The Role of the APPLE School Principal in Knowledge Exchange and in Implementing
Comprehensive School Health to Create a Healthy School Culture

by

Erica Colleen Roberts

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Centre for Health Promotion Studies
University of Alberta

Abstract

Comprehensive School Health (CSH) is an internationally recognized framework that moves beyond the individual to holistically address school health, and has been shown to be effective in improving health-enhancing behaviours and educational outcomes. Despite its effectiveness, the specific implementation strategies behind CSH are vague and much remains to be determined to help support its optimization. School leadership has been suggested to be important for the successful implementation of CSH. Furthermore, knowledge exchange (KE) practices, including knowledge brokering and data-driven decision-making (DDDM), are essential to ensure that implementation is evidence-informed. The principal seemingly acts as a key player within KE, yet this role remains to be examined within a project guided by CSH. Overall, multiple methods were used to address two specific objectives within this research, which included: 1) To qualitatively examine the role of the school principal in the implementation of a project guided by CSH, geared at creating a healthy school culture; and 2) To quantitatively examine the extent of knowledge sharing and use of evaluation data by principals in both CSH schools and other randomly selected provincial schools throughout Alberta, Canada.

The qualitative component of this research was informed by constructivist approaches of focused ethnography and grounded theory, leading to the overall classification of the study as a grounded ethnography. Semi-structured interviews (n=29) with school principals involved in the Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools), a project guided by the CSH framework, were conducted. Data were collected between April and July 2013. Through both latent content analysis and constant comparison analysis, five major themes emerged, leading to the development of a model representing the fluid role of the

principal within the CSH implementation process. Principals: 1) primed the cultural change; 2) communicated the project's importance to others; 3) negotiated concerns and collaboratively planned; 4) held others accountable to the change, while enabling them to take ownership, and; 5) played an underlying supportive role, providing positive recognition and establishing ongoing commitment. The quantitative component of this research represented a cross-sectional design where principals' perceptions about the use and sharing of School Reports (reports providing school-specific findings of an evaluation of children's health behaviours) were captured through the examination of secondary survey data, collected in the spring of 2012. Univariable logistic regression analysis was performed with survey questions examining report sharing and use, whereby data from both APPLE School principals (n=30) and a random sample of principals throughout the province of Alberta, Canada (n=73) were compared. Results showed that APPLE School principals had a statistically significant higher odds of: sharing the report overall; sharing the report outside of the school, particularly with parents; using the report for planning purposes; as well as a higher odds of both sharing and using the report in general.

Taken together, findings and recommendations from both the qualitative and quantitative research in this thesis will inform effective leadership practices, helping to improve CSH implementation efforts as well as data use and sharing strategies, ultimately leading to improvements in health outcomes for children and youth.

Preface

This thesis is an original work by Erica Roberts. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board under the project name "Implementation of Make the Healthy Choice the Easy Choice (APPLE Schools)" No. Pro00035108 (December 6, 2012; renewal expires on December 3, 2015). The secondary data used as a part of this thesis was obtained from an evaluation project, which also received ethics approval from the University of Alberta Research Ethics Board under the project name "An Evaluation of New Provincial Programs to Promote Healthy Weights Among Children and Youth in Alberta" No. Pro00003799 (original ethics obtained on December 20, 2007; renewal on June 10, 2014; expires on June 16, 2015).

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APPLE Schools: Alberta Project Promoting active Living and healthy Eating in Schools

BMI: Body Mass Index

CBPR: Community-Based Participatory Research

CFHI: Canadian Foundation for Healthcare Improvement

CIHR: Canadian Institutes for Health Research

CSH: Comprehensive School Health

DDDM: Data-Driven Decision-Making

FTE: Full Time Equivalent

HPC: Health Promotion Coordinator

JCSH: Joint Consortium for School Health

KE: Knowledge Exchange

KT: Knowledge Translation

REAL Kids Alberta: Raising healthy Eating and Active Living Kids in Alberta

SHF: School Health Facilitator

WHO: World Health Organization

Chapter 1: Introduction

1.1 Overview

This chapter represents an introduction to the thesis. It outlines the overall rationale and significance of the research, the purpose and research objectives, as well as the organization of the thesis.

1.2 School Leadership, Knowledge Exchange, and Comprehensive School Health

Comprehensive School Health (CSH) is known as an effective strategy for addressing health needs (Fung et al., 2012; Lister-Sharp, Chapman, Stewart-Brown, & Sowden, 1999; Stewart-Brown, 2006; Veugelers & Fitzgerald, 2005; Veugelers & Schwartz, 2010) while also improving academic outcomes (Murray, Low, Hollis, Cross, & Davis, 2007). The main goal of CSH is to address these areas through the transformation of the school culture into a health-focused culture (Nutbeam, 2000). Despite its effectiveness, the specific implementation strategies behind CSH are vague and much remains to be determined to help support its optimization. Although there has been some research on identifying the components necessary for CSH implementation, many of these components have yet to be fully operationalized, including school leadership (Samdal & Rowling, 2011). Further, it is critical that health promotion implementation strategies be continually informed by evidence (Gleddie & Hobin, 2011), highlighting the importance of the knowledge exchange (KE) practices of knowledge brokering and data-driven decision-making (DDDM). School leadership seemingly plays an important role in the area of DDDM to drive school improvement (Ikemoto & Marsh, 2007; Mandinach & Honey, 2008; Wohlstetter, Datnow, & Park, 2008; Young, 2006), yet this role is presently unexamined within a CSH framework. Furthermore, the role of the

principal as a knowledge broker and in sharing knowledge with the rest of the school community to assist change efforts also remains to be investigated.

1.3 APPLE Schools Project, Evaluation, and the School Principal

The Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools) applies an innovative CSH approach in Alberta, Canada and is geared at promoting active living and healthy eating among grade-level students as a means to promote healthy weights and reduce the future burden of chronic disease (www.APPLESchools.ca). The whole school community is targeted to make environmental-level changes within and beyond the school to transform the school's culture (Schwartz, Karunamuni, & Veugelers, 2010). Each participating school receives dedicated staff time in the form of a school health facilitator (SHF) who actively engages members of the school community to address barriers to healthy eating and active living (Schwartz et al., 2010). To date, APPLE Schools has been implemented in 51 school communities throughout Alberta, Canada. The project has been evaluated through both process and outcome evaluations in the past, and these evaluations have shown that the intervention is effective at targeting healthy eating and active living (Fung et al., 2012; Vander Ploeg, Maximova, McGavock, Davis, & Veugelers, 2014a; Vander Ploeg, McGavock, Maximova, & Veugelers, 2014b). Further investigation is required, however, to determine which implementation elements in specific have contributed to this success. Previous process evaluations have suggested that the principal's support for the intervention is imperative (Storey, 2013; Storey, Spitters, Cunningham, Schwartz, & Veugelers, 2011), but this role has yet to be examined.

Between 2008 and 2013 APPLE Schools were surveyed on an annual basis to monitor changes in student physical activity and nutrition, among other health behaviours, allowing for modifications to be made to the intervention (i.e., DDDM). School Reports stemming from these surveys were distributed to school principals on an ongoing basis and outlined how each school's grade 5 students were faring in the areas outlined above. Principals were encouraged to share these reports with the rest of the school community as well as use them in making data-driven decisions to further tailor the project to meet their school's evolving needs. The role of the principal in DDDM as well as knowledge brokering in relation to these School Reports remains to be examined.

1.4 Rationale

Although there has been some research looking into the role of the school principal in relation to change in school culture and program implementation, there remains much to be known about their role within a CSH framework. Furthermore, in APPLE Schools the principal may act as a knowledge broker in that it is their task to interpret the research evidence and share it in a way that is understandable and usable to the rest of the school community. There is currently a lack of information within the literature surrounding the role of the school principal as a knowledge broker and in making data-driven decisions. Thus, the present investigation will act as one of the first to examine the role of the principal in these areas. Further, the information gathered from this analysis will be beneficial to guide future projects employing a CSH framework, specifically in informing intervention design to enable productive leadership activity.

1.5 Research Purpose and Objectives

The purpose of this research was to define the role of the school principal within the implementation of a project guided by CSH, as well as to examine the principal's role in project-related KE activities. APPLE School principals were sampled in order to examine these areas, with an overall aim to inform CSH implementation efforts as a means to encourage broader uptake. Specific objectives of this research included:

- To understand the role of the school principal involved in the implementation of a CSH project (APPLE Schools) aimed at creating a healthy school culture
- To examine the extent of knowledge sharing and use of School Report evaluation data by principals in both APPLE Schools and other randomly selected provincial schools throughout Alberta

1.6 Thesis Organization

This thesis is organized in five chapters and is presented as a paper-based thesis wherein each research objective stands alone as an independent manuscript. Chapter two represents an overall review of the pertinent literature examining the current status of childhood obesity, school-based prevention, school culture and program implementation, KE, as well as literature pertaining to the school principal's role in each of these areas. Chapter three represents the first objective of this research in outlining the role of the school principal in implementing CSH, which has been submitted for review to Health Promotion International. Chapter four represents the second objective of this research, which examines the role of the school principal as a knowledge broker and in DDDM. Lastly, chapter five represents an overall conclusion to this research, tying the two objectives together and outlining overall implications and recommendations.

Chapter 2: Review of the Literature

2.1 Description, Significance, and Behavioural Determinants of Childhood Obesity

The increasing prevalence of childhood obesity is a major public health crisis. According to the 2009-2011 Canadian Health Measures Survey, 19.8% and 11.7% of children aged 5- to 17-years were classified as overweight and obese, respectively (Roberts, Shields, de Groh, Aziz, & Gilbert, 2012). Overweight and obesity are terms used to describe an excess of adiposity above the ideal for good health (Lobstein, Baur, & Uauy, 2004). Excess adiposity develops from a sustained positive energy imbalance in combination with a variety of genetic, behavioural, cultural, environmental, and economic factors (Lobstein et al., 2004).

Children with a high body mass index (BMI) often become obese adults (Dietz, 2004; Must & Strauss, 1999). Obese individuals are at increased risk of developing a variety of co-morbidities including hypertension, type-2 diabetes, cardiovascular disease, and certain cancers (Schelbert, 2009), as well as a number of psychological consequences including negative self-esteem, anxiety, and depression (Williams, 2005). These conditions may lead not only to a diminished quality of life and life expectancy, but also cost the health care system billions of dollars (Krueger, Turner, Krueger, & Ready, 2014). Moreover, many of these conditions are now being diagnosed in children at increasingly alarming rates (Hillier, Pedley, & Summerbell, 2011).

The primary behavioural determinants of energy imbalance have been recognized as poor diet and inadequate physical activity, and hence these factors have been deemed the main drivers of the obesity epidemic (Sparling, Franklin, & Hill, 2013; Story, Nanney, & Schwartz, 2009). Physical activity has been associated with health benefits in

children and youth, with a higher amount being associated with a greater benefit (Colley, Garriguet, Janssen, Craig, Clarke, & Tremblay, 2011). Given that only 6% to 20% of children in developed countries achieve the recommended 60 minutes of moderate to vigorous physical activity per day (Colley et al., 2011; Hallal et al., 2012), physical inactivity is emerging as a major problem facing today's youth. A sedentary lifestyle is strongly related to increased adiposity in children (Andersen, Crespo, Bartlett, Cheskin, & Pratt, 1998). Screen-time, in particular, has increased dramatically as a result of children watching television or playing video games in their leisure time (Andersen, 2000). The increasing westernization and urbanization occurring in most countries around the world is associated with a sedentary lifestyle, along with changes in diet towards one of high fat, high energy-dense foods (Swinburn, Caterson, Seidell, & James, 2004). The dietary trends of school-aged children tend to mimic overall trends seen in North America (Roblin, 2007). Here, a decreasing consumption of milk, vegetables, and whole grains has been paired with an increased intake of sugar-sweetened beverages, salty snacks, and fast foods, affecting the overall nutrient and caloric intake of children (Roblin, 2007). Thus, many children are not consuming a balanced diet and are not meeting the recommended guidelines as established by Health Canada's *Eating Well with Canada's Food Guide* (Roblin, 2007). Overall, the effects of poor diets and increasingly sedentary lifestyles on the worsening obesity trends emphasize the need for early intervention, through comprehensive health promotion and primary prevention strategies (Pelone et al., 2012).

2.2 Comprehensive School Health

Schools act as ideal settings for staging interventions in that they can reach almost all children during critical periods of growth, helping to establish healthy behaviours that lead to life-long healthy habits (Veugelers & Fitzgerald, 2005). In recent years, changes in health promotion in schools have moved away from an individual approach, towards a more holistic approach, such as that represented by the Comprehensive School Health (CSH) model (Lister-Sharp, Chapman, Stewart-Brown, & Sowden, 1999). CSH was developed in the early 1990's (Lister-Sharp et al., 1999), after the establishment of the Ottawa Charter for Health Promotion in 1986 (WHO, 1986). Based on a socio-ecological approach, CSH proposes that individual, interpersonal, community, and organizational factors should be taken into account when developing an intervention as they all have direct and indirect influences on health (Israel, Checkoway, Schulz, & Zimmerman, 1994; Nutbeam 1992). Therefore, CSH supports both individual behaviour change and long-term environmental changes to improve health (St. Leger, 2000). The Joint Consortium for School Health (JCSH), a partnership of federal, provincial, and territorial governments, and a leader in CSH in Canada, describes CSH as "an internationally recognized framework for supporting improvements in students' educational outcomes while addressing school health in a planned, integrated and holistic way" (JCSH, 2012). JCSH identifies four inter-related pillars of CSH: 1) teaching and learning; 2) social and physical environments; 3) healthy school policy; and 4) partnerships and services (JCSH, 2012). Thus, CSH focuses on the whole school community in order to support lifelong behaviour change among students (Story, Kaphingst, & French, 2006). CSH is synonymous with "Health Promoting Schools" (in Europe and Australia) and

"Coordinated School Health" (in the United States) (Veugelers and Schwartz, 2010). For reasons of consistency, CSH will be used throughout this thesis to refer to this universal framework.

Although more evidence is needed, preliminary evidence suggests that CSH is an effective strategy in positively influencing academic outcomes (Murray, Low, Hollis, Cross, & Davis, 2007) as well as health behaviours and outcomes in children (Fung et al., 2012; Lister-Sharp et al., 1999; Stewart-Brown, 2006; Veugelers & Fitzgerald, 2005; Veugelers & Schwartz, 2010). Creating a scientific base for the CSH approach has been an important focus in the last few decades (Samdal & Rowling, 2011). There have been three main endeavors within this development: 1) establishing rationale for this approach through linking improved health to improved learning (Clift & Jensen, 2005; Rowling & Jeffreys, 2006); 2) producing guidelines for its implementation and operationalization (Tang et al., 2009); and 3) providing indicators to evaluate implementation efforts (Barnekow, Buis, Clift, Jensen, Paulus, & Young, 2006; Lee, St Leger, & Moon, 2005; Wicklander, 2006). However, much remains to be examined in these areas in order to ensure implementation is efficient, effective, and founded on sound scientific evidence.

2.3 Comprehensive School Health as a Culture Shift

The theoretical framework of the CSH model is built on a comprehensive, socio-ecological settings approach, where school community members are not treated in isolation (Nutbeam, 1992). The creation of supportive health environments and community action are central to achieving the desired health and learning outcomes (Story et al., 2006). The result is a planned and coordinated attempt to ensure that what is learned in the classroom is also complemented by practices outside of the school

(Macnab, Gagnon, & Stewart, 2014). In this way, it is important that CSH is not viewed as a discrete activity within the school, but rather, as something that permeates all aspects of school life, linking to the core objectives of the school (Macnab et al., 2014). Thus, as per the World Health Organization (WHO), the stated goal of the CSH model is to alter the health culture and ethos of the school (Nutbeam, 2000). As such, the success of CSH interventions has often been associated with a change in school *health culture*, leading to its expansion within the greater community (Macnab et al., 2014).

According to Schein's (1990) conceptualization of organizational culture, basic underlying assumptions of a group create the foundation of an organization's culture. These are the shared beliefs, perceptions, and feelings that primarily remain unconscious, but are conveyed through the organization's values, goals, and philosophies. These shared assumptions are developed internally through relationships, organizational language, membership boundaries, distribution of status and authority, as well as reward and punishment. In order for these assumptions to remain consistent throughout the lifespan of the organization, they are either implicitly passed-on or explicitly taught to new members. Initially carried out by the organizational leader, this process takes on a life of its own once the organization becomes more established. Some explicit actions of this cultural socialization process include role modeling, teaching, coaching, rewarding, and the process of new member recruitment. While by nature these underlying assumptions are fairly engrained within an organization, they also remain malleable when the appropriate leadership is enacted to shape them (Schein, 1990).

Over the last three centuries, schools have developed their own organizational culture, which has resisted change over time (Parish & Aquila, 1996). Yet, within this

uniformity of cultural norms, there is also space for each school to display its own unique cultural elements (Marzano, Waters, & McNulty, 2005). The definition of culture within the field of education, therefore, remains vague (Deal & Peterson, 1990; Gruenert, 2000; Gruenert, 2005). Some have defined it as the patterns of values, beliefs, and traditions that describe the character of a school, wherein it is historically rooted and socially transmitted, giving meaning to human experience (Deal & Peterson, 1990). Others have labeled it as the guiding beliefs, assumptions, and expectations evident in the way a school operates (Fullan & Hargreaves, 1996). Furthermore, dichotomous views of school culture have also been created wherein the school is seen as either rigid and top-down, or collaborative and flexible to create change (Leithwood, 1992; Brown, 1993). Deal and Peterson (1990) assert that many organizations, including schools, work best when there is a commonly held culture.

School culture is seen as both a product and a process. It is a product as those previously in the organization have produced it; it is a process because it is being renewed and recreated as new members enter (Bolman & Deal, 2003). Change that fundamentally alters the culture of the school is classified as *second-order* change (Cuban, 1988). To accomplish this type of change, there is a need to focus on the implemented program for at least six or seven years (Green & Kreuter, 2005). Thus, time is needed for people to journey through the change process, especially when the change is personal in nature (Hall & Hord, 2006). Further to this, an organization does not change until the individuals within it change, suggesting the need for capacity to be built among school personnel in order for new programs to become embedded in the school culture (Hawe, 1994). Due to the fact that most cultures are deeply entrenched, to change them is

to fundamentally alter the character and identity of the organization (Deal, 1990). Because of this, ignoring the influence of an organization's culture on the ability to achieve specific change can be detrimental to the success of the change effort.

2.4 Implementation of Comprehensive School Health

Implementation is generally defined as "what a program consists of when it is delivered to a particular setting" (Durlak & DuPre, 2008, p. 329). Others conceptualize implementation in a range of ways, from representing the act of delivering an intervention, to preparing and equipping an organization to change its practice by providing guidelines and tools (Guldbrandsson & Bremberg, 2006).

Most health programs are implemented as pre-packaged intervention programs, aimed at changing student-level behaviours (Durlak & DuPre, 2008; Fixsen, Naoom, Blase, & Friedman, 2005; Forman, Olin, Hoagwood, Crowe, & Saka, 2009; Stith et al., 2006). These programs are often implemented through the use of generic program theory. CSH, however, is not a time-limited program, and hence, demands organizational and contextual change to meet its principles and aims (Weiner, Lewis, & Linnan, 2009). CSH highlights the importance of building a supportive environment in schools to stimulate students' health and wellbeing (Parsons, Stears, & Thomas, 1996; St. Leger, 2000). As directed by the socio-ecological approach, CSH emphasizes the interplay between organizations and individuals (McLeroy, Bibeau, Steckler, & Glanz, 1988; Deschesnes, Trudeau, & Kébé, 2010), whereby a change at the organizational level is expected to precede a change at the individual level (Green & Kreuter, 2005; Silins, Mulford, & Zarins, 2002; St. Leger, 2000; Wang & Ahmed, 2003).

Currently, there are many different interpretations within the literature about putting CSH implementation into practice (Allensworth, Wyche, Lawson, & Nicholson, 1995; Parsons et al., 1996; Thomas, Parsons, & Stears, 1998). Developing a standard protocol to guide the implementation of CSH is challenging due to the need to tailor the approach to local school context (Veugelers and Schwartz, 2010). The influence of contextual factors at multiple levels on the quality of program implementation has often been overlooked (Adelman & Taylor, 2003; Burns & Hoagwood, 2005; Fixsen et al., 2005; Greenhalgh, Robert, Macfarlane, Bate, Kyriakidou, & Peacock, 2005; Rohrbach, Grana, Sussman, & Valente, 2006; Wandersman et al., 2008). Although this adaptability is critical, it has also resulted in considerable variability in CSH implementation practices and limited agreement as to how these practices should be evaluated (Deschesnes, Martin, & Hill, 2003; Mukoma & Flisher, 2004; Veugelers & Schwartz, 2010). This absence of specific guidelines has hampered the development of rigor in the implementation and evaluation of CSH implementation (Rowling & Samdal, 2011). Furthermore, evaluation results remain few in number and inconclusive as to establish broader operationalization of CSH (Deschesnes et al., 2003). Thus, there is a need to focus on how CSH is implemented, wherein an attention to the functioning of each of its components is required as a means to further strengthen its evidence-base (Deschesnes et al., 2003; Mukoma & Flisher, 2004; Stewart-Brown, 2006). This in turn, will enhance the implementation of this approach, which has been shown to improve the education, health, and well being of school-aged children (Deschesnes et al., 2003).

Through their review of the literature, Samdal and Rowling (2011) uncovered several components hypothesized to be important for CSH implementation; one of these

components is the school's leadership. Now identified, the next step is to further describe and operationalize these factors (Samdal & Rowling, 2011) in order to create "models that can be put into practice in natural contexts" (Deschesnes et al., 2003, p. 393). In other words, it is hoped that by understanding the role of the principal within the implementation of a CSH project, the mechanism behind this 'essential component' can be made more apparent, allowing for the improvement and optimization of CSH implementation efforts.

