min -Those that had DPA daily were more active -If implemented as intended, DPA can achieve anticipated health effects

## Are YOU an elementary school teacher or administrator in Ontario?

Researchers from the University of Waterloo are interested in YOUR opinions about school-based physical activity.

UNIVERSITY OF  
**WATERLOO**

SCHOOL OF PUBLIC HEALTH  
AND HEALTH SYSTEMS

Are you:

- Currently teaching a grade 1-8 class at an Ontario elementary school?
- OR
- An elementary school principal or vice principal?

If so, please contact:

Researcher: Kristin Brown

Phone: 519-888-4567 ext. 33682

Email: [dpastudy@uwaterloo.ca](mailto:dpastudy@uwaterloo.ca)

Participation will consist of a 45-60 minute (in-person or phone) interview and participants will receive a \$20 gift card in appreciation of their time.

## **Ontario Elementary School Teachers, Principals, and Vice-Principals Needed for University of Waterloo Research Study**

Researchers from the School of Public Health and Health Systems at the University of Waterloo are looking for elementary school principals, vice-principals, and grade 1-8 teachers in Ontario to participate in a study about school-based physical activity.

Participation will involve a 45-60 minute interview and all participants will receive a \$20 gift card in appreciation of their time.

In order to participate, you must be an elementary school principal, vice-principal, or grade 1-8 teacher who is currently employed at an elementary school in Ontario.

This research project has been reviewed by, and received ethics clearance through, the University of Waterloo's Office of Research Ethics.

If interested, please contact:

Kristin Brown at 519 888-4567 ext. 33682 or [dpastudy@uwaterloo.ca](mailto:dpastudy@uwaterloo.ca).

## Are YOU an elementary school principal or vice principal in Ontario?

Researchers from the University of Waterloo are interested in YOUR opinions about school-based physical activity.



- Participate in a **30 minute (in-person or phone) interview**
  - Receive a **\$20 gift card** in appreciation of your time.

Please contact:  
Researcher: Kristin Brown  
Phone: 519-888-4567 ext. 33682  
Email: [dpastudy@uwaterloo.ca](mailto:dpastudy@uwaterloo.ca)

**Ontario Elementary Principals and Vice-Principals Needed  
for University of Waterloo Research Study**

Researchers from the School of Public Health and Health Systems at the University of Waterloo are looking for Ontario elementary school principals and vice-principals to participate in a study about school-based physical activity.

Participation will involve a 30-minute interview and all participants will receive a \$20 gift card in appreciation of their time.

In order to participate, you must be a principal or vice-principal who is currently employed at an elementary school in Ontario.

This research project has been reviewed by, and received ethics clearance through, the University of Waterloo's Office of Research Ethics.

If interested, please contact:

Kristin Brown at 519 888-4567 ext. 33682 or [dpastudy@uwaterloo.ca](mailto:dpastudy@uwaterloo.ca).

## APPENDIX F: Recruitment Letter of Information (Teachers)



Dear (Teacher Name),

Researchers from the School of Public Health and Health Systems at the University of Waterloo are conducting the study entitled *Understanding how local-level environmental factors shape implementation of policies for school-based physical activity*. We are writing to provide you with information about the study and ask whether you are interested in participating.

If you choose to participate, you will be part of a sample of eighteen key informants (i.e., school administrators and teachers) who will share their experiences with the Ontario Ministry of Education's Daily Physical Activity policy (herein referred to as DPA). This project will involve an interview to explore factors that shape the implementation and outcomes of DPA. Interviews will be conducted between October and December 2012 at a community location or via telephone. The study will explore the links between classroom physical activity, academic attainment, and behavioural outcomes, as well as the facilitators and barriers faced during implementation.

### What is involved for participants?

- One (45-60 minute) individual interview to share your experience implementing DPA

### What are the benefits of participation?

- Participants will have the opportunity to share their experiences as well as give feedback and suggestions for improvement regarding the local implementation of DPA.
- Participants will contribute to a preliminary evaluation of DPA, which may influence future DPA policy changes.

### Remuneration

Each interview participant will receive a \$20 Chapters gift certificate in appreciation of his or her time. The amount received is taxable. It is your responsibility to report the amount received for income tax purposes.

### Contact Information

This research has been granted ethics clearance from the University of Waterloo Office of Research Ethics. If you have any comments or concerns resulting from your participation in this project, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

Sincerely,

*Susan J. Elliott, PhD,*  
*Dean of Applied Health Sciences,*  
*School of Public Health and Health Systems*  
519-888-4567, Ext. 31346  
[elliotts@uwaterloo.ca](mailto:elliotts@uwaterloo.ca)

*Kristin Brown, B.Sc.*  
*M.Sc. Candidate*  
*School of Public Health and Health Systems*  
519-888-4567, Ext. 33682  
[kristin.brown@uwaterloo.ca](mailto:kristin.brown@uwaterloo.ca)



## APPENDIX G: Recruitment Letter of Information (Administrators)



Dear (Administrator Name),

Researchers from the School of Public Health and Health Systems at the University of Waterloo are conducting the study entitled *Understanding how local-level environmental factors shape implementation of policies for school-based physical activity*. We are writing to provide you with information about the study and ask whether you are interested in participating.

