THE ROLE OF SELF-EFFICACY IN THE DECISION OF GRADE 4, 5, AND 6 TEACHERS TO IMPLEMENT TOBACCO PREVENTION EDUCATION – A MIXED METHODS STUDY

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DEDICATION

To my family for all of their support and encouragement on this journey. To my kids Addison, and Asher, may you always have goals and work hard towards them. My hope is that you always know you can accomplish anything you put your mind to. To my husband Chris for always believing in me, and for always pushing me forward.

ABSTRACT

Tobacco use continues to be the leading cause of premature disease and death in Canada. Prevention of tobacco use in youth is a key component of any comprehensive tobacco reduction strategy. The purpose of this study is to understand why some elementary school teachers in Alberta choose to deliver an optional tobacco prevention program in their classroom, while others do not. Using an explanatory sequential mixed method design this study examines the role of self-efficacy as a decision-making factor for grades 4, 5, and 6 teachers to implement a tobacco prevention intervention. Feeling confident in delivering the program played a statistically significant role in the teachers implementing the intervention or not, indicating a strong relationship. The perceived value of tobacco use prevention seemed to increase with grade level, with grade six teachers indicating a need to prepare students for future grades when they were at higher likelihood to experience experimentation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION

Tobacco use is the leading cause of preventable death and disease in Canada (World Health Organization, 2016). The prevention of tobacco use by youth is a key component of any comprehensive tobacco reduction strategy (Alberta Health, 2012; Centers for Disease Control and Prevention, 2014). As part of the Alberta Tobacco Reduction Strategy, Alberta Health Services developed an innovative program for elementary students in Grades 4-6, designed to be delivered by teachers (Alberta Health Services, 2016). Tobacco use education is an optional component of the curriculum in Alberta. By researching individual factors related to self-efficacy including delivery confidence levels, outcome expectation, and outcome importance for teachers, additional measures can be included in the program design to support teachers for greater program uptake.

Public Health Epidemic

Tobacco use is one of the biggest public health threats in the world, killing more than five million people a year (World Health Organization, 2016). While nearly 80% of the world's tobacco users live in low and middle income countries, tobacco use within high income countries continues to be a major public health concern (World Health Organization, 2016). In Canada, tobacco is the leading cause of premature disease and death, resulting in over 37,000 deaths every year (Alberta Alcohol and Drug Abuse Commission, 2008).

Prevalence

Tobacco use in Canada peaked in the 1960s with nearly half of the general population using tobacco products, including 40% of women and 60% of men (Reid, Hammond, Rynard, & Burkhalter, 2017). In recent decades, the introduction of comprehensive tobacco reduction strategies implemented by federal, provincial, and municipal governments, Canada has seen an exponential reduction in rates (Health Canada, 2014).

According to the 2015 Canadian Tobacco and Drug Survey (Statistics Canada, 2015), which is conducted on a biennial basis, the prevalence rate of tobacco use for people aged 15 years and over is 13% or roughly 3.8 million smokers. Distribution across the country varies, with daily use ranging from a low of 10% in British Columbia to a high of 18% in Newfoundland and Labrador and Nova Scotia (Statistics Canada, 2015). Alberta is in the middle with 15.5% of people over the age of 15 using tobacco daily (Statistics Canada, 2015).

Canadian Tobacco and Drug Survey data shows the dramatic increase in prevalence rates between age 15-19 and 20-24 (Statistics Canada, 2015). For the 2015 survey, 9.7% of youth ages 15-19 indicated they used tobacco on a daily basis, a figure that nearly doubles to 18.5% for those aged 20-24 (Statistics Canada, 2015). Young adult Canadians are smoking daily at a much higher rate than the general population (13%), a disparity which indicates the need for ongoing, enhanced, and comprehensive tobacco reduction strategies including prevention initiatives, cessation services, and policy measures.

Economic Burden

The economic burden of tobacco related illness and death from cancer, cardiovascular, and respiratory diseases is devastating and includes substantial direct and indirect financial costs for Canada. In 2013, it was estimated that tobacco smoking resulted in total costs of $18.7 billion that year, with direct health care costs totalling $6.4 billion (Krueger, Krueger, & Koot, 2015). These costs represent is an increase from 2002 during which the estimates were $17 billion in total costs, with $4.4 direct health care costs (Krueger et al., 2015). The calculation of these costs comes from the assessment of the impact of illness from a macroeconomic perspective by aggregating costs across multiple economic agents (Krueger et al., 2015). These costs include the direct expenses incurred due to the illness including health care, as well as indirect costs such as lost wages due to diminished productivity (Krueger et al., 2015). Intangible costs such as pain

and suffering are not included in the calculation of the economic burden of tobacco use (Krueger et al., 2015).

Alberta's Tobacco Reduction Strategy

To address tobacco use in Alberta, the Ministry of Health implemented a 10-year comprehensive tobacco reduction strategy in 2012, which outlines specific action items in four strategic/priority areas. These areas include prevention, cessation, protection (from exposure to second-hand smoke), and knowledge transfer and capacity building (Alberta Health, 2012). The strategy also sets daily use prevalence targets for Alberta by the end of 2022, moving from 18% in 2012, to 12% in 2022 (Alberta Health, 2012). The plans are also categorized into phases, in order to first address priority areas, and other phases to build upon or enhance the phase one objectives.

The goal of the prevention strategic area is to prevent youth, young adults, pregnant women, and at-risk populations from using tobacco, tobacco-like products, smokeless tobacco and other related products (Alberta Health, 2012). Specific outcomes related to this project fall under section 1.3, which reads:

> The school-based and post-secondary tobacco reduction framework will be enhanced by using a comprehensive school health approach that considers initiatives such as:
>
> - Providing students, teachers and parents with access to targeted, up-to-date information on the risks associated with tobacco, tobacco-like products and smokeless tobacco use (phase one).
> - Supporting the delivery of comprehensive school health programs focused on reducing tobacco, tobacco-like products and smokeless tobacco use for students in key transitional grades (phase one).
> - Supporting the development of tobacco, tobacco-like products and smokeless tobacco reduction education in wellness-related school curricula (elementary, junior and senior high) based on best and promising practices (phase two).
> - Supporting the inclusion of tobacco, tobacco-like products and smokeless tobacco reduction education in wellness-related school curricula (elementary, junior and senior high) based on best and promising practices (phase two)." (Alberta Health, 2012, pp. 6-7).

The Academy for Tobacco Prevention

Alberta Health Services, the provincial health services authority in Alberta, plays a lead role in implementing the Alberta Tobacco Reduction Strategy on behalf of the government. To address the outcomes related to tobacco use prevention, supporting school-based programs, and providing students with up to date information on the risks associated with tobacco use, the Academy for Tobacco Prevention was launched province-wide in September 2016.

The Academy for Tobacco Prevention is a free, online, innovative, and evidence-based program for tobacco preventative education. The program is a school-based, teacher-led resource designed for grades 4, 5, and 6 (Alberta Health Services, 2016). The program includes detailed grade-specific lessons, interactive presentations, materials to encourage class discussion, and a variety of pre-developed cross-curricular activities to integrate into a variety of learning experiences (Alberta Health Services, 2016).

The goal of The Academy for Tobacco Prevention program is to provide factual information about tobacco use and teach students ways they can recognize negative social influences and develop strategies to resist pressure to use tobacco products (Alberta Health Services, 2016). The final lesson in each grade's materials is a cooperative card game intended to develop both social competence and social influence, which is considered a best practice approach in preventing tobacco use (Thomas, McLellan, & Perera, 2015). Characters within the lessons and card games are described as heroes and bosses, in which heroes represent youth with special abilities to combat the harms of tobacco use and bosses represent tobacco industry tactics that have traditionally been used to target kids, including normalization of use in movies and video games (Alberta Health Services, 2016). While the resource is aligned with the competencies for Engaged Thinkers and Ethical Citizens with an Entrepreneurial Spirit as outlined in the Alberta Education Framework for Student Learning (Alberta Health Services,

4

2016), tobacco prevention education is not a mandatory topic to cover (Alberta Health Services, 2016).

The Academy for Tobacco Prevention program's online lessons are built in online learning software, allowing the teachers to load the presentation onto a SMART® board located in the classroom and have students engage in interactive and visually appealing content. Teachers provide demographic information onto the website (the teacher's name, email, school postal code, and number of students in the classroom) to access the online lessons and in real-time can show the lessons in the classroom (Alberta Health Services, 2016). The innovative and technical component of the interactive lessons are intended to provide teachers with easily accessible and relevant content to use in the classroom. If appropriate supports and training in SMART® technology are not available to teachers, or if they are not confident in using it, they may struggle with the platform and thus fail to deliver the program (Alberta Health Services, 2016). Thus, teacher confidence in accessing and implementing this innovative resource could affect implementation. By determining to what extent confidence levels may be a barrier in implementation will inform program developers with recommendations to enhance future implementation.

Gamification

The Academy for Tobacco Prevention program includes the cooperative (non-competitive) card game 'Shadows of the Academy' in order to enhance social competence and social influence skills for students receiving this tobacco prevention program. By incorporating the card game into the program, Alberta Health Services introduced gamification into its health education programming. Gamification is a broad term used to describe the process of using gaming or game elements to motivate and engage people in non-game contexts (King, Greaves, Exeter, & Darzi, 2013). While games are primarily used for entertainment purposes, there is an

5

increasing interest in their potential to influence positive changes in health behaviours as well as increase interest and fidelity in the education setting (King et al., 2013). King et al (2013) identified that educational or behaviour change type games will need to have the same interest level as the games for fun entertainment have (King et al., 2013). Because the concept of gamification is relatively new in health education, having the input of content experts, behaviour scientists, and clinicians is essential in the development of this type of intervention, to ensure that the work is grounded in theoretical frameworks and has the ability to be researched and evaluated (King et al., 2013). Utilizing games for health education may be a new concept for many teachers, with potential apprehension to implement if there is uncertainty on effectiveness or on how to instruct students the rules to play. Researching the extent of this apprehension as a potential barrier to program implementation is important to gain insight into in order to support teachers in implementing the program, and what some strategies for addressing that apprehension might be. This study has the opportunity to research that potential apprehension by asking teachers about their confidence level in utilizing the cooperative card game within the tobacco prevention program, and if that contributed to or against them implementing the program in their classroom.

Study Goals

Factors that support the implementation of school-based tobacco prevention interventions are critical to long term health outcomes. If an intervention is not implemented effectively and consistently, its potential impact will never be achieved. Social scientists have long acknowledged that developing effective interventions is only one step towards supporting the health of populations (Durlak & DuPre, 2008). Effectively transferring these programs into real-world settings and maintaining them is a complicated, long-term process that requires successfully navigating the complex phases of program diffusion (Durlak & DuPre, 2008;

6

Rogers, 1962). By examining individual factors that contribute to the implementation of specific interventions, governments, health systems, and program developers can enhance positive factors to support expanded implementation of tobacco prevention interventions.

The aim of this study was to investigate the extent to which self-efficacy contributes to Grade 4, 5, or 6 teachers' decisions to implement The Academy for Tobacco Prevention within their classrooms in Alberta. An explanatory sequential mixed method was used to first, survey teachers, followed by seven in-depth interviews to expand on the theoretical constructs and further elucidate the quantitative results. This exploration will allow for greater understanding of how and why teachers decide to implement the program in their classrooms. For the mixed method design, an overarching research question was addressed by both a quantitative and qualitative research question. For this study the research questions were:

Mixed methods research question: What role does self-efficacy play in the decision-making process for grades 4, 5 and 6 teachers in Alberta to implement (or not) The Academy for Tobacco Prevention?

Quantitative research question: What is the relationship between self-efficacy factors and the implementation status of The Academy for Tobacco Prevention for grades 4, 5, and 6 teachers in Alberta?

