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Effects of Single-Gender Classes on Student Literacy and Engagement

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COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Jacqueline Button

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2012

Abstract

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Administrative Leadership for Teaching and Learning

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Abstract

Empirical evidence substantiating the effectiveness of engagement programs to support at-risk students is virtually nonexistent. In an attempt to improve student engagement and literacy for Grade 9 students enrolled in a developmental curriculum known as the essential-level program, the staff at one school implemented single-gender classes during the 2010-2011 school year. This project study was designed as a summative, goals-based, quantitative program evaluation to assess the effectiveness of the first-year single-gender program based on its stated goals and objectives. A purposive sample of 45 students, 6 teachers, and 2 educational assistants in the essential-level program was used to collect pretest and posttest Developmental Reading Assessment (DRA) score data as well as teacher and student survey data related to perceptions of single-gender classes. Survey data were analyzed using descriptive statistics to determine perceptions of student engagement, academic achievement, and behavior in single gender classrooms. Findings revealed that students and teachers indicated more positive perceptions toward single-gender classes. Analysis of covariance revealed that students in single-gender classes showed significantly higher reading achievement scores when compared to students in mixed-gender classrooms. The results of this program evaluation contribute to social change by adding to the body of knowledge focused on quantitative program evaluations, addressing a deficiency in the literature on single-gender instruction for at-risk students, and assisting the educational community in decision making to address gaps in literacy development and student engagement.

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Dedication

This doctoral study is dedicated to my sweet baby girl Jaryn. You are my strength and my inspiration. Mommy loves you... xo

Acknowledgments

The successful completion of my doctoral study has truly been a collaborative effort. First, I must thank my extraordinary family for their collective support and strength. Thank you Mom, Dad, Uncle Niels, and Jaryn for your incredible sacrifices throughout the entire doctoral process. I also wish to thank my amazing Committee Chair, Dr. Donald Poplau, my superb Methodologist, Dr. Marcia Griffiths-Prince, my encouraging URR, Dr. Patricia Hanrahan, and my phenomenal Editor, Meryl Greene, for their unwavering support, guidance, and expertise. A special thank you must also go out to two amazing Walden faculty, Dr. Kate Swetnam and Dr. Mary Howe, who shared their insights and expertise with me when I needed it most. Finally, I feel grateful for the support and encouragement of my mentor Leona, my amazing friend Pauline, my colleagues at OISE, and my Walden Facebook friends, especially Pam, Sherry, Allison, and Lisa. You continue to be my soul's inspiration... and I thank you.

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Section 1: The Problem

Introduction

Schools and classroom teachers have a significant and direct influence on student achievement and engagement (Marzano, 2003; National Comprehensive Center for Teacher Quality, 2008; Sanders & Horn, 1994). In Ontario, as well as much of Canada and the United States, public stakeholders scrutinize public education systems in order to ensure high levels of student achievement. The increased call for standardized testing, teacher accountability and public transparency provides evidence of such scrutiny (Gunzenhauser & Hyde, 2007). However, even under the pressure to ensure equitable outcomes for all students, there remain significant differences in students' success across schools and inequities in educational opportunity, including those of race, class, gender, language, migrant, and disability status, that continue to exist.

In Ontario, the response to such inequities includes the development of educational policies, practices, and initiatives at the provincial level, which target gaps in student achievement and engagement. In addition to the framework and supports provided by the provincial Ministry of Education, the Education and Quality Accountability Office (EQAO), established in 1996, is responsible for monitoring educational achievement using a standardized provincial testing model. The EQAO tracks student achievement in literacy and numeracy at the student, school, and board levels, and reports on student learning through large-scale standardized tests at the provincial, national, and international levels (EQAO, 2009).

Although the Ontario Ministry of Education and the EQAO work in harmony to provide educators with a course of action and supporting data to address educational inequities, inquiring into the root cause of such educational gaps remains the responsibility of all educators. The data collected by EQAO and the Ministry of Education enables educators and researchers to begin the dialogue necessary to identify the critical factors in addressing student achievement and engagement in the classroom.

Klinger, Rogers, Anderson, Poth, and Calman (2006) acknowledged that the majority of differences in student achievement are credited to differences among students. However, even when accounting for individual student factors, there remain significant differences across schools, in terms of student achievement and success (EQAO, 2009, 2011). Focusing inquiry on these differences may provide answers to closing the achievement gap for all students while simultaneously improving engagement levels in the classroom.

At the provincial, district, and school levels, there are noticeable achievement gaps in literacy for students entering Grade 9 who take their core courses (English, math, geography, and science) at the essential level. Typically, students who take essential-level programming in Grade 9 are those who have had trouble with the Grade 8 curriculum. Any students who are functioning two or more grades below the Grade 8 level are recommended by guidance counselors to take essential-level courses when entering high school (O'Connor, 2003). Often identified with a learning disability, these students receive a variety of academic supports and interventions, have measureable deficits in literacy development, and are noted to be some of the most at-risk students in the high

school system (O'Connor, 2003). However, they are still required to pass the Ontario Secondary School Literacy Test (OSSLT) in their Grade 10 year and demonstrate academic success in 30 credit-bearing courses in order to meet the Ministry of Training (1999) graduation requirements for an Ontario Secondary School Diploma (OSSD).

Over the past 5 years, at school XYZ, students taking an essential-level English class have received a variety of supports in an effort to address literacy deficits and a lack of classroom engagement, including Student Success Teacher intervention, Special Education support, literacy remediation, and a focus on differentiated teaching and learning strategies in the classroom, with little measurable success. During the 2010-2011 school year, single-gender classes, which included the use of specific gender-based instructional strategies by teachers, were introduced at school XYZ to Grade 9 essential-level students in their core subjects in an attempt to address these concerns. The purpose of this study was to determine the impact of this program on students' literacy skills, which included reading accuracy, fluency, and comprehension.

The Developmental Reading Assessment (DRA) was used to measure the development of students' literacy skills. DRA is a set of criterion-referenced reading assessments used to measure students' literacy skill development in reading accuracy, fluency, and comprehension. In this study, DRA was mandated for use by the district school board as a means of assessing reading levels of students. DRA is an informal reading inventory in which classroom teachers administer, score, and interpret the collected data (Beaver & Carter, 2006; Pearson Learning Group, 2009).

Since the single-gender program at school XYZ recently concluded its first full year of implementation, survey data were collected to reflect students' perceptions of their engagement in single-gender classes. Data collection also included survey information from teachers and support staff involved in the implementation of the single-gender program, which reflected the educators' perceptions of student engagement in the single gender classroom. The intent of these data was to assist in informing the decision-making process about the implementation of future single-gender programs at school XYZ and potentially across the district.

Definition of the Problem

In this study, I investigated the local problem of poor student engagement and literacy development for students taking programming at the essential level at school XYZ. Provincial, district, and school-based data indicated that Grade 9 essential-level students are not achieving academic success in the classroom, as well as on the provincially mandated Grade 10 literacy test (OSSLT). A strong correlation exists between literacy and student engagement, which can be used to identify and support at-risk students. Numerous studies on several continents identified that low levels of literacy and a lack of student engagement has led to an increased likelihood of being labeled at-risk and ultimately failing to graduate from high school (Biancarosa & Snow, 2004; Curtis & McMillan, 2008; Hernandez, 2011; Long, MacBlain, & MacBlain, 2007; Marks & Fleming, 1999; Marks & McMillan, 2003; Ryan & Watson, 2006). Compelling research has also connected increased levels of student literacy to improved levels of student engagement (Hernandez, 2011). Additionally, functionally adequate literacy

skills are an essential educational outcome, a necessity in the labor market and at the heart of an individual's social well-being (Rothman & McMillan, 2003). Consequently, most countries belonging to the Organisation for Economic Co-operation and Development (OECD) have made literacy achievement a primary focus for their educational systems (Haynes, 2011).