If you choose to participate, you will be part of a sample of eighteen key informants (i.e., school administrators and teachers) who will share their experiences with the Ontario Ministry of Education's Daily Physical Activity policy (herein referred to as DPA). This project will involve an interview to explore factors that shape the implementation and outcomes of DPA. Interviews will be conducted between December 2012 and January 2013 at a community location or via telephone. The study will explore the links between classroom physical activity, academic attainment, and behavioural outcomes, as well as the facilitators and barriers faced during implementation.

### What is involved for participants?

- One (30 minute) individual interview to share your experience implementing DPA

### What are the benefits of participation?

- Participants will have the opportunity to share their experiences as well as give feedback and suggestions for improvement regarding the local implementation of DPA.
- Participants will contribute to a preliminary evaluation of DPA, which may influence future DPA policy changes.

### Remuneration

Each interview participant will receive a \$20 Chapters gift certificate in appreciation of his or her time. The amount received is taxable. It is your responsibility to report the amount received for income tax purposes.

### Contact Information

This research has been granted ethics clearance from the University of Waterloo Office of Research Ethics. If you have any comments or concerns resulting from your participation in this project, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

Sincerely,

*Susan J. Elliott, PhD,*  
*Dean of Applied Health Sciences,*  
*School of Public Health and Health Systems*  
519-888-4567, Ext. 31346  
[elliotts@uwaterloo.ca](mailto:elliotts@uwaterloo.ca)

*Kristin Brown, B.Sc.*  
*M.Sc. Candidate*  
*School of Public Health and Health Systems*  
519-888-4567, Ext. 33682  
[kristin.brown@uwaterloo.ca](mailto:kristin.brown@uwaterloo.ca)

## APPENDIX H: Interview Letter of Information (Teachers)



Date

Title of Project:

**Understanding how local-level environmental factors shape the implementation of policies for school-based physical activity**

Investigators:

*Susan J. Elliott, PhD,*  
*Dean of Applied Health Sciences,*  
*School of Public Health and Health Systems*  
519-888-4567, Ext. 31346  
[elliotts@uwaterloo.ca](mailto:elliotts@uwaterloo.ca)

*Kristin Brown, B.Sc.*  
*M.Sc. Candidate*  
*School of Public Health and Health Systems*  
519-888-4567 ext. 33682  
[kristin.brown@uwaterloo.ca](mailto:kristin.brown@uwaterloo.ca)

This interview focuses on the experiences of key informants regarding the implementation of *Policy 138: Daily Physical Activity (DPA) in Elementary Schools, Grades 1-8*. We are interested in gaining insight into the facilitators and barriers that influence DPA, as well as the perceived outcomes at the school, class, and individual levels. Kristin Brown, MSc. Candidate from the University of Waterloo School of Public Health and Health Systems, and Student Investigator of the research project, will conduct the interview.

Participation in this study is voluntary. It will involve an interview of approximately 45-60 minutes in length to take place in a mutually agreed upon location or by phone. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. Data collected during this study will be retained for two years in a locked office at the University of Waterloo. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

In appreciation of your time, you will receive a \$20 Chapters gift certificate. If you withdraw from the interview, you can still receive the gift card. The amount received is taxable. It is your responsibility to report the amount received for income tax purposes.

If you have any questions about participation in this interview, please feel free to discuss these with Kristin Brown, or later, by contacting Dr Susan Elliott at 519-888-4567, Ext. 31346. If you are interested in receiving a copy of the executive summary of the study outcomes, please contact Kristin Brown at [dpastudy@uwaterloo.ca](mailto:dpastudy@uwaterloo.ca).

This research has been granted ethics clearance from the University of Waterloo Office of Research Ethics. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this project, contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca). Thank you for your assistance with this project.

Yours sincerely,

*Kristin Brown, B.Sc.*  
*M.Sc. Candidate, School of Public Health and Health Systems*  
[kristin.brown@uwaterloo.ca](mailto:kristin.brown@uwaterloo.ca)

## APPENDIX I: Interview Letter of Information (Administrators)



Date

Title of Project:

**Understanding how local-level environmental factors shape the implementation of policies for school-based physical activity**

Investigators:

*Susan J. Elliott, PhD,*  
*Dean of Applied Health Sciences,*  
*School of Public Health and Health Systems*  
519-888-4567, Ext. 31346  
[elliotts@uwaterloo.ca](mailto:elliotts@uwaterloo.ca)

*Kristin Brown, B.Sc.*  
*M.Sc. Candidate*  
*School of Public Health and Health Systems*  
519-888-4567 ext. 33682  
[kristin.brown@uwaterloo.ca](mailto:kristin.brown@uwaterloo.ca)

This interview focuses on the experiences of key informants regarding the implementation of *Policy 138: Daily Physical Activity (DPA) in Elementary Schools, Grades 1-8*. We are interested in gaining insight into the facilitators and barriers that influence DPA, as well as the perceived outcomes at the school, class, and individual levels. Kristin Brown, MSc. Candidate from the University of Waterloo School of Public Health and Health Systems, and Student Investigator of the research project, will conduct the interview.