2.4.1 The school principal and implementation of Comprehensive School Health.

As previously mentioned, based on the nature of CSH, organizational-level changes within the school are expected to precede changes at the individual level (Green & Kreuter, 2005; Silins et al., 2002; St. Leger, 2000; Wang & Ahmed, 2003). A prerequisite for this individual change, however, is the involvement of individuals, i.e., students, staff, and collaborators, within the organizational change processes (Samdal & Rowling, 2011). The core individual within the school who is able to initiate and facilitate these processes is presumed to be the school principal, as he/she is able to stimulate the participation of others and carry out the needed implementation actions (Diebold, Miller, Gensheimer, Mondshein & Ohmart, 2000; Farrell, Meyer, Kung, & Sullivan, 2001; Illback & Zins, 1995; Kam, Greenberg, & Walls, 2003; Larsen & Samdal, 2008; Tjomsland, Iversen, & Wold, 2009). Thus, because school principals are in a position to shape the organizational conditions necessary for successful and sustained program implementation, their role has been deemed important (Diebold et al., 2000; Illback & Zins, 1995). Some CSH-specific research has suggested that principal support

is essential within the implementation of the intervention (Aldinger, Zhang, Liu, Guo, Hai, & Jones, 2008; Frankum, 1994; Hoyle, Samek, & Valois, 2008; Inchley, Muldoon, & Currie, 2007; McBride, Midford, & Cameron, 1999). It is believed that the principal gives subtle but nonetheless strong messages concerning the legitimacy of continuing CSH project operations in the school (Frankum, 1994). Although suggested to be important, the principal's role within this framework has yet to be fully defined and operationalized.

Previously conducted process evaluations of the CSH project, the Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools), focused on teachers' and School Health Facilitators' perceptions of the intervention (Storey, 2013; Storey, Spitters, Cunningham, Schwartz, & Veugelers, 2011). From these reports, leadership emerged as an essential component of the project, wherein the uncontested support of the school principal was seen as important (Storey et al., 2011; Storey, 2013). Taken together, these findings suggest that the leadership role played by the APPLE School principal may be an essential component of project implementation and thus requires further investigation, especially in regards to their role in creating a healthy school culture.

2.5 School Leadership

Kotter (1996) defines leadership as the ability to define what the future should look like, align people with that vision, and inspire them to make it happen. Others define leadership as "…the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (Yukl, 2006, p. 8).

As the leader of the school, the principal's role within the school has evolved over time. In the 1920s-1960s principals supervised the day-to-day school activities and were seen as administrative managers who maintained the status quo (Hallinger, 1992). In the 1970s the principal's role shifted towards curriculum reform, where they were concerned with making changes, but not assessing the effectiveness of this change (Hallinger, 1992). The 1980s were met with a public desire to increase student academic achievement; this is where the principal as instructional leader emerged (Hallinger, 1992; Hallinger 2003; Leithwood, 1994). As a form of transactional leadership, instructional leadership was top-down, where principals would set goals aimed at achieving school improvement (Hallinger, 1992; Marks & Printy, 2003). According to Hallinger (1992; 2003), instructional leadership has been ineffective in bringing about sustained change due to its top-down nature. Transformational leadership emerged in the 1990s to compensate for the shortcomings of instructional leadership; it could assist principals in developing strategies to cope with the unplanned actions necessary for school reform (Hallinger, 1992; Hallinger, 2003). Rather than focusing specifically on direct coordination, control, and supervision of curriculum and instruction, transformational leadership seeks to build the organization's capacity to innovate (Hallinger, 2003). Transformational leadership may be viewed as a form of distributed leadership in that it focuses on developing a shared vision and shared commitment to school change (Hallinger, 2003). Rather than a single individual, the principal, coordinating and controlling from above, transformational leadership focuses on stimulating change through bottom-up participation (Day, Harris, & Hadfield, 2001; Jackson, 2000).

Transformational leadership is a popular form of leadership practiced among principals today.

2.5.1 Transactional versus transformational leadership.

According to Bass (1985), transactional leaders determine what their followers want and then strive to provide it to them; they respond to these wants and needs so long as their followers are performing at satisfactory levels. In contrast, transformational leaders raise the level of awareness of their followers of the importance of achieving valued outcomes, encouraging followers to work collectively towards the good of the group rather than pursue individual interests (Bass, 1985). Although some argue that transactional and transformational leadership styles are mutually exclusive (Burns, 1978), others insists that they are complementary (Bass 1985). Bass (1998) acknowledges that the environmental context in which the organization and leader find themselves is important. For example, transactional leadership seems to be more prominent and effective in relatively stable times, whereas transformational leadership is more appropriate in times of large-scale and rapid change (Bass, 1998). Scholars conducting research in this area consistently found that the skillful leadership of school principals was a key factor when it came to explaining successful change (Hallinger, 2003). Further, previous research has also suggested that a transformational leader can help create strong cultures that improve the school (Cavanaugh & Dellar, 1998). Based on these reasons, the concept of transformational leadership may have relevance within the implementation of CSH, and hence will be explored in further detail within the subsequent section.

2.5.2 Transformational leadership.

This form of leadership is concerned with not only improving the organization as a whole, but also is geared at improving each constituent member of the organization (Burns, 1978). As a result, members have the potential to be transformed into leaders themselves. In this way, transformational leadership acts as a mechanism of empowerment for followers, where they are enabled by the organization's formal leader to gain skills in and exercise their leadership (Burns, 1978). Thus, transformational leadership is a form of distributed leadership (Hallinger, 2003). Distributed leadership has been cited as particularly valuable in understanding participation and ownership in settings-based approaches to health (Spillane, 2006). This process of ownership and empowerment engages school community members to build their existing capacities and strengths to increase their sense of control over the change (Jensen & Simovska, 2005; Inchley et al., 2007).

Burns (1978) conceptualized the idea of transformational leadership and Bass (1985) refined this concept to the application of organizational studies. Leithwood and his colleagues have taken this concept of leadership and have since applied it to education administration (Hallinger, 2003), designing and altering models in order to put it into practice. Despite extensive research, there is not one single agreed-upon model to explain this concept (Leithwood & Jantzi, 1999; Leithwood & Jantzi, 2000). Based closely on these models of transformational leadership, Leithwood and Day (2007) have, however, identified four broad categories of overall successful leadership practices. This model has been suggested in other works looking at the role of the principal in the sustainability of CSH initiatives (Dadaczynski & Paulus, 2015; Tjomsland at al., 2009). The four major

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categories outlined in this model are: 1) building vision and setting direction; 2)

understanding and developing people; 3) designing the organization; and 4) managing the

teaching and learning program.

A number of scholars have cited the importance of the school leader to act in a

transformational manner in schools undergoing change (Barnett & McCormick, 2004;

Bass, 1998; Brown, 1993; Leithwood & Jantzi, 2005). Transformational leadership is not

rigid and inflexible, but rather, allows for adaptability within the change process (Bass,

1998; Deal, 1990; Hallinger, 2003; Leithwood & Jantzi, 2005); this, in turn, may increase

followers' commitment, motivation, and empowerment in supporting institutional change

(Hallinger, 2003; Leithwood & Jantzi, 2005; Yukl, 2006). Hay (2006) indicates that a

transformational leader, in times of change, must do four things: 1) present a compelling

case for why change is needed in the organization; 2) inspire a shared vision, creating a

shared course for action; 3) keep a sense of urgency for change at the forefront; and 4)

embed the change within the school culture.

Although transformational leadership appears to align with the cultural change

process deemed necessary for CSH implementation, as stated, leadership styles may not

be mutually exclusive (Bass 1985). To reiterate, Bass (1998) acknowledges that the

environmental context in which the organization and leader find themselves is important,

suggesting that leaders may in fact maintain flexibility in order to adapt to local

circumstances (Sims, Faraj, & Yun, 2009). Based on this reasoning, the concept of

situational leadership will be explored within the next section.

2.5.3 Situational leadership.

Hersey and Blanchard (1993) devised the theory of situational leadership, which suggests that leaders should be flexible enough to change their behaviours according to their followers' behaviour. Situational leaders are able to identify their followers' readiness level, abilities, and willingness to complete certain tasks, whereby they exercise different leadership behaviours to accommodate. For followers who are unable and unwilling to complete the task, leaders need to provide guidance. For followers who are unable but trying, leaders need to both guide and persuade. For followers who are able but insecure, leaders need to encourage, support, and empower them. For followers who are able and willing, leaders need only to delegate, assign, and monitor. Effective leaders know when to adjust or shift conditions and opportunities, and should be able to adapt their style to fit any situation (Hersey & Blanchard, 1993). Thus, situational leadership implies that both transformational and transactional leadership styles can be applied by the leader at different times, depending on the context and circumstances being experienced (Sims et al., 2009).

2.5.4 Leadership and culture change.

Leadership and culture are both complex concepts that often become intertwined (Deal & Peterson, 1990). In this way, school leaders have been found to play significant roles in the creation, encouragement, and refinement of the values, beliefs and traditions that shape school culture (Deal & Peterson, 1990; Walker & Vogt, 1987). Fullan (2002) describes the 'culture change principal' as a leader who possesses five essential traits, including: moral purpose, an understanding of the change process, the ability to improve relationships, knowledge creation and sharing, and coherence making (Fullan, 2002).

Many have suggested that it takes strong leadership to be able to navigate through the process of change and motivate the actions needed to alter culture. According to this research, there are certain leadership characteristics that a principal must possess in order for school culture to be shifted. First, the principal must understand their school and how it came to be, including an understanding of why the change is needed (Deal & Peterson, 1990; Walker & Vogt, 1987). The principal then casts expectations and affirms values through behaviour, language, and social interactions (Deal & Peterson, 1990). Some common tactics used amongst effective leaders include: 1) developing a sense of what the school should be; 2) selecting staff whose values fit well with their own; 3) facing conflict rather than avoiding it; 4) using one's own behaviour to exemplify core values; 5) telling stories that illustrate shared values; and 6) reinforcing the desired school culture (Deal & Peterson, 1990).

These findings have also been echoed in other studies, suggesting that a formal leader plays a significant role in establishing the climate for a school (Hall & George, 1999). Although the exact nature of the principal's role will differ based on school context, successful change seems to be related to how well the principal and other change facilitators work together (Fullan, 2001). Here, it becomes the principal's responsibility to convey the value of the initiative to other staff and school stakeholders (Frankum, 1994). Ultimately, the entire school community must believe that a new direction is needed in order to bring about change (Deal & Peterson, 1990; Walker & Vogt, 1987). Thus, school culture is changed through the experience and interplay between many people in the school community, wherein the principal often plays the decisive leadership role (Deal & Peterson, 1990). While the role of the principal in changing school culture

has been established as essential, there is a paucity of information regarding the role of the principal in shifting the school culture specifically related to CSH.

2.5.5 Leadership and implementation.

Fullan (1992) has described implementation as learning to do and learning to understand something new, which in turn is the essence of change. Hall and Hord (2006) noted the crucial role of the principal as a change facilitator; someone who identifies actions that can be taken to make change happen (Hall & Hord, 2006). The authors expand the description of the change facilitator from the individual to the team, whereby staff can assume these responsibilities once they have built enough capacity. The change facilitator team supports the idea of 'horizontal-based' change, suggesting that principals and teachers can work together to implement change (Hall and Hord, 2006).

While members of the school community must work together to implement change, research has shown that the principal's overall approach to leadership is directly related to the successful implementation of school-based interventions (Forman et al., 2009; Hall & George, 1999; Payne, Gottfredson, & Gottfredson, 2006). Here, the degree that a program is implemented depends on the actions and priorities of the principal, which in turn are dependent on leadership style (Hall & Hord, 2006). Thus, strong commitment and support from school leadership is suggested to be among one of the most important factors facilitating program implementation in schools (Fullan, 2001; Neil, Carlisle, Knipe & McEwen, 2001). Moreover, the principal is likely to have the most influence on a health promotion program if staff perceives that he or she actively supports the program (Leithwood & Jantzi, 1999). Fullan (1992) described the school principal as a 'gatekeeper' for program implementation at the school level; for a program

to become entrenched in the school culture, the principal must play an active and/or supporting role (Fullan, 2002). Further, Fullan, Miles, and Taylor (1980) found that principal leadership impacted all aspects of the implementation process from entry through to maintenance of the innovation.

Many studies have asserted that principal support was important in the maintenance and quality of school-based prevention programs (Gottfredson, Fink, Skroban, & Gottfredson, 1997; Gottfredson & Gottfredson, 2002; Kam et al., 2003; Rohrbach, Graham, & Hansen, 1993). This matches others who have cited principal support as an important factor in the success of curricular innovation (Hallinger & Heck, 1996; Leithwood & Duke, 1999). Due to the administrative power and gatekeeper function of the position, the principal provides local legitimacy to the innovation (Berman & McLaughlin, 1978) and can significantly impact implementation (Rohrbach et al., 1993). Of utmost importance is the presence of principal support that aids school personnel in creating an environment rich for program success (Berman & McLaughlin, 1978; Gottfredson & Gottfredson, 2002). Further, schools with stronger principal support for interventions are far more likely to implement these programs at a higher quality (Farrell et al., 2001; Fullan, 1992; Gager & Elias, 1997; Kam et al., 2003; Kegler, Steckler, McLeroy, & Malek, 1998; Payne et al., 2006; Payne, 2009; Rohrbach et al., 1993; Smith, McCormick, Steckler, & McLeroy, 1993). Interestingly, however, there has been little examination of the role of the principal in the implementation of prevention programs, despite its regular discussion in the literature (Elias, Zins, Graczyk, & Weissberg, 2000; Weissberg & Elias, 1993).

2.5.6 Leadership types to support implementing culture change.

Within the literature, there remains a paucity of information on principal leadership within the implementation of a culture change. It is clear that the behaviours that constitute principal leadership are multidimensional (Deal, 1990) and their impact will vary depending on the school context and instructional model (Leithwood & Duke, 1999). Further, despite the number of leadership models that exist, it is still unclear what types of leadership practices are required within the implementation of CSH, particularly with regards to creating a healthy school culture.

2.6 Knowledge Translation and Exchange

As defined by the Canadian Institutes of Health Research (CIHR) (2012), knowledge translation (KT) is an overarching term that includes concepts like knowledge synthesis, dissemination, and exchange. KT can occur at the end of a project, known as "End of Grant KT" as well as throughout the research process as "Integrated KT". This latter form of KT engages knowledge users throughout the duration of the research process, bringing researchers and knowledge users together to co-create the research process (CIHR, 2012). A knowledge-user, as defined by CIHR (2012), is an individual who is able to use the knowledge generated from the research to make informed decisions about health policies, programs, or practices.

Many terms are used to identify the concept of knowledge use, however, some of these terms focus on outcomes (knowledge utilization, research uptake), while others focus on the process (innovation diffusion, knowledge transfer, knowledge exchange) (Graham et al., 2006). Within the present research, the term *knowledge exchange* (KE), a form of integrated KT, will be used to describe knowledge use, as it suggests a two-way

flow of knowledge (CIHR, 2012), which is in alignment with the CSH approach

employed by the APPLE Schools project. The Canadian Foundation for Healthcare

Improvement (CFHI) (2014) defines KE as "collaborative problem solving between

researchers and decision makers" resulting in "mutual learning through the process of

planning, producing, disseminating, and applying existing or new research in decision-

making". Thus, KE is defined by the interaction that takes place between the knowledge

user and the researcher resulting in a process of co-learning (CIHR, 2012), attempting to

bridge the gap between research and practice. Thus, KE incorporates concepts of data-

driven decision-making (DDDM) as well as knowledge dissemination or sharing (i.e.,

knowledge brokering), the two concepts that will be the primary focus within the present

research.

2.6.1 Data-driven decision-making.

Data-driven decision-making (DDDM) is becoming a more prominent concept

within the field of education and refers to the systematic collection and analysis of

various types of data to guide a range of decisions, improving the success of students and

schools (Marsh, Pane, & Hamilton, 2006). DDDM has reportedly been used to help

inform decisions about educational practice as early as the 1950s (Gordon & Bridglall,

2003). Over the years, DDDM has been an increasingly encouraged practice within

education in response to pressures for school improvement and government-mandated

accountability (Massell, 2000). Despite this increased interest, in practice, DDDM is only

slowly progressing within schools (LaFee, 2002). Lou (2008) asserts that data-driven

practices are not satisfactory and are missing from many schools.

The concept of DDDM originated from business management models in which decisions and practices are made based on research findings; here, improvement strategies and resource allocation decisions produced better results when based on evidence of past performances (Kowalski, 2009). For DDDM, data must be organized and combined with an understanding of the situation to yield 'information'. When synthesized, this 'information' then becomes actionable knowledge whereby data users are able to apply their judgment to prioritize it (Marsh et al., 2006). Actionable knowledge can therefore inform different types of decisions (Marsh et al., 2006).

Some factors, as identified by Marsh et al. (2006), that affect the use of data in decision-making include: the accessibility of data; the quality of data; an individual's motivation to use data; the timeliness of data; staff capacity and support; organizational culture; as well as leadership, which is the focus of the present research and will be discussed in more detail below.

2.6.1.1 Role of the school principal in data-driven decision-making.

Data-driven decision-making (DDDM) has become an emerging practice for school leaders (Streifer, 2002), especially considering the appearance of district and government-level mandates concerning school improvement (Leithwood, Aitken, & Jantzi, 2001). Despite this increased pressure to use data within their practice, many principals feel that their training has not prepared them to meet these heightened demands (Byrd & Eddy, 2010; Herman & Gribbons, 2001). As a result, school leaders may struggle to incorporate DDDM into their schools (McLeod & Creighton, 2001). Thus, although there are many proponents of DDDM within schools, it is clear that this concept is just emerging within the practice of many school leaders (Doyle, 2003).

Furthermore, despite DDDM being a critical issue in both practice and research, little empirical research has been conducted on DDDM practices, especially from the principal's perspective (Luo, 2008). This is surprising considering the number of studies that have noted the principal as a key player in DDDM (Ikemoto & Marsh, 2007; Mandinach & Honey, 2008; Wohlstetter, Datnow, & Park, 2008; Young, 2006). Principals can also act as barriers to effective data use; depending on their level of data literacy, principals may feel insecure in leading DDDM efforts within their school (Wu, 2009). Further, lack of principal engagement in the DDDM process can act as an additional barrier (Markarian, 2009). Sutherland (2004) found that principals who were not enthusiastic about data-use were found to impact the enthusiasm among teachers and prevent this data from having a positive impact on practice.

DDDM has been shown to be the hallmark of good instructional leadership (Creighton, 2001). The role of an effective data-driven instructional leader includes: collecting relevant and useful data; having district support for the use of data; participating in professional development on how to use data in decision-making; analyzing the use of data practices; establishing measurable instructional goals; and restructuring the school to improve learning through the use of data (Datnow, Park, & Wohlstetter, 2007; Jazzar & Algozzine, 2006; Knapp, Swinnerton, Copland, & Monpas-Huber, 2006).

Overall, there is a common consensus within the literature that strong school leadership is critical in the successful implementation of data use in schools. Mandinach, Honey, and Light (2006) explained that strong leadership at the school-level seemed to be the most important factor in facilitating or impeding the use of data. However, there is a

lack of research that examines this role in detail, especially with regards to data pertaining to nutrition and physical activity.

2.6.2 Knowledge brokering.

The process of transferring research knowledge into action is recognized as a complex process (Graham et al., 2006). The information gathered by the researcher may not be in a form that is interpretable by the knowledge user. Thus, sharing research evidence with knowledge users through passive dissemination has been widely acknowledged as ineffective (Grimshaw et al., 2001; Kerner, 2006). This highlights that dissemination alone is not necessarily sufficient for the successful transfer of knowledge. Given difficulties such as these, transfer and implementation of knowledge may not be entirely easy to enforce. One proposed mechanism to bridge the gap between researchers and knowledge users is the use of intermediaries or brokers. These individuals are seen as the driving force behind knowledge transfer, facilitating interaction and interpreting evidence (Ward, House, & Hamer, 2009). Within the social change framework, brokering is designed to enhance access to knowledge by providing training to knowledge users, which may lead to positive social outcomes. In this context, brokers are seen as capacity builders (Ward et al., 2009).

Although school-based and healthcare literature is sparse with examples of knowledge broker impact, there is considerable evidence in other fields, particularly the business and agricultural sectors (Hargadon, 2005; Hartwich, & von Oppen, 1999; Zook, 2004). Stemming from project management literature, knowledge brokers act as mediators in the process of knowledge transfer between the various participants in a network (Holzmann, 2012). They bridge the gap and facilitate knowledge transfer by

creating links between individuals or organizational units (Goffin, Koners, Baxter, & Van der Hoven, 2010; Pawlowski & Robey, 2004; Ward et al., 2009). Research from these fields has also suggested that the role of the knowledge broker is to: 1) develop a mutual understanding between researchers and knowledge users in terms of goals and cultures; 2) collaborate with end users to identify issues and problems; and 3) facilitate the identification and interpretation of research evidence (Kitson, Harvey, & McCormack, 1998). Key attributes of knowledge brokers in these settings have been identified as their: skills in the interpretation and application of research; ability to tailor the key messages from research evidence to the local perspective; ability to develop a trusting and positive relationship with end users and to assist them to incorporate research evidence; as well as their ability to be in tune with their audience and their audience's environment (Dobbins et al., 2009). Currently the literature is lacking examples of the school principal acting in a knowledge brokering capacity with respect to sharing data with other members of the school community.

2.7 Research Setting: The Alberta Project Promoting active Living & healthy Eating in Schools (APPLE Schools)

2.7.1 Overview.

The Alberta Project Promoting active Living & healthy Eating in schools (APPLE Schools) is a school-based project that utilizes a CSH approach (www.APPLESchools.ca) and aligns with principles of Community-Based Participatory Research (CBPR). APPLE Schools is modeled after the Annapolis Valley Health Promoting Schools (AVHPS) project, a successful grassroots project, recognized as "best practice" in Canada (Public Health Agency of Canada, 2013). AVHPS, also based on the CSH framework, was

shown to reduce the prevalence of excess body weight and positively impact healthy behaviours among children in Nova Scotia, Canada (Veugelers & Fitzgerald, 2005). This success inspired the development of the APPLE Schools project in Alberta, Canada. Both projects are geared "to make the healthy choice the easy choice", however, APPLE Schools takes the AVHPS model one step further by placing a School Health Facilitator (SHF) in each participating school (Schwartz et al., 2010). SHFs work a varying level of time (between 0.2 and 1 Full Time Equivalent (FTE)) depending on each school's unique requirements, and actively engage members of the school community to address barriers to healthy eating and active living (Schwartz et al., 2010). The overall goal of the APPLE Schools project is to improve healthy eating and active living among school-aged children through increasing the capacity of the school community to take ownership over the project, and to ultimately embed wellness in the school culture (Schwartz, Karunamuni, & Veugelers, 2010). Community members are actively involved in participating in the decision-making process throughout the duration of the intervention. These members include students, teachers, principals, parents, and other community stakeholders. Thus, the project applies components of a bottom-up approach, whereby a high degree of flexibility enables space for the intervention to be tailored to meet the needs of each school community (Veugelers & Schwartz, 2010). The APPLE Schools project has been shown to effectively target healthy eating and active living (Fung et al., 2012; Vander Ploeg, Maximova, McGavock, Davis, & Veugelers, 2014a; Vander Ploeg, McGavock, Maximova, & Veugelers, 2014b), strengthening the evidence-base of CSH.