Rationale

Evidence of the Problem at the Local Level

Through this study, I addressed the local problem of whether the implementation of single-gender classes improved student engagement and literacy at school XYZ. Across the district, and specifically in school XYZ, there was consistent and compelling data that indicated that Grade 9 essential-level students were not achieving academic success, especially in the area of literacy achievement. By the end of their first semester in high school, nearly 70% of the district's Grade 9 essential-level students were deemed at-risk based on the school board's indicators of student success, which included the EQAO literacy and numeracy scores from Grade 6, credit accumulation, on-track-to-graduate status, attendance profiles, discipline referrals, and suspension data (Bothwell, personal communication, January 15, 2010). Based on data collected at school XYZ, 80% of the school's essential-level learners met the school board definition of at-risk. In addition, 65% of students enrolled in district-wide essential-level programming failed the OSSLT during their Grade 10 year, which is a provincial graduation requirement (EQAO, 2009, 2010). In the past 3 years, at school XYZ, no students taking an essential-level English course passed the OSSLT on their first attempt (EQAO, 2010). In addition, the

teachers of essential-level courses across the district consistently voiced their concerns about students' levels of engagement in the core academic subjects, which included English, mathematics, science, and geography.

Provincially, there was also evidence that inadequate literacy development and poor levels of classroom engagement continued to plague students taking essential-level programming. From 2006-2010, the provincial success rate on the OSSLT for fully participating first-time eligible students taking an essential-level English course decreased by 5 percentage points, from 24 to 19 (EQAO, 2010). During the same 5-year period, the OSSLT success rate for fully participating first-time eligible students taking an academic level English course was consistently high, fluctuating between 95% and 96% each year. While the overall participation rate in the OSSLT for students taking an academic-level English course remained consistently high at 98%, over the past 5 years, the overall participation rate for students taking an essential-level English course decreased by 12 percentage points, from 72% to 60% (EQAO, 2010).

Evidence of the Problem from the Professional Literature

Jones (2008) made the connection to literacy and engagement by suggesting student engagement levels were in direct relation to a student's literacy capacity. At-risk students are significantly more likely to experience disengagement from school. By the time many of these students have arrived in high school, they often see themselves as nonreaders and nonwriters, especially when at school. Students who come to school below grade level in terms of academic achievement are much less likely to engage socially, academically, or intellectually in school (Wilms, Friesen, & Milton, 2009). A

poor foundation in literacy prior to the onset of a child's educational career reduces the likelihood of success in the subsequent acquisition of literacy skills, thereby increasing the risk of disengagement from formal education (Annie E. Casey Foundation, 2010; Hernandez, 2011). Unfortunately, young children who struggle with literacy frequently become disconnected adolescents who are often labeled as lazy, which does little to reengage them in the academic learning process (Biancarosa & Snow, 2004; Long et al., 2007).

Definitions

At-risk students: Includes secondary students whose academic achievement is at least two levels below Grade 8 upon entry into high school, or any students who are performing significantly below the provincial standard, earning marks in the 50s and low 60s in their core academic courses (O'Connor, 2003).

Academic achievement: Refers to both formal and informal assessments. These assessments may include, but are not limited to, provincial tests, student grades, graduation rates, alternative assessments, curriculum-based assessments, and other academic assessments in both special education and regular education (Jenkins, 2006).

Constructivism: A view of learning based on the principle that knowledge is constructed by learners through an active, mental process of development, where learners are the builders and creators of meaning and knowledge (Marlowe & Page, 2005).

Core academic courses: English, math, social science, and science in the Grade 8 and Grade 9 educational programs (Ministry of Training and Education, 1999).

Differentiation: The process of ensuring that learning is matched to an individual student's readiness level, interests, and preferred mode of learning (Tomlinson & Allan, 2000).

Grade 9 essential-level programming: Programming offered to students who have had difficulty with the Grade 8 curriculum. Students who are functioning two or more grades below the Grade 8 level are recommended by guidance counselors to take essential-level courses when entering high school. Essential-level programming is offered in English, math, social science, and science at the Grade 9 level at school XYZ (O'Connor, 2003).

Gender gap: A discrepancy between the academic achievement of males and the academic achievement of females (Klinger, Shulha, & Wade-Woolley, 2009).

Inquiry-based learning: Utilizes an active learning structure, where progress is determined based on the development of students' experimental and analytical skills rather than their level of knowledge (Banchi & Bell, 2008).

Mixed-gender classrooms: Any classroom in which the population in the classrooms includes a mix of male and female students (Bracey, 2006). The term *coeducational classroom* will also share a common meaning.

Problem-based learning: A student-centered pedagogy in which students learn about a subject in the context of composite, complex, and realistic challenges (Loyens, Magda, & Rikers, 2008).

Single-gender class: Any class within a coeducational school in which all pupils in the classroom are of one gender (Bracey, 2006).

Student-centered learning: A broad learning approach that includes students actively learning in a self-paced, collaborative environment where the student is ultimately responsible for his or her own educational progress (Estes, 2004).

Significance

This project study has the potential to be noteworthy in several ways. The principle reason for this investigation was to examine whether teaching and learning strategies in the single-gender classroom enabled at-risk students entering high school to engage more fully in life at school and achieve academic success. There have been numerous provincial, district, and individual school initiatives that were designed to support struggling students (Ungerleider, 2008). The Ontario Ministry of Training and Education vision statement for schools required that schools offer an educational program "that promotes a high standard of achievement, that provides all students with the learning opportunities and support they need, and that is relevant to society's needs and expectations" (Ministry of Training and Education, 1999, p. 6). Educational mission statements across North America remind educators that all students can learn, that educators are committed to all students, and that educators should enable all students to reach high levels of achievement and acquire the knowledge, skills, and values they need to become responsible members of a democratic society. Yet, as educators, we continue to struggle to support our most challenging students, those who come to us below grade level, those who are disenfranchised with the educational system, and those who believe that they are no longer capable of succeeding in school.

Guiding Research Question

There are compelling data that have demonstrated that "unique local initiatives and programs established for the particular purpose of meeting local students' needs were often just as important, among those working on the frontlines, to the promotion of student engagement and success as major core initiatives" (Ungerleider, 2008, p. 73). Based on research inquiry and a focus from the district level, the educators at school XYZ recognized that student engagement and literacy development were two key elements in supporting at-risk students and achieving success for all. The educators at school XYZ also recognized that despite their best efforts, students taking essential-level programming continued to struggle with literacy development and classroom engagement, which appeared to be inextricably linked. Although there were very little data connecting single-gender programs for at-risk students to student engagement and literacy development, there was evidence to posit that this could be a successful approach to learning for students at school XYZ.

The primary research question for the data collection and analysis for this project study was the following: How effective are single-gender classes in improving literacy and student engagement levels for students entering the Grade 9 essential program at school XYZ? This program evaluation aimed to answer the following guiding subquestions:

1. In what ways is the single-gender program at school XYZ effective and how can the program be improved?

2. What is the connection between single-gender classes and student engagement for at-risk students at school XYZ?
3. What is the relationship between student engagement and literacy development?