Qualitative research question: How do Grade 4, 5, and 6 teachers in Alberta decide to implement The Academy for Tobacco Prevention in their classroom?

Many jurisdictions do not mandate certain topics or areas of study within the health curriculum. Teachers are often tasked with prioritizing the teaching of multiple health topics, with little to no understanding of topic importance, intervention efficacy, or appropriate developmental stage for delivery. By learning more about teachers' decision-making processes and their individual factors related to those decisions there will be a much greater likelihood of

strategically supporting teachers with the decisions that will lead to the greatest population health impact.

CHAPTER TWO: LITERATURE REVIEW

Search Strategy

The literature search strategy was developed in consultation with a Health Science Librarian to examine the extent, range, and nature of research activity in the area of tobacco use prevention education in elementary schools. Peer reviewed journal articles were located using MEDLINE (OVID interface), Psych Info, and Education Research Complete journal databases. Good quality grey literature gathered from government websites and agency databases, and web search engines (Google, Google Scholar) were also included. Search terms initially included tobacco/smoking, substance use, prevention, school-based, elementary, teacher, fidelity, curriculum, implementation, delivery, and barrier(s). Once the search was completed only one article was included in the results. Due to the poor return in the initial search, article inclusion utilizing a wider range of search terms including 'teacher efficacy' for delivering curriculum in general was added to the search strategy. The following section summarizes the findings and theoretical orientation from articles focusing on school-based program implementation at the elementary school level.

Teacher Implementation of School-Based Resources

A public health, school-based intervention has the potential to be extremely effective, but its potential can never be reached if it's not implemented. Durlak and DuPre (2008) determined strong empirical support that the level of implementation affects outcomes gained in promotion and prevention programs. Social scientists have long acknowledged that developing effective interventions is only one step towards supporting the health of populations (Durlak & DuPre, 2008). Effectively transferring these programs into real-world settings and keeping them there is a complicated, long-term process that requires successfully dealing with the successive, complex phases of program diffusion (Durlak & DuPre, 2008).

Factors regarding implementation are important, and an essential part of an evaluation process. The implementation process is affected by variables related to communities, providers and innovators, as well as aspects of the delivery and support system (Durlak & DuPre, 2008). It was also determined that the diffusion of effective interventions typically provide diminishing results as the process enfolds (Durlak & DuPre, 2008).

Innovation Theory.

Diffusion of innovation theory provides an explanation of the stages by which a new program is implemented within a given population. These stages include: (1) knowledge (acquisition about the innovation); (2) persuasion (attitude regarding the innovation; (3) decision (about implementing or not implementing); (4) implementation (beginning to use the innovation); and, (5) confirmation (commitment to use, continuation to use, or discontinue) (Rogers, 1962, 2003).
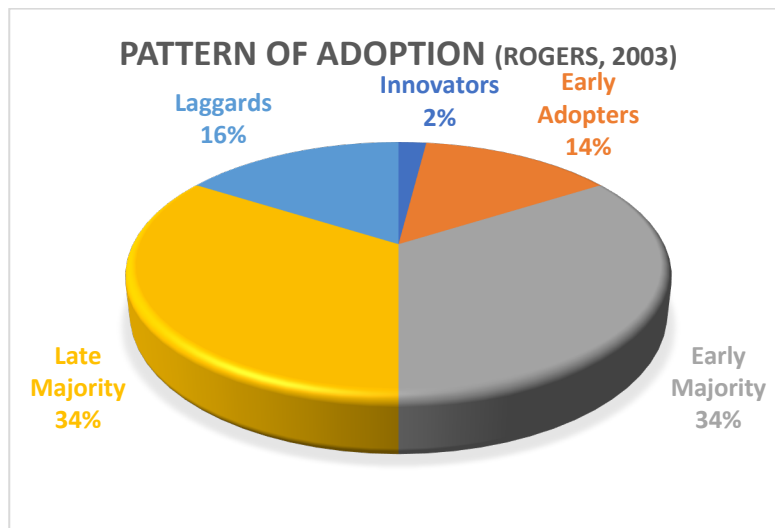
Figure 1. Pattern of Adoption (Rogers, 2003)

The pattern of adoption for a new public health program (or innovation) to be implemented includes five groups of implementers or adaptors (Rogers, 2003). 'Innovators' are people that want to be first to implement a new program and are often described/characterized as

independent and daring. Those that are very interested in the innovation but are not the first to implement it are called 'early adopters.' These individuals want to make sure the program is useful before implementing it themselves. The next two groups are the 'early' and 'late 'majority, and each account for about 34% of those targeted at implementing. Both of these groups may be interested in the program but deliberate for some time before making the decision to implement. These groups may also have some initial skepticism and may benefit from some external motivation to implement the new program (Rogers, 2003). The 'laggards' are the last group in the pattern of adoption and these individuals might not implement the program at all. For various reasons this group is not interested in the innovation and may be apprehensive of the innovation (or its implementation) itself (Rogers, 2003).

Self-efficacy Theory

Perceived efficacy plays a key role in human functioning because it not only affects a person's direct behaviour, but it has impact on other factors such as goals, aspirations, outcome expectations, perception of impediments and opportunities in the social environment (Bandura, 1997). Perceived efficacy also influences courses of action people choose to pursue, the challenges and goals they set for themselves, the commitment they put to them, how much effort they put forth in in achieving them, the outcomes they expect to produce, how long they persevere in the face of challenges, and their resilience to adversity (Bandura, 1997). In the school context, if a teacher is to deliver a particular intervention in the classroom, they must first know what the intervention is, and then learn how to deliver it. Self-efficacy is considered an important pre-requisite for behaviour change, as it is related to how much effort is put into a task and the outcome of that task (Nutbeam, Harris, & Wise, 2014). Identifying current levels of self-efficacy and promoting self-efficacy is an important task in the achievement of potentially increasing the utilization of a school-based program and provides a practical direction for

program developers (Nutbeam et al., 2014). Self-efficacy theory supports the fundamental importance of individual beliefs, values and self-confidence in determining behaviour (Nutbeam et al., 2014). In the context of schools, teacher self-efficacy beliefs can be defined as a teacher's individual beliefs in their capabilities to perform specific teaching tasks at a specified level of quality in a specified situation (Dellinger, Bobbett, Olivier, & Ellett, 2008). Further, a teacher's personal self-efficacy beliefs are defined as successfully performing specific teaching tasks in a teacher's current teaching situation (Dellinger et al., 2008).

Self-Efficacy of Teachers.

A teacher's efficacy belief is a judgement of his or her capabilities to bring about desired student outcomes (such as achievement, motivation, and students' own sense of efficacy) (Tschannen-Moran & Hoy, 2001). Efficacy beliefs of teachers relates to their behaviour in the classroom, affecting the effort they invest in teaching, the goals they set, and their level of aspiration (Tschannen-Moran & Hoy, 2001). Teachers with a high degree of self-efficacy tend to show greater levels of planning and organization, may be more open to new ideas, and may be more willing to experiment with new methods to better meet the needs of their students (Tschannen-Moran & Hoy, 2001).

There is very limited existing research regarding elementary school teachers' perceived self-efficacy for teaching tobacco prevention education. There is considerable literature that explores the self-efficacy of students in relation to their academic achievement, but very limited research on the role of self-efficacy in teachers and the delivery of optional (or non-graded) curricula in the classroom. In the only study available looking at perceived self-efficacy of elementary school teachers implementing tobacco reduction education, Perry-Casler (1997) found that teachers generally had high perceived self-efficacy, but that their knowledge about the dangers of tobacco use was limited (Perry-Casler, Price, Telljohann, & Chesney, 1997). Further,

12

teachers with low confidence in their ability to effectively teach prevention components were more likely to perceive the outcome as questionable (Perry-Casler et al., 1997). The authors recommended that a follow up study is needed to determine whether self-reported efficacy expectations for teaching tobacco are congruent with actual teaching behaviours (Perry-Casler et al., 1997).

In a study looking at a school-based nutrition program, having readily available external support was significantly associated with effective implementation of the program (Nathan et al., 2017). The authors also found that if the principal's perception is that the program is evidence-based and relevant to the school priorities, the likelihood of implementation was increased (Nathan et al., 2017). This result highlights the importance of communicating the benefit of prevention programs to school staff.

Kam, Greenberg & Walls (2003) investigated the role of various factors relating to implementation in quality school-based prevention. They found the main factor that contributed to the success of the implementation of the program within the classroom was adequate support from school principals. Significant intervention effects were only found where both principal support and teacher implementation quality was high (Kam et al., 2003). Kam et al. (2003) concluded that in order for empirically validated school-based prevention programs to maximize implementation, it is important to understand the processes underlying program dissemination.

In a study evaluating the intervention of a science school-based program, high teacher self-efficacy was found to be consistent with other research that looked at teachers implementing new curricula (Hodges, Gale, & Meng, 2016). Professional development and preparation by teachers may contribute to the efficacy levels for the implementation of the program (Hodges et al., 2016). Confidence was high for delivering the program, but participants (teachers) expressed

concern about integrating a new curriculum within their unique school environments that included increasing class sizes and an emphasis on test preparation (Hodges et al., 2016).

Hodges et al. (2016) found that teachers began curriculum implementation with relatively high levels of self-efficacy, and despite some challenges within their school contexts, teachers' beliefs in their capability to implement the curriculum successfully remained relatively unchanged. A common thread in the literature regarding teachers' implementation factors was the need for teacher training and support (Campbell et al., 2012; Perry-Casler et al., 1997; Sy & Glanz, 2008).

In a study exploring the self-efficacy beliefs of teachers implementing non-graded primary school programs, the authors summarized self-efficacy theory as the basis for most research on teacher efficacy (Mesquita & Drake, 1994). High self-efficacy was strongly related to the implementation of non-graded or optional programs (Mesquita & Drake, 1994). The authors concluded that the self-efficacy of teachers is a primary indicator for successful implementation of these programs (Mesquita & Drake, 1994).

Consequently, self-efficacy appears to be an important factor for program implementation, and appears to be sparsely researched topic, especially for tobacco education programs in primary schools. Further, self-efficacy evaluations appear to be global, with little attention paid to the components of outcome expectations and outcome values.

Outcome Expectations. Beliefs about whether one can produce certain actions (perceived self-efficacy) cannot be considered the same as beliefs about whether actions affect outcomes (Bandura, 1997). If a teacher believes that they can effectively deliver tobacco prevention education in the classroom (self-efficacy) but does not feel that education would have a positive impact on the students, motivation to deliver the education could be lacking.

Bandura distinguishes between efficacy expectations and outcome expectations in terms of their differences in the chronology of occurrence and focus on beliefs about whether behaviours can be performed (Dellinger et al., 2008). Efficacy expectation is the principle that one can successfully conduct the behaviours required to produce the outcome (Bandura, 1997). Outcome expectations are then based on whether behaviours will result in certain outcomes (Bandura, 1997).