2.7.2 APPLE School participants and recruitment.

The APPLE Schools project was originally launched within ten schools in the Edmonton, Alberta area in January of 2008. As of September 2011, the project expanded to include an additional 30 schools in several locations throughout Alberta. In 2013, five new schools were added in Fort McMurray. Three additional schools signed on in January 2014, and another 3 in September 2014. In total, there currently exists 51 APPLE Schools located throughout Alberta.

APPLE Schools are chosen to participate in consultation with school jurisdictions mainly on the basis of being located in low socio-economic status neighbourhoods, with a need for increased attention towards health promotion efforts within the school community (Schwartz et al., 2010). Additional inclusion criteria for becoming an APPLE School requires that the schools have a configuration that includes Grade 5, have no pre-existing involvement in another health promotion project, and be composed of a relatively stable population, with an annual attrition rate below 50% (Schwartz et al., 2010). School principals are asked to provide: an acknowledgement of their support for the intervention and agreement to participate in ongoing research; provision of office space for the SHF as well as inclusion of the SHF as a part of the school staff; and the creation of supportive healthy living policies (Schwartz et al., 2010).

Depending on available funding and need, schools joining between 2011-2012 and 2012-2013 had varying levels of dedicated staff time allocated to the project, ranging from 0.2 and 0.4 FTE to 0.5, 0.8, and 1.0 FTE. Most schools becoming APPLE Schools beyond this time point have been allocated funding to support a seconded staff member into a 0.2 or 0.5 FTE health facilitator role.

2.7.3 APPLE Schools evaluation.

The APPLE Schools project has been evaluated through both process and outcome evaluations in the past, and these evaluations are described in more detail below. Reports resulting from the analysis of evaluation data have been shared with each participating school. Based on these evaluations, and with input from the school community, the project is often modified and further customized to each school in order to support student health and wellbeing.

2.7.3.1 Process evaluation.

A process evaluation is a set of procedures for assessing program deployment and functioning (Weiner et al., 2009). Researchers conduct process evaluations to: assess program implementation as a means to improve program delivery; gauge program fidelity; or relate implementation efforts to program outcomes (Weiner et al., 2009). Improving and sustaining successful public health interventions relies increasingly on the ability of process evaluations to not only identify the effective components of an intervention (Steckler & Linnan, 2002), but also to help differentiate between implementation failure and project failure (Dobson & Cook, 1980). Further, despite interest in the use of evidence-based prevention programs by school districts, theory and research remain limited on how to move these programs into general practice with high-quality implementation (Domitrovich & Greenberg, 2000; Elliott & Mihalic, 2004; Schoenwald & Hoagwood, 2001). In order to move towards evidence-based practice, it is important to be able to assess school-based health promotion models of intervention through process evaluation measures; thus, understanding the implementation process and the factors that support CSH are essential to this field's continued growth (Cronbach,

1982). Despite the fact that CSH approaches have been shown to be effective, as per the findings of several outcome evaluations, little research has focused on the elements that may contribute to this success over time (Armstrong, Waters, Crockett, & Keleher, 2007). It is hoped that process evaluations will support the refinement of this intervention framework, with the goal of its broader uptake.

To date, as part of an ongoing process evaluation, a number of factors have been assessed within the implementation of the APPLE Schools project. The most prominent components of this evaluation have included gaining the perspectives of teachers and SHFs with respect to the implementation of the project (Storey et al., 2011; Storey, 2013). Within this research, facilitators and barriers as well as components essential to the project's implementation have been identified. This information has served to help tailor the intervention to each school community as well as to direct research efforts.

2.7.3.2 Outcome evaluation.

An outcome evaluation is a systematic examination of the changes, ideally benefits, that result from a set of activities implemented to achieve a stated goal (Patton, 2008). The intent of an outcome evaluation is to assess the effectiveness of these implemented activities with respect to the benefits achieved, whereby suggested improvements and possible direction for future activities can be provided (Patton, 2008).

Raising healthy Eating and Active Living Kids in Alberta (REAL Kids Alberta) is a project led by Principal Investigator Dr. Veugelers of the University of Alberta. The REAL Kids Alberta Evaluation aims to evaluate Alberta Health's Healthy Weights Initiative and provide details on the impact of this initiative (as well as other provincial programs) in promoting healthy behaviours and weights among Alberta students

(www.REALKidsAlberta.ca). REAL Kids Alberta uses a one-stage stratified random sampling design of all schools in Alberta. Data collection from approximately 150 randomly selected schools has been occurring since 2008, and occurs in the spring of every even-numbered year. Components of this evaluation include a variety of assessments directed towards school principals as well as grade 5 students and their parents. Grade 5 students are assessed for eating behaviours and dietary intake, physical activity and sedentary behaviours, in addition to other health behaviours through a variety of questionnaires. Height and weight measures are also taken in order to calculate children's body mass index (BMI). The parent/guardian evaluation component includes a survey that asks questions about the home environment, parental attitudes, support for health-related policy in schools, as well as neighborhood factors and socioeconomic background. Lastly, the principal survey contains questions on knowledge use, school environment, and implementation of provincial programs.

Between 2008 and 2013, APPLE Schools were evaluated annually (in the spring of each year) using similar evaluation tools to those used in the REAL Kids Alberta evaluation. While the tools were similar, additional questions were added to APPLE School surveys in order to better respond to the needs of the project. These evaluation data allowed for the documentation and characterization of change over the duration of the intervention. Because similar data were collected among APPLE Schools and a random selection of provincial schools during the same time period, cross comparisons can be made.

2.7.3.3 Outcome evaluation report distribution.

School Reports, stemming from the analysis of REAL Kids Alberta evaluation data, as well as APPLE School project evaluation data, are sent to all participating school principals and their corresponding superintendents. These reports contain aggregated information on how each school's grade 5 students are faring in the areas of physical activity, nutrition, and other behavioural outcomes. This allows schools to identify and assess their strengths and needs in each area. Due to ethical requirements, the school principal acts as the sole recipient of these reports in each school.

Although the rationale for providing School Reports solely to school principals within each school is due to ethical requirements, previous research has shown that principals tend to have more direct contact with school staff and therefore more substantial influence in communicating the importance and stimulation of data use (Wayman & Stringfield, 2006). Further, evidence suggests that when research is disseminated through personal one-to-one contact rather than group-based, more effective research utilization is made possible (Grol & Grimshaw, 2003; Lavis, Robertson, Woodside, McLeod, & Abelson, 2003). This evidence further supports the principal as the appropriate choice as the gatekeeper of the School Report.

To stimulate principal uptake, School Reports use audience-tailored formatting and are mailed to each school's principal and corresponding superintendent in the fall, following the period of data collection in the spring. School Reports provide information on how results can be used, including examples of how changes can be made to better target certain areas related to physical activity and nutrition. Reports also provide Health Promotion Coordinator (HPC) contact information. HPCs are employed by Alberta

Health Services and act as a key resource to school communities in the area of CSH. Every school jurisdiction in Alberta has access to a HPC, and can contact this individual as a resource to assist with the interpretation and dissemination of findings.

In addition to receiving their School Reports in the mail, APPLE School principals also attended two principal meetings annually (fall and spring) where research findings were discussed. Here, the interpretation and dissemination of the School Reports was highlighted. Specifically, professional development was provided to guide principals in the sharing and use of School Reports, assisting them to effect change in their school communities. For APPLE Schools, KE between school principals and the evaluation team happened on a recurring basis throughout the duration of the intervention. Thus, the principal seemingly acted as a key player in the area of KE, including data use and dissemination to the other team members in the school community (i.e., SHF, staff, and parents). This process has yet to be examined in relation to the APPLE Schools intervention and is important in determining how School Reports are being used to alter the intervention based on each school's specific needs. Currently, there is a lack of information within the literature surrounding the potential role of the school principal as a knowledge broker as well as the principal's role in applying research findings within the decision-making process.

2.8 Study Significance

Although CSH has been shown to be an effective strategy at improving health and learning outcomes, there remains much to be known with regards to what implementation components in specific have contributed to this success; and how these components can be operationalized to improve and optimize implementation efforts (Deschesnes et al.,

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2003; Mukoma & Flisher, 2004; Stewart-Brown, 2006). The school principal has been suggested to be a critical component for CSH implementation (Rowling & Samdal, 2011; Samdal & Rowling, 2011; Storey et al., 2011; Storey, 2013), yet this role has not been comprehensively examined. The APPLE Schools project, a project guided by CSH, allowed for the unique opportunity to examine this role in more detail.

Outcome evaluation data are important to continuously inform intervention efforts (Patton, 2008), allowing for CSH projects to be tailored to a school's evolving needs. The principal is the only individual ethically approved to receive School Reports stemming from the analysis of evaluation outcome data, and has also been deemed an important player in the KE process (Ikemoto & Marsh, 2007; Mandinach & Honey, 2008; Wohlstetter et al., 2008; Young, 2006). As this role has yet to be comprehensively examined within the literature, particularly within a CSH framework, the principal's role as a knowledge broker as well as within DDDM in relation to outcome data was examined.

This research will help school leaders identify and refine their leadership skills as well as their knowledge use and sharing practices in the face of CSH implementation. By doing so, it is hoped that higher quality implementation of CSH initiatives will be achieved, ultimately supporting the improvement in health and learning outcomes for children and youth (Deschesnes et al., 2003).

Chapter 3: Role of the School Principal in the Implementation of a Project Guided by Comprehensive School Health aimed at Creating a Healthy School Culture

3.1 Background

The increasing prevalence of childhood obesity is a major public health crisis. According to the 2009-2011 Canadian Health Measures Survey, 19.8% and 11.7% of children aged 5-17 years were classified as overweight and obese, respectively (Roberts, Shields, de Groh, Aziz, & Gilbert, 2012). Obesity contributes to a variety of co-morbidities (Schelbert, 2009), as well as to a number of negative psychological consequences (Williams, 2005). These conditions may lead to a diminished quality of life and life expectancy, and also cost the health care system billions of dollars (Krueger, Turner, Krueger, & Ready, 2014).

Poor diets and inadequate physical activity are widely recognized as the primary drivers of the obesity epidemic (Sparling, Franklin, & Hill, 2013; Story, Nanney, & Schwartz, 2009). The increasing westernization and urbanization occurring in most countries around the world is associated with a sedentary lifestyle, along with changes in diet towards one of high fat, high energy-dense foods (Swinburn, Caterson, Seidell, & James, 2004). As a result, children are not meeting the recommended physical activity or nutrition guidelines (Colley et al., 2011; Hallal et al., 2012; Roblin, 2007). Overall, the effects of poor diets and increasingly sedentary lifestyles on the worsening obesity trends emphasize the need for early intervention, through comprehensive health promotion and primary prevention strategies (Pelone et al., 2012).

Several school-based health promotion initiatives have shown to be effective in addressing childhood obesity, especially those focused on physical activity, healthy eating and positive social behaviour (Fung et al., 2012; Veugelers & Fitzgerald, 2005).

Informed by the Ottawa Charter for Health Promotion (Nutbeam 1992; WHO, 1986), in Canada, this approach is defined by the Joint Consortium for School Health (JCSH) as Comprehensive School Health (CSH) and is described as "an internationally recognized framework for supporting improvements in students' educational outcomes while addressing school health in a planned, integrated and holistic way" (JCSH, 2012). JCSH identifies four interrelated pillars of CSH: 1) teaching and learning; 2) social and physical environments; 3) healthy school policy; and 4) partnerships and services (JCSH, 2012). Thus, CSH focuses on the whole school community in order to support lifelong behaviour change among students (Story, Kaphingst, & French, 2006). CSH is synonymous with Health Promoting Schools (in Europe and Australia) and Coordinated School Health (in the United States) (Veugelers and Schwartz, 2010). For reasons of consistency, CSH will be the term used in this manuscript to represent this framework. Although some research has been done on the effectiveness of CSH in achieving better health outcomes, further research is needed to understand the "how" and "why" behind the CSH implementation process (Veugelers & Schwartz, 2010).

The proposed research intended to examine specific aspects of a project that applies the CSH framework, the Alberta Project Promoting active Living and healthy Eating in schools (APPLE Schools) (www.APPLESchools.ca). APPLE Schools aims to improve healthy eating and active living among children and youth by increasing the capacity of the school community, with an ultimate aim to embed wellness into the school culture (Schwartz, Karunamuni, & Veugelers, 2010). Each participating school receives dedicated staff time in the form of a School Health Facilitator (SHF) who actively engages members of the school community to address barriers to healthy eating

and active living (Schwartz et al., 2010). Previously conducted evaluations of the APPLE Schools project revealed leadership as an essential component of implementation, where the uncontested support of the school principal was seen as imperative (Storey, 2013; Storey, Spitters, Cunningham, Schwartz, & Veugelers, 2011).

The implementation of any initiative within a given organization is a process that is directly related to aspects of change and culture (Bridges, 2003). Fullan (1992) described the school principal as a gatekeeper for program implementation at the school level; for a program to become entrenched in the school culture, the principal must play an active and/or supporting role (Fullan, 2002). Fullan, Miles, and Taylor (1980) found that principal leadership impacted all aspects of the implementation process from entry through to maintenance of the innovation. Remarkably, there has been little examination of the role of principal in the implementation of prevention programs, despite its regular discussion in the literature (Elias, Bruene-Butler, Blum, & Schuyler, 2000; Weissberg & Elias, 1993). Hence, the leadership role played by the APPLE School principal is hypothesized to be vital and thus requires further investigation. By making the school leadership practice more transparent through the generation of a detailed description of the emic perspective about how leaders think and act, leaders can identify, reflect on, and adapt their practice (Argyris & Schon, 1974; Hoy, 1996). Therefore the purpose of this research was to describe the role of the school principal involved in the implementation of a CSH project aimed at creating a healthy school culture.

3.2 Methods

    3.2.1 Research paradigm and approach.

    This research was part of an ongoing process evaluation of a broader community-based intervention, APPLE Schools. In alignment with the participatory framework of the larger project, the ontological viewpoint directing this research was relativism, which assumes that there are multiple truths to be found (Mayan, 2009). For the epistemological perspective, a subjectivist approach was taken in that the researcher played an active part in the research, co-constructing the knowledge that was generated (Creswell, 2012). Furthermore, a constructivist theoretical underpinning guided this research, with the goal of understanding the lived experience from the point of view of those who live it (Creswell, 2012). This study was exploratory in nature, and as such, a qualitative approach was employed. This approach stresses the importance of context and the participants' frame of reference, therein producing detailed descriptive information (Creswell, 1994).

    3.2.2 Guiding method.

    Ethnography, in general, is used as a framework to study the meaning and experiences of a defined culture or group in a holistic fashion (Hammersley & Atkinson, 2007). It helps in exploring values, beliefs, and practices from an emic point of view (Richards & Morse 2007). Focused ethnography can be used in time-limited, exploratory studies where a limited number of key informants are relied upon to provide knowledge relative to the phenomenon under study (Muecke, 1994). It is recognized as one of the best ways to obtain insider perceptions, eliciting information on a special topic or shared experience (Richards & Morse 2007). According to Muecke (1994), focused

ethnographies are: problem-focused and context-specific; focused on a discrete

community or social phenomena; the conceptual orientation of a single researcher; and

focused on a limited number of participants. Led by a specific research question, the

cultural focus of a traditional ethnography remains, but is framed within a discrete

community, phenomenon, and context (Higginbottom, Pillay, & Boadu, 2013). As a

detailed description of the culture and experience behind the leadership practice of the

APPLE School principal was desired, within the context of establishing a healthy school

community, focused ethnography (Higginbottom et al., 2013) was considered an

appropriate guiding method within the present research.

When *time* emerged as a central component of the preliminary findings, it became

clear that the principal's role was dependent on the underlying social change process.

Because of this, grounded theory was incorporated into the analysis. This was seen as an

acceptable methodological step in order to clearly delineate the effects of time within the

findings. As grounded theory is *process-oriented* (Strauss & Corbin, 1990), it was hoped

that its inclusion would allow for an understanding of the core process central to change

within the social group under investigation (Morse, Stern, Corbin, Bowers, & Clarke,

2009). The use of grounded theory was further rationalized by its appropriateness within

studies where the primary variables have already been identified (Strauss & Corbin,

1990).

The main analytical element brought into the study by a grounded theory

approach included constant comparative analysis, which involved ongoing comparison of

data throughout all stages of the analysis. Grounded theory takes an inductive,

comparative, and interactive approach to inquiry (Charmaz, 2006). This approach

emphasizes the process of analysis and development of theoretical categories rather than focusing solely on the results of inquiry (Charmaz, 2008).

Thus, in pairing the main methodological drive of focused ethnography with analytical components of grounded theory, a grounded ethnography (Charmaz, 2006) emerged as the guiding method in this research. Scholars have advocated for the use of grounded theory within ethnographic research, including some who have specifically championed grounded theory ethnography as a new way of exploring traditionally ethnographic questions (Babcuk & Hitchcock, nd). According to Charmaz (2006), grounded theory ethnography (or grounded ethnography) prioritizes the studied phenomenon or process, rather than a description of a setting. Ethnographers can make connections between events by using grounded theory to study processes. Battersby (1981) contends that grounded ethnography allows the ethnographer to "generate a thesis or picture of certain social processes" (p. 93). A grounded theory constant comparative analysis leads ethnographers to: 1) compare data with data; 2) compare data with emerging categories; and 3) demonstrate relations between concepts and categories (Charmaz, 2006). Further, these methods move ethnographic research toward theoretical development by raising description to abstract categories and theoretical interpretation (Charmaz, 2006). Thus, grounded theory ethnographers study what is happening in the setting and make a conceptual rendering of these actions (Charmaz 2006). Timmermans and Tavory (2007) assert that grounded theory can increase the ethnographer's connection to the data, ultimately helping to focus ethnographic research through the study of social processes. This in turn may extend the often-limited theoretical component of ethnography, shifting the focus from description to explanation

(Timmermans & Tavory, 2007). Finally, grounded ethnography can be a powerful tool for linking research-to-practice across disciplines and can be particularly effective for practitioner-driven fields such as education and health care (Babchuk & Hitchcock, nd).

When combining multiple qualitative methods, as was done within the current study, it has been suggested that the approaches be congruent with the philosophical paradigm of the study and hence with each other (Annels, 2006). As per the relativist ontology and subjectivist epistemology underpinning the current study, approaches needed to align with a constructivist paradigm, as identified by Lincoln and Guba (2000). The preferred type of grounded theory to be applied was that outlined by Charmaz (2006), as this has a clear link to relativist ontology and was congruent with a constructivist perspective to qualitative research. Ethnography, on the other hand, in its modern form, is innately constructivist (Williamson, 2006). The constructivist position views research as an emergent product wherein the researcher's perspectives will direct their attention within the research, but not determine their research (Charmaz, 2008). Further, unlike the positivist philosophy of classic grounded theory (Glaser & Strauss, 1967), which asserts that the researcher can and should remove their influence from their research, constructivists aim to make these influences explicit, embedding themselves in the research rather than being distant observers (Charmaz, 2008). When constructivist grounded theorists engage with their data, their perspectives may grow and/or change, emphasizing the emergent nature of this approach.

Both focused ethnography and grounded theory are rooted in a symbolic interactionism philosophical foundation (Annells 1996; Goulding, 1998; Prus, 1996; Robrecht 1995; Timmermans & Tavory, 2007). This foundation holds that all social

phenomena are products of a negotiated reality within which many interpretations of the social world exist, ultimately allowing each individual to shape the world they live in (Johnson, Long, & White, 2001). Other similarities that both ethnography and grounded theory share, further warranting their collective use, include: research that is conducted in natural settings; inductive data analysis; researcher as primary data collection instrument; flexible research design; purposeful sample selection; a focus on producing findings as per the participant's emic point of view; and the use of some form of memoing, journaling, and/or field notes (Babchuk & Hitchcock, nd).

3.2.3 Participants, sampling, recruitment, and ethics.

All APPLE School principals were contacted via email and invited to participate based on being employed in an APPLE School for a minimum of two months prior to the date of contact. Thus, purposive sampling was used based on reasons of inclusiveness as well as per its suitability in focused ethnography (Higginbottom et al., 2013). This sampling technique is often used when participants have specific knowledge or experience that is judged to be of interest to the investigation (Crookes & Davies, 1998). Upon agreement to participate, an interview was scheduled and principals were sent an information letter (see Appendix A) outlining the procedures. Prior to the initiation of the interview, principals were asked to review and provide written informed consent (see Appendix B), and were provided time to ask questions about the study. Two graduate-level qualitatively trained research assistants conducted interviews, either at the participant's respective school, or privately over the phone; interview locations were deemed comfortable and convenient for the respondent.

As per focused ethnography, data saturation often dictates sample size (Higginbottom et al., 2013). Here participants are recruited until the topic has been fully investigated and no new interpretations are generated from additional participants (Guest, Bunce, & Johnson, 2006). Again, based on inclusivity, all principals who agreed to participate were included within the analysis, and thus, saturation was reached well before the data collection was completed. Theoretical sampling, used in grounded theory, is a sampling technique that helps the researcher to fill out the properties of their categories that have emerged within preliminary analyses (Charmaz, 2008). A sufficient number of interviews were conducted within the present research whereby further confirmation of tentative interpretations was not needed. Thus, theoretical saturation (Charmaz, 2008) occurred through the initial sampling of participants, and further data collection was deemed unnecessary to further develop the categories produced.

Interviews were conducted between April and July 2013, ranged between 19 and 66 minutes, and were audio-recorded with participant permission. Interviews were transcribed verbatim immediately after collection. To ensure confidentiality of the findings, pseudonyms were used in the transcripts in the analysis and presentation of results. Data were presented in an aggregate form, wherein individual participants were not identifiable. Approval for this study was obtained from the Health Research Ethics Board at the University of Alberta as well as from each participating school jurisdiction and school as per their respective processes.

3.2.4 Data generation.

Focused ethnography allows for multiple data sources to be used when searching for themes, patterns, meanings, and understanding (Richards & Morse, 2007). The

purpose of this multi-source data collection was to view the phenomenon from a variety of angles. Furthermore, when information from one source complements or explains information obtained from another, it enhances the understanding of the phenomenon and increases validity (Richards & Morse, 2007). Several data generating techniques were employed in this study including semi-structured interviews, detailed field notes, personal journaling, and memos. Many of these data generating strategies have also been deemed appropriate within grounded theory (Babchuk & Hitchcock, nd), particularly the inclusion of memoing (Charmaz, 2008).