The challenge in this project study was to examine, in depth, (a) the nature of student engagement, (b) the connection between literacy and student engagement, and (c) an understanding of adolescent development in the single-gender classroom in order to effectively map out a strategic plan of action for the at-risk students at high school XYZ. In order to determine if the single-gender classroom program significantly benefitted students in the essential-level program at school XYZ, a program evaluation was conducted, which included recommendations for future actions.

Review of the Literature

This literature review includes and examination and summary of current literature related to the challenges of supporting at-risk students. The literature review focuses on four major themes. These themes include the theoretical framework, which underpinned the entire study and the decision making of the school's administrative team to pursue single-gender classes for their Grade 9 essential-level students. Furthermore, the topics of biological differences in learning, literacy and the at-risk secondary school student, and student engagement provided points of discussion in addition to a more comprehensive understanding of the problems facing the students and educators at school XYZ.

The literature reviewed for this study was collected using a systematic approach. The search for peer-reviewed educational research employed a variety of online sources

and databases, educational publications, as well as well as personal and professional resources. Online databases included ERIC, Education Research Complete, Sage Education full-text, ProQuest Central, Teacher Reference Center, Academic Search Complete, and Science Direct. Search terms included *at-risk*, *high school literacy*, *adolescent literacy*, *student engagement*, *student disengagement*, *single gender*, *developmental reading assessment*, *brain-based learning*, *group socialization theory*, *gender and learning*, *gender and brain development*, and *biological differences in learning*.

Theoretical Framework

In order to understand why school XYZ chose to implement single-gender classes for their Grade 9 essential-level program, it is important to understand the theoretical background behind the decision-making process. At the heart of teaching in the essential-level program at school XYZ is the belief that all students can learn and that constructivism was the focus of strong instructional practice. In school XYZ, this meant that teachers had a strong understanding of differentiation and assisted students with the construction of knowledge rather than reproduction of a series of facts (Morris, personal communication, May 11, 2010). Teachers in the essential-level program at school XYZ understood that using tools such as student-centered problem-solving and inquiry-based learning activities encouraged students to formulate and test their ideas, draw conclusions and inferences, and convey their knowledge within the framework of a collaborative learning environment. However, even with the willingness of teachers to adapt their instruction to address the differentiated needs of their students, challenges in engaging

students to become active participants in the learning process continued to persist. A deeper in-depth look was required in order to inform the instructional practice of the team.

Brain-based learning theory. A natural extension and emerging appendage to constructivist learning (Vygotsky, 1978) was the theory of brained-based learning (Caine, 2000; Caine, Caine, McClintic, & Klimek, 2008; Jensen, 2005; Kahveci & Ay, 2008). In fact, some scholars (Bruer, 1999; Caine & Caine, 2006) have argued that brain-based learning and constructivist learning are essentially analogous. Brain-based learning theory, pioneered by Caine and Caine (1994, 1998, 2006), is grounded in what we have learned about the structure and function of the brain and concluded that as long as the brain continues to function using its normal processes, learning will occur. Based on the continual evolution and emerging science of understandings of how the brain learns, educators who used a brain-based learning theory approach were interested in learning how the brain works as a means to discover ways to enhance teaching and learning. Educators, who informed their practice based on brain-based learning theory, used information about the human brain to organize lesson construction and facilitate learning, with an emphasis placed on how the brain learns naturally (Slavkin, 2004). Brain research and theory suggested that the development of a variety of brain structures and processes are fundamentally different between males and females (Miller, Lurye, Zosuls, & Ruble, 2009). Consequently, there was evidence to suggest that learning styles and preferences of males and females differed significantly (Zaidi, 2010). Recent research suggested that it is not that the structure of the brain is entirely different, but rather there

are fundamental differences in the sequence of development of the various brain regions in males and females (Sax, 2006; Zaidi, 2010). This research provided essential information in formulating a plan to address the learning needs of all students, and provided critical guidance in devising a plan of action to support all learners. Consequently, the accompanying theory of learning suggested that males and females learn differently.

Group socialization theory. In addition to brained-based learning theory, the work of Harris (1995) provided a second theoretical lens from which to draw an understanding of students in the essential-level program at school XYZ. Group socialization theory (Harris, 1995) contended that a child's learning environment and the influence of group socialization dramatically influenced a child's ability to learn and develop. This theory focused on group identity being most important when members of other groups were present. One of the most robust findings connected to group socialization research is the sex-segregated nature of play amongst children. Children demonstrated their preference for same-sex playmates by the age of 3, with this type of gender segregation remaining consistent until early adolescence (Martin, Ruble, & Szkrybalo, 2002; Ruble, Martin, & Berenbaum, 2006; Wharton, 2005). Additionally, boys and girls made sense out of what it meant to be male or female based on their observations and social interactions, and the development of these attitudes and understandings influenced the type of information that they recognized and retained (Leaper & Friedman, 2007).

Once children have established their own self-concept of gender, they begin to form a social identity of themselves, which specifically connects them to a gender group (Harris, 1995; Robnett & Susskind, 2010; Turner, 2000). As highlighted in social identity or self-categorization theories (Brewer, 2007; Hewstone, Rubin, & Willis, 2002; Tajfel & Turner, 1986), being a member of a group typically leads to in-group bias, which is a widely accepted and acknowledged occurrence in the social sciences. In-group bias refers to the propensity for a group to evaluate its own members more sympathetically than members of a group to which they do not belong (Hilliard & Liben, 2010; Rabbie & Horwitz, 1969; Robnett & Susskind, 2010). Similarly, numerous studies indicated that children "are more likely to pay attention to objects, activities, behaviors, and social roles associated with their own gender" (Leaper & Friedman, 2007, p. 563) while demonstrating their in-group bias by devaluing that which is associated with the opposite gender (Martin et al., 2002; Robnett & Susskind, 2010). Furthermore, researchers posited that once children have established their own self-concept of gender, performance in opposing gender-type activity areas may have declined in situations in which the role of gender was seen as substantial (Guimond & Roussel, 2001; Hyde & Kling, 2001). These implications suggested that males may have behaved collectively in a way that was significantly different when females were in the classroom as opposed to when the males were the lone group. These implications are considered valid for females as well.

There was also significant evidence that within a group, shared perspectives and experiences can improve the overall well-being of group members. Haslam, O'Brien, Jetten, Vormedal, and Penna (2005) concluded that group members are more readily able

to endure challenges and overcome hardships when they have the actual or perceived support of the other group members. Additionally, group members' sense of well-being also improved because they believed that they would have their viewpoints and opinions reaffirmed, acknowledged, and valued within the group (Reicher, Haslam, & Rath, 2008). Given that students in essential-level programming typically demonstrated noticeable disengagement in school and traditionally struggled to overcome academic obstacles in the mixed-gender classroom, the possibility of creating an environment in which students feel connected by gender may provide opportunities to reengage students in learning while developing a strong sense of efficacy and well-being related to school.

Biological Differences in Learning

Recent brain research (Canadian Council on Learning, 2009; Gurian & Stevens, 2006b; King & Gurian, 2006; Klinger et al., 2009; Kovalik, 2008; National Institutes of Mental Health (NIMH) study (2007); Sax, 2006; Spielhagen, 2006; Zaidi, 2010) confirmed what we have known anecdotally: Male and female brains are unique. Differences in the male and female brain include brain structure, function, and chemistry (Society for Women's Health Research, 2008; Zaidi, 2010). During the last 2 decades, research in the fields of neuroscience, medicine, psychology, and biology have identified more than 100 structural differences in the brain of males and females (Gurian & Stevens, 2006a).