Participation in this study is voluntary. It will involve an interview of approximately 30 minutes in length to take place in a mutually agreed upon location or by phone. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission anonymous quotations may be used. Data collected during this study will be retained for two years in a locked office at the University of Waterloo. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

In appreciation of your time, you will receive a \$20 Chapters gift certificate. If you withdraw from the interview, you can still receive the gift card. The amount received is taxable. It is your responsibility to report the amount received for income tax purposes.

If you have any questions about participation in this interview, please feel free to discuss these with Kristin Brown, or later, by contacting Dr Susan Elliott at 519-888-4567, Ext. 31346. If you are interested in receiving a copy of the executive summary of the study outcomes, please contact Kristin Brown at [dpastudy@uwaterloo.ca](mailto:dpastudy@uwaterloo.ca).

This research has been granted ethics clearance from the University of Waterloo Office of Research Ethics. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this project, contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca). Thank you for your assistance with this project.

*Kristin Brown, B.Sc.*  
*M.Sc. Candidate, School of Public Health and Health Systems*  
[kristin.brown@uwaterloo.ca](mailto:kristin.brown@uwaterloo.ca)

Yours sincerely,

## APPENDIX J: Interview Letter of Consent (Teachers and Administrators)

### INTERVIEW PARTICIPATION CONSENT FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

---

I have read the information presented in the information letter about a study being conducted by Dr Susan J. Elliott and Kristin Brown of the School of Public Health and Health Systems at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

YES    NO

I agree to have the interview audio recorded.

YES    NO

I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

YES    NO

Participant Name: \_\_\_\_\_ (Please print)

Participant Signature: \_\_\_\_\_

Witness Name: \_\_\_\_\_ (Please print)

Witness Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX K: Teacher Interview Guide

### I) Teachers who have implemented DPA in their classrooms

Construct	Question	Probes
<i>Introduction</i>	Tell me about yourself	<ul style="list-style-type: none"> <li>- teaching experience</li> <li>- grade(s) taught</li> <li>- school</li> </ul>
<i>Educational context and DPA Implementation Status</i>	<p>Tell me what a typical day at school is like for you.</p> <p>What role does physical activity play at your school?</p> <p>Are you familiar with the DPA policy? Have you implemented DPA in your classroom?</p>	<ul style="list-style-type: none"> <li>- what is your class like?</li> <li>- what is your school like? How many students?</li> <li>- what challenges do you face during the school day?</li> <li>- in the curriculum? how often does class receive physical education?</li> <li>- on the playground?</li> <li>- extra-curricular activities (e.g., intramurals, athletic teams)?</li> <li>- in the classroom?</li> <li>- (describe details of Policy 138 if needed)</li> <li>- why or why not?</li> </ul>
<i>Strategies and Activities</i>	<p>Tell me about your experience with DPA in your classroom.</p> <p>What strategies have you used to implement and maintain DPA in your class' schedule?</p> <p>What types of activities do you use to meet the 20 minutes of moderate to vigorous physical activity?</p>	<ul style="list-style-type: none"> <li>- do you complete DPA in the classroom?</li> <li>- do you use any other school facilities (e.g., outside, the gymnasium)?</li> <li>- what types of activities work/don't work?</li> <li>- do you consider moderate or vigorous intensity level of PA when planning activities?</li> <li>- do you participate in the activities with your students?</li> </ul>
<i>Facilitators and Barriers</i>	<p>What factors have helped you implement DPA in your classroom?</p> <p>What barriers have you faced in implementing and maintaining DPA in your classroom?</p>	<ul style="list-style-type: none"> <li>- specific personnel, resources, and/or finances? <ul style="list-style-type: none"> <li>o student/teacher/school/board levels?</li> </ul> </li> <li>- how have you dealt with these barriers/how could these barriers be overcome?</li> <li>- do you feel comfortable teaching physical activity?</li> </ul>

<i>Perceived Outcomes</i>	What outcomes has the DPA policy had in your classroom?	<ul style="list-style-type: none"> <li>- student/teacher physical activity?</li> <li>- student behaviour/concentration?</li> <li>- student academic outcomes?</li> <li>- positive? negative?</li> </ul>
<i>Suggestions</i>	Do you have any suggestions for how the DPA policy or its implementation could be changed?	<ul style="list-style-type: none"> <li>- are changes needed at provincial/school board/school/class level?</li> <li>- do you think training student leaders to lead DPA activities would work at your school?</li> <li>- do you have any alternative policy ideas?</li> </ul>
<i>Discussion</i>	<p>Is there anything else you'd like to add that we haven't talked about?</p> <p>Is there anyone else that you think I should talk to regarding DPA implementation?</p>	