3.2.4.1 Semi-structured interviews.

Interviews were chosen as the primary data generating strategy within this study on the basis of their appropriateness within a focused ethnography (Higginbottom et al., 2013) as well as their suitability for the study population of interest. Interviews established an environment of trust and encouragement wherein principals felt comfortable engaging in discussion.

Semi-structured interviews were performed with the use of a topic guide containing questions relevant to the research question (Higginbottom et al., 2013). Questions were devised in order to invite detailed discussion on the topic, as per focused ethnography (Davies, 1999). Although the topic guide was developed principally with this method in mind, the guide remained flexible, allowing for participant topics of interest to emerge. This adaptability permitted the eventual inclusion of a grounded theory analysis, as per the emergence of the concept of *time*, a concept that was originally unanticipated, but later welcomed within the analysis.

After initial development of the topic guide, questions were refined in consultation with project staff. Thereafter, pilot testing of the guide occurred among a sample of principals (n=5), whereby questions were refined in order to best align with the research question. In the end, 10 questions were included in the interview guide, and were adapted throughout the initial stages of data collection. A copy of the interview guide is provided in Appendix C.

Overall, interview questions moved from general to specific (Mayan, 2009; Spradley, 1979) and explored principal perceptions on (1) their role and critical skills required for implementation, (2) facilitators and barriers to implementation, and (3) the perceived culture change in their school as a result of the project's implementation. Interview questions were open enough to allow for principals to discuss their experiences and perceptions of project implementation; questions were not restrictive and allowed the respondent flexibility in their responses. Follow-up and probing questions were also used within interviews to prompt for expansion or clarification (Spradley, 1979).

3.2.4.2 Field notes, personal journaling, and memos.

Detailed field notes were kept in order to keep track of specific happenings during the periods of data collection. Acting as a supplement to the oral text generated from the interviews, the interviewer took notes on non-verbal cues, contextual details, as well as the general content of the discussion (Mayan, 2009).

A personal journal was also kept in order to record personal thoughts, feelings, hunches, and reflections, while also tracking the progression of understanding and synthesis of the data (Morse & Field, 1995). This ensured researcher responsiveness and reflexivity (Watt, 2007). Field notes and reflective journaling are often incorporated as

data collection strategies within focused ethnography, wherein contextual observations and non-verbal communications can be recorded in order to provide a heightened perspective of the data (Higginbottom et al., 2013).

In terms of the development of the research, difficulties and insights were tracked, with thoughts on potential analytical schemes and processes noted in the form of memos (Szabo & Strang, 1997). Memoing is considered a very important part of grounded theory analysis (Bryman, Bell, & Teevan, 2012), is often used in focused ethnography (Higginbottom et al., 2013), and was performed consistently throughout the study. This included the generation of notes outlining what particular concepts and categories were referring to, helping to keep track of thoughts, shape reflections, and guide key decisions during data analysis, whereby these ideas were constantly checked and verified against the data (Mayan, 2009).

3.2.5 Data analysis.

Audio recordings were transcribed verbatim. Transcription accuracy was verified and data was imported into NVivo v10 to help organize the analysis. Within the analysis, first, latent content analysis (Mayan, 2009) was employed, as per its appropriateness within a focused ethnography (Higginbottom et al., 2013). Here the focus was on the underlying meanings of the messages in the text (Mayan, 2009). As per Mayan (2009), the following steps were taken within the analysis: 1) the researcher became familiar with the data, whereby transcripts were read several times to gain an overall sense of the content, revealing any overarching concepts (Richards & Morse, 2007); 2) words and phrases were highlighted and coded (broken down into component parts and given names), wherein a variety of codes were used to ensure full coverage of the informants'

accounts; 3) codes were aggregated into categories in relation to the research question and re-examined to determine the necessity of sub-categorization; 4) categories were reflected upon to identify themes (i.e., big picture patterns) that connected them; and 5) themes then allowed for conclusions to be drawn from the data. It is important to note that internal homogeneity and external heterogeneity were considered at the level of categorization. In this way, data within categories cohered together meaningfully, while there were clear and identifiable distinctions between categories (Braun & Clarke, 2006).

As a cyclical process, latent content analysis required that the researcher engage in an iterative and self-reflective process, wherein data were continually revisited to generate new insights (Mayan, 2009). This process was both inductive and abductive resulting in the use of caution when drawing conclusions, as relationships between data categories continually changed (Mayan, 2009). Based on this process, it is not surprising that the study design and direction of the data management techniques required modification throughout.

Preliminary results of latent content analysis suggested that the concept of *time* was innately part of the data. This lead to the subsequent use of a grounded theory constant comparison analysis (as modified by Charmaz, 2006). When compared to traditional versions, the constructivist version of constant comparison contains correctives that reduce the likelihood that researchers merely superimpose their preconceived notions on the data (Charmaz, 2006). It also frees the analyst from becoming so immersed in respondents' worldviews that they are accepted without question (Charmaz, 2006). Thus, it forces one to look at their data critically and analytically. What the analyst sees in their data relies in part upon their prior

perspectives; rather than seeing their own perspectives as truth, the analyst tries to see them as one view among many (Charmaz, 2006).

Within the constant comparative analysis, systematic steps of open (which included elements of initial and focused coding), axial, and selective (or theoretical) coding were used (Charmaz, 2006). Open coding (similar to initial and focused coding) involved line-by-line and paragraph analysis of transcripts, whereby data were broken-down, examined, compared, and conceptualized leading to categorization. In these initial stages, the analyst remained open to exploring the theoretical possibilities within the data, wherein data was compared with data (Charmaz, 2006). Open codes are provisional, comparative, and grounded in the data (Charmaz, 2006). Towards the end of this stage, codes became more directed, selective and conceptual, wherein larger segments of the data were synthesized (Charmaz, 2006). This required decisions about which initial codes to categorize, whereby data was compared with codes, helping to refine them (Charmaz, 2006). Thereafter, during axial coding, data were put back together in new ways, where connections were made between categories and sub-categories. Thus, the purpose of axial coding was to sort, synthesize, and organize large amounts of data and reassemble them in new ways after open coding (Creswell, 2012). Selective (or theoretical) coding, the final stage, involved selecting the core categories, systematically relating them to other categories, validating relationships, and filling in categories that needed further refinement and development (Charmaz, 2006). Together, these steps lead to the development of a description of the central phenomenon of the study: a detailed description of the principal's role within the culture change process.

3.2.6 Trustworthiness.

Trustworthiness as described by Lincoln & Guba (1985) was employed as a prescription to ensure rigor within the current study. Here, the four categories (credibility, transferability, dependability, and confirmability) were upheld in the following manner: 1) *Credibility* (internal validity, i.e., confidence in the 'truth' of the findings) was maintained through:

- Respondent validation or "member checking". Here, one study participant was asked to review the preliminary findings wherein feedback was incorporated into the investigator's account. Some view this procedure as the strongest available check on the credibility of the findings (Lincoln & Guba, 1985). However, because the overall findings represent the cumulative view of all respondents, feedback from the single participant was seen as part of the error reduction process rather than an ultimate test of credibility (Mays & Pope, 2000).

- Stakeholder debriefings, which allowed for preliminary findings to be shared with stakeholders and feedback to be incorporated into the analysis.

- Interview questions themselves acted as a source of internal validation. For example, the probing question asking principals whether their role evolved over time, confirmed the findings that their role was changing throughout the process. Furthermore, the question asking what advice they would give to a principal new to an APPLE School, acted as an internal validation of our findings in uncovering the critical skills and characteristics of an APPLE School principal, allowing for a detailed description to be produced. Together these findings validate the process-

orientation and descriptive nature of the results, reaffirming the classification of this study as a grounded ethnography.

- Triangulation of data through the use of two different guiding methods (i.e., focused ethnography and grounded theory) and multiple data generating strategies (i.e., interviews, personal journaling, field notes, and memoing) was used. Triangulation compares the results from two or more sources or methods wherein patterns, convergence, and differences are noted. This practice assumes that any weakness in one data collection technique or method will be compensated in another. Therefore, triangulation acts as a means of ensuring comprehensiveness and reflexivity within the collection and analysis of the data (Mays & Pope, 2000).

2) *Transferability* (external validity, i.e., showing that the findings have applicability in other contexts) was established through:

- The generation of a thick description of the setting and participants through detailed field notes.

- Purposeful sampling, which allowed for data to be collected from appropriate informants, ensuring that those sampled were the best representatives of the knowledge sought. This resulted in the potential for applicability of the findings outside of the immediate context.

3) *Dependability* (reliability, i.e., showing that the findings are consistent and could be repeated) was upheld by:

- Keeping a detailed record or audit trail, wherein decisions were documented and data analysis reflections were recorded through personal journaling and memoing.

- Team debriefings, wherein the interpretation of the findings was discussed among members of the research team on an ongoing basis.

- Peer debriefings, wherein a peer reviewer was consistently involved in providing feedback throughout the research process. Here, questions and challenges were made of the researcher's assumptions and constructive feedback was supplied in the research methods and interpretations (Lincoln & Guba, 1985). These meetings began in the initial stages of inquiry wherein discussions focused on issues related to preliminary data collection and analyses; thereafter, discussions evolved to focus on methodology and concluding analyses (Guba & Lincoln, 1989; Lincoln & Guba, 1985; McMillan & Schumacher, 1997). This peer was someone external to the study, and hence helped to establish a degree of credibility within the study findings; areas of potential bias were explored, which were not entirely apparent to the researcher consumed in the details of the research project (Creswell & Miller, 2000; Guba & Lincoln, 1989; Lincoln & Guba, 1985).

4) *Confirmability* (objectivity, i.e., the extent to which the findings of a study are shaped by the respondents and not researcher bias) was established through:

- The use of verification strategies that allowed the researcher to continuously and incrementally identify and correct errors throughout the research. Through this iterative and reflexive approach, the researcher moved back and forth between design and implementation to systematically check data and explore the fit between data and the conceptual analysis, ensuring methodological coherence (Morse, Barrett, Mayan, Olson, & Spiers, 2008). The continual verification of data against itself allowed for examination of the reliability of inferences being

drawn throughout data analysis. Furthermore, the use of both latent content

analysis and constant comparison analysis demonstrated rigor in the researcher's

attempts to best represent the data. Here, grounded theory methods preserved an

open-ended approach, yet added rigor to the ethnographic research by building

systematic checks into the analysis of data (Charmaz, 2006).

Further, as rigor and robustness in qualitative research are to some extent

established through a self-conscious and reflective approach, the concept of reflexivity

became an important dimension within this research (Denzin & Lincoln, 1998:

Hammersley & Atkinson, 2007). Reflexivity is focused on making explicit and

transparent the effect of the researcher, methodology, and tools of data collection on the

process of the research and the research findings (Schwandt, 2007). In this way,

reflexivity allows the researcher to establish the validity of the phenomena being studied,

ensuring that it isn't an expression of the researcher's ideology (Schwandt, 2007).

Reflexivity in qualitative research has been cited as one of the major criteria for assessing

research quality (Mays & Pope, 2000), and was therefore an essential requirement. Thus,

the researcher made every effort to minimize personal biases and preconceptions prior to

entering the study domain, through the articulation of personal assumptions (Richards &

Morse, 2007). To further facilitate this, constant team, peer, and stakeholder collaboration

in interpreting data, coding, and analytic theming provided opportunities to raise

awareness of beliefs and assumptions potentially influencing the data analysis.

3.3 Results

Overall, 29 APPLE School principals participated in this study. Of those

interviewed, 62% were women, 68% had obtained at least a masters-level education, and

the large majority (69%) had over 7 years of experience in an administrative role. These principals represented 27 of the 40 APPLE Schools located throughout Alberta, Canada (2 schools had both the principal and vice principal participate). At the time of this research there were 40 APPLE Schools (all of which were invited to participate), however the project has since expanded and has now been implemented in 51 school communities throughout Alberta, Canada. Participating principals were from schools that had kindergarten to grade 6 (85%), and had between 200-400 students (56%). Further, most schools had been an APPLE School for 2 years (63%), with varying degrees of SHF/champion support, ranging between 0.2 and 1.0 Full Time Equivalent (FTE).

Upon analyzing all 29 principal interviews, five major themes emerged from the data, suggesting the principal played a fluid role throughout the implementation process and describes the basic social process of shifting the school culture. Principals: 1) *primed for cultural change* by integrating the project into school structure and role modeled expected behaviours; 2) *advocated for cultural change* by communicating the importance of the project to others; 3) *negotiated, motivated, and collaborated* by discussing project concerns and collaboratively planning; 4) *monitored and enabled others* by holding others accountable to the change, while enabling them to take ownership over the project, and; 5) *supported and sustained* the change process by playing an underlying supportive role, providing positive recognition and establishing ongoing commitment to the project. Additionally, several principal characteristics were viewed as foundational prerequisites prior to implementation. Together, these findings provide a conceptual model that is representative of the cultural change process as experienced by the school principal (see Figure 3.1). This model is described in detail below.

Figure 3.1: Model of Principal's Role in Implementing a Project Guided by CSH Aimed at Creating Healthy School Culture

PRIME FOR CULTURAL CHANGE	ADVOCATE FOR CULTURAL CHANGE	NEGOTIATE, MOTIVATE & COLLABORATE	MONITOR & ENABLE OTHERS
• Establish project as a school priority • Role model • Make time in the schedule • Set expectations for new staff • Collaborate with and support School Health Facilitator/ Champion	• Communicate the importance of the project o Special focus on parent engagement • Act as a spokesperson within broader community	• Negotiate/mediate concerns • Collaboratively plan and reflect	• Stand strong • Enable others to take ownership

SUPPORT & SUSTAIN

- Reward, recognize, and celebrate
- Ongoing commitment
- Take things slow

FOUNDATION	PROJECT SPECIFIC • Understanding of project • Alignment of principal and project values	SCHOOL SPECIFIC • Understanding of school context • Confident in leadership abilities • Pre-established trusting relationships

Briefly, this model represents the fluid and adaptive role that the principal embodied throughout the implementation of a project guided by CSH. *Foundation* elements underlie the model, suggesting that they supported the implementation process and were attended to prior to the initiation of implementation. The principal's role began on the left-hand side of this model and moved towards the right as the process unfolded. Roles blended into subsequent stages, suggesting that earlier traits were still embodied by principals once they entered the next stage. Within each stage, the order in which the principal enacted each characteristic/trait was often important. Traits are listed in the order for which they occurred in each stage. The final goal of implementation was the principal's transition to become an overarching facilitator of staff in their state of ownership over the project.

3.3.1 Foundation.

In order for principals to take on the various roles involved in the cultural change process, a number of prerequisites were identified. These were broken-down into *project-specific* and *school-specific* factors. *Project-specific* factors included having a firm understanding of the APPLE Schools project, and ensuring that the project's philosophy and the principal's values were aligned. As one principal indicated: "Come to a true understanding of what Comprehensive School Health means and then implement it." Networking with existing APPLE School principals was perceived as invaluable in gaining an understanding of the project, while also elucidating potential barriers and facilitators one could face as a principal. *School-specific* factors included having an understanding of the school context in which they worked, being confident in their leadership abilities as a school principal, and having pre-established trusting relationships

with others in the school. Principals felt that it was important to have a firm positioning within their school as a principal prior to the project's implementation. Many emphasized the need for the principal to be familiar with the context of their school, including its existing needs, resources, and key stakeholders. This spoke to the caution that was expressed in terms of introducing an APPLE School into a school where the principal was brand new, or new to their role as principal (i.e., moving from vice principal or teacher to principal). As one principal emphasized: "…these people have to trust me before we can do anything. And that's the foundation…" Similar thoughts were reiterated by another:

> Well the fact that we have such capacity in this school and I'm not new to the building. You know, the very fact that people know me and they love this school… So when people come in here, I already have that capacity with them. So that if I talk to them, they understand that I'm not doing this to put them down or put them in their place or tell them how to rear their children. They see us as partners and that's really important.

3.3.2 Prime for cultural change.

This *priming* stage served as means for principals to prime themselves as principals of an APPLE School as well as to prime the school community for the cultural change. Initially, principals wanted to feel comfortable with the APPLE Schools project and its potential benefits prior to actively communicating the message to others in the school. Although within the foundational *project-specific* factors described above, principals acknowledged that their values needed to align with the project's philosophy, the priming stage acted as an opportunity for this alignment to be explored. During this stage, principals saw the project running in real time, and this served as an opportunity for them to build their competency and comfort with implementation. Principals felt that

if they themselves did not support the project, others would notice, and perhaps become apathetic towards the project's implementation. Thus, this priming stage acted as a trial run for principals in testing the waters, seeing how the project actually worked, and feeling comfortable with its operations in order to fully support and advocate for the initiative within their school. Specific elements of this stage included: 1) establishing the project as a school priority; 2) role modeling the expected behaviours; 3) making time within the schedule to highlight the project; 4) setting project-related expectations for new staff; and 5) collaborating and supporting the school health facilitator or champion. These areas are described in detail below.

3.3.2.1 Establish the project as a school priority.

Within this stage, principals worked to establish the APPLE Schools project as a school priority. This was done primarily through the incorporation of the project's philosophy into the school vision/plan/goals, formalizing the school's commitment to the project. Here, it became clear that it was not simply the implementation of a transient project or program, but rather, a commitment to changing the philosophy of the school, wherein healthy practices were to become the norm. As one principal stated: "[The role of an APPLE principal is a] huge role because you really set the vision… everybody is watching you for the leadership so you have to choose carefully the direction that you want to head." Another stated: "We can't just leave it to chance… it's got to be one of the goals."

Principals understood that they were under a close watch by others in the school community. They were also wary of wanting to maintain their integrity and the respect of those around them by not coming in too top-heavy with the implementation of the

project. Thus, principals took a softer approach to the project's introduction; they found ways to subtly show the rest of the school community that the project philosophy was of value to them. Principals believed that when others saw that they themselves valued the project, others would begin to see this value too. As stated by one:

> As soon as they saw that it was important to me and the school, if I put it into our school goal and they saw that APPLE schools was one of our school goals, to become a healthier school, then the teachers then saw the focus and they went with it, because they realized it was part of what we did at our school.

3.3.2.2 Role model.

Principals ensured that their support for the project was clearly displayed primarily through their ability to role model the behaviours associated with the desired cultural change. This set the tone for the rest of the school. Within the school, principals were highly conscious of their food and beverage choices as well as their support and participation in physical activities, as these behaviours were on display for students and staff to see. Principals also indicated that this role modeling capacity did not end after they exited the school. Within the broader community, principals also found that they needed to be conscious of making healthy choices. Whether it was food selections at the grocery store, or activity on community bike trails, principals were aware of the potential of encountering students or staff in these settings. This suggested that they needed to fully embody a healthy lifestyle approach beyond the school setting, and by extension, remain consistent in their commitment to the change process.

Role modeling required that principals were highly relational and willing to engage at a direct level with students, staff, and families. Principals participated in school events related to physical activity and nutrition, making others aware of this active

involvement and participation. Role modeling also required that principals were consistent in their actions. Principals acknowledged the need to be consistently involved in these practices and that superficial involvement would not be acceptable in establishing their role as a health ambassador within the school. In trying to garner the support of others, principals realized that these practices were important to help them build their credibility and trustworthiness in the eyes of others. They hoped that this would make it more likely that others would come to see the value of the project. As one principal asserted: "Be real and don't say anything you're not willing to do yourself. And [you] have to be the example… living in the goldfish bowl called principalship… they watch us so much… being a hypocrite… doesn't give you much credibility." Another principal outlined the importance of role modeling in relation to the project:

> I don't know if it's skills as much as you have to be… a role model… you can't talk about being healthy and being active. You have to be living that… not so much the skill but as much the – we have to model – be role models. And we're much more aware of what we do and how we act in terms of healthy eating and nutrition and active lifestyle.

Many principals revealed that role modeling was a unique trait associated with being an APPLE School principal; it was this trait specifically that distinguished their role as an APPLE School principal most prominently from their role as principal in general. As one principal indicated: "You have to walk the talk for a long time until they go, 'Ooh, she never varies from her beliefs and what she stands for'… So I think that's the important part of an administrator… if you believe in this then you'd better walk it."

3.3.2.3 Make time in the schedule.

Also occurring within the priming stage, principals incorporated the project into the school structure by allocating time in the schedule to showcase its importance. This more formalized arrangement of time included both time within the school day as well as time during staff meetings. Providing this time within the schedule: heightened the project by keeping it at the forefront of everyone's mind; emphasized its permanency within the operations of the school; showed staff that the principal valued the project; and acted as a professional development opportunity for staff, often facilitated by the SHF. According to one principal: "…the scheduling of all those things I'm very involved with as well as in our staff meeting, making sure that it's part of the agenda and that there's ongoing promotion."

3.3.2.4 Set expectations for new staff.

Besides making structural changes to the school schedule, principals also made changes to the human resources protocols within the school by setting expectations for new staff within the hiring process. Principals recognized the transient nature of staff and therefore identified the need to screen and educate new staff members to keep the project vision alive. Potential new hires were informed of the newly established healthy school policies/procedures during their interview. Principals identified the staff screening process as a simple way to keep the momentum behind the project going and as a means to emphasize the project's permanency within the school. By assessing whether or not the new staff member understood the project, embodied qualities associated with the project, and showed willingness to participate in the project, principals could make the most appropriate choice in terms of the best fit for their school. As per one principal's view:

"It's also part of my hiring process for new staff. I talked to them about what that means and that in order to be a staff member there's a commitment required." Another principal echoed these thoughts: "…because that is a vision for our school, that I do look for people on hiring that I know are going to be those positive role models and supportive of that direction."

3.3.2.5 Collaborate and support school health facilitator/champion.

Also during the priming stage, principals collaborated with and acted as a sounding board for their SHF/champion. Additionally, principals provided support, while providing continued guidance and direction on addressing challenges. This supportive role entailed that principals acted alongside their SHF to make them feel comfortable and valued, as well as part of the school team. Principals also remained open and relational towards their SHF, helping them to feel this sense of inclusiveness. Principals connected regularly with their SHF to discuss the project, and collaborated in terms of brainstorming and planning the project's implementation. By establishing this open and honest relationship with their SHF, principals were showing their SHF that they supported the initiative and wanted this individual to be as successful as possible.

3.3.3 Advocate for cultural change.

During the previously described *priming* phase, the principal saw evidence of the APPLE Schools project in action and felt more confident in backing its implementation. This allowed the principal to move into a role in which they advocated for cultural change by actively communicating project messages to students, staff, parents, and the broader community by serving as a spokesperson for the project.

3.3.3.1 Communicate the importance of the project.

In communicating the importance of the project to others, principals ensured that staff, parents, and students understood the project and its associated behavioural expectations. To facilitate this communication, cultural messages were integrated into formal and informal conversations, and a variety of media were used to widely distribute the message, including announcements, assemblies, school events, newsletters, letters, and information on the school website. In referring to their role as a project advocate, one principal asserted: "I think it's reminding everyone about the philosophy of the school, that this is who we are and… articulating that being part of our vision… just being relentless in talking about who we are."