Much of the work by Dr. Leonard Sax (2006) hinged on the differences identified in the male and female brain in terms of development and learning preferences, as identified in several key studies including Hanlon, Thatcher, and Cline (1999), Anokhin,

Lutzenberger, Nikolaev, and Birbaumer (2000), and the NIMH (2007). Collectively, these studies provided evidence that there is no overlap in the trajectories of brain development in girls and boys, and that the areas of the brain involved in language, spatial memory, motor coordination, and getting along with other people develop in a different order, time, and rate in girls compared with boys. The NIMH study (2007) was the one of the world's largest studies of brain development in children. The results from this study were consistent with earlier findings (De Bellis et al., 2001; Giedd et al., 1999) in that the gray matter volumes of the brain peaked approximately one to two years earlier in females than males, which consequently, corresponded to the average age difference at puberty. As with any effective research, the study generated a variety of questions for further study, including the role of puberty and the effects of other developmental processes related to structural and behavioral changes in the brain.

In addition to structural and developmental differences, there is robust evidence suggesting that male and female brains are organized differently. Researchers have identified significant gender differences in the functional organization of the brain related to working memory (Goldstein et al., 2005; Li, Lu, & Gong, 2010; Speck et al., 2000). Men showed right hemisphere dominance while women primarily activated the left hemisphere during all of the working memory tasks. In contrast, researchers also found that men use the left hemisphere of the brain for receiving and generating language, while women use both hemispheres of their brains for language (Sax, 2005; Zaidi, 2010). In addition, a growing body of research has led researchers to suggest that the female brain has a thicker corpus callosum than the male brain (Zaidi, 2010). The corpus callosum is

the linking collection of tissue between the left and right hemispheres of the brain, and researchers have surmised that that the increased thickness may be responsible for the greater cross-hemispheric communication in the female brain (Ganjavi et al., 2011).

There is also an abundance of evidence which has led researchers to suggest that the female brain processes language more easily, earlier, and faster than the male brain (Canadian Council on Learning, 2009; Haier, Jung, Yeo, Head, & Alkire, 2005; Harper & Pelletier, 2008; Skinner, Kindermann, & Furrer, 2008). By comparison, males have more readily excelled at spatial-mechanical and gross motor skill tasks, especially those involving spatial perception and mental rotation (Burman, Bitan, & Booth, 2008; Clements et al., 2006; Cosgrove, Mazure, & Staley, 2007; Kansaku & Kitazawa, 2001; Sommer, Aleman, Bouma, & Kahn, 2004; Voyer, Voyer, & Bryden, 1995). Although males and females appeared to use different hemispheres for specific tasks, and demonstrated strengths in opposing areas, there is no evidence to suggest that one gender demonstrated a higher Intelligence Quotient (IQ) than the other (Halpern, 1997, 2000, 2006; Halpern & LaMay, 2000). In fact, there is evidence that can be understood to imply that males and females use different areas of the brain in order to attain similar IQ levels (Cosgrove et al., 2007).

A growing body of evidence has shown that males and females, in addition to physiological differences in brain development, have different learning styles and preferences. Wehrwein, Lujan, and DiCarlo (2007) assessed the preferred learning styles of physiology undergraduate majors to determine if males and females have similar learning styles. The VARK (Fleming & Mills, 1992) inventory tool for assessing

individual learning style preferences was administered to 86 undergraduate physiology majors. The study found that there were a variety of learning styles in the classroom and that some students did not learn via the standard lecture format. Furthermore, this study demonstrated that there are gender differences in learning styles such that males tended to be multimodal and females tend to be unimodal. Similarly, Philbin, Meier, Huffman, and Boverie (1995) investigated the differences in learning styles between men and women. The learning style work of Belenky, Clinchy, Goldberger, and Tarule (1986) and Kolb (1984, 1994) provided the framework for this study. A survey that included the Kolb Learning Style Inventory, 12 Educational Dialectical questions, and a subjective question was administered to 72 subjects of various ethnic groups. The results showed that men and women were found to have different learning styles, and in general, men seemed to find congruence between traditional education and their learning style while women did not.

Although there is a significant quantity of research that has been conducted which supports the assertion that there are gender-based differences in the brain's structure, function, and chemistry, there are detractors who believe that we are too ready to accept the differences presented by neuroscience to explain human behaviors (Weisberg, Keil, Goodstein, Rawson, & Gray, 2008). Additionally, some researchers have suggested that there is a disproportionate amount of published data supporting gender differences in brain research as opposed to research showing no differences between the sexes (Kaiser, Haller, Schmitz, & Nitsch, 2009). More noteworthy may be the reminder that the brain has been found to be more complex than any individual finding about gender-based brain

variation, and that it has a tremendous ability to reorganize itself by creating new neural connections throughout one's lifespan (Barnea, Rassis, & Zaidel, 2005; Feng, Spence, & Pratt, 2007; Garon & Moore, 2004). As educators, we must continue to investigate developments in brain research and use our knowledge and understanding of brain-based learning to inform our professional practice.

Literacy and Students At-Risk

One of the greatest challenges facing school systems today, particularly at the secondary school level, is the inability to effectively meet the needs of the most at-risk student populations (O'Connor, 2003; Ungerleider, 2008). In Ontario, the at-risk student is defined using several criteria. At the high school level, the at-risk student is identified as a secondary student who is achieving at no less than two grade levels below their current grade level placement. Secondary students who perform significantly below the provincial standard in any subject area or are earning marks in the 50s and low 60s and who do not have the foundations to be successful in the new curriculum are also deemed as at risk (O'Connor, 2003; Ontario Ministry of Education, 2005a).

In order to better support the learning needs of the at-risk student population, many school districts across Ontario have spent the vast majority of their resources focused on student engagement and literacy (Ungerleider, 2008). At the provincial and local levels, focus has been placed on the importance of literacy in the development and implementation of curriculum practices, in both the prevention and remediation areas of learning. Achievement in reading literacy has been one of the most important foundations for success in school and life (Cunningham & Stanovich, 1998; Howe, 2011; Smith,

Mikulecky, Kibby, Dreher, & Dole, 2000), and is a crucial survival tool to survive in a globally diverse society (OECD, 2010). In Ontario, graduation from high school is impossible without the successful completion of either the Ontario Secondary School Literacy Test (OSSLT) or the Ontario Secondary School Literacy Course (OSSLC). The purpose of the OSSLT is to determine whether a student has the literacy (reading and writing) skills expected by The Ontario Curriculum across all subjects up to the end of Grade 9 (EQAO, 2007). Students who have been eligible to write the OSSLT at least twice and who have been unsuccessful at least once are eligible to take the OSSLC (Ontario Ministry of Education, 2003). In Ontario, there has been an inextricable link between high school graduation and literacy achievement (Ungerleider, 2008).

The challenge for educators is to remain focused on the supporting those students who come to high school without the requisite literacy skills to graduate. Literacy development has played an essential role in a high school candidate's ability to graduate, and has been one of the most significant factors enabling students to have kept pace with the high school curriculum (Kamil, 2003; Lee, Grigg, & Donahue, 2007; Biancarosa & Snow, 2004). Struggling readers are at a significant learning disadvantage in text-heavy courses and frequently have been refused entry into more academically demanding courses (Au, 2000). Evidence has also been found to indicate that many high school teachers, who have had low expectations of their students' abilities to read and write, continued to victimize their students based on the teachers' inability to teach the reading and writing strategies necessary for academic success (ACT, Inc., 2005).