Outcome Value. According to self-efficacy theory, the outcome value is the degree of importance one ascribes to the outcome of the behaviour (Bandura, 1977). For the context of this study, it is important to determine not only if teachers believe that The Academy for Tobacco Prevention will prevent tobacco use in their students, but to determine the value that grade 4, 5 and 6 teachers place on tobacco use prevention programming in generally for students of this age. Teachers prioritize the health-related programs they deliver in classrooms because of competing priorities. Figure 4 outlines how outcome value, together with efficacy and outcome expectations contribute to a comprehensive self-efficacy construct (Perry-Casler et al., 1997).
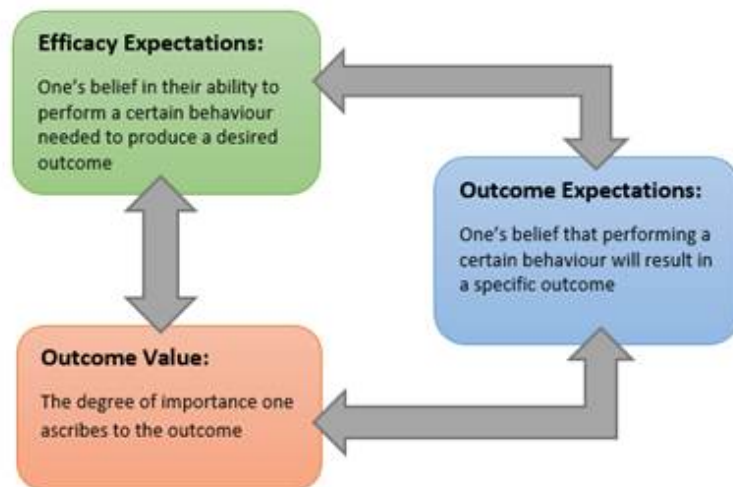
Figure 2. Self-Efficacy constructs

Summary

There is limited research in the area of elementary teachers' perceived self-efficacy for teaching tobacco prevention education. A scoping review revealed only one study found that looks specifically at self-efficacy factors for elementary teachers and delivering tobacco prevention education to students (Perry-Casler et al., 1997). Perry-Casler et al. (1997) recommended that a follow up study be conducted to determine whether self-reported efficacy expectation for teaching tobacco are congruent with actual teaching behaviours (Perry-Casler et

16

al., 1997). Other literature regarding school based preventative education suggests that teachers' self-efficacy and principals' buy-in are key factors affecting implementation. The likelihood of teachers successfully implementing a tobacco prevention program for grades 7 and 8 were found to possess common characteristics including physical education teachers and daily internet use (Sy & Glanz, 2008). Overall, school context and the school environment also contributed to successful implementation. Durlak (2008) reported that less than 5% of over 1200 published prevention studies provide data on program implementation, indicating a further need for this type of research.

CHAPTER THREE: METHODOLOGY

Study Design

This study utilized an explanatory sequential mixed methods design, in which

quantitative data collection occurred through online survey, and qualitative interviews were used

to follow up on the quantitative findings. This design is useful for assessing trends and

relationships quantitatively and explaining the mechanisms or processes behind them

qualitatively (Creswell & Plano Clark, 2017). Below, Figure 4 illustrates the study design,

showing the steps of data collection and data analysis.
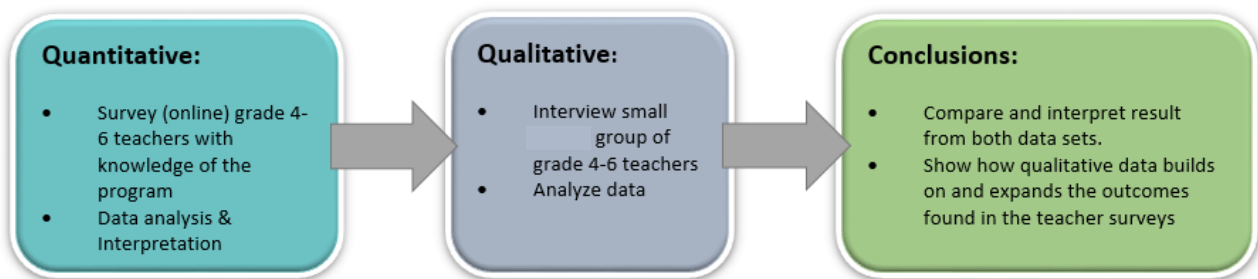
Figure 3. Steps of data collection and data analysis

Instruments

An online survey was sent to teachers who had logged onto the Alberta Health Services'

Academy for Tobacco Prevention program website (which is needed to access the online

program). The online survey consisted of 28 multiple choice questions divided into 3 categories

of questions, including demographic and comparison group assignment, self-efficacy, and

program design questions. Demographic and comparison group assignment questions and

program design questions were created by the principal investigator based on literature outcomes

and the research question. Self-efficacy questions were drawn from the Perry-Casler (1997)

study which explores teachers' self-efficacy factors in implementing tobacco prevention

education. In addition to the questions adapted from Perry-Casler (1997), four questions were

included from the Ohio State Teacher Efficacy Scale (OSTES), Factor 3: Efficacy for Student Engagement (Tschannen-Moran & Hoy, 2001). The OSTES questions focus on the role teachers play in motivating students, influencing students to value learning, increasing student self-efficacy, and supporting families to help children to do well in school (Tschannen-Moran & Hoy, 2001). Based on the analysis from Tschannen-Moran & Hoy (2001), the questions included within Factor 3: Efficacy for Student Engagement could be considered reasonable valid and reliable (Cronbach alpha of 0.87, as per Tschannen-Moran & How, 2001) when exploring the construct of teacher efficacy. Regarding outcome expectations Perry-Casler (1997) had asked if the teachers felt the students would be more knowledgeable, and have gained (refusal) skills. For outcome value Perry-Casler asked a health topic ranking question to determine when compared to other topics where did tobacco prevention rank. Both of these have been included in the survey as well.

The quantitative survey questions were pilot-tested with six teachers before the surveys are sent out to the larger groups of teachers that had accessed The Academy for Tobacco Prevention program. Participants reviewed the survey for functionality and clarity. No changes to the survey were deemed necessary based on the pilot-testing.

Demographic and Comparison Group Assignment Questions. Questions in the demographic and comparison group assignment included asking the teachers to confirm if they currently teach, or in the last year have taught, grades 4-6 in Alberta. The survey included a question which asked how many years of teaching experience the participants had, as well as if they have received training in tobacco prevention education of any kind. Past experience in delivering any kind of tobacco prevention education was required to compare responses of teachers with varying degrees of familiarity with the topic of tobacco prevention. The comparison group question, used during the analysis, determined if respondents had fully, partially, or not at all implemented The Academy for Tobacco Prevention program within their classroom.

Self-Efficacy Questions. Self-efficacy questions are divided into three areas: efficacy expectations, outcome expectations, and outcome value. Several 5-point Likert-type questions were used to assess the level of perceived confidence (from 'not at all confident' to 'very confident') in their ability to teach The Academy for Tobacco Prevention. The same 5-point Likert type questions was used to determine the level of belief that when The Academy for Tobacco Prevention is taught, it will have a positive impact on students. Outcome value was assessed by utilizing a health topic ranking question to determine the level of perceived importance that the teachers placed on tobacco prevention education.

Program Design Questions. Program design questions allow for insight into how the unique and innovative design of The Academy for Tobacco Prevention plays a role in a teacher's decision to implement the program in their classroom. Five-point Likert-type questions allow teachers to rank their level of importance (from 'not at all important' to 'extremely important') of the format (free, online, and interactive) in their decision to implement The Academy for Tobacco Prevention. Other questions in this category include a 5-point Likert-type scale of importance teachers have placed on the inclusion of a cooperative card game, and if teachers did or would recommend this program to others. The complete survey, including coded values, is in Appendix 1.

The survey was deployed in Qualtrics Research Suite® to ensure data collection was streamlined, anonymous, and confidential. The principal investigator did not have access to individual teacher's contact information, ensuring teacher anonymity and confidentiality. Responses to the survey were collected anonymously and could not be traced back to respondents. Once participants consented to the online survey, completed the questions and submitted the responses, participants were not able to withdraw from the study, as there was no way to identify which set of responses to remove. This potential issue was outlined in the consent form. All data and responses remained on the Qualtrics servers at the University of Lethbridge.

Qualitative Questions. Once the survey data was being collected and analyzed, the qualitative interview guide was finalized so that teachers' comments enhance the results using their own words and situations. Questions were created collaboratively with the study supervisor, and designed as open-ended, utilizing the themes from the online survey:

1. Describe your teaching style/method.
2. Tell me how students learn in your classroom.

3. Reflect on how you made the decision to implement or not to implement The Academy for Tobacco Prevention.

4. Explain what is needed to enhance your confidence in delivering The Academy for Tobacco Prevention.

5. Describe the barriers/challenges you experienced in implementing The Academy for Tobacco Prevention.

6. Did you recommend the Academy for Tobacco Prevention to another teacher? Why/why not?

7. Do you believe the Academy for Tobacco Prevention is effective in preventing future tobacco use for students in grades 4-6? Why/Why not?

8. Can you outline the tools you already had/ you would have needed to implement The Academy for Tobacco Prevention?

Participants

For teachers to be eligible to participate in the study they needed to be either currently teaching, or within the last year have taught, Grade 4, 5, or 6 in Alberta, and have awareness of The Academy for Tobacco Prevention program. This grade range was chosen for this study because The Academy for Tobacco Prevention program is designed for students in Grades 4 through 6. For the quantitative component, once emails were sent out to the larger group of teachers in the Alberta Health Services database, a follow-up reminder was sent out two weeks after the initial email to target non-responders.

Qualitative participants included Grade 4, 5, and 6 teachers in Alberta, and included a mixture of individuals based on their program implementation status (fully, partially, or none) and willingness to participate in an interview. Participants were recruited from the Alberta

Health Services database. Follow up interviews for the qualitative phase of the study were completed by telephone.

Ethics

Ethical approval was obtained through the University of Alberta Human Research Ethics Board (study Pro00083172). Operational and administrative approvals were also obtained from Alberta Health Services, Provincial Research Administration Innovation & Research Management and the Tobacco Reduction Program.

Recruitment

As an existing requirement to access the online Academy for Tobacco Prevention program, teachers provide demographic information (including email address) into the website that is kept in an Alberta Health Services database. A letter of invitation, consent form, and survey links were emailed to all teachers in that database (consent form included in Appendix 1). Email invitations were re-sent to non-responders after two weeks. The principal investigator is an employee of the Alberta Health Services Tobacco Reduction Program and was involved in the creation of The Academy for Tobacco Prevention. Due to this potential conflict in accessing the teacher emails, the manager of the Tobacco Reduction program managed the data request and sent the recruitment email.

Participants were invited to participate in the qualitative portion of the study (see letter of invitation in Appendix 2) through the email from Alberta Health Services. Potential participants were asked to reach out to the researcher directly. Participants were provided with the consent form via email prior to the interview. Participants were advised that they could choose not to participate, not answer any of the questions, or remove themselves from the study at any time. Participants were anonymous throughout the analysis phase by utilizing ID numbers and not names. Names and emails of interview participants are kept on secure servers and password

protected University of Lethbridge computers on University property keeping all contact information confidential and secure and only available to the principal investigator.

Measurements

In the analysis, the intervention (teachers that implemented the program) and control group (teachers that didn't implement the program) compared the three main outcome variables: efficacy expectation, outcome expectation, and outcome value. Based on the teachers' opinions, all of the self-efficacy variables use a 5-point Likert scale type questions to report if they felt confident in being able to run the program, if they felt the program would be effective, and if the outcome is of value based on the age of the student. Likert scale responses are ordinal and were treated as scale for some analyses. Questions in the survey looking at outcome value and outcome expectations are based in social cognitive theory and are modeled from previous work by Perry-Casler (1997). Question responses were coded within the Qualtrics survey platform based on the variable type, allowing the data to be easily exported into and analyzed using Statistical Package for the Social Sciences (SPSS) v. 26. Once exported the variables were reviewed to ensure the correct variable type was assigned. Likert scale questions were categorized as scale so parametric tests could be utilized if found to be normally distributed.

Outcomes for this study include short, medium, and long-term effects based on the findings. Short-term outcomes include providing recommendations for enhanced implementation of The Academy for Tobacco Prevention based on the identified positive and negative variables affecting implementation. Medium-term outcomes include the potential to provide future program developers the factors that contribute to successful implementation of non-mandated health related curriculum in the classroom, as well as to contribute to Alberta-based research in the area of tobacco prevention. While examining long-term outcomes is beyond the scope of this

study, I believe that enhanced program utilization and program implementation knowledge will lead to lower overall tobacco prevalence rates. A logic model is outlined in Appendix 4.