## II) Teachers who have not implemented or maintained DPA in their classrooms

<b>Construct</b>	<b>Question</b>	<b>Probes</b>
<i>Introduction</i>	Tell me about yourself	<ul style="list-style-type: none"> <li>- teaching experience</li> <li>- grade(s) taught</li> <li>- school</li> </ul>
<i>Educational context and DPA Implementation Status</i>	<p>Tell me what a typical day at school is like for you.</p> <p>What role does physical activity play at your school?</p> <p>Are you familiar with the DPA Policy? Have you implemented DPA in your classroom?</p>	<ul style="list-style-type: none"> <li>- what is your class like?</li> <li>- what is your school like?</li> <li>- what challenges do you face during the school day?</li> <li>- in the curriculum? How often does your class receive physical education?</li> <li>- on the playground?</li> <li>- extra-curricular activities (e.g., intramurals, athletic teams)?</li> <li>- in the classroom?</li> <li>- (describe details of Policy 138 if needed)</li> <li>- why or why not?</li> </ul>
<i>Facilitators and Barriers</i>	<p>What are some of the reasons that you do not have DPA in your classroom?</p> <p>What do you think would have helped you run DPA in your classroom?</p> <p>What challenges are there related to implementing and maintaining DPA in the classroom?</p>	<ul style="list-style-type: none"> <li>- specific personnel, resources, and/or finances? <ul style="list-style-type: none"> <li>o student/teacher/school/board levels?</li> </ul> </li> <li>- specific personnel, resources, and/or finances? <ul style="list-style-type: none"> <li>o student/teacher/school/board levels?</li> </ul> </li> <li>- specific personnel, resources, and/or finances? <ul style="list-style-type: none"> <li>o student/teacher/school/board levels?</li> </ul> </li> <li>- how could these barriers be overcome?</li> <li>- do you feel comfortable teaching physical activity?</li> </ul>
<i>Alternative PA Practices</i>	Do students in your class have opportunities to participate in physical activity during instructional time? If so, what types of activities?	<ul style="list-style-type: none"> <li>- what types of activities work/don't work?</li> <li>- do you plan activities such that students reach/sustain a moderate or vigorous intensity level during the activities?</li> <li>- do you participate in these activities with your students?</li> </ul>
<i>Suggestions</i>	Do you have any suggestions as to how physical activity policy for elementary students could be changed?	<ul style="list-style-type: none"> <li>- are changes needed at provincial/school board/school/class level?</li> <li>- do you think training student leaders to lead DPA activities would work at your school?</li> <li>- do you have any alternative policy ideas?</li> </ul>
<i>Discussion</i>	<p>Is there anything else you'd like to add that we haven't talked about?</p> <p>Is there anyone else that you think I should talk to regarding DPA implementation?</p>	

## APPENDIX L: Principal Interview Guide

Construct	Question	Probes
<i>Introduction</i>	Tell me about yourself	<ul style="list-style-type: none"> <li>- experience as principal/VP</li> <li>- teaching experience?</li> <li>- grades within the school (i.e., K-8, K-6?)</li> <li>- how many years at current school?</li> </ul>
<p><i>Educational Context and DPA Implementation Status</i></p>	<p>Tell me what a typical day at school is like for you.</p> <p>What role does physical activity play at your school?</p> <p>Does your school have a policy related to physical activity for elementary students?</p> <p>Are you familiar with the DPA policy? Tell me about the DPA policy in your school.</p>	<ul style="list-style-type: none"> <li>- What is your school like? How many students?</li> <li>- What challenges do you face in a typical day of school? (outside of PA)               <ul style="list-style-type: none"> <li>- in the curriculum? how often do classes receive physical education?</li> <li>- on the playground?</li> <li>- extra-curricular activities (e.g., intramurals, athletic teams)?</li> <li>- in the classroom?</li> </ul> </li> <li>- provincial policy only?</li> <li>- board-specific or school-specific policy?               <ul style="list-style-type: none"> <li>o if so, would you be willing to provide me with a copy? (either hard copy or electronic)</li> <li>o does this policy include DPA?</li> </ul> </li> <li>- (describe details of Policy 138 if needed)</li> <li>- if school has implemented DPA: why did they implement it?               <ul style="list-style-type: none"> <li>o how has DPA been implemented in your school?                   <ul style="list-style-type: none"> <li>▪ within classroom?</li> </ul> </li> <li>o is there someone in charge of DPA in your school (e.g., Healthy Schools Committee)?</li> </ul> </li> <li>- if school has <u>not</u> implemented DPA: why not?</li> </ul>
<p><i>DPA Policy Facilitators and Barriers</i></p>	<p>What factors have helped you implement DPA policy in your school?</p> <p>What challenges have you faced regarding the implementation of the DPA policy?</p>	<ul style="list-style-type: none"> <li>- specific personnel/resources/finances?               <ul style="list-style-type: none"> <li>o board/school/class levels?</li> </ul> </li> <li>- do you have a Healthy Schools Committee or school champion(s)?</li> <li>- specific personnel/resources/finances?               <ul style="list-style-type: none"> <li>o board/school/class levels?</li> </ul> </li> <li>- how have you overcome these barriers/ how could these barriers be overcome?</li> </ul>