Those children who have experienced learning difficulties throughout their school careers, which the educational system did not address, were 19% more likely to have left school early without a diploma (Finnie & Meng, 2006). In addition, students who failed to earn a high school diploma were most disadvantaged in finding good-paying jobs as adults (Anlezark & National Centre for Vocational Education, 2011; Belfield & Levin, 2007; Statistics Canada, 2010). High school dropouts were also less likely to be healthy, more likely to die earlier, more likely to become parents at a young age, more likely to be involved the criminal justice system, and more likely to require social assistance than those students who graduated from high school (Amos, 2008). Researchers have estimated that the lack of basic literacy in the United States alone has cost businesses, universities, and underprepared high school graduates billions of dollars per year in diminished productivity and curative costs (Greene, 2000; National Commission on Adult Literacy, 2008). There is little doubt that an individual's economic and social well-being critically ties into the development of basic literacy skills. According to Haynes (2011), literacy development for adolescents "is the linchpin of standards-based instruction for middle and high school student achievement" (p. 15). Focusing on the development and advancement of students' literacy achievement will ensure that inadequate literacy levels can be overcome, enabling millions of high school students the opportunity to succeed in the 21st century (Haynes, 2011).

Student Engagement

In order for students to achieve academic success, they need to be engaged in their work at school. Researchers have agreed that student engagement is multifaceted,

and incorporates behavioral, emotional, and cognitive dimensions (Fredricks, Blumenfeld, & Paris, 2004; Yazzie-Mintz, 2010). Wilms et al. (2009) also defined student engagement as multidimensional and defined engagement in terms of academic, intellectual, and social components. By either definition, measures of student engagement demonstrated a positive correlation with achievement, standardized test score, and decreased attrition rates (Fredricks et al., 2004). The solution for tackling problems of chronic low achievement, student boredom and frustration, and high dropout rates has been in understanding how to engage students (Finlay, 2006; Fredricks et al., 2004). However, this can be quite a daunting task for high school teachers who work with students at risk.

When examining the disengagement of at-risk students, an investigation into the possible factors for their disenfranchisement is necessary. Without question, literacy development was found to be a key component in the successful engagement of student in the high school curriculum (Hernandez, 2011). However, looking at student engagement through the lens of gender may also provide some insight into designing appropriate and engaging curriculum for at-risk students.

Researchers Guimond and Roussel (2001) suggested that by the time students reach high school, certain academic stereotypes, such as boys are better in science and math, have been well established. These stereotypes are rooted in a child's self-perceived competence and interest in a particular subject. Therefore, girls tended to have higher self-efficacy and interest in reading and writing than their males counterparts. By comparison, boys tended to demonstrate higher interest and self-efficacy in math, the

physical sciences, and computer science than did girls (Herbert & Stipek, 2005; Hyde & Kling, 2001; Weinburgh, 2005). Furthermore, once students internalized these stereotypes, their performance in subjects that were representative of the opposite gender may have caused a decline in their academic performance levels in those subjects (Guimond & Roussel, 2001; Hyde & Kling, 2001). This is of particular concern in the Grade 9 essential-level program, which is often predominantly a male population and full of boys who already struggle with reading.

The gender gap in reading achievement is a worldwide phenomenon that has consistently been demonstrated by girls outperforming boys (EQAO, 2010; OECD, 2001, 2002). To date, no clear and consistent research has been conducted to explain why this is the case. However, noted gender differences in literacy development and learning may provide a starting point for investigation. According to the OECD (2002), reading engagement has been a more robust indicator of literacy achievement than socioeconomic status. In a study conducted by Topping, Samuels, and Paul (2008), gender appeared to play a key role in levels of reading engagement for students in Grades 1 through 12. The researchers noted that girls consistently demonstrated superior ability to read a greater quantity and a higher quality of reading materials when compared to boys. However, when scores were compared, in which boys and girls read a similar quantity and quality of reading materials, scores between the genders were similar, suggesting that the reading gap can be closed. Oakhill and Petrides (2007) determined that, when measuring and comparing the reading comprehension abilities of boys and girls, the impact of boys' comprehension achievement scores positively correlated to their interest level in the text.

Conversely, girls demonstrated relatively little correlation between reading comprehension scores and interest in the text. Again, recognizing the important of differentiating reading content based on gender may provide a clue for improving the reading engagement level of all students.

Another interesting area that was explored involved student engagement and gender in the realm of behavioral involvement in learning, positive emotional tone, and perseverance when facing challenges (Skinner et al., 2008). Of particular note for at-risk students was the suggestion that children with low literacy and academic skills tended to display antisocial behavior, increased levels of frustration, and higher levels of stress in the learning environment (Miles & Stipek, 2006; Wu, Hughes, & Kwok, 2010). For boys, this frustration was often compounded by the fact that their relationships with teachers tended to demonstrate a lack of closeness and elevated levels of conflict when compared to their female counterparts (Hughes & Kwok, 2007; Silver et al., 2005). In contrast, girls demonstrated higher levels of academic persistence when it came to reading text (Klinger et al., 2009; Oakhill & Petrides, 2007), even when their literacy levels were below grade level. Even as girls exhibited greater perseverance academically, there was evidence that girls experienced greater internal distress at school, especially when their achievement was poor (Pomerantz, Altermatt, & Saxon, 2002). In addition, research by Wang et al. (2007) and Haslam and Reicher (2006) indicated that males and females responded to stress in very different ways and through different parts of the brain, in that men activated the fight or flight response while women responded through emotion. Perhaps related to the emotional response by females, researchers consistently found that “girls are more

concerned than boys are with pleasing adults, such as parents and teachers" (Pomerantz et al., 2002, p. 397). With the abundance of recent brain research available to educators, it is incumbent upon us to continually update our instructional knowledge base in order to best meet the needs of our students. Utilizing our emerging understanding of how gender differences impacts learning may present an opportunity for us to meet the needs of our most at-risk and disengaged student populations.

Implications

This project study was significant for school XYZ for several reasons. The primary focus of this program evaluation was to determine the effectiveness of the implementation of single-gender classes for Grade 9 essential-level students. Teachers and administrators at school XYZ rarely had the time and the resources to effectively identify, monitor, evaluate, and report on the effectiveness of programming changes. Utilizing an outside evaluator to facilitate the evaluation alleviated the stress of determining the effectiveness of the program implementation and reduced the level of bias often affiliated with in-school action research projects. The finished program evaluation and accompanying white paper is intended to assist educators in decision making regarding the continuation or possible expansion of the single-gender program and aid in making recommendations to inform and improve instructional practice of educators at school XYZ.

In addition, at the school, district, and provincial levels, the implementation of single-gender classes attempted to address the need to academically support the most at-risk students in the school system. There was limited research that specifically addressed

the needs of students performing significantly below grade level, especially concerning student engagement and literacy development. The program evaluation at school XYZ focused on three key measures of a successful program implementation, which included literacy development, student engagement, and teacher perceptions regarding the success of the program. The results of this investigation will be highlighted in a white paper that will be presented to the stakeholders of school XYZ as well as district leaders who may use the data gathered to make decisions about supporting other at-risk students across the district.

Summary

The intent of this literature review was to synthesize the current literature related to supporting at-risk students. Despite a variety of supports and interventions, most at-risk students at school XYZ continued to struggle with engagement in learning and the development of the fundamental literacy skills necessary to navigate high school successfully. The empirical evidence on the effectiveness of engagement programs to support at-risk students was virtually nonexistent, although there appeared to be a number of strategies that, when implemented fully, could have positive outcomes for students' academic success. Investigating gender differences in the learning environment provided a vehicle to address the current educational dilemma at school XYZ.

Section 2 presents an explanation of the methodology for this project study. The rationale for the design of the project study and the accompanying research used to support the design choice is discussed.