Utilizing an explanatory sequential mixed method design, the data analysis first consisted of the statistical analysis of quantitative survey responses. Once the statistical analysis was complete a thematic coding for participant interview responses was done to build on the results from the survey.

Quantitative Data Analysis. The null hypothesis is: self-efficacy factors do not affect Grade 4, 5, or 6 teachers' decision to implement a tobacco prevention program. Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) v. 26. Teachers were assigned to comparison groups based on full or no/partial implementation of the program. Comparison groups were created based on teachers' responses to the online survey.

Likert type questions including short form OSTES (3rd factor) questions served as scale variables for the dependant variable (various self-efficacy factors) including the ranking of confidence in program delivery, program outcome value, and outcome expectation. An Analysis of Variance (ANOVA) was used to determine statistical significance, with the p-value set at 0.05 significance.

Qualitative Analysis. Once the interviews were complete and transcribed, I conducted a

thematic analysis, utilizing a data analysis spiral (Creswell & Plano Clark, 2017) and open

coding to review the findings from the interviews. This process is depicted in Figure 4 below.

Data Collection

Managing and Organizing the Data

Reading and Memoing Emergent Ideas

Describing and Classifying Codes into Themes

Developing and Assessing Interpretations

Representing and Visualizing the Data

Account of Findings
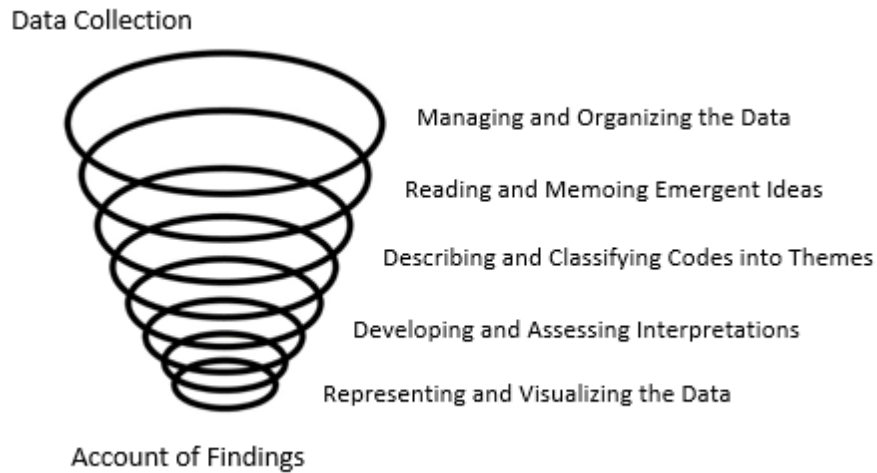
Figure 4: Data analysis spiral (Creswell & Plano Clark, 2017)

During an initial meeting with a supervisory team member, the seven interview

transcripts were reviewed and analyzed into preliminary and emergent ideas. Interview responses

were then reviewed line by line, to attach common meaning, and then condense common words

and concepts into themes. Common concepts and themes were compiled by reviewing and

comparing responses to common questions as well as different questions. For example, teaching

style or method responses were directly compared to confidence in delivering the program.

External and systemic factors also play a role in the decision-making process for

implementing a tobacco prevention program in the classroom (Hodges et al., 2016). In the

qualitative phase, open-ended questions were used in relation to the overall challenges and

barriers to implementing tobacco reduction type of programming. These questions further

explored the individual self-efficacy factors examined in the survey questions.

Through thematic analysis, the qualitative component of the study provided the opportunity to explore personal factors such as self-efficacy along with the school environment and context in which the teachers work. One of the benefits of thematic analysis is its flexibility in analysis, and allows categories to evolve from the data (Braun & Clarke, 2006). Qualitative interviews with participants were recorded and transcribed to text. During the analysis phase the data was categorized into themes through a process of coding and condensing the codes. Themes provided names for the purpose of discussion in the results (Braun & Clarke, 2006).

Mixed Method Analysis. Emergent themes from the interview transcripts (quantitative analysis) were used to confirm, enhance, and build upon the (quantitative) online survey results. Utilizing the process of conjunctive triangulation, the quantitative and qualitative data was reviewed and discussed based on the explanatory framework of the mixed methods study design (Mertens & Hesse-Biber, 2012). Conjunctive triangulation in a mixed method design, assigns a distinctive role to both the quantitative and qualitative research methods, and allows the results to work together in how the findings are interpreted and discussed. (Howe, 2012) This type of triangulation of the data allowed for having two type of methods for researching the same research question (Howe, 2012). This is a different approach from disjunctive triangulation, which indicates that some thing makes something else happen, or one explains the other (Howe, 2012). The qualitative data is used to confirm, explain, and build upon the quantitative findings from the teacher responses on the survey. I have used conjunctive triangulation to interpret the mixed methods results, so it is acknowledged that this a variation from the traditional interpretation of the explanatory sequential design where the qualitative results explain the quantitative results. For displaying the results of the study, Chapter 4 shows the distinct results from the quantitative analysis and statistical calculations, followed by the qualitative thematic analysis findings. Chapter 5 weaves both sets of results into overall findings, discussion, recommendations, and conclusions.

CHAPTER FOUR: RESULTS

Emails to potential respondents were sent approximately two weeks apart to 292 email addresses. During that time 48 responses were collected. After reviewing the number of responses, an additional recruitment email was sent to the teacher database to increase the number of responses. This second email was sent to 365 email addresses and brought the total number of responses to 94. (The number of email addresses in the database had increased due to an additional five months of teachers accessing the program and inputting their information into the database.) It was not possible to determine an actual response rate, due to the fact that the email sent to potential respondents was sent by a third party (Alberta Health Services Tobacco Reduction Program) and it was not determined how many emails were undeliverable and may not have reached potential participants during each of the data collection attempts.

Dates for recruitment are included in Table 1. During the data collection phase between November 9, 2018 and May 1, 2019, a total of 94 responses were recorded in Qualtrics based on answering the study inclusion question confirming they were a teacher in Alberta, teaching grade 4, 5, or 6 currently (or within the last 2 years). Of those 94 responses, 19 cases were removed due to respondents not completing the survey after answering the initial inclusion question, leaving 75 cases for the analysis (n=75). No one withdrew from the study.

Table 1
Data Collection Details

Activity	Dates	# of Emails	Responses
Overall Timeline	Nov 9, 2018 – May 1, 2019	365	94
First Email to Teachers	November 9, 2018	292	Not collected*
Second Email to Teachers	November 26, 2018	292	48
Third Email to Teachers	April 18, 2019	356	94

* Number of first email responses was not collected, because the second email was a reminder for the initial collection of responses

Survey Respondent Demographics

Demographic questions or independent variables for the sample included: if they had implemented The Academy for Tobacco Prevention in their classroom, what grade the teachers currently taught, and how long they had been teaching those grades. The demographic characteristics of the study sample are displayed below in Table 2.

Table 2
Demographics of Study Sample

Characteristic	n	%
Grade Respondents Currently Teach		
Grade 4	22	30.1
Grade 5	18	24.7
Grade 6	12	16.4
Split Class	21	28.8
Total (n)	73	100.0
Years Teaching Grade 4, 5, or 6		
1-5	44	58.7
6-10	16	21.3
11-15	8	10.7
16+	7	9.3
Total (n)	75	100.0
Implementation of Program		
No	10	13.3
Some	29	38.7
Yes	36	48.0
Total (n)	75	100.0
Formal Training in Tobacco Prevention		
No	70	93.3
Yes	2	2.7
Don't Know	3	4.0
Total (n)	75	100.0

Summary Statistics

A summary of all variables and frequencies in each category are outlined in Tables 3-6 and are organized by category: program design (Table 3), efficacy expectations (Table 4), outcome value (Table 5), and outcome expectations (Table 6). For eight questions/variables

missing values were imputed by SPSS using series mean for ordinal/scale (Likert scale) questions. The variables with missing values included: Importance of Tobacco Prevention in Grade 4, Importance of Tobacco Prevention in Grade 5, Importance of Tobacco Prevention in Grade 6, Effectiveness of Tobacco Prevention in Grade 4, Effectiveness of Tobacco Prevention in Grade 5, Effectiveness of Tobacco Prevention in Grade 6, Importance of the card game in the decision to implement the program, and Confidence in Teaching the Card Game (Shadows of the Academy). Less than 10% (<10%) of data was missing in each of the variables listed, allowing for missing data to be imputed using series mean and not changing the validity of the data set (Williams, 2013).

All Likert scale questions were categorized as continuous/scale for statistical analysis. All continuous/scale values (or dependent variables), except for "confidence in teaching the cooperative card game (Shadows of the Academy)", were normally distributed. "Confidence in teaching the cooperative card game", was positively skewed (1.19) and as such results should be interpreted with caution.

Summary statistics for the program design questions are outlined in Table 3. All of the variables were normally distributed, with the exception of 'confidence in being able to teach the cooperative card game,' which was positively skewed. Confidence related questions were divided into three self-efficacy based categories which included efficacy expectation, outcome expectation, and outcome value. Each category contained multiple questions where respondents answered based on a Likert scale of responses (scale 1-4 with 1 being not at all confident and 4 being very confident).

Table 3
Program Design

Item	N	Mean (SD)	Mode	Median	Min.	Max.
Importance of the program format in the teachers' decision to implement the program (5-point Likert scale)	73	3.91 (.939)	4	4	Not at all Important (1)	Extremely Important (4)
Importance of the card game element in the teachers' decision to implement the program (5-point Likert scale)	75	2.84 (1.358)	4	3	Not at all Important (1)	Extremely Important (4)
Confidence in their ability to teach the cooperative card game "Shadows of the Academy" (4-point Likert scale)	75	2.35 (1.104)*	1	3	Not at all Confident (1)	Very Confident (4)

*positively skewed

Table 4
Efficacy Expectation

Item	n	Mean (SD)	Mode	Median	Min.	Max.
Confidence in their ability to deliver The Academy for Tobacco Prevention (4-point Likert scale)	74	3.18 (.817)	3	3	Not at all confident (1)	Very confident (4)
Confidence in their ability to teach tobacco prevention education content in general (4-point Likert scale)	75	3.03 (.657)	3	3	Not at all confident (1)	Very confident (4)
Confidence in their ability to encourage students not to use tobacco (4-point Likert scale)	75	3.44 (.620)	4	4	Not at all confident (1)	Very confident (4)
Confidence in their ability to motivate students who show low interest in tobacco prevention education (5-point Likert scale)	75	3.59 (.737)	3	3	None at all (1)	A great deal (5)
Confidence in their ability to assist families in helping their children prevent tobacco use (5-point Likert scale)	74	2.70 (.716)	3	3	None at all (1)	A great deal (5)
Confidence in their ability do to get students to believe they can prevent tobacco use (5-point Likert scale)	75	3.96 (.625)	4	4	None at all (1)	A great deal (5)
Confidence in their ability to help students value tobacco prevention (5-point Likert scale)	75	4.13 (.684)	4	4	None at all (1)	A great deal (5)

Table 5
Outcome Value

Item	N	Mean (SD)	Mode	Median	Min.	Max.
Perceived importance of tobacco prevention by grade (5-point Likert scale):						
Grade 4	75	4.29 (.871)	5	5	Not at all important (1)	Extremely important (5)
Grade 5	75	4.54 (.715)	5	5	Not at all important	Extremely important
Grade 6	75	4.83 (.614)	5	5	Not at all important	Extremely important
Intention to implement The Academy for Tobacco Prevention in the future	73	1.89 (.356)			No (1)	Yes (2)