<p><i>DPA Monitoring and Evaluation</i></p>	<p>Does your school conduct any monitoring or evaluation of the DPA policy? (e.g., monitor the number of classes who have implemented DPA)</p> <p>Does your school provide any information to your school board regarding the DPA policy?</p>	<ul style="list-style-type: none"> <li>- can you describe the details of monitoring/evaluation conducted? How often?</li> <li>- do you know how many classes at your school are getting DPA as intended?</li> <li>- how has monitoring/evaluation influenced school practice? (i.e., have outcomes influenced changes at school or class level?)</li> <li>- if <u>not</u>, do you see a need for evaluation/monitoring?</li> <li>- if so, what type of information is provided and how often?</li> <li>- do you know how the school board uses monitoring data? Are data sent to Ontario Ministry of Education?</li> </ul>
<p><i>Perceived Outcomes</i></p>	<p>What outcomes do you think the DPA policy has had in your school?</p>	<ul style="list-style-type: none"> <li>- positive? negative?</li> <li>- school/teacher/class/student levels?</li> <li>- health/behaviour/academic?</li> </ul>
<p><i>Suggestions</i></p>	<p>Do you have any suggestions as to how physical activity policy for elementary students could be changed?</p>	<ul style="list-style-type: none"> <li>- are changes needed at provincial/school/school board level?</li> <li>- do you have any alternative policy ideas?</li> </ul>
<p><i>Discussion</i></p>	<p>Is there anything else you'd like to add that we haven't talked about?</p> <p>Is there anyone else that you think I should talk to regarding DPA implementation?</p>	

## APPENDIX M: Teacher Background Questionnaire

Participant Identification Code: \_\_\_\_\_

Date of Interview: \_\_\_\_\_

1. What is your sex?      Male      Female
2. School Board: \_\_\_\_\_
3. School: \_\_\_\_\_
3. What grade do you teach?  1      2      3      4      5      6      7      8
4. How many years of teaching experience do you have? \_\_\_\_\_
5. What year did you receive your last post-secondary training? (e.g., teachers' college, university courses, graduate degrees) \_\_\_\_\_
6. Have you had any specialized training in physical and health education? (e.g., undergraduate degree or teachers' college specialization in a related field)  
 Yes  
 No
7. How would you rate your own physical activity level?  
 Not at all physically active (limited physical activity)  
 Not very physically active (below Canadian Physical activity standard)  
 Physically active (meets Canadian Physical Activity standard)  
 Very physically active (exceeds Canadian Physical Activity standard)
8. Have you implemented DPA in your classroom?  
 Yes  
 No
9. How often do students in your class get 20 minutes of physical activity during instructional time?  
 Never  
 Some days (1-2 days/week)  
 Most days (3-4 days/week)  
 Everyday (5 days/week)

## APPENDIX N: Principal Background Questionnaire

Participant Identification Code: \_\_\_\_\_

Date of Interview: \_\_\_\_\_

1. What is your sex?      Male      Female
2. School Board: \_\_\_\_\_
3. School: \_\_\_\_\_
4. Position:              Vice-principal      Principal
5. How many years have you held a position in school administration? \_\_\_\_\_
6. How many years have you held a school administration position at this school?  
\_\_\_\_\_
7. What year did you receive your last post-secondary training? (e.g., teachers' college, university courses, graduate degrees) \_\_\_\_\_
8. Have you had any specialized training in physical and health education? (e.g., undergraduate degree or teachers' college specialization in a related field)  
 Yes  
 No
9. How would you rate your own physical activity level?  
 Not at all physically active (limited physical activity)  
 Not very physically active (below Canadian Physical activity standard)  
 Physically active (meets Canadian Physical Activity standard)  
 Very physically active (exceeds Canadian Physical Activity standard)
10. Has your school implemented DPA?  
 Yes  
 No