Section 2: The Methodology

Introduction

In this section, I outline the methodology for this project study, including an explanation of the program evaluation, the nature of the design, and the justification for using this approach. In addition, I describe the setting and sample, along with the instrumentation and materials used for data collection and analysis. Finally, I present the assumptions, limitations, and delimitations of the study, as well as the measures for the protection of participants' rights.

Research Design

Over the past 10 years, the Ontario secondary school system paid increasing attention to studying and reporting on the effectiveness of interventions designed to advance student learning with the implementation of the Student Success/Learning to 18 (SS/L18) Strategy (Ungerleider, 2008). The impetus for the SS/L18 Strategy was a direct result of the four-phased double-cohort longitudinal study by King and colleagues (King, 2002, 2003; King, Warren, Boyer, & Chin, 2004). These studies focused on the low graduation rates within the province of Ontario and determined that credit accumulation in Grades 9 and 10 were key contributors to secondary school graduation. In addition, the Ontario Ministry of Education (2005b) highlighted student engagement as a critical element of students remaining in school until graduation. Based on these reports and the direction of the Ontario Ministry of Education, many school programs and student interventions focused on supporting engagement to improve student achievement and graduation rates.

In an attempt to improve student engagement and literacy for students of essential-level programming, school XYZ implemented single-gender classes during the 2010-2011 school year. This project study's quantitative program evaluation was used to assess the effectiveness of the 1st-year program based on school XYZ's stated goals and objectives. Lordico, Spaulding, and Voegtle (2010) suggested that, from an educational perspective, the definition of a program evaluation is any educational endeavor focused on improving or finding a solution to an identifiable problem. According to Spaulding (2008), the primary purpose of a program evaluation was to determine the effectiveness of the implemented interventions and recommend any necessary adaptations, while Scriven and Coryn (2008) suggested that the objective of a program evaluation was to establish the value and significance of a product or service. Program evaluation is understood to be fundamentally different from traditional quantitative or qualitative research in that its primary purpose is to assist in decision making and make recommendations to inform and improve instructional practice (Spaulding, 2008; Donaldson, Christie, & Mark, 2009). As Chen (2005) affirmed, "The body of evaluation knowledge needs empirical feedback to nurture its growth" (p. 270).

One of the benefits of a program evaluation was that school XYZ would be able to maintain a very specific and internal concentration on a localized problem. The purpose of this study was not necessarily to focus on theory or how the results might transfer to a broader population. Rather, the program evaluation model allowed me the flexibility to address the research question of interest rather than having to fit the research question to a particular design (Christie & Fleischer, 2010).

The school district and school XYZ placed a strong emphasis on collecting quantitative data for analysis (Stieva, personal communication, February 21, 2010). In this particular case, the program evaluation was solely quantitative and summative in nature. The decision to conduct a purely quantitative study was based on the purpose, need, and audience of the evaluation (Spaulding, 2008). Additionally, the program evaluation was summative in nature because the data collected were for the purpose of "measuring outcomes and how those outcomes relate[d] to the overall judgment of the program and its success" (Spaulding, 2008, p. 9). Although an action research/teacher inquiry approach was regularly practiced within this school district, a more formal approach toward evaluating this program was utilized. Informal evaluations tended to include biased perspectives of the educators involved, a lack of rigor, and poor outcomes (Stufflebeam & Shinkfield, 2007), which may have led to errors in decision making (Stufflebeam, 2008).

Although there are several approaches to program evaluation, an objectives-based approach was utilized. Spaulding (2008) asserted that an objectives-based approach was the most common approach in program evaluation. In the case of school XYZ, there were two reasons for an objectives-based approach. First, the objectives of the evaluation were determined by the program development and implementation team and the evaluator (Lordico et al., 2010). These objectives were essential in order to plan a course of action for the 2010-2011 school year. Secondly, school XYZ wished to have a summative evaluation conducted at the end of the first year of implementation of their single-gender program. The purpose of collecting data for a summative evaluation were "to measure

outcomes and to determine how those outcomes relate to the overall judgment of a program" (Lordico et al., 2010, p. 320). An objectives-based approach can easily be utilized for summative and formative evaluations (Lordico et al., 2010).

The particular model of program evaluation for consideration in this project study was the Goal-Based Evaluation (GBE) model. A GBE is "any type of evaluation based on and knowledge of—and referenced to—the goals and objectives of the program, person, or product" (Scriven, 1991, p. 178).The GBE model focused on the extent to which the goals and objectives of the program were met (Scriven & Coryn, 2008; Spaulding, 2008; Usun, 2008). The GBE approach was a practical means for evaluating goals and objectives established for the program (Frechtling, 1994, 2007, 2010; Spaulding, 2008). In case of school XYZ, the goals of the program were clearly established during the program's formation, therefore the ensuing objectives became the criteria for measuring the effectiveness of the program (Frechtling, 2007), and holding the program accountable for prior expectations.

Kirkpatrick's four-level model of evaluation (1998) followed the goal-based evaluation approach, which was the basis for the program evaluation at school XYZ. According to Kirkpatrick (1998), the four-level model was based on four straightforward questions that rendered four levels of evaluation, which included:

1. Reaction: how the learners react to the learning process
2. Learning: the extent to which the learners gain knowledge and skills
3. Behavior: capability to perform the learned skills
4. Results: benefits to the individual and the organization

The program evaluation at school XYZ centered on the first two levels of evaluation. Focusing the evaluation of the first two levels was a reasonable approach to evaluating a program in its first year of existence and the key to gathering more informed data in levels 3 and 4 (Kirkpatrick, 1998).

With a focus on gathering data for evaluation at the reaction and learning levels, four identifiable goals were set prior to the implementation of the single-gender program at school XYZ. The team of educators responsible for the implementation of the program at school XYZ, in consultation with the evaluator, formulated the program goals. For the 2010-2011 school years, the three goals for the Grade 9 single-gender program were:

1. Students will indicate on the post implementation survey that they are more engaged in learning when in single-gender classroom.
2. Teachers and Educational Assistants will indicate on the post implementation survey that their students are more engaged in learning when in single-gender classroom.
3. DRA posttest scores for all students will improve at a more substantial rate in the single-gender classroom when compared to the DRA posttest scores from previous mixed-gender Grade 9 essential-level classes at school XYZ.

Goals 1 and 2 provided data for reaction level evaluation. The reaction level measured how participants in the single-gender classroom reacted to the implementation of the program (Kirkpatrick, 1998). The participants in the program included six single-gender classroom teachers, four educational assistants, and 45 students enrolled in Grade 9 essential-level program at school XYZ. Data collection from the reaction level was an

essential component of an effective program evaluation (Kirkpatrick, 1998). Reaction level data were necessary in determining participants' perceptions of the effectiveness of the implemented program and led to a deeper understand of data collected at the learning level (Kirkpatrick, 1998).

Simplicity was the strength of the GBE model, because the evaluations produced relevant, targeted information that was easily accessible and straightforward to use (Fitzpatrick, Sanders, & Worthen, 2004). However, there were weaknesses attached to utilizing the GBE model as a framework for this study. According to Bell (2000), Fitzpatrick et al. (2004), and Spaulding (2008), the GBE approach may foster a linear and inflexible approach to evaluation by neglecting objectives, ignoring the context in which the evaluation takes place, and disregarding the outcomes other than those highlighted in the objectives. When conducting a summative evaluation using the GBE model, the evaluator must be prepared to allow for unforeseen circumstances in understanding and presenting the full scope of the study (Frechtling, 1994, 2010). The evaluator must be reminded that the purpose of the evaluation is to inform the professional practice of the educators involved in the program and foster collegial discussion, planning, and reflection, rather than being focused solely on goals and objectives (Spaulding, 2008).