Table 6
Outcome Expectations

Item	N	Mean (SD)	Mode	Median	Min.	Max.
Perceived effectiveness of tobacco prevention by grade (4-point Likert scale)					Completely ineffective (1)	Very effective (4)
Grade 4	75	3.31 (.443)	3	3		
Grade 5	75	3.30 (.444)	3	3		
Grade 6	75	3.33 (.484)	3	3		
Likelihood that students will have increased social competence and social influence after playing Shadows of the Academy (4-point Likert scale)	69	3.03 (.568)	3	3	Extremely unlikely (1)	Extremely likely (4)
Likelihood that students will be more knowledgeable about tobacco related issues after receiving The Academy for Tobacco Prevention (4-point Likert scale)	72	3.54 (.768)	4	4	Extremely unlikely (1)	Extremely likely (4)
Likelihood that students will be better able to communicate refusal to peers after receiving The Academy for Tobacco Prevention (4-point Likert scale)	72	3.22 (.537)	3	3	Extremely unlikely (1)	Extremely likely (4)

Table 7

Perceived importance of tobacco prevention compared to other health topics

Health Topic Response	n	Mean (SD)	Mode	Median
Physical Activity/Fitness	75	1.77 (1.149)	1	1
Dietary Behaviours & Nutrition	75	2.21 (1.142)	2	2
Tobacco Use Prevention	75	3.62 (1.062)	4	4
Injury Prevention & Safety	75	3.85 (1.552)	3	3
Alcohol/Drug Use Prevention	75	3.93 (1.110)	5	4
Sexually Transmitted Infections	75	5.63 (0.825)	6	6

Quantitative Results

Table 8

Study Variables	ANOVA	P
Program Design		
Implementation status and importance of the program format in the decision to implement	$F(2,70.0)=1.068$	0.349
Teaching experience and importance of the program format in the decision to implement	$F(3,72.0)=1.810$	0.153
Implementation status and importance of the card game in the decision to implement	$F(2,68.0)=13.576$	0.01*
Teaching experience and importance of the card game in the decision to implement	$F(3,69.0)=0.928$	0.432
Implementation status and confidence in teaching the cooperative card game as part of the program	$F(2,67.0)=13.565$	0.01*
Teaching experience and confidence in teaching the cooperative card game as part of the program	$F(3,74.0)=1.578$	0.202
Efficacy Expectation		
Implementation status and confidence in being able to deliver the program	$F(2,71.0)=5.034$	0.009*
Teaching experience and confidence in being able to deliver the program	$F(3,70.0)=3.683$	0.016*
Implementation status and confidence in teaching tobacco prevention education content in general	$F(2,72.0)=4.371$	0.016*
Teaching experience and confidence in teaching tobacco prevention education content in general	$F(3,74.0)=0.410$	0.746
Implementation status and confidence in ability to encourage students not to use tobacco	$F(2,72.0)=2.892$	0.062
Teaching experience and confidence in ability to encourage students not to use tobacco	$F(3,74.0)=2.227$	0.093
Implementation status and confidence in ability to motivate student who show low interest in tobacco prevention education	$F(2,72.0)=1.980$	0.145
Teaching experience and confidence in ability to motivate student who show low interest in tobacco prevention education	$F(3,71.0)=0.389$	0.761
Implementation status and confidence in ability to assist families in helping children prevent tobacco use	$F(2,71.0)=0.783$	0.461
Teaching experience and confidence in ability to assist families in helping children prevent tobacco use	$F(3,70.0)=0.346$	0.792
Implementation status and confidence in ability to get students to believe they can prevent tobacco use	$F(2,72.0)=1.980$	0.145
Teaching experience and confidence in ability to get students to believe they can prevent tobacco use	$F(3,71.0)=2.492$	0.067
Implementation status and confidence in ability to help students value tobacco prevention	$F(2,72.0)=1.572$	0.215

Table 8

Study Variables	ANOVA	*P*
Efficacy Expectation Continued	$F(3,71.0)=0.586$	0.626
Teaching experience and confidence in ability to help students value tobacco prevention		
Outcome Value		
Implementation status and importance of tobacco prevention in grade 4	$F(2,72.0)=0.869$	0.424
Teaching experience and importance of tobacco prevention in grade 4	$F(3,71.0)=2.512$	0.065
Implementation status and importance of tobacco prevention in grade 5	$F(2,72.0)=1.513$	0.227
Teaching experience and importance of tobacco prevention in grade 5	$F(3,71.0)=2.764$	0.048*
Implementation status and importance of tobacco prevention in grade 6	$F(2,72.0)=2.245$	0.113
Teaching experience and importance of tobacco prevention in grade 6	$F(3,71.0)=7.287$	0.01*
Outcome Expectation		
Implementation status and confidence in effectiveness of the program in grade 4	$F(2,72.0)=0.855$	0.430
Teaching experience and confidence in effectiveness of the program in grade 4	$F(3,71.0)=2.655$	0.055
Implementation status and confidence in effectiveness of the program in grade 5	$F(2,72.0)=0.715$	0.492
Teaching experience and confidence in effectiveness of the program in grade 5	$F(3,71.0)=1.268$	0.292
Implementation status and confidence in effectiveness of the program in grade 6	$F(2,72.0)=0.453$	0.638
Teaching experience and confidence in effectiveness of the program in grade 6	$F(3,71.0)=4.100$	0.010*
Implementation status and likelihood students will have increased social competence and social influence after playing the cooperative card game	$F(2,66.0)=0.014$	0.986
Teaching experience and likelihood students will have increased social competence and social influence after playing the cooperative card game	$F(3,65.0)=1.551$	0.210
Implementation status and likelihood that students will be more knowledgeable about tobacco related issues after receiving the program	$F(2,69.0)=0.212$	0.809
Teaching experience and likelihood that students will be more knowledgeable about tobacco related issues after receiving the program	$F(3,68.0)=0.145$	0.932

Program Design. A summary of the inferential statistics results is located in Table 8. A one-way analysis of variance was conducted to evaluate the relationship between the implementation status of The Academy for Tobacco Prevention and how important the card game component was in the decision to implement the program. The independent variable, Implementation Status, had three levels: Yes, No, Some. The dependent variable was level of importance. The means and standard deviations for each group are shown in Table 9. The ANOVA was significant, $F(2, 67.0) = 13.565$, $p =<.001$, indicating a significant difference between the groups.. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the 3 groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between Yes and Some for implementation status ($p < 0.05$).

Table 9
Relationship of Implementation Status and Importance of the Card Game in Deciding to Implement

Implementation of Program	*n*	M (SD)
Yes	35	3.49 (1.067)
Some	26	1.92 (1.230)
No	9	3.00 (1.323)

A one-way analysis of variance (ANOVA) was conducted to evaluate the relationship between the implementation status of The Academy for Tobacco Prevention and confidence in teaching the cooperative card game. The independent variable, Implementation Status, had three levels: Yes, No, Some. The dependent variable was level of confidence. The means and standard deviations for each group are shown in Table 10. The ANOVA was significant, $F(2, 68.0) = 13.576$, $p =<.001$, indicating a significant difference between the groups. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the three groups were unequal we used the Dunnett's C (Williams, 2013) test for post hoc comparisons. A significant difference was found between Yes and Some for implementation status ($p < 0.05$).

38

Table 10
Relationship of Implementation Status and Confidence in Teaching the Card Game

Implementation of Program	n	M (SD)
Yes	36	2.92 (1.025)
Some	26	1.62 (0.852)
No	9	2.22 (1.093)

Efficacy Expectation. A one-way analysis of variance was conducted to evaluate the relationship between the implementation status of The Academy for Tobacco Prevention and how confident the teacher was in delivering The Academy for Tobacco Prevention. The independent variable, Implementation Status, had three levels: Yes, No, Some. The dependent variable was level of confidence. The means and standard deviations for each group are shown in Table 11. The ANOVA was significant, $F(2, 71.0) = 5.034$, $p = .009$, indicating a significant difference between the groups. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the 3 groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between Yes and No for implementation status ($p < 0.05$).

Table 11
Relationship of Implementation Status and Confidence in Delivering the Academy for Tobacco Prevention

Implementation of Program	n	M (SD)
Yes	36	3.36 (0.833)
Some	29	3.17 (0.122)
No	9	2.44 (0.882)

A one-way analysis of variance was conducted to evaluate the relationship between the amount of teaching experience and confidence in being able to deliver The Academy for Tobacco Prevention. The independent variable, Teaching Experience, had four levels: 1-5, 6-10, 11-15, 16+. The dependent variable was level of importance. The means and standard deviations for each group are shown in Table 12. The ANOVA was significant, $F(3, 70.0) = 3.683$, $p = .016$, indicating a significant difference between the groups. Follow-up tests were conducted to

evaluate pairwise differences among the means. As variances among the three groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between 1-5 and 6-10 for years of teaching experience ($p < 0.05$).

Table 12

Relationship of Teaching Experience and Confidence in Delivering the Academy for Tobacco Prevention

Years of Teaching Experience	*n*	M (SD)
1-5	44	3.34 (0.680)
6-10	15	2.60 (1.121)
11-15	8	3.13 (0.354)
16+	7	3.43 (0.787)

One-way ANOVA calculations were conducted on the other efficacy expectation variables in relation to the three levels of implementation status (yes, some, no) and years of teaching experience. No other variable included in the efficacy expectation category resulted in a statistically significant outcome.

A one-way analysis of variance was conducted to evaluate the relationship between the implementation status of The Academy for Tobacco Prevention and how confident the teacher was in delivering tobacco prevention education content in general. The independent variable, Implementation Status, had three levels: Yes, No, Some. The dependent variable was level of confidence. The means and standard deviations for each group are shown in Table 13. The ANOVA was significant, $F(2, 72.0) = 4.371$, $p = .016$, indicating a significant difference between the groups. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the three groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between Yes and Some for implementation status ($p < 0.05$).

Table 13

Relationship of Implementation Status and Confidence in Delivering General Tobacco Prevention Education

Implementation of Program	*n*	M (SD)
Yes	36	3.25 (0.692)
Some	29	2.83 (0.539)
No	10	2.80 (0.632)

Outcome Value. A one-way analysis of variance was conducted to evaluate the relationship between the amount of teaching experience and importance of receiving tobacco prevention education in grade 6. The independent variable, Teaching Experience, had four levels: 1-5, 6-10, 11-15, 16+. The dependent variable was level of importance. The means and standard deviations for each group are shown in Table 14. The ANOVA was significant, $F(3, 71.0) = 7.287$, $p = <.001$, indicating a significant difference between the groups. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the three groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between 1-5 and 11-15 (mean difference: .923), 6-10 and 11-15 ($p < 0.05$), 11-5 and 16+ for years of teaching experience ($p < 0.05$).

Table 14

Relationship of Teaching Experience and the Importance of Tobacco Prevention Education in Gr. 6

Years of Teaching Experience	*N*	M (SD)
1-5	44	4.90 (0.291)
6-10	16	4.98 (0.059)
11-15	8	3.98 (1.589)
16+	7	5.00 (0.000)

A one-way analysis of variance was conducted to evaluate the relationship between the amount of teaching experience and importance of receiving tobacco prevention education in grade 5. The independent variable, Teaching Experience, had four levels: 1-5, 6-10, 11-15, 16+. The dependent variable was level of importance. The means and standard deviations for each group are shown in Table 15. The ANOVA was significant, $F(3, 71.0) = 2.764$, $p = .048$,

indicating a significant difference between the groups. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the three groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between 1-5 and 6-10 for years of teaching experience ($p < 0.05$).

Table 15
Relationship of Teaching Experience and Importance of Tobacco Prevention Education in Gr. 5

Years of Teaching Experience	N	M (SD)
1-5	44	4.43 (0.653)
6-10	16	4.88 (0.342)
11-15	8	4.19 (1.363)
16+	7	4.86 (0.378)

One-way ANOVA calculations were conducted on the other outcome value variables in relation to the three levels of implementation status (yes, some, no) and years of teaching experience. No other variable included in the outcome value category resulted in a statistically significant outcome. The summary of the tests conducted on these variables and their significance are included in Table 8

Outcome Expectation. A one-way analysis of variance was conducted to evaluate the relationship between the amount of teaching experience and perceived effectiveness of the program for grade 6 students. The independent variable, Teaching Experience, had four levels: 1-5, 6-10, 11-15, 16+. The dependent variable was level of likelihood. The means and standard deviations for each group are shown in Table 16. The ANOVA was significant, $F(3, 71.0) = 4.100$, $p = .010$, indicating a significant difference between the groups. Follow-up tests were conducted to evaluate pairwise differences among the means. As variances among the three groups were unequal I used the Dunnett's C test for post hoc comparisons. A significant difference was found between 1-5 and 16+ years of teaching experience ($p < 0.05$).