## APPENDIX O: Teacher Interview Coding Manual

- 1) Background
  - a. Teaching experience
    - i. Past teaching (grade, location)
    - ii. Grade they currently teach
    - iii. Extracurricular involvement
    - iv. Current class characteristics
  - b. Typical School Day
  - c. General Challenges
    - i. Time
    - ii. Curriculum Demands
    - iii. Academic (varying student learning rates)
    - iv. Behavioural
    - v. Social (home life etc.)
    - vi. Emotional (trust)
    - vii. Lack of Control over day
      1. Interruptions & unexpected events
    - viii. Class Size
    - ix. Portables
  - d. Overall School Environment
    - i. Staff dynamic
      1. Positive
      2. Negative
    - ii. Staff extracurricular involvement
    - iii. Grades in school
      1. JK-4
      2. JK-6
      3. JK-8
    - iv. Balanced School Day
    - v. Non-Balanced School Day
    - vi. Demographics
      1. French Immersion
      2. SES
      3. Rural
      4. Urban
      5. Suburban
- 2) Overall PA Environment of school
  - a. Intramurals
  - b. Extracurricular Clubs & Teams
  - c. Recess
  - d. Everyone can participate (Right to Play)
  - e. Individual School PA policies & rules

- 3) DPA implemented in class
  - a. Yes
  - b. Sometimes
  - c. No
  
- 4) Physical education (PE)
  - a. Frequency per week
    - i. 5 x
    - ii. 4 x
    - iii. 2-3 x
    - iv. <2 x
  - b. Length of PE period
    - i. <30 min
    - ii. 30-40 min
    - iii. 45+ min
  
- 5) DPA Implementation
  - a. Method of Implementation
    - i. DPA on days when no PE
    - ii. PE everyday
  - b. Location
    - i. Large space inside
    - ii. Outside
    - iii. Classroom
  - c. Scheduling Logistics
    - i. Combining Classes in Gym for PE
    - ii. Time of day of PA breaks
    - iii. DPA on timetable
  - d. DPA breaks sum to 20 min (not just 1 20 min period)
  
- 6) Facilitators to DPA implementation
  - a. Teacher-specific
    - i. PA experience
    - ii. Teacher motivation to implement
    - iii. Teacher as PA role model
    - iv. Teacher enjoys PA
  - b. School social environment
    - i. School champion
    - ii. Staff sharing ideas
    - iii. Staff support of DPA
  - c. School physical environment
    - i. Gym & activity facilities
    - ii. Nearby parks & large fields
  - d. Resources
    - i. Activity ideas
    - ii. Technology

- iii. Equipment
      - iv. Training & workshops
    - e. Support
      - i. Administrator(s)
      - ii. School Board
    - f. Scheduling
- 7) DPA Implementation Barriers
- a. Teacher specific
    - i. Lack of teacher motivation
    - ii. Lack of staff support
    - iii. Discomfort teaching PA
    - iv. Teacher not trained in PA
  - b. Time
    - i. Not enough time for planning
    - ii. Not enough time for DPA activities
    - iii. Disruptions during day
  - c. Curricular demands
    - i. Lower priority than rest of curriculum
      - 1. DPA not reportable (i.e., not on report card)
      - 2. Not held accountable for providing DPA
      - 3. Priority has decreased over time
    - ii. Emphasis on integration into subjects
  - d. Lack of support from admin
  - e. Resources
    - i. Lack of activity ideas
    - ii. Lack of teacher training
    - iii. Lack of equipment/funding
    - iv. Resources not available/accessible
    - v. Resources not useful/practical
  - f. Student-specific factors
    - i. Lack of student motivation
    - ii. Student abilities
    - iii. Poor student behaviour
  - g. More difficult to implement in older grades
    - i. Rotary (i.e., several different teachers during day)
    - ii. Engaging older students
    - iii. Having to change clothes
  - h. School physical environment
    - i. Classroom Space
      - 1. Safety
      - 2. Portables
      - 3. Achieving MVPA in classroom
    - ii. Lack of facilities
    - iii. Sound (disturb other classes)
    - iv. Weather

1. Can't go outside due to rain, snow
  2. No AC in summer months
  - i. Didn't think through practicality of implementation
    - i. Didn't remove anything from other subjects to compensate for added 20 min
- 8) Strategies for overcoming barriers
- a. Meetings to find solutions
  - b. Teacher motivation, planning, dedication
  - c. Expert at school-board level to travel to schools and provide support to teachers
- 9) Outcomes
- a. Student
    - i. Provides a break for students
    - ii. Behaviour
      1. Improved Focus & Attention
    - iii. Enjoyment
    - iv. Leadership
    - v. Increased Self-esteem
    - vi. Increased Energy
    - vii. Students with Special Needs
    - viii. Trust & appreciation of teacher
  - b. Teachers
    - i. Increased Energy
    - ii. Informal opportunity to interact with students
  - c. Class
    - i. Social interaction
    - ii. Positive mood, positive class environment
  - d. School
    - i. Community building
  - e. Negative
    - i. Yes
      1. Added stress on teacher
      2. Trouble getting students to settle back down
    - ii. No
  - f. Question whether DPA is affecting physical activity or obesity levels
- 10) Activities
- a. Activities that work
    - i. Large space
      1. Running
      2. Sports
      3. Relays
      4. Tag
      5. Skipping

- ii. In classroom
  - 1. Music
  - 2. Dance
  - 3. Games
  - 4. Stretching, Yoga, Minor Aerobics
  - 5. Fitness Circuits
- iii. Competition
- b. Activities that Don't Work