Of note, principals felt that it was their role to meaningfully engage with the parent group in terms of building awareness around the project. They also spoke of the importance in using a gentle and nurturing approach to communicate this message, as to avoid placing blame or judgment on parents, particularly in the realm of nutrition. As one principal emphasized: "…you have to be able to take parents on that journey as well and support them. It's a huge role." The principal's role with the parent group was further stressed by another principal:

> And certainly the parent education aspect has really played a big role… in making sure that our school council meetings and any parent presentations that I'm the lead person, the person that they look at for that information and that leadership and the expectations for family. So certainly those are my key roles.

Principals reported difficulties in engaging with the parent group and employed two key strategies to overcome this challenge. Firstly, principals felt that one of the most invaluable means of communicating the project message to parents was through their

children. The students' understanding of the project's expectations was indirectly

communicated to their parents at home. Principals emphasized the power of this

communication and the weight that the message had coming from the children. As per

one principal's description:

> The students we think are the strongest… carriers of the message. They bring the
> message home and tell their parents… So they're telling their parents, 'You know
> what? I've got to turn off the TV', or 'I've got to eat this' or 'I tried a new fruit or
> a vegetable today that's better.' So I think that's kind of the communication that's
> been happening… it's been from the bottom up. Kids are communicating up to
> their parents and back out to the community.

Secondly, principals recognized the importance of informing and educating the

school/parent council group about the APPLE Schools project. In building awareness

with the members of this group, principals could entrust the support of a parental

audience, who in turn often had the ability to spread the word amongst the less involved

parents and families in the community. Principals nurtured an understanding of the

project and provided justification for its existence in a non-threatening manner. As

outlined by one principal:

> If the parents are onboard…they can be great advocates for the things that we
> [want to] change in the bigger community because they do the parking lot talk…
> If they're fighting with you, nothing will change – it'll actually get worse to spite
> you. So that's a huge piece.

This sentiment was also reported by another principal:

> The parent council group – once we got them onboard, it was a lot… easier to
> have buy-in from the community. Because once the school council understood
> and our APPLE Core team, once they understood what the objectives of our
> health and wellness policy were, and the APPLE Schools philosophy, they were

able to put out a lot of fires in that parent community – misconceptions about the program or the policy.

3.3.3.2 Act as a spokesperson.

Finally, principals also acted as a spokesperson during this stage, in which they disseminated the message of becoming a healthy school to the broader community. Here, principals discussed their involvement in the APPLE Schools project to outside parties and their schools were recognized for this association. In referring to their role as spokesperson, one principal mentioned: "So I think my role… has to be as well as an ambassador for APPLE and explaining it outside of the APPLE Schools." This was reiterated by another principal: "It's being that spokesperson… for the ideas that are coming out… it's just being visible and being able to talk about it. And being able to support what you're saying."

Some principals expressed the importance of first internally communicating and establishing the project prior to feeling comfortable with advertising this association with the outside community. As such, principals created an order to these communications wherein engaging the community at large became secondary to communicating and establishing the message internally.

3.3.4 Negotiate, motivate, and collaborate.

This stage occurred after the message of becoming a healthy school was communicated to students, staff, parents, and the community. At this point, members of the school community began to form their own opinions and resistance towards the change. Here, principals were open to listening, mediating, and negotiating with others, while still keeping the overall direction clear.

3.3.4.1 Negotiate/mediate.

During this stage, resistance from staff and parents was often experienced. Principals felt the need to stay connected to their staff's concerns and not disrespect their opinions towards the change. Principals continually communicated with staff, allowing those with appeals and judgments to step forward to discuss their concerns. This open communication ensured that principals' authority was still respected amongst the staff. As such, a critical skill of principals within this stage was to act as a mediator, negotiator, and listener. Staff were given the time to voice their concerns, wherein principals made sure that they were being seen and heard. As stated by one principal: "…you have diametrically opposed views and you need to know how to acknowledge everybody's views but yet still keep the message clear." Being able to defuse disputes and guide individuals in this way was an important skill for principals to possess. Principals recognized that they couldn't waver and become lenient with staff, for this lack of direction was not conducive to bringing about change.

3.3.4.2 Collaboratively plan and reflect.

Throughout this stage, principals indicated that they jointly prioritized with community stakeholders including staff, parents, and other community members how to best incorporate the project into school routines and policies given the school context. By engaging others in the process of reflecting upon, reviewing, and adapting policies and practices, principals were able to facilitate broader participation. This collaboration within the decision-making process ensured that the needs of each school community were continually being met. For example, as one principal indicated:

> In order to come up with a good nutrition guidelines policy, there needed to be input from the various stakeholders that includes parents and school council and

teachers… then there's feedback that might inform some changes or some tweaking of language and then the policy is finalized.

3.3.5 Monitor and enable others.

The final stage of the model represented the principals' role in monitoring the change, whereby expectations, policies, and practices were enforced. During this stage, principals continued to ensure that everyone was clear on the vision of becoming a healthy school community. In this way, principals re-educated and cycled back to core beliefs as a means to enforce the project's permanency. Others within the school were held accountable to the vision wherein principals often provided guidance. In this sense, principals *stood strong* to the vision. Additionally within this stage, principals began to enable others to take on project responsibilities, whereby teams were built and leaders were identified.

3.3.5.1 Stand strong.

Principals reported an increased need to enforce the vision during this stage. Of note, this stage often occurred in instances where the SHF was being phased out of the school. Principals stressed their desire to debunk the belief that the SHF defined the existence of the project within the school; they needed others to know that APPLE Schools wasn't simply a transient program. Rather, principals were adamant in communicating the project in terms of it being a fixture and change of philosophy in the school, regardless of the actors present. Principals expressed their desire to want to remain encouraging and positive and articulated their hesitancy towards moving into the role of the *enforcer*. Principals, instead, were keen on reaching the desired state of playing an overarching facilitative role, which was much more hands-off. In order to reach this state, however, principals recognized the necessity of actively guiding staff;

they accepted the burden of being in this policing role for the short-term, hoping it would payoff in supporting their long-term goal. In reference to this policing role, one principal asserted: "I'll become more of a police—policing the visions and rules that we implemented at the advent of APPLE Schools—I'll be more making sure that these things are being implemented and we're providing a healthy atmosphere for the kids."

Principals reported using policies, staff handbooks, as well as the school vision as resources to enforce the project's continuation. Having written documentation outlining this commitment greatly supported the principals' case in establishing the project's continuation.

3.3.5.2 Enable others to take ownership.

Also within this stage, principals provided space for others to act and take ownership over the APPLE Schools project. Principals organized the enthusiasm of others by building teams, involving others in important tasks, and created a sense of distributed and shared leadership over the project. In building teams, the workload was dispersed more manageably amongst staff. This was important, as principals recognized the commitments and demands that were already being placed on teaching-staff, and did not want to burden them further with an unreasonable amount of project-related work. Principals exercised their supervisory role to organize this enthusiasm in building teams, enabling productive leadership activity in relation to the project's continuation. Creating this sense of distributed leadership was important in putting principals on the same playing field as the rest of their staff. Principals acknowledged that everybody needed to feel like part of a team working towards the same goal, rather than having one central leader directing the masses in a certain direction. As outlined by one principal:

…it would be a whole lot more successful if everybody in the staff decided

that…together. Because then it's not just me bossing them around and telling

them what to do. If it comes from them, they're more likely to do it, because they

understand the rationale for doing it. And if they come up with the rationale

whether you help them get there or not, it usually works a whole lot more

effectively.

Principals believed that by dispersing the role of the SHF amongst many others it would be more likely that the project would continue, even if some of these individuals left the school. Principals recognized student and staff transiency as a major threat to the sustainability of the project. They asserted that the more people they had involved in taking ownership over the project, the higher the degree of its embeddedness within the school. Principals exuded patience at this stage as they allowed others to begin to see the value of the project for themselves. By enabling others to act, principals were willing and able to take things slow. Others within the school needed to believe in the project's continuation based on their own understanding and appreciation for the change. Through tactful, hands-off leadership, principals remained encouraging, ensuring that the school community did not feel overwhelmed or pressured to take on the philosophy if they weren't ready to do so. Principals did not want to be prescriptive and demanding in their requests for change. They had to let healthier choices evolve and develop over time; principals saw this as necessary in order for change to become deeply rooted within school practices. This bottom-up approach was emphasized by one principal in the following quote:

…if you want people onboard and supporting what you feel is important, you

need to approach it from a bottom up direction, not a top down directive. You

need to empower the people and inspire the people around you so that they too

feel it is their responsibility and their accountability and take full ownership of that.

3.3.6 Support and sustain.

This component of the model acted as a fundamental role of the principal, and underpinned the majority of the implementation process. Once the tone was set and the school was primed for change, throughout each of the subsequent steps principals acted in this capacity. This role was not as pronounced in the beginning, but was augmented throughout the process and became a major part of the principal's role in the final stages of implementation. Here, principals emphasized the importance of taking the change process slowly, and understood that the change took time to become embedded within the school. As well, principals reaffirmed their commitment and continually applauded the positive efforts of others by celebrating progress in a transparent manner, building momentum for change.

3.3.6.1 Take things slow.

Although this was not necessarily acknowledged in the beginning, principals came to realize that the change process took time. They could not expect that the rest of the community would be on board with the project from day one. Principals realized that in order for the change to be sustainable, it had to come from the bottom-up, rather than be directed from an authority figure. In other words, principals had to provide others with the space to develop their own appreciation for the change, a process that took time. Principals expressed the importance of being patient in this respect, particularly in the later stages of implementation wherein these enabling processes became more prominent. In referring to the importance of gradual change, one principal emphasized: "…baby

steps… we're not changing everything at one time. We don't want to be prescriptive, it's better if it comes from within." This was also reiterated by another principal:

> Take it slow. Because as soon as you come in and you start preaching and telling everyone what we're going to do, and giving roles and responsibilities, there'll be a lot of resentment and you won't get the support or buy-in. People won't see the value in it and see just how important it is. Because it's top heavy. You're telling them what to do. So take it slow.

3.3.6.2 Ongoing commitment.

Moving past the *priming stage* signified that the principal was fully committed to the realization of the vision; they were committed to the cultural change process. With this commitment came the notion of consistency; principals were consistent in their actions, communication, and behaviour in relation to the APPLE Schools project. Principals acknowledged that this commitment was important in order for others to see the worth of the project. Principals also understood that the movement towards a healthy school culture could not be something that was contrived, acted, or pretended; they knew their commitment had to be genuine. As emphasized by one: "I think that if we're going to value this and say that we're an APPLE School, then let's live it and let's commit to it. If not, we should just not pretend." Further, principals made it a priority to follow-through with their commitment to the project. This meant that they couldn't let it fall to the wayside—something that was easy to do considering the large number of initiatives coming into a school at any given time. When principals committed to the project, they knew they needed to have the integrity, determination, and perseverance to see it through.

3.3.6.3 Reward, recognize and celebrate.

Lastly, principals continually applauded the positive efforts of others by celebrating progress in a transparent manner, building momentum for change. This was

important in establishing the continued engagement of others in the school community. Principals got people excited about the work of the APPLE Schools project, where their enthusiasm and optimism towards the project wore-off on others. Principals recognized the positive efforts and achievements of others in relation to the project. This *encourager* characteristic of principals came out very strongly. As one principal mentioned: "… my philosophy is that you support the positives and you give ideas for growth without condemning the person or the staff person because you'll lose them completely…" Principals recognized that this helped to create positive emotions towards the project, building momentum for change and fostering additional support. Further, this positive recognition of achievements was often delivered in a transparent manner, establishing positive examples for others to follow. Overall, as stated by one, principals needed to be: "…the booster behind [the project]… I guess a little bit of the cheerleader and getting people rallied behind the work of it."

3.3.7 Summary.

Overall, results produced a detailed description of the role of the principal throughout the process of implementing CSH in order to shift the school culture. This role was fluid whereby it evolved over time, remaining adaptive and attuned to the project receptiveness of others. Principals emphasized the importance of taking the change process slowly; this was highlighted most prominently by the *priming stage* as well as the principal's enablement of others.

Principals recognized that because the project's implementation was related to changing the school's culture, they felt they played an even more prominent role than if simply implementing a transient program. This was particularly the case as principals

recognized the change was specific to addressing longstanding lifestyle habits and routines that had been hardwired within the school. Despite the fact that another champion was present in the school, spearheading the initiative, the principals reported that their support remained a vital component of the project's implementation. Principals related the importance of this support to their influence over the school's operations; this support was necessary for the project to become engrained into the way the school operated. This goes back to the importance of the principal in their role of setting the tone for the rest of the school, as others are watchful of this direction. As one principal mentioned: "…I think the administrator's role is critical. It is… don't underestimate what you're doing isn't being seen. People are watching what you're doing…" The importance of the principal's role was reiterated by others:

> But again, the whole thing needs that administrator—both administrators' support, otherwise it's not going to work, I think. Because again, it's a change in culture and philosophy so if you don't have that support of both your administrators… staff know it and you're kind of pushing an uphill battle…

3.4 Discussion

Given the presumed importance of the principal in implementing CSH (Rowling & Samdal, 2011; Samdal & Rowling, 2011; Storey et al., 2011; Storey, 2013), we sought school principals' perspectives on their role in the implementation of a project, guided by a CSH framework, aimed at creating a healthy school culture. To our knowledge, this is the first study of its kind to examine the role of the principal in the implementation of a CSH project geared at promoting healthy eating and active living. While two previous studies explored principal's perceptions of CSH (Larsen & Samdal, 2008; Tjomsland,

Iversen, & Wold, 2009), one involved the implementation of a project focused on social competence and violence prevention (Larsen & Samdal, 2008), and the other examined sustainability (Tjomsland et al., 2009). Others have attempted to operationalize the role of the principal within the CSH framework (Rowling & Samdal, 2011), but have done so through a review of the literature and not through research within the field. Thus, our study provides unique insight into the principal's role within this framework and how their role evolved throughout the implementation process.

Results from the present study indicated that principal support was essential in order to implement CSH. This is in line with previous studies that indicated principal support was more important for the implementation of environmental-level programs when compared to individual-level programs (Payne, 2009). CSH could be considered an environmental-level program as it requires greater school-wide changes, wherein the principal must approve of and desire these changes (Payne, 2009). Thus, CSH moves beyond the time-bounded nature of a *program* (Israel, Checkoway, Schulz, & Zimmerman, 1994), whereby it becomes embedded into school culture. Ideally, positive effects are sustained beyond the termination of funding through a process of institutionalization (McIsaac, Read, Veugelers, & Kirk, 2013). As such, *re-culturing* (Fullan, 1993) may be a helpful term to describe the implementation process, wherein "changing the norms, values, incentives, skills, and relationships in the organization" (Fullan, 1998, p. 9) must occur. Thus, establishing a CSH project within a school suggests that both implementation and cultural change processes are taking place.

Analysis revealed that school principals enacted a dynamic role throughout the process of implementation, which is consistent with previous research indicating that

effective leaders are responsive to a school's changing context (Hallinger, 2003). This is also in alignment with the concept of situational leadership, which suggests that leaders remain flexible in order to accommodate their followers' readiness levels, abilities, and willingness to complete certain tasks (Hersey & Blanchard, 1993). However, there appeared to be a time-order to the principals' role. This finding initially appeared to contradict previous school-based health promotion work, wherein a cyclical and iterative process of implementation was recommended (Boot, van Assema, Hesdahl, & de Vries, 2010). It must be emphasized, however, that within the current findings this time-dependency did not imply that the principal's role was inflexible. In fact, the principal continued to cycle back and incorporate previous roles into subsequent stages of implementation, remaining adaptive to local circumstances. In this way, the stages tended to blend together, wherein roles were enacted in a cumulative manner.

3.4.1 Prime for cultural change.

The *priming* stage within the current findings served two purposes. Firstly, this stage acted as a way for principals to slowly introduce the change to the rest of the school community, setting the tone, and establishing a new school vision without overwhelming others. In other words, they established project 'readiness'. Secondly, this stage provided an opportunity for principals to *self-prime* in order to feel comfortable with the project. While the need to establish 'readiness' is well recognized (Elias et al., 2003; Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008; Larsen & Samdal, 2008; Sabatier, 1986; Stith et al., 2006; Weiner, Lewis, & Linnan, 2009), the desire of the principals to *self-prime* within this phase is unique to our findings, and has not been discussed previously within the literature. Principals asserted that they themselves needed to feel comfortable

with the project and see it in action before they were able to gain confidence in fully

backing the project and moving forward with its implementation.

One way that principals *self-primed* was through the act of role modeling. Within

the current study, role modeling was a unique element of the principal's role, wherein

they found that they had not previously needed to act in this capacity within their

traditional role as a principal. It is speculated that this was because the desired culture

change was specific to health and lifestyle, very personal features of one's behavioural

practices. Other studies have also described the importance of role modeling by school

staff in order to influence student behaviour within the context of healthy eating and

physical activity (Blomquist, 1986; Cargo, Salsberg, Delormier, Desrosiers, & Macaulay,

2006; Glover, 1978; Gordon & Turner, 2001; MacQuarrie, Murnaghan, & MacLellan,

2008; Storey et al., 2011). Some have also outlined role modeling as an important feature

of the principal's role in health-specific programming (Barnett, O'Loughlin, Gauvin,

Paradis, & Hanley, 2006; Smith, Bibeau, Altschuld, & Heit, 1988) and when shaping the

culture of the school (Barnett & McCormick, 2004; Fiore, 2004; Norris, 1994; Yukl,

2006). It is believed, however, that the present study is the first to emphasize this role

within a CSH framework.

Principals within the present study also found that it was important to start setting

the tone for new staff by establishing project expectations early on. This was done within

the hiring process whereby potential new hires were made aware of the project and the

commitment required. In their study examining principal perceptions of CSH program

sustainability, Tjomsland et al. (2009) found that principals emphasized the importance

of staffing schools with teachers who were well matched to the health promotion efforts

as an important factor within the sustainability of the programming. Our study suggests that these practices are also invaluable for implementation. General findings in the literature suggest that the change process can only move forward when the leader and teachers' purpose for change becomes the same (Brown, 1993). Further, leaders can facilitate the accomplishment of school goals by motivating organizational members through establishing expectations (Leithwood, Jantzi, & McElheron-Hopkins, 2006).

3.4.2 Advocate for cultural change.

The principal also advocated the change inside and outside of the school, communicating the project message to all of the involved stakeholders, which is not surprising considering that holistic engagement is part of the CSH approach (Nutbeam, 1992). This is also consistent with findings surrounding the effectiveness of APPLE Schools in creating positive behavioural changes both inside and outside of school hours (Vander Ploeg, McGavock, Maximova, & Veugelers, 2014b).

Within the literature, informal and formal communication has been cited as one way that leaders influence culture (Norris, 1994). Our study, however, emphasizes the role of the principal acting as a spokesperson within the broader community, particularly in relation to their attempts at engaging the parent group. Principals felt responsible for this engagement, reporting that it needed to happen from the onset of implementation in a gentle and non-judgmental manner. Engaging parents is a key component of school-based health promotion efforts (Taylor, Quinn, Littledyke, & Coll, 2012), and is also seen as one of the most challenging parts of implementation (Inchley, Muldoon, & Currie, 2007). While these studies indicate that parent engagement is key, none have operationalized the

role of the principal in engaging this group within the implementation of an initiative guided by CSH.

In the present study, it is speculated that the principal felt responsible for parent engagement due to their authority and respected leadership. The healthy schools message may carry more weight coming from the principal as opposed to the teaching staff or SHF. Interestingly, previous reports stemming from the APPLE Schools project revealed that teachers and SHFs also felt responsible for engaging with parents (Storey et al., 2011; Storey, 2013). This overlap suggests that it may be necessary to keep messages clear and consistent so that parents are receiving similar messages from all stakeholders. This also suggests that it might be important for stakeholders to clearly negotiate their roles with one another so that role redundancy can be avoided.

Principals in this study also reported their active involvement as spokespeople within the broader community, informing others of their status as an APPLE School. This may have indirectly contributed to partnership building within the community. According to Leithwood et al. (2006), connecting with the outside community allows ideas and resources to filter into the school. Here, it is the principal who must build productive relationships with families and communities (Leithwood et al., 2006). This association, however, has not been well established within the CSH literature. In their study examining CSH implementation in Scotland, Inchley et al. (2007) found that school leaders helped to embed programming into the school through a number of ways, one of which was through the liaison with external agencies. Viig and Wold (2005) found that the principal's reach with outside agencies and in providing resources, facilitated teacher participation in the CSH project. Thus, our findings, although not specific to building

partnerships with outside organizations, help to support the role of the principal in advocating for the project outside of the school.

3.4.3 Negotiate, motivate, and collaborate.

Principals emphasized the need to be willing and open to hearing other's project-related concerns while still keeping the message clear. It is in this stage that the role of the principal as a negotiator and mediator emerged. Although the traditional role of the principal includes the ability to mediate between different interests and expectations (Dadaczynski & Paulus, 2015), it is believed that because the principal played an intermediary role between their staff and SHF, their role as a negotiator became ever more prominent in the face of CSH implementation.

The importance of collaborative decision-making, or prioritizing, within the successful development of policies has been highlighted in previous literature. Here the inclusion of staff within the process of establishing school priorities is best achieved through a collaborative process, spearheaded by the school leadership (Samdal & Rowling, 2015). This engagement of stakeholders is postulated to decrease resistance to change (Cargo et al., 2006; Domitrovich et al., 2008), facilitating the adoption and adherence to health promotion practices (MacLellan, Holland, Taylor, McKenna, & Hernandez, 2010; Taylor et al., 2012), fostering ownership (Deschesnes, Martin, & Hill, 2003; McBride, Midford, & Cameron, 1999; Samdal & Rowling, 2015). The present study emphasized the principal within this role, and also highlighted the importance that principals placed on continually revisiting and revising school policies and practices in a collective manner as to best meet the school's evolving needs.

3.4.4 Monitor and enable others.

There is abundant literature on the need for policy to guide the promotion of healthy eating and physical activity in schools (Briggs, Safaii, & Beall, 2003; Wechsler, Devereaux, Davis, & Collins, 2000). Policy development has been deemed critical for the implementation of CSH initiatives (Samdal & Rowling, 2011) and is important in helping principals provide justification to change practices (McIsaac et al., 2013). The role of the principal in enforcing these policies and practices, however, is less clear. Within the present study, principals felt uncomfortable acting as an enforcer of the project's policies and practices, but understood that this role was necessary in order for the project to be instilled and sustained within the school. Cargo et al. (2006) discussed teachers' hesitancy in acting as an enforcer of nutrition and physical activity changes within the school, yet the literature is sparse with examples wherein principals acted in this capacity. Thus, the role of the principal in monitoring the CSH implementation process through enforcement of project policies and messages, providing guidance when needed, is uniquely highlighted herein.