Table 16

Relationship of Teaching Experience and Perceived Effectiveness of the Academy
for Tobacco Prevention in Gr. 6

Years of Teaching Experience	*N*	M (SD)
1-5	44	3.25 (0.472)
6-10	16	3.25 (0.394)
11-15	8	3.50 (0.535)
16+	7	3.86 (0.378)

One-way ANOVA calculations were conducted on the other outcome expectation variables in relation to the three levels of implementation status (yes, some, no) and years of teaching experience. No other variable included in the outcome expectation category resulted in a statistically significant outcome. The summary of the tests conducted on these variables and their significance are included in Appendix 6.

Qualitative Findings and Results

Over the course of the three emails sent to the teachers, a total of seven teachers were willing to participate in a telephone interview which all seven completed. Interviews lasted from 10-20 minutes. Implementation status of the Academy for Tobacco prevention was not a variable for the qualitative component; however, it was disclosed that of the seven teachers interviewed, six had implemented the program in the classroom, and one had not. The seven interviews were recorded using Skype for Business web application, and audio files were saved as MP4 files on the University of Lethbridge server and transcribed for analysis.

Multiple Strategies for Teaching and Learning. The teachers were asked to discuss their teaching style or method in the classroom, which was coupled with a follow up question that asked to describe how children learned in their classroom. It was common for the teachers to express hesitancy in explaining their specific teaching method. As one participant said "That's a little complicated, I'm not sure… that's a loaded question… I guess being in elementary… teaching grade 6 I've always tried to style after being kind of a junior high school style" and

another said "oh gosh haha, I don't even know how to answer that". It was easier for the teachers to highlight the multiple strategies implemented for student learning within the classroom. All of the teachers discussed utilizing multiple methods of instruction and apply a variety of learning strategies with their students. The multiple methods included teacher directed instruction, students working with their peers (in pairs or groups), independent assignments, and accessing technology. One participant indicated that their students learned "through a combination teacher directed instruction, cooperative learning, and independent learning so I like to give them lots of different ways to access the information".

    Access and Alignment. When discussing decision making factors for deciding to implement The Academy for Tobacco Prevention in their classroom there was a consistent theme for the program being easy to use and well-liked by students. One participant stated that they "really enjoyed that the presentations were made, easy to use, no cost… and then I made some resources to go with it". Teachers particularly liked that the program was created in Alberta and followed the Alberta health curriculum. One participant said "This is my third year doing it and I find the kids absolutely love the program, they love the characters, they just love the way its set up". Accessing the Academy for Tobacco Prevention online was both a positive factor for teachers to decide to implement and discussed as a barrier for implementation due to potential technical glitches for the delivery within the classroom. Having ready-made lessons (with teacher tips), and built-in tools (interactive learning software, trailer video, and card game) were seen as main reasons for deciding to implement. Barriers for delivery included loading of the website itself, and limited time for health curriculum in general. Challenges related to accessing technology was not an identified barrier by the teachers interviewed. Teachers indicated that access to what they needed to deliver the program (SMART board, projector, computer, and internet) was not at all an issue.

Confidence to Deliver. All of the teachers interviewed who delivered the program in their classroom said they had either already recommended the program to another teacher or planned on it. One participant reported "I did recommend it to the other grade 5 teacher, I did recommend it because I thought it was fun and engaging and also very informative both for the teacher and the students". This willingness to recommend indicates a strong confidence in the program itself, and also in their ability to deliver it. Many of the teachers interviewed indicated that they became aware of the program because it was recommended to them from either another teacher or their principal.

When discussing if there was anything needed to enhance or increase their confidence in delivering the program, all of the teachers indicated they had what they needed skill-wise to implement. One participant said, "I think it's pretty good, I think the lesson plans that come with the program background knowledge do a pretty good job in informing me to the point where I feel confident delivering that information". Another participant suggested, "I think it already has what I needed, there are parts for me to talk about and parts for me but then it did a lot of the teaching for me so I could kind of.., sit back and work with kids and get to know them better because I wasn't too busy teaching all the concepts". Once the teachers were familiar with the materials, confidence for delivery was high.

Teachers Hope It Is Effective. When asked if the teachers believed the program was effective in preventing future tobacco use in their students, they were not all that confident. Instead, teachers discussed a hopefulness that the program would make a difference. One participant remarked:

> I sincerely hope so, haha, I mean they are getting the information right, so, I think I remember learning about tobacco prevention when I was in school and you know some of those things stick with you, but that didn't necessarily stop me, haha.

45

Another participant said, "I hope it is, I mean who knows… we chat a fair amount about peer pressure, that type of thing but I hope it opens up conversations and that's what I encourage with students". Ensuring that students received the information about harms associated with tobacco use, and "hard evidence" was important to the teachers. It was acknowledged that it is important to have these conversations with students at this stage because the students will be moving into Junior High or Middle School soon and they need to be ready before they are faced with making a choice. One participant said:

> I hear what they are doing once they leave our school and go to junior high and high school and my personal belief that some of these influences on kids are happening younger and younger so they need to be educated about it.

Several of the responses had teachers reflecting on their own experience in school and leaning on what they felt made a difference for them (whether they thought they made a good decision or not). Ensuring that conversations about tobacco use continue outside of the context of the program delivery was important. Having the students engaged in conversations with others including family and friends was seen as a positive aspect of the program.

Conclusion

Through the process of statistical analysis of survey responses, and the thematic coding of interview transcripts, the output provided unique insight into the research question, looking at the role of self-efficacy in the decision-making factors for grades four to six teachers to implement The Academy for Tobacco Prevention. The following chapter will provide a detailed description and interpretation of the statistical analysis presented in this chapter, while utilizing the interview responses to enhance and further paint the picture of the results of this study.

CHAPTER FIVE: DISCUSSION

Introduction

In this chapter I will discuss the mixed method research findings. I have outlined the quantitative findings presented in chapter four and use that information to provide insight into the study research questions. Qualitative thematic analysis was then used to confirm, build upon, and provide further narrative to the responses provided in the quantitative survey responses. By providing a narrative overview of the analysis of the data, program developers and fellow researchers can apply the information to enhance program utilization and inform future research into decision making factors for teachers implementing non-mandatory programs. Increasing prevention program implementation in elementary schools is a mechanism in working toward the long-term goal of increasing public health outcomes related to tobacco use in the future.

Program Design Impact

The delivery components of The Academy for Tobacco Prevention program were important to teachers. Of the respondents, 74% felt that the format was either very important or extremely important in their decision to implement the program in their classrooms. Teachers acknowledged the positive aspect of multiple teaching methods including, interactive SMART board elements, and fun aspects like the card game and character development within The Academy for Tobacco Prevention.

Teachers had relatively low confidence in being able to teach the cooperative card game itself (Shadows of the Academy). Over half of respondents indicated being either slightly or not at all confident in being able to teach the card game. Confidence in teaching the card game was identified as a concern in program delivery when the program was pilot tested (Alberta Health Services, 2016). In order to address this concern an instructional video was created in addition to the written instructions that are included in the game package (Alberta Health Services, 2016).

Ensuring teachers are aware of the instructional resources that exist is an essential way to increase the confidence levels of teachers to implement the program. The instructional materials for teaching the card game include discussing the flexibility in the rules for playing the game, as it really doesn't matter how the game is played, the goal is for the students to work together to increase social competence and social influence (Alberta Health Services, 2016).

More than 98% of respondents indicated there is an increased likelihood of program effectiveness because the program was developed by Alberta Health Services. This indicates that programs created by the provincial health authority in the future can rely on a strong level of confidence in program quality and perceived effectiveness by teachers in Alberta. In addition to the confidence in Alberta Health Services creating the program leading to increased effectiveness, nearly all respondents recommended the program to another teacher, and planned on implementing the program in their classroom in the future, this was the case for both survey results and interview discussions. This finding indicates a strong confidence by teachers in the program design, and program developer.

All teachers who were interviewed identified using a variety of teaching and student learning methods within the classroom, which was in line with all of the teachers having confidence in delivering the multi-strategy Academy for Tobacco Prevention. It can be inferred that teachers that teach this way would be drawn to a program like this, as it aligns with their teaching style already. Another conclusion is that the program is designed in a way that would fit the way most teachers already teach by incorporating many methods of teaching and learning for their students. It is important to teachers that the program aligns with the Alberta health and wellness curriculum, and that specific student outcomes are identified within the lessons.

Confidence in Delivering the Academy for Tobacco Prevention

Teachers efficacy beliefs are a judgement of their capabilities and relate to their behaviour in the classroom (Tschannen-Moran & Hoy, 2001). It is well established that teacher self-efficacy has been related to student outcomes, effort and enthusiasm in teaching, their openness to new ideas and to experiment, and to a students' own sense of efficacy (Tschannen-Moran & Hoy, 2001). The results from the validity work of the OSTES self-efficacy assessment tool showed that the challenge of measuring teacher self-efficacy is due to its complex nature, and the need for the tool to not be too narrow or too focused (Tschannen-Moran & Hoy, 2001). Similar to the work testing the validity of the OSTES tool, the present study attempted to assess a broad range of confidence-based capabilities that teachers would factor in their teaching behaviours.

Based on the results of the study, confidence played a statistically significant role in the implementation status of the program. Teachers indicating a higher confidence in delivering the program were more likely to implement The Academy for Tobacco Prevention in their classroom. There was also a significant relationship between the implementation status of The Academy for Tobacco Prevention and confidence in delivering tobacco prevention in general. Teachers that had a higher confidence in tobacco prevention information in general were also more likely to deliver the Academy for Tobacco Prevention in their classroom. Teacher interviews found that the teachers who had implemented the program liked that the lessons were provided to them and found the program "did the teaching for [them]". A similar outcome was found in Perry-Casler's (1997) work, which found that most teachers indicated high efficacy expectations to teach tobacco prevention within their classrooms.

49

Outcome Value

The study indicated a statistically significant result in comparing outcome value (valuing the topic area of tobacco prevention) and if the teachers implemented the program in their classrooms for students in Grade 5 and 6. A non-significant relationship with implementation and valuing the outcome in Grade 4 could indicate that as children get older the value of tobacco prevention becomes more valued, as responses for "very important" increased by each grade level (with grade 4 being the least, and grade 6 being the most for these responses). This was also supported by several interview participants discussing that they implemented to program because they needed to prepare students for middle school (Grades 7-9) when tobacco use will be a more significant issue for them to deal with, indicating a lower importance level for lower grades. Outcome Value in Perry-Casler's (1997) work indicated no statistically significant difference between outcome value based on gender and formal training, the latter of which the present study did not include in teacher demographic information.

When asked to rank health topics for grades 4-6 students in order of importance, teachers indicated physical activity, nutrition, and injury prevention above the importance of tobacco prevention. This prioritization persisted despite the fact that tobacco use continues to be the leading cause of preventable death and disease in Canada and throughout the world (World Health Organization, 2016). Tobacco prevention was only valued above alcohol/drug use prevention and sexually transmitted infections when ranking the importance for grades 4-6 students. The ranking question was modeled after Perry-Casler's (1997) work. When comparing results, they were very similar in outcome. The only difference was in this study tobacco use was found to be valued above alcohol/drug use, where in Perry-Casler's study tobacco prevention was valued below alcohol/drug use. Recommendations for supporting teacher decision making for health topic inclusion will be discussed later in the chapter.