11) Techniques that teachers would recommend

- a. Adapting activities as you go
- b. Integration into other subjects
- c. School-wide DPA
  - i. Yes
  - ii. No
- d. Student leaders
  - i. Teachers using student leaders for DPA
  - ii. Not Currently using student leaders, but could work
  - iii. Barriers to implementing student leader program
- e. Class Competition (House Points)
- f. Rewards for Students

12) Activity Level

- a. In classroom
  - i. Activities that reach MVPA
  - ii. Movement (low-intensity PA)
- b. MVPA in Large Indoor & Outdoor Spaces

13) Teacher participation in PA

- a. Teacher participates
- b. Teacher participates to be a role model, motivate students
- c. Supervision priority over participation
- d. Barriers to teacher participation

14) Evaluation and/or Monitoring

- a. School
  - i. Yes
    - 1. Why
  - ii. No
    - 1. Why Not
- b. Board
  - i. Yes
    - 1. Why
  - ii. No
    - 1. Why Not



15) Suggestions for change

- a. Important to increase student PA levels
  - i. Who should play a role in teaching students a healthy lifestyle?
    - 1. Teachers
    - 2. Parents
  - ii. Aware of link between PA and learning
  - iii. Aware of positive chronic disease prevention impacts
- b. Increase resources and activity ideas
  - i. Increase accessibility of resources (activity ideas, equipment)
    - 1. Centralized database for activity ideas
  - ii. Activity ideas should be in simple format
- c. Increase Training for teachers
- d. PA Expertise available
  - i. Board level
  - ii. School level
- e. Changes to DPA Implementation
  - i. Increase accountability & reportability
  - ii. Increase activity space
  - iii. Increase frequency of PE
  - iv. Changes should be school-specific

## APPENDIX P: Principal Interview Coding Manual

- 1) Background
  - a. Administration experience
    - i. Years as principal
    - ii. Years as vice-principal
  - b. Teaching experience
  - c. Role as Principal
    - i. No Typical Day
    - ii. Personal Mantra
    - iii. Personal Beliefs in PA
  - d. General Challenges
    - i. Student Needs
    - ii. Unexpected Events
    - iii. Balancing Needs of Stakeholder Groups
    - iv. Student Behaviour
    - v. Staff Training
    - vi. Administrative Duties
  - e. Overall School Environment
    - i. Grades in school
      1. JK-8
      2. Alternative elementary school
    - ii. Number of staff at school
    - iii. Number of students at school
    - iv. Programs available at school (e.g., special education, “gifted”)
    - v. Demographics
      1. French Immersion
      2. SES
      3. Diverse population (e.g., cultural, learning needs, SES...)
    - vi. Staff dynamic
      1. Positive
      2. Negative
    - vii. Balanced School Day
    - viii. Non-Balanced School Day
    - ix. School Values
      1. Respect
      2. Social Skill Development
- 2) Overall PA Environment of School
  - a. Outside Instructional Time
    - i. Intramurals
    - ii. Extracurricular Clubs & Teams
    - iii. Recess
      1. Frequency of recess
      2. Link Between Organized Activity and Behaviour
    - iv. Other School PA Programs

- b. Inside Instructional Time
  - c. Individual School PA policies & rules
  - d. Healthy Schools Committee
    - i. Yes
    - ii. No
    - iii. Unsure
  - e. Physical Environment
    - i. Available PA Facilities
  - f. Educating Parents about PA
- 3) Physical education
- a. Frequency per week
    - i. 5 x
    - ii. 4 x
    - iii. 2-3 x
    - iv. <2 x
  - b. Length of PE period
    - i. <30 min
    - ii. 30-40 min
    - iii. 45+ min
- 4) DPA Implementation Status
- a. School's DPA Implementation Status
    - i. Yes
    - ii. No
  - b. DPA Frequency
    - i. Difference between younger & older grades
    - ii. Implemented but not necessarily every day
- 5) DPA Implementation Characteristics
- a. Process of implementation and staff acceptance
  - b. Scheduling
    - i. By Teachers
    - ii. By Administration
    - iii. DPA on days when no PE
    - iv. Health Class
      - 1. Division of labour/spread the workload between teachers
  - c. Location
    - i. Hallways
    - ii. Outside
    - iii. Classroom
    - iv. Gym/Activity Space
  - d. Strategies
    - i. Student Leaders
    - ii. Activities Principal has seen in school
  - e. Important to think about QUALITY of DPA