In this study, the role of the principal in setting the stage for shared or distributed leadership was also essential in order to enable others to take ownership. Distributed leadership, a highly noted practice within the literature, is linked to the concept of transformational leadership (Hallinger, 2003), and is described as a leadership structure wherein school personnel are active participants (Spillane, 2006). Here, notions of collegiality, joint-ownership, and joint-responsibility are emphasized (Spillane, 2006). While previous research has emphasized the importance of distributed leadership practices within the implementation of CSH (Larsen & Samdal, 2008), to the best of our

knowledge, no earlier studies have emphasized its importance in the presence of another health champion.

3.4.5 Support and sustain.

Sustainability involves the building of organizational capacity, moving beyond the conceptualization of CSH as a time-limited program, to reflecting on how it can be engrained within the school's culture (Macnab, Gagnon, & Stewart, 2014). This long-term sustained change will ultimately depend upon staff assuming ownership over the proposed changes in the school (Hallinger, 2003). The ultimate goal of the principal was to see the project philosophy become engrained in the school; here the project would become a natural extension of how the school operated. Sustainability, therefore, became a topic of interest and discussion for the principals. Results suggested that the principals perceived themselves to be important players in ensuring the project was sustainable.

Findings from others have suggested that the principal plays a central role, and is the driving force behind the sustainability of change processes within the school (Bryk, 2010; Donaldson, 2001; Fullan, 1992; Fullan 2001; Fullan & Hargreaves, 1992; Huberman & Miles, 1984; Larsen & Samdal, 2008; Tjomsland et al., 2009). However, our findings add unique insight into this role by describing the principal's desire to: take the change process slowly; establish their ongoing commitment to the project; and openly celebrate the achievements of others.

Others have emphasized the need to take CSH implementation slowly (Cushman, 2008; Mitchell, Palmer, Booth, & Davies, 2000; Moon, Mullee, Rogers, Thompson, Speller, & Roderick, 1999; Stewart-Brown, 2006; Stolp, Wilkins, & Raine, 2014; Veugelers & Schwartz, 2010). Principals stressed the importance of taking the change

one step at a time as to avoid overwhelming the school community with the proposed change, making it more likely to be accepted and engrained. The gradual nature of implementation is clearly depicted in the layout of the model produced herein.

Once the principals in this study felt comfortable with the change process and saw themselves playing a more active role in the project's implementation, they felt that they had to emphasize their commitment to the project in order for the change to be engrained. Others have highlighted the need for leaders to show their commitment to the organizational vision and goals through their behaviours, as these practices are deemed necessary in order to foster the support and ownership of followers (Bass, 1998). Leaders who are consistent in their actions and commitment are able to build the respect and trust of others (Bass, 1998). We feel that this active principal commitment to change has not been previously emphasized within the CSH literature.

Acknowledging contributions and celebrating achievements is an important quality for a principal to embody (Fullan, 1992; Fullan, 2005). A principal is able to foster greater motivation from teachers by supporting them both emotionally and professionally (á Campo, 1993; Bass, Waldman, Avolio, & Bebb, 1987). Thus, it is not surprising that within the current study the principal acted in this capacity. Our findings add to the current body of literature in that although this role was important throughout implementation, it became even more pronounced in the final stages. It is believed that as more and more school members were taking ownership over the project, the principal became increasingly enthused to show their support for these practices.

3.4.6 Limitations.

As this study had a qualitative and exploratory focus, the findings are not necessarily generalizable to the whole population. Despite this, the APPLE Schools intervention was applied across different contexts wherein the specific implementation strategies were not uniform. Regardless of contextual differences, results surrounding the role of the principal within the implementation of the project were consistent, emphasizing the transferability of the present findings.

An additional limitation is that principal self-selection bias could have occurred, wherein those more invested in the project and its implementation, were perhaps more likely to have considered participation in this research. However, the qualitative nature of this study relied on obtaining information-rich cases (Kvale, 1996; Patton, 2002); it was thus important to recruit participants who were eager and willing to share their experiences. Future research could examine the perspectives of the other stakeholders within the school (i.e., teachers, community members, SHFs) to see how they define the principal's role within the project. This may help to verify some of the information gathered here, while also allowing the bias of the principal's self-view to become diffused by other viewpoints. This research may also help to clarify roles and prevent role redundancy, allowing for a greater degree of efficiency within the implementation process. Within this study, neither the quality of implementation nor the quality of administrative leadership was measured. Thus, the association between effective leadership and effective implementation cannot be established herein. Future research could quantify this relationship.

3.4.7 Conclusions.

Our findings indicate that principals play a critical role in providing direction for their schools and in determining the culture. They are also key players in the implementation of projects that strive to make environmental-level changes within the school. Additionally, the principal's role in enabling others and ensuring that capacity is built to take on the challenge of project sustainability after the change agent role is minimized is imperative. Findings within the literature have been somewhat mixed as to whether principal support for project implementation is necessary in the presence of another health champion within the school. To our knowledge, APPLE Schools is the only project that employs an onsite SHF at a high intensity within the school, up to 1.0 FTE. Despite the presence of this champion, however, principal support was seen as imperative for project implementation (Storey et al., 2011; Storey, 2013) and findings from this study defined and operationalized their role. Thus, even though there was a highly active change agent within the school at the highest possible dose, the principal was still seen as important within the implementation. We believe that this provides the ultimate evidence to suggest that regardless of the other actors within the school, the principal plays an invaluable role in CSH implementation.

Based on this invaluable role, it is hoped that the model created herein can help leaders implement CSH projects, specific to the mediation of obesity-related risk factors, as well as more broadly in terms of CSH in general. This framework can also provide guidance to principals seeking to create changes in school culture, regardless of the nature of the program. Hence, these results do not need to be confined to a CSH framework and it is encouraged that they are explored more broadly. Lastly, the model's

design provides practical guidelines to principals, and serves as a knowledge translation product, making the research findings highly user-friendly. This fills an important gap, as others have suggested the need for CSH-specific guidelines to assist principals with the implementation process (Larsen & Samdal, 2008).

3.4.8 Implications for school health.

These findings speak to the importance of the principal within the implementation and cultural change processes in the school. Thus, it is recommended that health promotion initiatives in schools focus on the principal as an existing resource to facilitate the implementation and sustainability of environmental-level changes. Findings suggest that it would be important to train principals in the area of CSH so that: 1) they are better prepared to take on its implementation, and 2) are provided with an opportunity to *self-prime* by ensuring their values align with CSH. This training could be provided within their formal education or alternatively, through professional development training sessions and networking opportunities with other CSH-informed principals. The model developed here could act as an excellent training resource for these purposes. It is also recommended that, if possible, principal transitions be limited during CSH implementation. Otherwise, large accomplishments and sustainability of school change could easily be lost as a result of unsupportive leadership. Thus, from a resource-management perspective (i.e., wanting to achieve the greatest impact at the lowest cost), a proactive, supportive principal would be a requirement for any school-level change. Further, change should be initiated and implemented one step at a time as to not overwhelm faculty and staff, further increasing the likelihood that changes are sustained

(Cushman, 2008; Mitchell et al., 2000; Moon et al., 1999; Stewart-Brown, 2006; Stolp et al., 2014; Veugelers & Schwartz, 2010).

Overall, this research will help to optimize CSH implementation efforts, which in turn will help improve learning, health behaviours, reduce the future burden and costs of chronic disease, and reduce health inequalities (Vander Ploeg, Maximova, McGavock, Davis, & Veugelers, 2014a).

Chapter 4: Role of APPLE School Principal in Knowledge Sharing and Use

4.1 Background

Childhood obesity is a major public health crisis. According to the 2009-2011 Canadian Health Measures Survey, 19.8% and 11.7% of children aged 5-17 years were classified as overweight and obese, respectively (Roberts, Shields, de Groh, Aziz, & Gilbert, 2012). Obesity contributes to a variety of co-morbidities (Schelbert, 2009), as well as to a number of negative psychological consequences (Williams, 2005).

Poor diets and inadequate physical activity are widely recognized as the primary drivers of the obesity epidemic (Sparling, Franklin, & Hill, 2013; Story, Nanney, & Schwartz, 2009). The increasing westernization and urbanization occurring in most countries around the world is associated with a sedentary lifestyle, along with changes in diet towards one of high fat, high energy-dense foods (Swinburn, Caterson, Seidell, & James, 2004). As a result, children are not meeting the recommended physical activity or nutrition guidelines (Colley et al., 2011; Hallal et al., 2012; Roblin, 2007). Overall, the effects of poor diets and increasingly sedentary lifestyles on the worsening obesity trends emphasize the need for early intervention, through comprehensive health promotion and primary prevention strategies (Pelone et al., 2012).

Several school-based health promotion initiatives have shown to be effective in addressing childhood obesity, especially those focused on physical activity, healthy eating and positive social behaviour (Fung et al., 2012; Veugelers & Fitzgerald, 2005). Informed by the Ottawa Charter for Health Promotion (Nutbeam 1992; WHO, 1986), in Canada, this approach is defined by the Joint Consortium for School Health (JCSH) as Comprehensive School Health (CSH) and is described as "an internationally recognized

framework for supporting improvements in students' educational outcomes while

addressing school health in a planned, integrated and holistic way" (JCSH, 2012).

Although some research has been done on the effectiveness of CSH in achieving better

health outcomes, further research is needed to understand the "how" and "why" behind

the CSH implementation process (Veugelers & Schwartz, 2010).

Through their review of the literature, Samdal and Rowling (2011) uncovered

several components hypothesized to be important for CSH implementation; one of these

components is the school's leadership. Additionally, sharing and use of school-specific

evidence (knowledge exchange) has been deemed important as a means of supporting the

implementation of CSH by creating awareness, informing action, and acting as an overall

catalyst for change, helping to implement and embed CSH policy and practices within the

school culture (Gleddie & Hobin, 2011). While knowledge exchange practices have been

deemed important for CSH implementation, much remains to be examined in regards to

the principals' role in facilitating these practices within a CSH framework. Knowledge

exchange can be defined as "collaborative problem solving between researchers and

decision makers" resulting in "mutual learning through the process of planning,

producing, disseminating, and applying existing or new research in decision-making"

(CFHI, 2014). Thus, knowledge exchange incorporates elements of knowledge sharing

(or brokering) as well as knowledge use (or data-driven decision-making (DDDM))

(Marsh, Pane, & Hamilton, 2006), two concepts that will be highlighted within this study.

Data-driven decision-making (DDDM) is an emerging field of practice within

school leadership (Streifer, 2002), yet little empirical research has been conducted in this

area, especially in regards to the principal's role (Luo, 2008). This is surprising

considering the number of recent studies that have noted the principal as a key player in DDDM (Ikemoto & Marsh, 2007; Mandinach & Honey, 2008; Wohlstetter, Datnow, & Park, 2008; Young, 2006). In regards to knowledge sharing, the literature is lacking examples of the school principal acting in a knowledge brokering capacity with respect to sharing data with other members of the school community. Knowledge brokers act as mediators in the process of knowledge exchange between the various participants in a network (Holzmann, 2012). Thus, they create links between individuals or organizational units (Goffin et al., 2010; Pawlowski and Robey, 2004; Ward et al., 2009), facilitating the identification and interpretation of research evidence (Kitson, Harvey, & McCormack, 1998). Previous research has shown that principals tend to have a high degree of direct contact with school staff and therefore may have a substantial influence in communicating the importance and stimulation of data use (Wayman & Stringfield, 2006).

In Alberta, an example of a CSH project that promoted knowledge exchange through ongoing evaluation and report generation is the Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools) (www.APPLESchools.ca). APPLE Schools aims to improve healthy eating and active living among school children through increasing the capacity of the school community to take ownership over the project (Schwartz, Karunamuni, & Veugelers, 2010). Between 2008 and 2013, School Reports generated from the analysis of annual evaluation data were sent to all participating school principals. These reports contained aggregated information on how each school's grade 5 students were faring in a number of different areas including physical activity and nutrition. This information provided an opportunity for schools to

identify and assess their strengths and needs in each area, allowing for the intervention to be tailored as needed.

As the sole recipient of these reports in each school, the school principal was encouraged to use these data and share the information amongst the rest of the school community. School Reports used audience-tailored formatting, and included graphics and visuals to increase readability and promote uptake. To encourage report use and sharing, APPLE School principals received support from the project team (i.e., APPLE School Health Facilitators, principals, and education experts) in the form of ongoing professional development and training. Speculations within the literature have suggested that principals who are well informed and trained in data use are more likely to implement changes in their practice (Choppin, 2002; Datnow, Park, & Wohlstetter, 2007; Lashway, 2003; Mason, 2002). The principal's role within data use and sharing, however, has yet to be empirically examined, particularly within the context of CSH. For this reason, the main objective of this study was to assess whether principals who were part of a CSH project (APPLE Schools) were more likely to share and use School Reports when compared to a random sample of principals throughout the province of Alberta.

4.2 Methods

4.2.1 Study design and population.

4.2.1.1 Overview.

This cross-sectional study aimed to assess evaluation School Report sharing and use among principals in both APPLE Schools and a sample of control schools, representative of schools in Alberta, through secondary data analysis. Principals from both APPLE Schools and control schools were surveyed in 2012 based on the inclusion

criteria of their school's participation in both the 2010 and 2012 evaluation years. These time points were important considerations based on the incorporation of questions within the 2012 Principal Survey inquiring into 2010 School Report use and sharing. Of note, the School Reports produced for both APPLE Schools and control schools only differed based on the comparison data that was provided. Within the reports, aggregated data was presented for a number of measured health outcomes; each APPLE School was compared to the average of all other APPLE Schools, and each control school was compared to the average of all other control schools in each of these measures.

4.2.1.2 APPLE Schools recruitment.

The APPLE Schools project was originally launched in ten schools in the Edmonton, Alberta area in January of 2008. As of September 2011, the project expanded to include an additional 30 schools in several locations throughout Alberta. In 2013, five new schools were added in Fort McMurray. Three additional schools signed on in January 2014, and another 3 in September 2014. In total, there currently exists 51 APPLE Schools located throughout Alberta.

Schools were selected in consultation with school jurisdictions mainly on the basis of being located in low socio-economic status neighbourhoods, with a need for increased attention towards health promotion efforts within the school community (Schwartz et al., 2010). Additional inclusion criteria for becoming an APPLE School required that the schools have a configuration that included Grade 5, have no pre-existing involvement in another health promotion project, and be composed of a relatively stable population, with an annual attrition rate below 50% (Schwartz et al., 2010). APPLE Schools were evaluated on an annual basis, in the spring of each year up until and

including 2013. Components of this evaluation included a variety of assessments directed towards school principals as well as grade 5 students and their parents.

4.2.1.3 Control schools recruitment.

Raising healthy Eating and Active Living Kids in Alberta (REAL Kids Alberta) is a project led by Principal Investigator Dr. Veugelers of the University of Alberta. The REAL Kids Alberta Evaluation aims to evaluate Alberta Health's Healthy Weights Initiative and provide details on the impact of this initiative (as well as other provincial programs) in promoting healthy behaviours and weights among Alberta students (www.REALKidsAlberta.ca). Components of this evaluation include a variety of assessments directed towards school principals as well as grade 5 students and their parents.

The provincial schools evaluated by REAL Kids Alberta were selected using a one-stage stratified random design of all schools in Alberta. The sampling frame includes all elementary schools in Alberta with grade 5 students with the exception of private schools, francophone schools, on-reserve federal schools, charter schools, and colony schools. Schools were stratified according to the following geographical areas: 1) metropolitan: Calgary and Edmonton, each with populations of about 1 million people; 2) city: other municipalities with more than 40,000 residents; and 3) rural-town: municipalities with less than 40,000 residents. Schools were randomly selected from each of these geographical strata to achieve a balanced number of students in each stratum (Fung et al., 2012). Thus, data collection from approximately 150 randomly selected schools has been occurring since 2008, and occurs in the spring of every even-numbered

year. Within the present study, principals from these randomly selected schools acted as the control group.

4.2.1.4 Principal Survey participants.

As part of both REAL Kids Alberta and APPLE Schools project evaluations, principals were surveyed after receiving approval to participate at both the jurisdiction and school levels. Principal Surveys were dropped off at each participating principal's office by the evaluation team approximately one week prior to scheduled school visits. Surveys were completed through self-report wherein survey completion implied informed consent. When evaluation assistants returned to the school for student data collection the following week, they collected the completed Principal Surveys. Principals who did not complete the survey before these site visits were provided with a prepaid envelope to mail the survey back to the evaluation team once completed. Follow-up phone calls were made at the end of the data collection period in June to encourage survey completion and return. Data collection for the current study occurred between the months of March and June of 2012.

In spring 2012, 140 randomly selected provincial schools participated in the REAL Kids evaluation and 40 APPLE Schools participated in the APPLE Schools project evaluation. Principal Survey data was selected for inclusion within the present analysis based on a school's involvement in both 2010 and 2012 evaluations. This inclusion criterion was necessary based on the incorporation of questions within the 2012 Principal Survey inquiring into report usage. Because the REAL Kids evaluation occurs every even-numbered year, 2010 report usage was of interest within the 2012 survey. For consistency, the same comparison was examined within APPLE Schools. Based on this

criterion, a resulting108 control schools and 36 APPLE Schools were deemed eligible to be part of the present analysis. Of the control schools, 93 Principal Surveys were returned (86% response rate), of which, only 73 complete datasets were obtained (68% completion rate) [missing values (n=5); self-excluded (n=15)]. All 36 APPLE School Principal Surveys were returned (100% response rate), of which, only 30 were complete datasets (83% completion rate) [self-excluded (n=6)]. Please see Appendix D for further details on participation and response rates.

4.2.2 Outcome.

4.2.2.1 Assessment of School Report sharing and use.

In order to examine the knowledge sharing and use of the 2010 School Reports, questions were added to the Principal Survey as part of the 2012 evaluation for both APPLE Schools and control schools. These questions were based on a previously validated knowledge utilization survey, developed for the understanding of the dissemination of the Youth Smoking Survey (YSS) results (University of Waterloo, 2009). Questions explored whether the principal reviewed the report data, if they shared the data and with whom, and when they used these data. These survey questions and response options are provided below in Figure 4.1.

Figure 4.1: 2012 Principal Survey Questions on Report Sharing and Use

Q2-1 **Schools that participated in the REAL Kids Alberta evaluation [or APPLE Schools project evaluation] receive School Reports that summarize evaluation results. Did you review the School Report that we sent to you in 2010?**

   ○ No, my school did not participate in the evaluation in 2010.

   ○ No, I was not the principal of this school in 2010.

   ○ No.

   ○ Yes, I read the Report.

   ○ Yes, I read the Report and shared it with … (Check all that apply.)

      ○ Teachers.

      ○ Parents.

      ○ Students.

      ○ School board.

      ○ Others in the community (e.g. Alberta Health Services, other community partners)
(Please specify.)_____

Q2-2 **If you answered the above question with 'yes', please indicate when you use the 2010 School Report? (Check all that apply.)**

   ○ When there is a health-related issue at my school.

   ○ When planning programs, curriculum or events

   ○ When support is being provided from outside groups (e.g. Alberta Health Services, other community partners).

   ○ Other (please specify): _____

4.2.3 Data Analysis.

Univariable logistic regression methods were used to assess whether APPLE School principals shared and used the knowledge from Schools Reports more so than control school principals. 2012 Principal Survey questions were examined as follows: 1) questions on *report sharing* were, a) examined overall, b) grouped to examine sharing within and outside the school, and c) examined in relation to each individual stakeholder; 2) questions on *report use* were, a) examined overall, and b) examined in relation to each

individual scenario provided; and lastly, 3) report sharing *and* use was collectively

examined. STATA v12 (StataCorp, College Station, TX, USA) was used to perform the

statistical analyses. Approval for this study was obtained from the Health Research Ethics

Board at the University of Alberta.

4.3 Results

4.3.1 School Report reading and sharing.

Of those principals who received the 2010 School Report and who completed the

questions of interest, 100% (30/30) of APPLE School and 92% (67/73) of control school

principals indicated that they had read the School Report. Of those principals who read

the report, APPLE School principals had 5.96 times the odds (95% CI: 1.29, 27.43) of

sharing the report than control school principals (Table 4.1).

Table 4.1: Comparisons of 2010 School Report sharing among APPLE School principals and a control sample of principals

Of those who read the report, those that shared the report	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	47/67 (70%)	1.00	--
	APPLE Schools	28/30 (93%)	5.96 (1.29, 27.43)	**0.022**

Of those who shared the report, most were sharing internally, whereby 96% of

APPLE School principals and 94% of control school principals had shared with teachers

or students. This sharing was not significantly different between APPLE School and

control school principals. When examined in further detail, principals from both control

and APPLE Schools reported sharing the report most frequently with teachers (96%

APPLE School principals; 94% control school principals) (Table 4.2). Further, although

23% of control school principals shared the report with students and only 7% of APPLE School principals did, this difference was not statistically significant.

Differences were found between APPLE School and control school principals with respect to sharing the report externally (i.e., with parents, the school board, or others in the community), wherein APPLE School principals were significantly more likely to share with at least one of these stakeholders (OR: 3.41, 95% CI: 1.10, 10.51). Further, APPLE School principals had statistically significant higher odds of sharing the report with parents (OR: 4.41, 95% CI: 1.43, 13.55) (Table 4.2). Proportions of principals sharing the report with their school board were low and not significantly different (4% APPLE School principals; 6% control school principals). Lastly, although 17% of control school principals shared the report with others in the community and only 7% of APPLE School principals did, this difference was not statistically significant (Table 4.2).