Setting and Sample

I conducted a quantitative program evaluation at school XYZ, a public high school in southern Ontario, Canada. According to the study site, school XYZ was home to approximately 2,200 full-time high school students during the 2010-2011 academic year. School XYZ offered diversified academic programs for all post-secondary study

(university, college, apprenticeship), and workplace destinations. Approximately 83% of school XYZ graduates attended post-secondary education and training programs after graduation, while 17% attended alternative education pathways, or went directly to work.

Based on data gathered from the school district, there were approximately 4,100 students enrolled in Grade 9 programming for the 2010-2011 school year. At school XYZ, there were approximately 550 Grade 9 students in total enrolled in all levels of programming. There were 45 students at school XYZ enrolled in Grade 9 essential-level programming. Of the 45 students in the sample, 15 were girls and 30 were boys. The 45 students in this study represented approximately 8% of the entire ninth grade student population at school XYZ and approximately 30% of all students taking Grade 9 essential-level programming in this school district.

The 45 students in this project study were an example of purposive sampling, within the framework of a program evaluation. According to Creswell (2008), purposive sampling is defined as studying a particular phenomenon within the context of a specific group of students, and where the likelihood of gathering data from the target population has been achieved (Trochim & Donnelly, 2006). Based on data gathered from each school in the district that provided essential-level programming to Grade 9 students, the 45 students in this sample represented the typical academic qualities and socioeconomic attributes of students in Grade 9 essential-level programming within the district. In addition, a power analysis of the sample size was conducted using SPSS software. The power analysis identified the minimum total sample size and test group sample size for a one-tailed or two-tailed ANCOVA study, given the alpha level or *p*-value, the anticipated

effect size or Cohen's *d* value, and the desired statistical power level (Hill & Lewicki, 2007). Utilizing a *p*-value of .05 as a conventional measure of statistical significance, an effect size of 0.8, and a desired statistical power level equal to 0.80, the minimum total and test group samples sizes were met for a one-tailed or two-tailed ANCOVA study.

Instrumentation and Materials

The instrumentation in this program evaluation included a number of tools in order to document the effectiveness of the single-gender program at school XYZ. The primary mode of evaluation was the evaluation matrix, which was the "cornerstone of conducting a rigorous and successful evaluation project" (Spaulding, 2008, p. 15). The evaluation matrix consisted of a set of predetermined outcomes that provided the evaluator with a blueprint of all of the necessary data for collection (Spaulding, 2008) and was generated by the program development and implementation team at school XYZ and the evaluator. The final summative evaluation, based on this matrix, is intended to inform the future decision-making processes regarding gender specific programming at school XYZ. The specific tools used to gather data are highlighted in Table 1.

Table 1

Evaluation Matrix for Single-Gender Programs

Evaluation objective	Stakeholder group	Tools used to collect data	Timeline
Goal 1: To document students perceptions of their engagement in the single gender classroom	Students	Postsurvey	June 2011
Goal 2: To document teachers perceptions about the engagement levels of students in their classroom	Teachers and Educational Assistants	Postsurvey	July 2011
Goal 3: To document changes in reading achievement for Grade 9 students in the essential-level program	Students	Pretest and posttest DRA scores	Pretest scores from September 2010 Posttest scores from June 2011

In addition, in order to collect reaction level data, two surveys were distributed that reflected one-time measurements following the implementation of the single-gender program. The benefits of having used surveys included (a) standardization and uniformity of questioning; (b) the ease with which data was compared, contrasted, quantified, and analyzed; and (c) the assurance of a higher degree of reliability than other techniques of data collection could provide (Joppe, 2006). In educational research, scaled surveys have often been employed to obtain information about individuals' attributes, behaviors, beliefs, and attitudes (Dessell, 2005). According to Dyer (1995), Likert scales have been the most efficient and effective approach in developing highly reliable attitude scales.

In developing an effective attitude scale, Dwyer (1993) suggested the scale need only reflect one possible perception of truth rather than being factually accurate because respondents will reply to the feeling triggered by the item in question. Fink (2006) suggested that reliability and validity of a survey instrument will produce better results if it is well designed and easy-to-use. In addition, an even balance of positive and negative statements used in the scale helps to avoid bias and improve reliability as any respondent who wishes to always answer *strongly agree* will demonstrate inconsistency in response levels (Erikson & Tedin, 2011). Furthermore, Trochim and Donnelly (2006) suggested utilizing a relatively small number of items in a final scale (e.g., 10 to 15) and, although there was some disagreement over the number of values attached to response scale, the majority of researchers agreed that 5 to 7 points are most effective in providing respondents with an accurate and reflective voice for analysis (Dessell, 2005). Surveys should also adhere to the principles of good survey writing (Lordico et al., 2010), which included the use of the following:

1. Clear concise language
2. Survey items that gather data on one central idea or question
3. Avoidance of double negatives
4. Response items that do not overlap
5. Inclusion of all possible responses to each item
6. Inclusion of items that do not make assumptions about the participants
7. Inclusion of items that allow participants to express their true beliefs

School XYZ developed the surveys used in their program evaluation and paid special attention to the survey developed for the students to ensure that the surveys used appropriate language and were written at a level that students could understand (Dessell, 2005). The first survey was given to all students participating in single-gender classes, and reflected students' perceptions of their engagement levels in single-gender classes. The student engagement survey used by school XYZ adapted the Engagement Versus Disaffection with Learning (EvsD) student survey proposed by Skinner et al. (2008) to ensure reliability and validity of the instrument. Fredricks et al. (2011) reported high levels of internal consistency reliabilities and interindividual stability within the EvsD student survey. The EvsD scale also provided evidence of construct validity within the student survey (Fredricks et al., 2011). The student survery is found in Appendix A.

The administration of the student survey occurred during the last week of school and took place with the English teacher monitoring the completion of the survey during class time. Given the reading abilities and the potential lack of focus during the administration of the survey, the teacher read the questions to the students to ensure comprehension (Fredricks et al., 2011). Students completed the paper and pencil questionnaire in approximately 20 minutes. Once completed, the teacher collected the surveys and placed them in a sealed envelope without reading student responses. Surveys were locked in a safe in the Main Office of school XYZ until this study was formally approved by the Institutional Review Board (IRB) – #10-04-11-0128171.

A second survey was developed by school XYZ, which was given to all teachers and support staff who worked in single-gender classes, which reflected an educator's

perspective on student engagement levels in the single-gender classroom. The teacher perception survey adapted the (EvsD) teacher survey proposed by Skinner et al. (2008) and the Teachers' Views of Single Gender and Heterogeneous Education (TVSGHE) survey conducted by Fry (2009) to ensure reliability and validity of the instrument. Again, Fredricks et al. (2011) reported high levels of internal consistency reliabilities and interindividual stability within the EvsD teacher survey and Fry (2009) indicated that the TVSGHE survey yielded high levels of internal reliability. The EvsD scale also provided evidence of construct validity within the teacher survey (Fredricks et al., 2011). The teacher survey is found in Appendix B.

The administration of the teacher survey occurred following the completion of the final reporting period at school XYZ. The principal of school XYZ provided teachers with the pencil and paper survey during a team meeting at the conclusion of the school year. Teachers completed the teacher report instrument during the meeting and took approximately 15 minutes to complete the survey. Once completed, the principal collected the surveys and placed them in a sealed envelope without reading the teachers' responses.