- 6) Facilitators to DPA implementation
  - a. Teacher-specific
    - i. PA experience and training
    - ii. Teacher motivation
    - iii. Teacher participation
  - b. School social environment
    - i. School champion
    - ii. Staff sharing ideas
    - iii. Staff support of DPA
  - c. School physical environment
    - i. Activity facilities
    - ii. Nearby parks & large fields
  - d. Resources
    - i. Activity ideas
    - ii. Equipment
    - iii. Training workshops
  - e. Support
    - i. Administrator
      - 1. PA Important to Administrator(s)
      - 2. Scheduling by Administrator(s)
      - 3. Administrator Reminders to Staff
    - ii. School Board
      - 1. DPA Considered a Priority
      - 2. Champion or Expert at Board Level
      - 3. Resources Provided
      - 4. Equipment Available
      - 5. PA Funding Available
  - f. PA seen as important societal issue
- 7) DPA Implementation Barriers
  - a. Teacher-specific
    - i. Lack of teacher motivation
    - ii. Teacher PA Ability
    - iii. Discomfort teaching PA
  - b. Time
    - i. Difficulty scheduling gym time
    - ii. Not enough for DPA staff training
    - iii. Rotary
  - c. Curricular demands
    - i. Not enough for implementing DPA among other subjects
    - ii. Lower priority than rest of curriculum
      - 1. DPA not reportable (i.e., not on report card)
      - 2. Not held accountable for providing DPA
      - 3. Priority has decreased over time
  - d. Resources
    - i. Lack of activity ideas

- ii. Lack of available training
    - iii. Lack of equipment
    - iv. Limited finances
  - e. School physical environment
    - i. poor access to facilities and resources
  
- 8) Strategies for overcoming barriers
  - a. Meetings to find solutions
  - b. Workshops
  - c. Resources
  
- 9) Outcomes
  - a. Positive
    - i. Student
      - 1. Focus and attention
      - 2. Social Interaction
      - 3. Increased self-esteem
      - 4. Lifelong learning of importance of PA
      - 5. Student Awareness of DPA
      - 6. Special Needs Students
        - a. Outlet for students with special needs
        - b. Teaches life skills
        - c. Provides new experiences they wouldn't get otherwise
        - d. Fitness and health benefits
  - b. Negative
    - i. Yes
      - 1. Some teachers see DPA as unstructured, non-instructional time
    - ii. No
  
- 10) Evaluation & Monitoring
  - a. School
    - i. Yes
      - 1. Why/How
    - ii. No
      - 1. Why Not
  - b. Board
    - i. Yes
      - 1. Why/How
    - ii. No
      - 1. Why Not
  - c. Importance of Monitoring
  - d. DPA Reported through Learning Skills (i.e., participation, engagement)
  - e. Expectation that DPA is Happening

11) Suggestions for change

- a. Important to increase PA in theory
  - i. Awareness of + chronic disease prevention impacts
  - ii. Awareness of link between PA and academic attainment
  - iii. Whose role is it to teach students healthy lifestyle?
    - 1. Teacher?
    - 2. Home values (role of parent)?
    - 3. Society?
- b. School, Board, and Teacher Specific
  - i. Talking to teachers about how to help improve DPA
- c. Increase monitoring and accountability
- d. Increase training and finances for DPA
- e. Target Sedentary Individuals

## Glossary

**DPA:** Refers to the Ontario Daily Physical Activity Policy. This policy, mandated by the Ontario Ministry of Education, states that all elementary school students in Ontario should receive 20 minutes of sustained moderate to vigorous intensity physical activity within instructional time each day. For more information, see <http://www.edu.gov.on.ca/eng/teachers/dpa.html>

**Health and Physical Education:** Refers to the subject in the Ontario curriculum. For more information, see <http://www.edu.gov.on.ca/eng/curriculum/elementary/healthcurr18.pdf>

**Intermediate Grades:** Refers to grades 7 and 8.

**Junior Grades:** Refers to grades 4, 5, and 6.

**Physical Activity:** Refers to the behaviour of being active. The Canadian Society for Exercise Physiology (2013) defines physical activity as:

- “Movement that increases heart rate and breathing
- Any bodily movement produced by skeletal muscles that requires energy expenditure”

**Physical Education:** Refers to the physical activity/physical fitness component of the “Health and Physical Education” curriculum subject.

**Primary Grades:** Refers to grades 1, 2 and 3.

### **MVPA: moderate to vigorous intensity physical activity**

- The Canadian Society for Exercise Physiology (2013) defines **moderate intensity physical activity** as, “As a rule of thumb, if you're doing moderate-intensity activity you can talk, but not sing your favourite song, during the activity. You're working hard enough to raise your heart rate.”
  - Examples of moderate intensity physical activity are “brisk walking” and “playing games that require catching and throwing, such as baseball, softball” (Canadian Society for Exercise Physiology, 2013).
- The Canadian Society for Exercise Physiology (2013) defines **vigorous intensity physical activity** as, “If you're doing vigorous-intensity activity, you will not be able to say more than a few words without pausing for a breath. Your heart rate has gone up quite a bit.”
  - Examples of vigorous intensity physical activity are running, skipping rope, and tag (Canadian Society for Exercise Physiology, 2013).

Canadian Society for Exercise Physiology (2013). Glossary of Terms. Retrieved from <http://www.csep.ca/english/view.asp?x=890>