Table 4.2: Comparisons of 2010 School Report sharing amongst different groups by APPLE School principals and a control sample of principals

Of those who shared the report, those that shared internally (teachers or students)	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	44/47 (94%)	1.00	--
	APPLE Schools	27/28 (96%)	1.84 (0.18, 18.61)	0.605
Of those who shared the report, those that shared with teachers	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	44/47 (94%)	1.00	--
	APPLE Schools	27/28 (96%)	1.84 (0.18, 18.61)	0.605
Of those who shared the report, those that shared with students	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	11/47 (23%)	1.00	--
	APPLE Schools	2/28 (7%)	0.25 (0.05, 1.23)	0.089
Of those that shared the report, those that shared externally (parents or school board or others)	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	27/47 (57%)	1.00	--
	APPLE Schools	23/28 (82%)	3.41 (1.10, 10.51)	**0.033**
Of those who shared the report, those that shared with parents	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	24/47 (51%)	1.00	--
	APPLE Schools	23/28 (82%)	4.41 (1.43, 13.55)	**0.010**
Of those who shared the report, those that shared with the school board	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	3/47 (6%)	1.00	--
	APPLE Schools	1/28 (4%)	0.54 (0.05, 5.49)	0.605
Of those who shared the report, those that shared with "others in the community" (i.e., Nurse)	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	8/47 (17%)	1.00	--
	APPLE Schools	2/28 (7%)	0.38 (0.07, 1.91)	0.237

4.3.2 School Report use.

Ninety-three percent of APPLE School and 84% of control school principals reported using the report in some capacity. These overall proportions did not differ significantly between APPLE School and control school principals. Ninety percent of APPLE School principals reported using the School Report for planning purposes, while only 70% of control school principals reported using the report in this way. Thus, APPLE School principals were more likely to use the report for planning purposes (OR: 3.83, 95% CI: 1.04, 14.09) (Table 4.3).

Principals who used the School Report when there was a health-related issue (APPLE School principals, 17%; control school principals, 18%) as well as those using when support was provided by outside groups (APPLE School principals, 33%; control school principals 27%) were modest and not significantly different (Table 4.3).

Table 4.3: Comparisons of 2010 School Report use among APPLE School principals and a provincial sample of principals

Of those who read the report, those that used the report	**School**	**x/n (%)**	**OR (95% CI)**	**p-value**
	Control Schools	56/67 (84%)	1.00	--
	APPLE Schools	28/30 (93%)	2.75 (0.57, 13.26)	0.208
Of those who read the report, those that used the report when there was a health-related issue	**School**	**x/n (%)**	**OR (95% CI)**	**p-value**
	Control Schools	12/67 (18%)	1.00	--
	APPLE Schools	5/30 (17%)	0.92 (0.29, 2.88)	0.882
Of those who read the report, those that used the report when planning programs, curriculum, or events	**School**	**x/n (%)**	**OR (95% CI)**	**p-value**
	Control Schools	47/67 (70%)	1.00	--
	APPLE Schools	27/30 (90%)	3.83 (1.04, 14.09)	**0.043**
Of those who read the report, those that used the report when support was provided from outside groups	**School**	**x/n (%)**	**OR (95% CI)**	**p-value**
	Control Schools	18/67 (27%)	1.00	--
	APPLE Schools	10/30 (33%)	1.36 (0.54, 3.46)	0.517

4.3.3 School Report sharing and use.

Results showed that 87% of APPLE School principals and 66% of control school principals were both sharing and using the School Reports. In logistic regression, this translated to APPLE School principals having 3.40 times the odds of both sharing and using the report than control school principals (95% CI: 1.06, 10.92) (Table 4.4).

Table 4.4: Comparisons of 2010 School Report overall sharing and use among APPLE School principals and a provincial sample of principals

Overall, of those who read the report, those that shared **and** used the report	School	x/n (%)	OR (95% CI)	p-value
	Control Schools	44/67 (66%)	--	1.00
	APPLE Schools	26/30 (87%)	3.40 (1.06, 10.92)	**0.040**

4.4 Discussion

The present study demonstrates the potential impact of the APPLE Schools programming (CSH) on the likelihood that principals share and use evaluation reports. Results showed that APPLE School principals had a statistically significant higher odds of: sharing the report overall; sharing the report outside of the school, particularly with parents; using the report for planning purposes; as well as a higher odds of both sharing and using the report. Furthermore, based on high levels of report reading and use by principals in general, results suggest that the reports are important within the principals' practice. Overall, findings help to define the role of the principal within the knowledge exchange process, while adding to the CSH and school change literature.

On the whole, both APPLE School principals and control school principals demonstrated high proportions of reading the report, with proportions of 100% and 92% respectively. Within their study examining school principals' experience using the Youth

Smoking Survey (YSS) school smoking profile, Tirilis (2011) found that 74% of

principals had reported reading the report to some extent. This is interesting considering

that principals receiving the YSS report pay for the service. Higher proportions of report

reading within the present study may be attributed to the audience-tailored formatting and

readability of the School Report. When compared to YSS school smoking profile reports,

which are highly textual, School Reports provided to principals in this study included

colored text, graphs, and pictures, and were visually spaced as to not overwhelm the

reader with textual information (please refer to www.REALKidsAlberta.ca for an

example of this report). It is believed that this formatting may be one factor contributing

to high proportions of report reading amongst all principals involved in the current study,

which is in alignment with KE best practices (Cousins & Leithwood, 1993).

APPLE School principals were shown to have higher odds of sharing the report

overall. However, when examining those who were sharing, similarities were seen

between APPLE School and control school principals in terms of sharing of the report

within the school, particularly with teachers. Almost all principals who shared the report

were doing so with teachers, which is a logical decision and a promising observation. The

involvement of teachers has been shown to be essential to make school health initiatives

succeed (Ridge, Northfield, St Leger, Marshall, Maher, & Sheehan, 2002; Ridge,

Sheehan, Marshall, Maher, & Carlisle, 2003), thus, their intentional inclusion within the

KE process is not surprising. Research on teacher use of evidence by Louis, Marks, and

Kruse (1996) suggests that adequate resources, such as time for teachers to meet with one

another, is an important step in supporting productive use of evidence. Further, Levin and

Datnow (2012) found that tight connections between the school principal and teachers helped to enable reform.

Interestingly, only a few principals shared the report content with students. Although statistically not significant, control schools had a higher proportion of principals sharing with students when compared to APPLE Schools. It is believed that there could be two potential explanations for these findings. Firstly, it is speculated that because a fair amount of capacity has been built within APPLE Schools, that the principal themselves may only share the report with one lead teacher or school health champion, who is then able to spread the message more widely amongst the rest of the school community. Thus, present findings may actually represent an under-reporting of the actual amount of report sharing that is taking place within APPLE Schools. The principal may entrust the report with others, knowing that they have built enough capacity to share the findings independently. In this scenario, the principal is acting as the gatekeeper to KE, but isn't necessarily acting as the primary knowledge broker. In their study on data sharing, Levin and Datnow (2012) also found loose connections between the principal and the students, which seemed appropriate considering that teachers interacted with students more directly. These authors recommended that teachers should be made aware of this responsibility to ensure that data does not stop with them but rather influences students' actions as well.

The second possible explanation for a lower proportion of report sharing with students among APPLE School principals is that they may not want to burden their students with this information, particularly if these findings are not positive. Principals may not want to decrease the motivation of their students. Furthermore, because APPLE

Schools is an environmental-level project that moves beyond the individual, it might not make sense for principals to share findings at an individual level. This may lead to victim blaming wherein students may feel reprehended for their inability to change their individual behaviours (O'Dea, 2005), which runs counter to the overall message of the intervention. Furthermore, information contained within the reports is often sensitive in nature and may contain personal details related socioeconomic status and food insecurity. Principals may deem this information inappropriate to share with students.

Other findings from this study found that APPLE School principals had higher odds of sharing the report outside of the school. It is believed that this is based on the nature of the CSH framework whereby "partnerships and services" is an important consideration for implementation (JCSH, 2012). As such, APPLE School principals may already be interacting with outside stakeholders more regularly, making data sharing a natural extension of these interactions. Parents in particular seemed to be the group external to the school that the APPLE School principals were more likely to share with. This emphasizes the role that the principal plays with regards to this group.

Results showed that very few principals shared reports with their school boards. It is hypothesized that because each school jurisdiction also receives a copy of the School Report, principals may have felt less compelled to share with this group. The incentive for principals to share this information with their school board would be to initiate a conversation about wellness. Within this conversation, principals could potentially use negative findings to draw attention to the problem, perhaps garnering increased resources and district support to positively influence changes within their school.

Rates of sharing the report with others in the community were also low overall. Potential explanations of this include lack of principal awareness as to which community groups would be receptive to the information provided in the reports, or alternatively, they had other staff members taking on this task of sharing. This delegation is likely within APPLE Schools, which helps to provide a potential explanation for the lower proportion of sharing the report within the community when compared to the control school principals.

Nonetheless, sharing the report outside of the school may be a more difficult task for someone who does not have the authority and respect that a principal embodies. As such, it is somewhat surprising that levels of sharing outside of the school, with the school board and others in the community, were low among principals. Levin and Datnow (2012) found that teacher connections to the district were loose whereby the principal served as mediator. Recommendations stemming from Levin and Datnow's (2012) study suggested that principals seek tight connections with district-level authorities as well as teachers in order to serve as a mediator between the two.

In terms of report use, it is positive to see both APPLE School and control school principals demonstrating high usage. Moderate proportions of principals were using the report in times when there was a health-related issue or when external support was provided. While it is positive to see this usage, this also speaks to the fact that these principals may be waiting for a health concern to arise or for outside support rather than instigating the use of the report on their own terms.

Using the report for planning purposes aligns more with proactive usage, and speaks towards the principal as an instigator of change rather than a passive recipient of

the reports. It is believed that using the report for planning purposes is the best survey indicator to highlight the principal's role within DDDM. APPLE School principals had statistically significant higher odds of using the report in this way when compared to the control sample of principals. This suggests that APPLE School principals may be more inclined to make data-driven decisions with respect to these reports. It is hypothesized that APPLE School principals were more likely to use the report for planning purposes based on their involvement in ongoing professional development including regular meetings with APPLE School project staff. During these meetings, managers often discussed the importance of the School Reports and would ask the principal how they were using evidence to effect change in their school communities. This finding is in alignment with others who have suggested that principals who are well informed and trained in data use are more likely to implement changes in their practice (Choppin, 2002; Datnow et al., 2007; Lashway, 2003; Mason, 2002).

Lastly, APPLE School principals had statistically significant higher odds of collective use *and* sharing of the report, providing convincing evidence of the APPLE School principal's role within knowledge brokering and DDDM. Again, this finding could suggest that the professional development training that the APPLE School principals receive and/or their involvement in a project geared at shifting the school culture may be impacting their desire and likelihood of using and sharing project-related data.

4.4.1 Strengths and limitations.

Strengths of the current study include the representative sample of control school principals, along with a high response-rate for school-based research (Esbensen, Melde,

Taylor, & Peterson, 2008). A potential limitation of the current study includes the lack of demographic information collected from principals to allow for the examination of any other factors that may be influencing report sharing and use (i.e., number of years as a principal). Another limitation includes the small sample size of APPLE Schools whereby statistical analysis was limited and should be interpreted with caution. Further, APPLE Schools were selected by school jurisdictions rather than through random selection, which limits the generalizability of the results. Additionally, responses to survey questions remain subjective and are prone to reporting error. Because APPLE School principals received School Reports annually (as opposed to every other year like the control schools), reporting error could have occurred among APPLE School principals based on failure to accurately recall sharing/use of the 2010 School Report in the 2012 survey year. Lastly, little to no information is available on the principals who did not participate; as such, it is possible that the findings from this study are not representative of all principals in Alberta. It is unknown in which direction this possible selection bias may have affected the overall results.

4.4.2 Conclusions.

In this study, principals' data use and sharing was investigated by comparing APPLE School principals, who received specific training in report usage and dissemination, to a provincial sample of principals. This study was the first to examine the role of the principal as a knowledge broker, one of the few to examine the role of the principal in data use and DDDM, as well as the first to examine these roles in relation to data founded on physical activity and nutrition. Results showed that APPLE School principals had statistically significant higher odds of sharing the report overall; sharing

the report outside of the school, particularly with parents; using the report for planning purposes; as well as a higher odds of both sharing and using the report overall. This may suggest that the training and support that APPLE School principals received from the project team could have assisted them in these processes. Further, because principal support has been deemed important within the implementation of APPLE Schools (Storey, 2013; Storey, Spitters, Cunningham, Schwartz, & Veugelers, 2011), these principals may have been more likely to self-initiate report use and sharing behaviours, as per alignment with models of school improvement.

Despite these stated differences, report reading and use was relatively high among all principals, regardless of their affiliation. This is a promising finding, and could partially be attributed to the audience-tailored formatting and usability of the School Report. Similar results between the two groups were also seen in terms of high levels of report sharing, particularly with teachers. Lower proportions of principals sharing report findings with students, the school board, and with others outside of the school suggest that more awareness be built in these areas to help increase these practices. These lower proportions could also suggest that the principal is acting more as a gatekeeper of report knowledge as opposed to actively disseminating results as a knowledge broker. Further investigation would be required to identify the exact mechanisms occurring behind this knowledge sharing.

4.4.3 Implications/recommendations.

Having data does not necessarily mean that they will be used to drive decisions (Marsh et al., 2006) or shared amongst the rest of the school community. As shown by the results of the current study, report sharing among some groups (i.e., students, the

school board, and others in the community) was not very high. Further, report usage could have been higher, especially amongst the control sample of school principals. Because APPLE School principals received guidance and support in the form of training from the APPLE Schools project team, it would be recommended that all schools receiving School Reports be provided with the appropriate training in data use and dissemination. Many assert that the demands of DDDM have not been paired with adequate training for school leaders, and it is recommended that additional support be provided with regards to these practices (Englert, Fries, Goodwin, Martin-Glenn, & Michael, 2004; Herman & Gribbons, 2001). Without this technical assistance, data may become misinformation or perhaps lead to invalid inferences (Marsh et al., 2006).

In further facilitating principals' use and sharing of reports, it may be important to allocate adequate time for educators to study and think about the data, as well as for opportunities for school leaders to partner with outside organizations whose mission it is to support data use. Partners such as health promotion specialists or advisors in the local community may provide this crucial technical support (Boot, van Assema, Hesdahl, & de Vries, 2010; Leurs, Bessems, Schaalma, & De Vries, 2007). In the present study, all School Reports contained Health Promotion Coordinator (HPC) contact information. HPCs are employed by Alberta Health Services and act as a key resource to school communities in the area of CSH. Every school jurisdiction in Alberta has access to an HPC, and can contact this individual as a resource to assist with the interpretation and dissemination of School Reports and other health-related data.

As levels of sharing the report with teachers and parents were high amongst principals, it is hypothesized that the principal acts as the gatekeeper of knowledge within

these groups. Their role as a knowledge broker in disseminating the findings more widely was limited as demonstrated by low levels of sharing with students, the school board, as well as with others within the community. It may be that other actors within the school (i.e., lead teachers or champions) were taking on this role. This, however, is only a speculation based on the limitations of the data produced herein. It would be recommended that principals negotiate these roles within their school to ensure that knowledge sharing is occurring on a wider scale.

The high levels of sharing with the parent group suggest that the principal may feel responsible for engaging with this group. As parental engagement has shown to be a pivotal aspect of school-based health promotion efforts (Taylor, Quinn, Littledyke, & Coll, 2012), this role should be encouraged, but also negotiated with others in the school to ensure that role redundancy is avoided and that parents are not being bombarded with information.

Chapter 5: Conclusions

5.1 Summary of Findings

The purpose of the present research was to define the role of the school principal within the implementation of a project guided by a Comprehensive School Health (CSH) framework, geared at creating a healthy school culture. The principal's role in project-related knowledge exchange (KE) processes was also examined. The project, the Alberta Project Promoting Active Living and healthy Eating in Schools (APPLE Schools), has been shown to be effective in targeting healthy eating and physical activity (Fung et al., 2012; Vander Ploeg, Maximova, McGavock, Davis, & Veugelers, 2014a; Vander Ploeg, McGavock, Maximova, & Veugelers, 2014b). However, more research regarding effective implementation of CSH is needed, including a closer examination of the role of the principal within this implementation process. Thus, the role of the principal was the focus of the current research. Multiple methods were used to address two specific objectives, which included:

- To understand the role of the school principal involved in the implementation of a CSH project (APPLE Schools) aimed at creating a healthy school culture

- To examine the extent of knowledge sharing and use of School Report evaluation data by principals in both APPLE Schools and other randomly selected provincial schools throughout Alberta

5.1.1 Research objective 1.

The first objective of the present research was to examine the role of the school principal in implementing a project guided by a Comprehensive School Health (CSH) framework, aimed at creating a healthy school culture. Results showed that the role of the

principal evolved over the implementation process, wherein their role was flexible and fluid in order to adapt to local circumstances. A model was produced to highlight these findings, and is already being used by principals making environmental-level changes in their schools. Prior to engaging in implementation, foundation elements or prerequisites were identified by principals. It was stressed by principals that they: have an understanding of the project; ensure an alignment of their values with the project values; understand the school context for which they were working in; were confident in their leadership abilities; and have pre-established trusting relationships with others in the school. If these conditions were met, principals felt that it was then appropriate to introduce the project.

To avoid overwhelming the school community with the proposed changes, principals introduced the project slowly and tactfully. This 'priming' stage emerged as one of the major findings within this research. Principals primed others for the cultural change by establishing the project as a school priority, role modeling expected behaviours, making time in the schedule to highlight the project, and setting expectations for new staff. They also worked closely with the School Health Facilitator (SHF), providing guidance and support, while also acting as a sounding board in the development of implementation strategies. Through these activities, principals were also 'self-priming' for change. Here, principals were familiarizing themselves with the operationalization of the project—seeing it in action before becoming more comfortable to take on an active role in its implementation.

Moving into the next stage signified the principals' commitment to the implementation process. They began to actively advocate for the cultural change. At this

point, they started to communicate the importance of the project to others, sharing project messages and educating the school community. A variety of media were used to spread the word and cultural messages were integrated into formal and informal conversations. Principals also took special care to meaningfully engage with the parent group; they felt that they were primarily responsible for this engagement. Their role as a spokesperson in disseminating the project's message amongst the broader community also emerged within the advocating stage.

Once the project message had been communicated with the school community, those resistant to the change began to step forward to voice their concerns with the principal. Acting as negotiators and mediators, principals were willing to listen to resistive staff and parents, while keeping the overall project message clear. They gently guided naysayers to a clearer understanding and acceptance of the change. Thereafter, principals began to engage the school community in a collaborative manner, as to jointly prioritize the project's incorporation into school plans, policies, and practices. This joint collaboration and prioritization happened on a reoccurring basis throughout the project's implementation, ensuring that policies and practices continued to meet the school's evolving needs.

In the last stage of the implementation process, principals reported that they first needed to enforce the healthy school vision that they had created at the advent of implementation. Here, principals described the need to act in a somewhat unfavorable policing role, whereby they held others accountable to the change by revisiting school plans and policies, providing guidance to those who wavered from the vision. They also began to enable others to take ownership over the project mainly through distributive

leadership practices. Here, principals organized the enthusiasm of others to take on the role of the SHF, creating teams and identifying leaders.

Lastly, as a fundamental role of the principal, underlying the majority of the implementation process, principals were supporting and sustaining the cultural shift. Here, principals: took the change process slowly; demonstrated their ongoing commitment to the change; and rewarded, recognized, and celebrated the positive efforts of others.

5.1.2 Research objective 2.

The second objective of the present research aimed to assess the role of the school principal within the knowledge exchange (KE) process, with regards to knowledge use (i.e., data-driven decision-making (DDDM)) and sharing (i.e., knowledge brokering). Specifically, the research intended to determine whether APPLE School principals were more inclined to act in these capacities with respect to evaluation outcome data provided in School Reports, when compared to a randomly selected sample of provincial school principals in Alberta. Results showed that APPLE School principals had statistically significant higher odds of: sharing the report overall; sharing the report outside of the school, particularly with parents; using the report for planning purposes; as well as a higher odds of both sharing and using the report in general.

Overall, of those eligible to answer questions pertaining to report use and sharing, a high proportion of principals read the report (100% of APPLE School and 92% of control school principals). Of those who read the report, APPLE School principals had statistically significant higher odds of sharing the report overall, suggestive of a knowledge brokering role. Of those who were sharing the report, high levels were seen in

both APPLE Schools and control schools with regards to internal sharing, of which, most was happening with teachers. Lower levels were seen in terms of sharing with students, the school board, and others within the community. These may be areas of intervention whereby further examination could uncover reasons why sharing was lower amongst these groups.

As mentioned, APPLE School principals had statistically significant higher odds of sharing the report outside of the school, particularly with regards to sharing the report with the parent group. This outside sharing emphasizes the role that the APPLE School principal plays as a spokesperson in the broader community and in engaging the parent group, also highlighted in the first objective of this research.

In terms of report use, overall, both APPLE School and control school principals demonstrated high use of the report, with 93% and 84% usage, respectively. Modest use was seen in terms of using the report when there was a health-related issue, or when support was being provided from outside groups, with no statistically significant difference based on school. It was discussed that report usage during these times represented reactive rather than proactive usage, which is not necessarily in alignment with DDDM practices. Rather, self-initiating report use in times of planning was seen as a more proactive characteristic of a leader driven to make data-related decisions. APPLE School principals were found to have 3.83 times the odds of using the report for planning purposes when compared to control school principals (95% CI: 1.04, 14.09).

Lastly, overall report sharing and use was tabulated, where principals who both used and shared the report in some capacity was examined. Eighty-seven percent of APPLE School principals both used and shared the report, compared to 66% of control

school principals. Here, APPLE School principals had 3.40 times the odds of both using and sharing the report when compared to control school principals (95% CI: 1.06, 10.92). This finding suggests that APPLE School principals may be participating in the KE process to a higher degree when compared to control school principals. A potential explanation for this higher degree of involvement amongst APPLE School principals could be the professional development that they receive from the project team in terms of data sharing and use. Furthermore, the APPLE School principals' high involvement in the KE processes could be a natural extension of their engagement within the cultural change process as brought on by the implementation of APPLE Schools, emphasized within findings from the first objective.

5.1.3 Both objectives: Tying it all together.

The first objective of the present research helped to uncover the APPLE School principal's role as an advocate and active communicator of the project. In this fashion, they reported their responsibility in communicating project messages with teachers, students, parents, and the broader community. Therefore, it is not surprising to see that the APPLE School principal was also sharing School Report findings with most of these stakeholders. School Reports contain information that may help bolster the culture change process, and so it makes sense that APPLE School principals would be eager to share these messages with the rest of the school community. Further, positive report findings could be communicated through the principal's role as an encourager and supporter, wherein sharing the school's progress in a transparent manner could help build momentum for change. Negative findings, on the other hand, may not be shared outright, but rather, may act as an incentive for the principal to move into more of an enforcing or

advocating role, to try and bring more awareness to the importance and necessity of creating a healthy culture at their school.