50

Outcome Expectation

Teachers did not express strong levels of confidence in the likelihood of the program being effective, with "somewhat effective" being the most indicated response. During teacher interviews, teachers expressed hope that the program was effective because it was engaging and the students had fun when participating in the program. Providing the "facts" was a theme identified within the interview analysis, as many teachers indicated they remembered learning themselves about the harms of tobacco use when they were in school.

In comparing the variable "likelihood for increased social competence and social influence", with the variable "likelihood for increased knowledge around tobacco related information", teachers felt that there was a higher likelihood of increased knowledge than increased social competence and social influence. In the interviews there was a general lack of awareness regarding the concepts of social competence and social influence. There was a general lack of awareness regarding the importance of these concepts when it comes to effective tobacco prevention programming in the classroom. Gaining knowledge about tobacco specific concepts, was secondary to the increasing of social competence and social influence in the development of the Academy for Tobacco Prevention (Alberta Health Services, 2016). It was also discussed in Perry-Casler's (1997) work that teachers focused primarily on the knowledge component associated with tobacco-related harms, rather than the skills and abilities for tobacco use prevention in the future. It was noted as well the need for preservice and in-service designed and promoted for primary grade teachers where the emphasis must be placed on prevention education from a public health perspective (i.e. social influences).

Recommendations

As outlined in the study logic model (Appendix 5), a short-term outcome of the study is to provide recommendations to program developers to enhance and expand program

implementation based on the study findings. As indicated on the outcomes of this study, there are several recommendations to influence the increased uptake of The Academy for Tobacco Prevention by grade 4-6 teachers in Alberta.

It is recommended that there are mandatory and sustained professional development opportunities for elementary (health) teachers in the area of tobacco/substance use prevention. The teachers who were interviewed did not have a strong understanding of effective substance-use prevention strategies and focused primarily on the information and facts provided within the program. Concepts that include increasing social competence and social influence within the students were not identified as effective components for prevention programming, although are considered best evidence for tobacco prevention education (Thomas et al., 2015). This is important because health topics are not mandated, and individual teachers choose which topics to cover in each grade (although sexual health education is mandated provincially). In addition to education on evidence-based components of tobacco prevention, communicating the impact of tobacco use on society, and enhancing teachers' potential role in addressing this public health epidemic can increase the self-efficacy for teachers to deliver The Academy for Tobacco Prevention.

There is a need for an effective and efficient mechanism for teachers to become aware of evidence-based and locally created programming, especially for non-mandatory topics such as tobacco prevention. It is not a realistic expectation for teachers to self-select health related concepts, without an objective understanding of potential health impact and certain developmental levels. Confidence in the program developer (Alberta Health Services) is extremely high and an increased likelihood of the program being effective because of who developed it. Most teachers who had implemented the program found the program by looking on their own or being told about the program by another colleague (another teacher or principal).

It is recommended that the teachers become aware that the program covers a variety of outcomes, as teachers are looking to utilize the small amount of time allotted for health class in an effective way potentially covering multiple outcomes. It is also recommended that the content within the online lessons be presented as different sections, instead of specific grade levels (as it's presented now). By presenting the content in different sections it would allow teachers to determine which sections to present in their classrooms depending on the students in their classes and which specific outcomes they are trying to cover, instead of just by grade.

Table 17
Summary of Recommendations

Recommendation	Rationale
Teacher professional development in tobacco prevention best practice	There is a need to increase the outcome value in elementary school teachers to positively effect program uptake.
Mechanism for consistent program awareness for teachers	With tobacco prevention education non mandatory, there is a need for teachers to consistently become aware of free, locally created curriculum aligned programming available to teachers.
Mandatory health topics indicated in the curriculum based on potential outcome impact	Providing mandatory health topics in certain grades based on potential for the greatest public health impact, and not teacher alone decision.
Market the program by indicating the multiple teaching modes, and available resources to aid instruction	Teachers look for programs that already align with their teaching philosophy and strategy. The majority of teachers utilize a multiple strategy approach to lesson delivery.

Strengths

There are some strengths to highlight for this study. The access to Alberta Health Services data allowed collection efforts to be directed to teachers in Alberta that have logged into the Alberta Health Services Academy for Tobacco Prevention website, and knowledge of the program could be confirmed without large mass emails to teachers hoping they have awareness. The mixed methods design allowed for teacher interviews to provide added context and richness

to the numbers found within the quantitative analysis. Inferences made from quantitative data, can then be confirmed through the dialogue that the teachers provided.

Limitations

Despite the strengths identified, it is important to acknowledge the study limitations. In the follow up interviews I asked teachers about decisions they made in the past and how they made that decision. This type of questioning could have led to recall bias, as teachers may not have recalled with accuracy what components were included in their decision to implement or not to implement the program (Hulley, Cummings, Browner, Grady, & Newman, 2013). Social desirability bias may have also affected the study results, as prevention of youth tobacco use is seen as a desirable topic to be covering in the classroom (Hulley et al., 2013).

Because this study explored individual factors related to the decision-making process, external factors such as teacher workload, school demographics, and school culture may have introduced confounding variables. Both internal and external factors affect decision making for classroom programming, and the extent to which external factors relate to the internal factors being studied were explored through qualitative interviews.

There are a couple of confounding variables that should be considered for this study. Even though tobacco use prevention education is an optional health topic in Alberta, some teachers who participated in the study may have been told they were required to deliver the program by their principals or school administration, which would be a factor in comparing a teachers' likelihood to deliver the program and their sense of self-efficacy. Also, a teachers' lack of comfort level with the software technology itself was not included in the survey, and could play a role in the decision making factor for implementing in the classroom. Even though respondents were told their responses were anonymous, for both on the online survey and in the

interviews, tobacco use prevention would be considered to have a social bias, and favorable responses for delivering the program may be skewed in a positive way due to that bias.

The survey had some limitations as well. In particular, because respondents self-selected into the study, response bias could have impacted the results (Hulley et al., 2013). For example, we do not know how respondents differed in any significant way from non-respondents. Respondents to the survey and interview participants may be considered early adopters to the program, as the program was launched in late 2016. Early adopters may have a higher interest in tobacco reduction in general, as they have sought out the program and have a higher value of the outcome and the innovation of the program design (Rogers, 2003). This bias is reduced by comparing the data of those that do implement the program and those that don't as the decision-making factors are what is being studied for both groups of teachers. A higher sample size would have provided more opportunity for statistical calculation significance, and a higher power. The number of participants who did not implement the program (specifically in grade 4), was low and the outcomes were potentially minimized. As this is a masters' thesis, there is the limitation of a novice researcher.

Another issue in the survey was when the teachers were asked to indicate what grade they taught on the online survey, the option of "split class" was provided in addition to grade 4, 5, and 6. This error in the survey design unfortunately did not allow any calculations to occur regarding grade level without completely excluding the group of responses where a teacher indicated they taught a split class. It would have been possible to utilize those responses when comparing to specific grade taught because they could be grouped in with whatever grade was included in their split grade class. With having the response as simply "split" we cannot know what grades are located in the split.

Another limitation to this study is the absence of gender and age demographics. It is possible that younger teachers were more comfortable with the Program. However, these data were not obtained in the survey. The demographic information questions were focused on years of teaching experience, if formal training in tobacco prevention education had been received, and if the teachers had implemented the Academy for Tobacco Prevention.

Lastly, while this research was being conducted, I was an employee of Alberta Health Services Tobacco Reduction Program, involved with promoting the Academy for Tobacco Prevention as part of my role to other Alberta Health Services staff and teachers. Bias in analysis was prevented by working collaboratively with other supervisory committee members on the identification of initial themes, and line by line review of interview transcripts produced accurate representation of the data. I am also not a teacher, and therefore some teaching and education related concepts could be lost as this is not my educational background.

Conclusion

Findings Implications. The basis of this study is the notion that supporting greater self-efficacy in teachers through greater knowledge in tobacco prevention interventions could ultimately result in significant outcomes related to population health. As outlined in the study logic model (Appendix 5), the outcomes of this study have the potential to inform teachers of their potential impact on population health impacts related to the implementation of effective, curriculum linked programming in their classroom. The findings of this study showed there is a statistically significant relationship between the teachers' implementation status and their level of confidence in being able to deliver the program. Tobacco prevention program developers can utilize this information to address and increase teachers' level of confidence to potentially increase the utilization rate of these types of programs. By increasing the implementation rate of programing teachers play a valuable role in affecting future population health outcomes. Those

population health outcomes include increase in quality of life for those who don't use tobacco, chronic disease incidence reduction, and future health care cost avoidance. Teachers will continue to be conduits to supporting the health of their students (who are future adults), and its program developers, school administrators, and health care providers role to ensure teachers have the skills and tools to make decisions that will have the greatest population health impact.

Dissemination of Results. The results and recommendations for this study will be shared with staff and leadership of the Alberta Health Services, Tobacco Reduction Program, as additional information for consideration as they develop other tobacco prevention or health-related behaviour programs intended for teacher delivery in the classroom. In sharing that information with Alberta Health Services, there is the potential to share this information directly with other prevention areas such as teams working in Comprehensive School Health, and front-line staff that often work directly with school administration and teachers. There is also broader application for these results with tobacco prevention program developers in other jurisdictions, as school-based interventions are popular for accessing young people.

Disseminating these results directly to teachers is also very important. Results will be shared with Alberta teachers by working with University of Lethbridge Faculty of Education to determine efficient and effective venues and means for reaching teachers directly with the study findings, and further supporting the implementation of the Academy for Tobacco Prevention. Some initial venues and means include the annual provincial teachers' conventions, and teacher newsletters.

Future Research Considerations. As the program design, including pre-developed, online interactive lessons, was important to the teachers that implemented the program, future studies should include if the comfort level (or lack thereof) of using technology was a factor for those that did not implement the program in their classrooms. Also, a study researching the

effectiveness of The Academy for Tobacco prevention was occurring in parallel to this study looking at the short and medium term outcomes on student knowledge and behaviours after receiving the program (Alberta Health Services, 2016). Future research should investigate how the self-efficacy of teachers is affected with the knowledge of the effectiveness status of the program itself. Further research is needed on any application of the outlined recommendations and how that affects teacher self-efficacy, and in turn implementation status of The Academy for Tobacco Prevention would be valuable.

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APPENDIX ONE: SCRIPT FOR SURVEY AND INTERVIEW RECRUITMENT

Subject Line: Academy for Tobacco Prevention Research Project

Hello,

My name is Maureen McNaul and I am the Manager of the Alberta Health Services Tobacco Reduction Program. You are receiving this email because you have logged onto the Alberta Health Services program website to access The Academy for Tobacco Prevention online teacher resource for grades 4-6 students in Alberta and have provided your email address.

We have partnered with Chrysta Bell, a MSc student with the University of Lethbridge to learn more about the decision making factors teachers consider when choosing whether or not to deliver this program in their classrooms. Below is a link to a confidential (10 min) survey to support this research. Your contact information is not being shared with the researchers to ensure all responses are kept anonymous. Survey Link

If you would be willing to participate in a telephone, or in-person interview to support this research please contact Chrysta Bell at chrysta.bell@uleth.ca to schedule an approximately 20 minute interview. Chrysta is looking for 10 teachers to participate in interviews.

If you have any questions please contact myself, or Chrysta Bell at chrysta.bell@uleth.ca

Thank you for supporting this research (U of A Pro 00083172)!

Maureen   (Maureen's email signature)

PARTICIPANT CONSENT FORM
Title of Study: The Role of Self-Efficacy in the Decision of Grades 4, 5, and 6 Teachers to Implement Tobacco Prevention Education – A Mixed Methods Study

Principal Investigator: Chrysta Bell (403-393-5702)
Study Supervisors: Dr. Darren Christensen (403-329-5124), and Dr. Noella Piquette (403-394-3954).

Why am I being asked to take part in this research study?
You are being asked to be in this study because you have logged onto the Academy for Tobacco Prevention online program which is an Alberta Health Services program and that you are a teacher of grade 4, 5, or 6 students.

What is the reason for doing the study?
The purpose of this research project is to learn more about the factors that contribute to teachers delivering the Academy for Tobacco Prevention in their grade 4, 5, or 6 classroom. The potential benefits of your participation in this research includes contributing to Alberta-based evaluation of tobacco prevention programming and the outcomes are intended to support teachers in future implementation of similar programs.

What will I be asked to do?
If you agree to voluntarily participate in this research, your participation will include answering an anonymous online survey that will take approximately 10 minutes.
The survey will begin following your indication of consent at the bottom of this form. Questions to be asked include the decision-making factors that contributed to you delivering or not delivering the program, this includes questions about your individual beliefs, values, and confidence.

What are the risks and discomforts?
It is not possible to know all of the risks that may happen in a study, but the researchers have taken all reasonable safeguards to minimize any known risks to a study participant.

What are the benefits to me?
The potential benefits of your participation in this research includes contributing to Alberta-based evaluation of tobacco prevention programming and the outcomes are intended to support teachers in future implementation of similar programs. However, you may not get any benefit from being in this research study.
Your participation will not affect your relationships with Alberta Health Services or the University of Lethbridge.

Do I have to take part in the study?
Your participation in this research is completely voluntary, however if you do consent to participate through this online survey, your data will not be able to be removed from the analysis as your responses are anonymous and can't be tracked.
If you do not wish to answer a question on the survey, it can be skipped to the next question.

Your answers will not be submitted until the end of the survey when "submit" is clicked at the end.

Will my information be kept private?
Responses to the survey are anonymous and can't be tracked back to you or your email address ensuring privacy of respondents. Once answers are submitted, the data will not be able to be removed.

What if I have questions?
If you have any questions about the research now or later, please contact Chrysta Bell at 403-393-5702 or study supervisors Dr. Darren Christensen at 403-329-5124 and Dr. Noella Piquette at 403-394-3954.
If you have any questions regarding your rights as a research participant, you may contact the Research Ethics Office at the University of Alberta at 780-492-2615. This office has no affiliation with the study investigators.

 By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age.

    ○   I consent, begin the study (1)

    ○   I do not consent, I do not wish to participate (0)

APPENDIX THREE: ONLINE SURVEY

Teach4-6 Do you currently, or did you (in the last two years), teach grade 4, 5 or 6 in Alberta?

○ Yes (1)

○ No (0)

Skip To: End of Survey If Do you currently, or did you (in the last two years), teach grade 4, 5 or 6 in Alberta? = No

TeachCurr: Which grade do you currently teach or did you teach in the last two years?

○ Grade 4 (1)

○ Grade 5 (2)

○ Grade 6 (3)

○ Split class including grade 4, 5, or 6 (4)

YearsTaught: For how many years have you taught grade 4, 5 or 6?

○ 1-5 years (1)

○ 6-10 years (2)

○ 11-15 years (3)

○ 16+ years (4)

Training: Have you received formal training in the area of tobacco prevention education?

○ Yes (1)

○ No (0)

○ I'm not sure (9)

Gen Content: How **confident** are you in teaching tobacco prevention education content in general (i.e. refusal skills, tobacco industry information, health effects, addressing family members use)?

    ○   Not at all confident (1)

    ○   Slightly confident (2)

    ○   Moderately confident (3)

    ○   Very confident (4)

Encourage: How **confident** are you in your ability to encourage students not to use tobacco?

    ○   Not at all confident (1)

    ○   Slightly confident (2)

    ○   Moderately confident (3)

    ○   Very confident (4)

Believe: How much can you do to get students to **believe** they can prevent tobacco use?

    ○   None at all (1)

    ○   Very little (2)

    ○   Some degree (3)

    ○   Quite a bit (4)

    ○   A great deal (5)

Value: How much can you do to help your students **value** tobacco prevention?

    ○   None at all (1)

    ○   Very little (2)

    ○   Some degree (3)

    ○   Quite a bit (4)

    ○   A great deal (5)

Motivate: How much can you do to **motivate** students who show low interest in tobacco prevention education?

       ○   None at all (1)

       ○   Very little (2)

       ○   Some degree (3)

       ○   Quite a bit (4)

       ○   A great deal (5)

Families: How much can you assist **families** in helping their children prevent tobacco use?

       ○   None at all (1)

       ○   Very little (2)

       ○   Some degree (3)

       ○   Quite a bit (4)

       ○   A great deal (5)

ImplAcademy: Have you implemented the **Academy for Tobacco Prevention** in your classroom?

       ○   Yes, all 4 lessons and the card game (2)

       ○   Some of it, but didn't complete it (1)

       ○   No (0)

ImplOther: Have you implemented any other tobacco prevention program/lessons in your classroom, prior to learning about the Academy for Tobacco Prevention?

       ○   Yes (1)

       ○   No (0)

Created: Did you implement an existing program/lesson, or did you create the lesson(s) yourself?

    ○   Existing program (1)

    ○   Created the lesson(s) myself (2)

Confident: How **confident** were/are you in being able to deliver the Academy for Tobacco Prevention?

    ○   Not at all confident (1)

    ○   Slightly confident (2)

    ○   Moderately confident (3)

    ○   Very confident (4)

How **confident** were/are you in teaching the cooperative card game "Shadows of the Academy" as part of the tobacco prevention program?

    ○   Not at all confident (1)

    ○   Slightly confident (2)

    ○   Moderately confident (3)

    ○   Very confident (4)

Important: In your opinion, **how important** is it for grades 4, 5, or 6 students to receive tobacco prevention education?

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
Grade 4 students (Grade4)					
Grade 5 students (Grade5)					
Grade 6 students (Grade6)					

Rank Please rank the following health topics in order of importance (for grade 4, 5 or 6 students), from **1 (most important)** to **6 (least important)**. (*drag the bars to move up and down*)

_____ Physical Activity/Fitness (1)
_____ Dietary Behaviours and Nutrition (2)
_____ Injury Prevention and Safety (3)
_____ Alcohol/Drug Use Prevention (4)
_____ Tobacco Use Prevention (5)
_____ Sexually Transmitted Infections and HIV (6)

Effective: In your opinion, **how effective** (in preventing future tobacco use) are tobacco prevention programs, when provided in grades 4, 5, or 6 ?

	Completely ineffective (1)	Somewhat ineffective (2)	Somewhat effective (3)	Very effective (4)
Grade 4 students (Grade4)				
Grade 5 students (Grade5)				
Grade 6 students (Grade6)				

Confidence: Does the fact that Alberta Health Services created this program impact your confidence in its likelihood to prevent future tobacco use?

○ Yes, its important to me that the program was developed by a reputable source like Alberta Health Services (1)

○ No, who developed it doesn't matter much to me (0)

How important was the **program format** (i.e. online/interactive lessons) in your decision to implement (or not) The Academy for Tobacco Prevention?

○ Not at all important (1)

○ Slightly important (2)

○ Moderately important (3)

○ Very important (4)

○   Extremely important (5)

CardGame: How important was the **cooperative card game** in your decision to implement (or not) The Academy for Tobacco Prevention?

○   Not at all Important (1)

○   Slightly important (2)

○   Moderately important (3)

○   Very important (4)

○   Extremely important (5)

Knowledge: In your opinion, how likely is it that students will be more **knowledgeable** about tobacco related issues after receiving The Academy for Tobacco Prevention?

○   Extremely unlikely (1)

○   Somewhat unlikely (2)

○   Somewhat likely (3)

○   Extremely likely (4)

Refusal: In your opinion, how likely is it that students will be better able to **communicate refusal** to peers after receiving The Academy for Tobacco Prevention?

○   Extremely unlikely (1)

○   Somewhat unlikely (2)

○   Somewhat likely (3)

○   Extremely likely (4)

SocialC In your opinion, how likely is it that students will have **increased social competence and social influence** after playing the Shadows of the Academy card game?

○   Extremely unlikely (1)

○   Somewhat unlikely (2)

○   Somewhat likely (3)

○   Extremely likely (4)

Recommend: Did you **recommend** The Academy for Tobacco Prevention to another teacher?

○   Yes (1)

○   No (0)

Future: Will you implement The Academy for Tobacco Prevention in your classroom in the future?

○   Yes (2)

○   Maybe (1)

○   No (0)

Open Is there anything else you'd like to tell us regarding The Academy for Tobacco Prevention?

_____

_____

_____

APPENDIX FOUR: INTERVIEW QUESTIONS

1.   Describe your teaching style/method.

2.   Tell me how students learn in your classroom.

3.   Reflect on how you made the decision to implement or not to implement The Academy for Tobacco Prevention.

4.   Explain what is needed to enhance your confidence in delivering The Academy for Tobacco Prevention.

5.   Describe the barriers/challenges you experienced in implementing The Academy for Tobacco Prevention.

6.   Did you recommend the Academy for Tobacco Prevention to another teacher? Why? Why not?

7.   Do you believe the Academy for Tobacco Prevention is effective in preventing future tobacco use for students in grades 4-6? Why? Why not?

8.   Can you outline the tools you already had/ you would have needed to implement the Academy for Tobacco Prevention?

APPENDIX FIVE: LOGIC MODEL

LOGIC MODEL: The Academy for Tobacco Prevention – Teacher Efficacy Research Project

IDENTIFIED NEED: In Canada, tobacco use is the leading cause of premature disease and death, with over 37,000 deaths per year[1]. Alberta Health's 2022 tobacco prevalence targets to reduce youth smoking from 13% in 2010 to 6% in 2022[1]

PROJECT GOAL: Identify self-efficacy factors for Alberta (grade 5) teachers regarding the implementation of The Academy for Tobacco Prevention

RATIONALE: Implementation factors improve accountability, support evidence-informed decision making, and is an essential part of an evaluation process (Alberta Tobacco Reduction Strategy outcome 4.8)

INPUTS:	ACTIVITIES:	OUTPUTS:	SHORT-TERM OUTCOMES:	MEDIUM-TERM OUTCOMES:	LONG-TERM OUTCOMES:
Alberta Health Services lesson utilization data (teachers' info) Stakeholders Quantitative collection methods Qualitative collection methods	XX surveys distributed to 2 groups of teachers (quantitative) via email X interviews conducted (qualitative) either in person or by phone Data analysis	The level of grade 5 teachers': Perceived confidence in their ability to effectively teach The Academy Belief that The Academy when effectively taught, will have a positive impact on their students Perceived importance of tobacco prevention education	Recommendations for enhanced and expanded implementation based on positive efficacy factors Negative efficacy factors identified & recommendations to mitigate those factors for Academy implementation	Knowledge translation for future program development of teacher efficacy factors that can contribute or effect successful prevention program implementation Contribute to Alberta-based research in tobacco prevention	Contribute to the reduction in tobacco prevalence rates in Alberta

THEORETICAL ORIENTATION: Social Cognitive Theory – Self-Efficacy[2,3]

- Efficacy Expectations (one's belief in their ability to perform a certain behaviour needed to produce a desired outcome)
- Outcome Expectations (one's belief that performing a certain behaviour will result in a specific outcome)
- Outcome Value (denotes the degree of importance one ascribes to the outcome)

1. Alberta Health. (2012). *Creating Tobacco-free Futures: Alberta's Strategy to Prevent and Reduce Tobacco Use.* Retrieved from www.health.alberta.ca/documents/Tobacco-Reduction-Strategy-2012.pdf.
2. McKenzie, J. F., Neiger, B. L., & Thackeray, R. (2017). *Planning, implementing, and evaluating health promotion programs: a primer* (7th ed.). United States: Pearson Education Inc.
3. Bandura, A. (1997). *Self-efficacy: the exercise of control.* New York: W.H. Freeman.