The high degree of report sharing with teachers was a positive finding, suggesting that principals felt comfortable entrusting this information with their staff. Lower levels of report sharing with students, however, do not appear to support the role of the principal as a knowledge broker (i.e., someone who is sharing knowledge with all groups). Principals may instead be acting as the gatekeeper of this knowledge, sharing it with the most prominent individuals in the school (i.e., leader teachers or champions) and entrusting them to disseminate findings with other groups, such as students.

The role of the principal in engaging the parent group and in acting as a spokesperson for the APPLE Schools project in the broader community was emphasized in the first objective of the present research. This outside engagement was also highlighted in the second objective through results showing that APPLE School principals had higher odds of sharing the report outside of the school as well as with parents. Collectively, these findings speak to the principal's role in reinforcing the CSH message beyond the school walls. It is thus important to acknowledge the role of the principal in this regard, whereby supports and training could be provided to facilitate these processes.

Overall, APPLE School principals showed higher odds of sharing the report, a statistically significant finding, which was supported through results obtained in the first objective. Here, the role of the principal as a communicator, collaborator, and transformational leader suggested that the principal was operating in a highly relational manner; it would make sense that sharing report findings align with these practices.

Relative to those of other schools, APPLE School principals were more likely to use the report in times of planning. Using the report for planning purposes aligns with the APPLE School principal's role in facilitating the joint reflection and adaptation of plans and policies to best meet the school's evolving needs, as discovered in the first objective. Reports act as a useful tool for principals to assess their needs and strengths in physical activity and nutrition, assisting them to make adjustments to plans and policies as necessary.

Lastly, APPLE School principals also demonstrated higher odds of report use and sharing overall. As suggested by the model produced in the first objective, it may be that they are driven to use and share data in their practice based on their high level of involvement within the implementation of CSH and culture change processes. Although more research would be needed to fully elucidate these connections, collectively, these results speak towards the overall importance of the principal within these practices.

5.2 Interpretation of Findings

The present research sought to examine the role of the school principal within the implementation of a project guided by CSH, geared at creating a healthy school culture, as well as to examine the principal's role in project-related KE practices. It is apparent that the principal's role in project-related KE processes supports the implementation of CSH, as evidenced by their use of DDDM and when acting as a knowledge broker. As emphasized by others, a strong leader who advocates using evidence-based practices within a school can have a significant impact on the successful implementation of interventions (Gottfredson & Gottfredson, 2002; Kam, Greenberg, & Walls, 2003; Kelly & Lezotte, 2003; Payne, Gottfredson, & Gottfredson, 2006; Schachter, 2006). The

present study further confirms this presumed impact of school leadership within a CSH framework.

Effective health promotion models assert that in order for others to feel ownership over something, they need to be aware that a problem exists and play an active role in deciding whether or not a program is necessary for addressing this problem (Greenberg, Domitrovich, Graczyk, & Zins, 2005). One way in which identification of a problem can be achieved is by providing local data (Earl & Timperley, 2009). Traditionally, educators have been more inclined to treat anecdotal knowledge as being more powerful than empirical data, as this knowledge is perceived to have higher relevancy to their immediate practice (Earl & Timperley, 2009). Unsuccessful change initiatives have typically been based on these invalid shared beliefs and popular practices (Hall & Hord, 2006). One way to circumvent this problem is to provide locally grounded data that is easily interpretable and transferable into practice (Earl & Timperley, 2009). Through the personalized School Reports, each principal was able to objectively provide information to his/her school community, thus identifying areas of both strengths and challenges that could be addressed. Present findings suggest that APPLE School principals, when compared to a random sample of provincial principals, were more likely to use report data for program planning and share the report findings with others.

Slavin (2008) in particular has advocated the application of evidence-based practice to improve schooling, an approach he called evidence-based reform. He argued that schools will not get better unless the changes being pursued are based on strategies that have been validated through rigorous research (Slavin, 2008). Wayman's (2005) study found that school leaders are key in building a culture of data use within schools.

The new challenge facing school leaders is establishing a culture of DDDM, which enable them to react intentionally to data provided by outside systems (Datnow, Park, & Wohlstetter, 2007; Halverson, Grigg, Pritchett, & Thomas, 2005; Lachat & Smith, 2005). As demonstrated from findings in the first objective of the current research, principals must not passively stand by and expect change to occur without their voice and action.

Aside from providing data that is easily interpretable and locally applicable, the collaborative engagement of staff within the data decision-making processes has been deemed important to encourage knowledge use (Anderson, Leithwood, & Strauss, 2010; Datnow et al., 2007; Heritage & Yeagley, 2005; Knapp, Swinnerton, Copland, & Monpas-Huber, 2006; Wayman & Stringfield, 2006;). In this way, the data becomes socialized, where it is transformed into a useable form of knowledge that is more likely to be applied in practice (Fullan, 2002). Oftentimes, innovative solutions arise when people in groups draw on evidence and combine it with tacit knowledge (Nonaka & Takeuchi, 1995), allowing for traditional beliefs to be questioned and new knowledge to emerge (Earl & Timperley, 2009). Thus, knowledge sharing practices become important and have been deemed central to effective leadership (Fullan, 2002). This norm of sharing knowledge with others is the key to continual growth and improvement (Fullan, 2002).

In order to support DDDM, principals acted as a knowledge broker in terms of their role in disseminating report findings, particularly amongst teachers and parents. In the current research, this knowledge brokering role was not seen with all stakeholders, however, as sharing was lower amongst students, the school board, and others within the community. Thus, it is hypothesized that the principal may be acting more as a gatekeeper of the data, whereby others in the school may be taking on more of a

brokering role. Other studies that have observed the principal within data-related processes have placed the principal within a more managerial as opposed to participatory role. In their study, Anderson et al. (2010) reported that principals provided teachers access to the data, in addition to interpretation tools, time, and resources without directly engaging in these processes themselves. Others have also outlined the role of the principal as *gatekeeper* to school innovations and change (Fullan, 2001), as they are believed to have significant influence over a school's status as a healthy organization (Dadaczynski, 2012). This gatekeeping role appears to be somewhat top-down in nature, where decisions to share and use data are coming from a single individual. Once knowledge is shared however, bottom-up participation may encourage sharing on a wider basis, where participants often become co-leaders in data-informed problem solving (Knapp et al., 2006). Kerr, Marsh, Ikemoto, Darilek, and Barney's (2006) study found that the principal played an important role in getting DDDM efforts off the ground and then in establishing distributed leadership for DDDM to take hold throughout the school. This finding was echoed in other studies that found the most successful principals were able to act as initial catalysts for data inquiry but then worked to create more distributed leadership around data use (Copland, 2003; Wayman and Stringfield, 2006). Additionally, others have cited evidence-based culture (Corcoran, Furhman, & Belcher, 2001) and 'shared' or collaborative school leadership (Darling-Hammond, 1990; Marks & Printy, 2003), as a desirable set of conditions for creating school-level change (Elmore & Burney, 2000). Thus, both top-down and bottom-up practices may be at play within the KE process within the current study, a finding that also aligns with the first objective of this research and is described in more detail below.

Through the development of the model in the first objective of this research, there appeared to be a time-order to the principals' role within the implementation process. To prevent the school community from feeling overwhelmed towards the proposed change, the principal had to prime the change and gradually work towards its implementation. Thereafter, through their communication efforts, principals set expectations and standards for the project; tasks that appeared to be somewhat top-down in their delivery and aligned with a transactional form of leadership (Hallinger, 2003). As stated, effective health promotion models are bottom-up in nature and assert that key stakeholders need to be aware that a problem exists (potentially through data sharing) and meaningfully engaged early on in order to feel ownership over the initiative (Greenberg et al., 2005). While local data was provided to key stakeholders, engagement and enablement of others came later on in implementation within the present research. It is hypothesized that this initial top-down adaptation was required in order to appease the pre-existing bureaucratic structure within schools. In integrating health promotion practices within the school's preexisting structural operations, a happy medium was discovered, wherein the enablement of others came later on within implementation. The establishment and enforcement of the message of the proposed change appeared to be needed before the principal felt that they could allow others the space to develop ownership over the project. It was at this point that the principal was keen to support bottom-up practices of shared or distributed leadership, practices that align with transformational leadership (Hallinger, 2003). Thus, our findings suggest that the combination of both top-down and bottom-up strategies were used within the implementation of CSH, a finding that aligns with others (Gleddie, 2012; Larsen & Samdal, 2008; Sabatier, 1986; Viig, Fosse, Samdal,

& Wold 2012). This combination suggests that principals may be tailoring their leadership practices to the context and local circumstances of their school, aligning and adapting their practices based on their school's present 'stage' of implementation. Principal role adaptability was clearly shown within the model produced in the first objective of this research, and speaks towards the concept of situational leadership (Hersey & Blanchard, 1993).

Some have asserted that because the principal has the formal responsibilities and power to allocate resources and make decisions surrounding the inclusion of goals within the school plan, that a top-down approach is effective when first integrating health promotion practices into the school (Viig et al., 2012). Similar results were seen in a study conducted by Inchley, Muldoon, & Currie (2007); when school leaders took the lead, it gave the CSH program heightened status, whereby their involvement was seen as crucial for effective implementation. Research suggests that program implementation is the most successful when anchored at the top and bottom levels of the school (Elias, Zins, Graczyk, & Weissberg, 2003; Fullan, 1992; Viig & Wold, 2005; Zins, Elias, & Greenberg, 2003). At the bottom, teachers, who are most likely implementing program elements at the ground level, need to be motivated and prepared for implementation (Elias et al., 2003). At the top, appropriate resources need to be allocated, and the provision of an empowering and motivating environment should be prioritized (Gleddie, 2010; Sabatier, 1986).

As per Fullan's (2002) description of the 'culture change principal', this individual must possess: moral purpose, an understanding of the change process, the ability to improve relationships, coherence making, as well as abilities in knowledge

creation and sharing (Fullan, 2002). This last point ties both of the present research objectives together, suggesting that principals involved in cultural change processes be skilled in the area of KE. It has been suggested that those working with and disseminating knowledge have superior interpersonal skills, communication skills, and motivational skills, while also being a skilled mediator and team builder who remains flexible and diplomatic (Dobbins et al., 2009). An individual with these skills and abilities may then work to facilitate organizational change (Kitson, Harvey, & McCormack, 1998), eliminate environmental barriers to DDDM (Thompson, Estabrooks, & Degner, 2006) and promote an organizational culture that values the use of the best available evidence in practice (van Kammen, de Savigny, & Sewankambo, 2006). In the first objective of the present research, the principal was communicating the project message with all stakeholders, mediating conflicting interests, as well as building teams and distributing tasks; these are all qualities emphasized in relation to knowledge sharing best practices as listed above. Collectively, results provide further evidence to support the importance of the principal within the cultural change and KE processes.

5.3 Strengths and Limitations

As the first objective of the present research was qualitative in nature, findings may not necessarily be generalizable to the population of principals in Alberta. Regardless of contextual differences, however, results surrounding the role of the principal within the implementation of the project were consistent, emphasizing the potential transferability of the present findings. An overall strength of this qualitative research includes the attentiveness to trustworthiness as demonstrated by a number of

different strategies including the use of both focused ethnography and grounded theory methods.

A potential limitation to both studies includes the possible selection bias that may have occurred as a result of APPLE Schools being hand-selected for participation in the intervention. Based on this selection process, APPLE School principals agreed to implementation and signed-off on their commitment to the project. Thus, the present research may only represent the viewpoints of those principals who were more invested in the project's implementation. Although this type of bias is often welcomed into qualitative research, as it is important to recruit participants who are eager and willing to share their experiences, such bias often limits the impact of quantitative findings. Further limitations within the second objective of this research include: the lack of demographic information on principals completing the survey to allow for the examination of other variables that may be influencing report use and sharing; the small sample size of APPLE Schools, which limited statistical analysis and interpretation; as well as the limitations posed by the structure of the survey questions, which remain subjective, are subject to interpretation and reporting error, and are limited in the extent of data that they are able to capture. Strengths of the second objective include the representative sample of control school principals, along with a high response-rate for school-based research (Esbensen, Melde, Taylor, & Peterson, 2008).

An overall strength of this research includes the fact that APPLE Schools has been shown to be an effective intervention at targeting healthy eating and physical activity, as well as reducing health inequalities (Fung et al., 2012; Vander Ploeg at al., 2014a; Vander Ploeg et al., 2014b). Thus, not only has a detailed description of the

principal's role been produced within the implementation of a CSH project, but this description has been produced within a highly effective CSH project. It is thus hoped that these findings be applied in different settings to bring about the optimization of CSH project implementation, leading to a broader positive impact on the health and wellbeing of children and youth.

5.4 Recommendations and Future Research

Future research could examine the perspectives of the other stakeholders within the school (i.e., teachers, community members, SHFs) to see how they define the principal's role within the project. Collecting other viewpoints may help to verify some of the information gathered here, while also allowing the bias of the principal's self-view to become diffused. This research may also help to clarify roles and prevent role redundancy, allowing for a greater degree of efficiency within the implementation process. Within this present research, neither the quality of implementation nor the quality of administrative leadership was measured. Thus, the association between effective leadership and effective implementation cannot be established herein. Future research could quantify this relationship.

The role of the school principal as a knowledge broker has not been extensively examined within the literature and requires more attention and examination. The present findings provide some insight into this role, but are limited based on the nature of the survey questions. As sharing was high amongst teachers and parents, it is hypothesized that the principal acted as the gatekeeper of knowledge within these groups. Their role as a knowledge broker in disseminating the findings more widely was limited as demonstrated by low levels of sharing with students, the school board, as well as with

others within the community. It may be that other actors within the school (i.e., lead teachers or champions) were taking on this role. This, however, is only a speculation based on the limitations of the data produced herein, and may be an area of future research. For the time being, it is recommended that principals negotiate these roles within their school to ensure that knowledge sharing is occurring on a wider scale.

5.5 Recommendations for Practice

Providing professional development in the area of CSH implementation, as well as knowledge use and sharing are important considerations and implications from this research. As the principal acted as a key role model within the project's implementation, it is recommended that they have a foundational knowledge of CSH as well as skills in data use and dissemination. Professional development has been shown to act as an organizational catalyst for greater absorption of CSH concepts, and increases the capacity of leaders to integrate and more effectively implement the innovation through optimal planning and practical use of knowledge (Deschesnes, Drouin, Tessier, & Couturier, 2014). Professional development has also been shown to be useful to assist leaders in learning how to use data in decision-making and in analyzing the use of data practices in school restructuring (Datnow, Park, & Wohlstetter, 2007; Jazzar & Algozzine, 2006; Knapp, Swinnerton, Copland, & Monpas-Huber, 2006). It is suggested that this training be provided through board-level opportunities for principals, particularly now that health has emerged as a priority within the field of education (JCSH, 2012).

As outlined in both objectives of this research, the principal was found to have an elevated role with the parent group. Thus, principals should be made aware of this role and be prepared to engage with parents in a sensitive and respectful manner. Further, as

previous reports stemming from the APPLE parent project revealed that teachers and

SHFs also felt responsible for engaging with parents (Storey et al., 2011; Storey, 2013), it

may be necessary for roles to be clearly negotiated with other school staff, as to

streamline the process of implementation and knowledge sharing with this group.

Overall, findings speak to the importance of the principal within the

implementation and culture change processes as well as within the brokering and use of

outcome report data and knowledge. Health promotion initiatives in schools should focus

on the principal as an existing resource to facilitate these processes.

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Appendix A: Information Letter

UNIVERSITY OF ALBERTA

DEPARTMENT OF PUBLIC HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH

INFORMATION LETTER

Project Title: **Implementation of Make the Healthy Choice the Easy Choice (APPLE Schools)**

Principal Investigator	APPLE Schools: Research Coordinator
Dr. Kate Storey Department of Public Health Sciences, School of Public Health Tel (780) 492-9609 E-mail: kate.storey@ualberta.ca	Nicole McLeod Department of Public Health Sciences, School of Public Health Tel (780) 248-1863 E-mail: ncmcleod@ualberta.ca

March 25, 2013

You are being asked to participate in a one-on-one interview and possible follow-up interview in order to increase our understanding of the process of implementing comprehensive school health in the APPLE schools. We would like to know how easy you think it has been to implement CSH and what has made it easier or more difficult. We are hoping to gain a better understanding of key factors involved in CSH implementation, from the perspective of people who are directly involved.

Participation involves a one-on-one interview, either in-person or by telephone, lasting approximately 45- 60 minutes. During the interview you will be asked a series of questions about your experience implementing comprehensive school health in the APPLE schools project. You may also be asked to participate in a shorter (30 minute) second interview to follow-up on the initial interview. Interviews will be recorded to ensure that the discussion is captured accurately.

Before publicizing any study findings, you will have the opportunity to read through these findings and provide any feedback, comments, and/or concerns to ensure we have interpreted your answers as accurately as possible.

Benefits & Risks
Sharing perceptions and observations you and your fellow colleagues have in regards to work you do and your perception of implementing a comprehensive school health program will give a better understanding of the benefits of being part of APPLE Schools. The information you provide may help inform future project effectiveness and improve the services provided. Additionally, the information we gather will be useful for understanding more about the project's process evaluation.

There are no known risks associated with participating in this study. However, if any questions asked in the interview make you feel uncomfortable, you can choose not to answer them. You may ask for a copy of your interview transcript at any time. Any information that you do not wish to be included will be removed.

Confidentiality

Your confidentiality will be maintained. To protect your identity, you will be assigned a number in place of your name. We want to emphasize that any information provided in the interview should be kept confidential and not shared with any other individual. We will not record any personal information in the written records. To protect against personal information being released, we will ensure that your participation in this study, and any information that you provide, remains confidential. Furthermore, all information will be stored in a locked file cabinet in a locked office at the University of Alberta. Only members of the research team will have access to this information.

Freedom to withdraw

Taking part in the project is completely voluntary. There will be no negative consequences if you do not want to participate. Your information will be removed from the study without consequences if you decide later that you do not want to participate. If you wish to withdraw or have any other questions, you may contact Kate Storey at the phone number or email address listed below.

If you have any concerns or questions related to ethics of this study, you may contact the Health Research Ethics Board at the University of Alberta (Tel: 780-492-2615).

Sincerely,

K. Sto

Kate Storey, PhD, RD
School of Public Health
University of Alberta
Tel (780) 492-9609
kate.storey@ualberta.ca

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UNIVERSITY OF ALBERTA

DEPARTMENT OF PUBLIC HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH

3-50 University Terrace
Edmonton, AB T6G 2T4

www.publichealth.ualberta.ca

Tel: 780.492.6408
Fax: 780.492.5521

INFORMED CONSENT FORM

Project Title: **Implementation of Make the Healthy Choice the Easy Choice (APPLE Schools)**

Principal Investigator	APPLE Schools: Research Coordinator
Dr. Kate Storey Department of Public Health Sciences, School of Public Health Tel (780) 492-9609 E-mail: kate.storey@ualberta.ca	Nicole McLeod Department of Public Health Sciences, School of Public Health Tel (780) 248-1863 E-mail: ncmcleod@ualberta.ca

Do you understand that you have been asked to participate in a research study?   Yes   No

Have you read and received a copy of the attached Information Sheet   Yes   No

Do you understand the benefits and risks involved in taking part in this research study?   Yes   No

Have you had an opportunity to ask questions and discuss this study?   Yes   No

Do you understand that you are free to refuse to participate, or to withdraw from the study at   Yes   No
any time, without consequence, and that your information will be withdrawn at your request?

Has the issue of confidentiality been explained to you? Do you understand who will have   Yes   No
access to your information?

This study was explained to me by: _____

I agree to take part in this study:

_____   _____   _____

Signature of Research Participant   Date   Witness

_____   _____

Printed Name   Printed Name

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____   _____

Signature of Investigator or Designee   Date

Contact Information:
If you have any questions regarding your rights as a research participant, please contact the University of Alberta Research Ethics Office at (780) 492-2615 (collect calls are accepted).
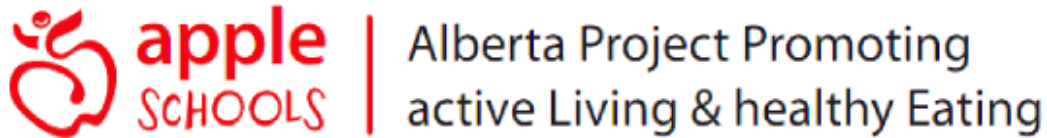
School Name	
Grade levels in School (e.g., K-6) Number of students in School	
How long have you been at this school?	
Have you always had a principal role at this school?	
How long has your school been an APPLE School?	
SHF dose (e.g., FTE) and has this changed?	
Are there any other programs (besides APPLE Schools) being run in your school at this time (i.e., Leader In Me)?	
Demographics for Publication: How long have you been an administrator/principal?	
What is your level of education? What degree(s) do you have?	
Male / Female	

1. I have limited experience with your school; can you briefly tell me about your school?

2. As an APPLE School principal, how would you define your role in the project?

3. Are there certain characteristics or critical skills that are helpful to have as a principal specifically of an APPLE School?

4. What are some key factors that have helped you in implementing APPLE Schools?

5. We'd like to explore your role in working with the other stakeholders in the school and will ask about your relationship with these individuals here. Firstly, How do you work and interact with students as you implement the APPLE Schools project? How do you work and interact with staff? How do you work and interact with parents? How do you work and interact with community members?

6. What are some barriers that have hindered you in implementing APPLE Schools?

7. Do you feel your school has changed as a result of being an APPLE School?

8. What are your thoughts on sustaining the healthy school vision in your school?

9. Are you familiar with the School Reports containing project-related evaluation data? If yes, how do you use these reports in your school?

10. If you had to give advice to a principal new to an APPLE School, what would it be?

11. Is there anything you would like to add?

Appendix D: 2012 Principal Survey Response Rate and Participation Flow-Chart

| 2012 evaluation Provincial Schools (n = 140) | 2012 evaluation APPLE Schools (n = 40) |

Provincial Schools Participating in both 2010 & 2012 n = 108

→ 15 not returned

Surveys Returned (n = 93)

86% response rate

→ 5 not completed

Question #2 Completed (n = 88)

→ 15 self-excluded (i.e., were not principal in 2010)

Received 2010 Report? (n = 73)

→ 6 did not read

Read 2010 Report? (n = 67)

→ 8 read only

Shared or Used Report (n = 59)

Shared? (n = 47)   Used? (n = 56)

3 shared only   44 shared + used   12 used only

APPLE Schools Participating in both 2010 & 2012 n = 36

Surveys Returned (n = 36)

100% response rate

Question #2 Completed (n = 36)

→ 6 self-excluded (i.e., were not principal in 2010)

Received 2010 Report? (n = 30)

Read 2010 Report? (n = 30)

Shared or Used Report (n = 30)

Shared? (n = 28)   Used? (n = 28)

2 shared only   26 shared + used   2 used only

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