Although the student and teachers surveys on the perceived levels of student engagement in the single-gender classroom cannot be used to determine if the students demonstrated higher levels of engagement in the single-gender classroom than previous mixed-gender classrooms, the surveys provided information about this particular cohort of students at one point in time (Trochim & Donnelly, 2006).

Goal 3 provided data for this program evaluation at the learning level. Learning level evaluations traditionally utilized pretest and posttest measures to assess the amount of learning that transpired during the program (Kirkpatrick, 1998). The learning level evaluation at school XYZ sought to determine the impact of single-gender classes on literacy development for students taking Grade 9 essential-level English class by evaluating pretest and posttest DRA scores. The DRA was a set of individually administered criterion-referenced reading assessments intended to be administered, scored, and interpreted by classroom teachers (Beaver & Carter, 2006; Pearson Learning Group, 2009). Based on research conducted by the Pearson Learning Group (2009), the DRA demonstrated reliability and validity on a consistent basis. The reliability analyses conducted include internal consistency, passage equivalency, test-retest reliability, as well as interrater and expert rater reliabilities (Pearson Learning Group, 2009; Williams, 1999). In addition, the Pearson Learning Group (2009) and Williams (1999) also found the DRA to be valid based on measures of criterion-related, construct, and content validity.

The evaluation of the DRA data, in conjunction with the student survey data and the teacher survey data was used to draw conclusions about the effectiveness of the single-gender program at school XYZ for Grade 9 essential-level students.

Data Collection and Analysis

The purpose of this project study was to examine and evaluate the effectiveness of the single-gender program at school XYZ based on the following three objectives:

1. To document students' perceptions of their engagement in the single-gender classroom
2. To document teachers' perceptions about the engagement levels of students in their classroom
3. To document changes in reading achievement for Grade 9 students in the essential-level program

Data Collection

Data collection included two surveys conducted as one-time measurements following the implementation of the single-gender program. One survey was given to all students participating in single-gender classes and reflected students' perceptions of their engagement levels in the single-gender classroom. Students completed the engagement survey before they left for summer vacation in June 2011. A second survey was given to all teachers and support staff who worked in single-gender classes, and reflected an educator's perspective on student engagement levels in the single-gender classroom. Although the teacher and student surveys could not be used to determine if the students demonstrated higher levels of engagement in the single-gender classroom, the surveys can be expected to provide information about this particular group of students and teachers at one point in time (Trochim & Donnelly, 2006). The results of these surveys were entered into an electronic spreadsheet and sent to the researcher via a sealed envelope once the study was approved.

Additionally, data collection included the pretest and posttest results for all 45 students in the essential-level, single-gender classes as well as the pretest and posttest

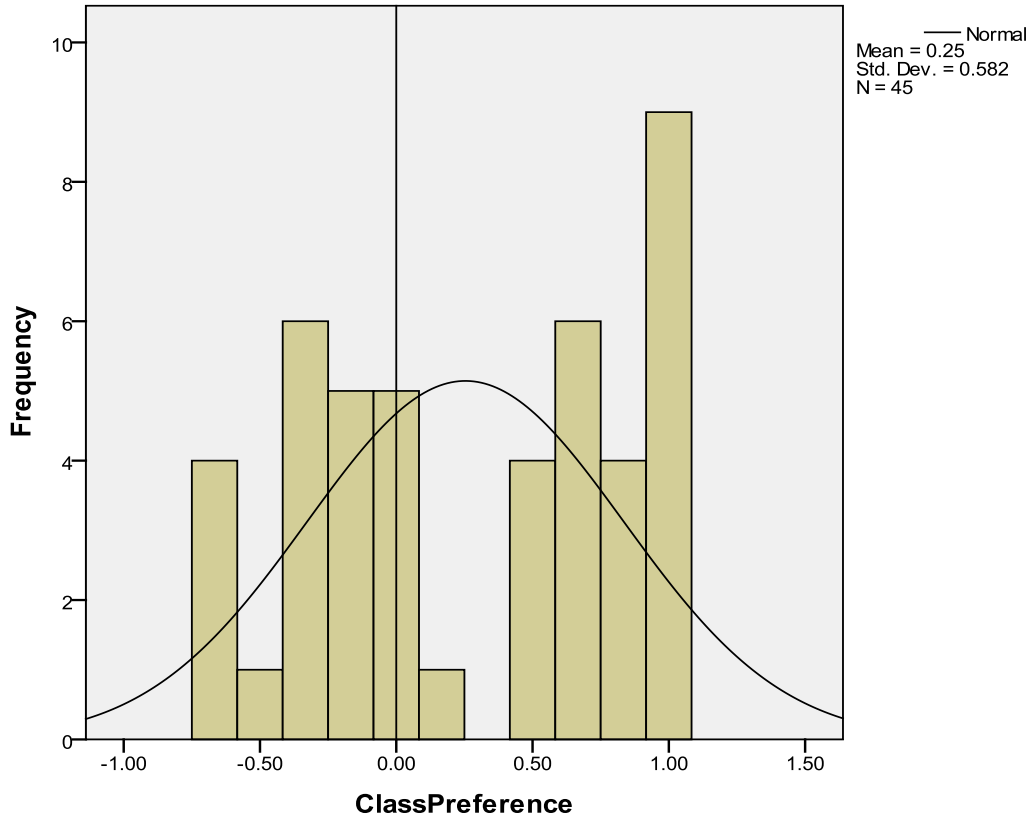
results for 37 Grade 9 students in the essential-level, mixed-gender program during the 2009-2010 school year. The pretest and posttest measurement utilized in this study was the Developmental Reading Assessment (DRA), which was used by all Grade 9 English classes throughout the district. The DRA represented a set of individually administered, criterion-referenced reading assessments intended to be administered, scored, and interpreted by classroom teachers (Beaver & Carter, 2006; Pearson Learning Group, 2009). The pretest occurred during the first two weeks of September 2010, while the posttest assessment took place at the end of June 2011. The results were entered onto an electronic spreadsheet, which was then sent to the researcher via a sealed envelope after the study had met IRB approval.

Data Analysis

This program evaluation employed a variety of strategies to appraise the evaluation objectives. In evaluating objectives 1 and 2, the analysis of the survey data included descriptive statistics in order to illustrate what the data demonstrated (Trochim & Donnelly, 2006). Information was cleaned, coded, and assessed for missing data (Creswell, 2008). There were no previous archival data from which to compare. Univariate analysis was utilized to examine the data one variable at a time (Trochim & Donnelly, 2006). Objective 3 used an Analysis of Covariance (ANCOVA) model to evaluate the pretest and posttest DRA scores of students in single-gender classes and compared those scores to a previous cohort of Grade 9 essential-level students in mixed-gender classes in order to determine the impact of single-gender classes on literacy development.

Objective 1. The focus of the first objective in this program evaluation was the documentation of students' perceptions of their engagement in the single-gender classroom. A total of 45 students completed the student perception survey at the end of the 2010-2011 school year. Of those 45 students, 15 were female and 30 were male. Students were asked to answer 12 questions on their experiences in the single-gender classroom. Students read a variety of statements and then identified if that experience was more likely to occur in the single-gender classroom, the mixed-gender classroom, or if there was no difference. A reliability analysis of those 12 questions was conducted using Cronbach's alpha to determine the level of internal reliability within the surveys. As Cronbach's alpha approaches 1, the level of internal consistency increases (Gliem & Gliem, 2003). A strong level of internal reliability was determined amongst the 12 questions with a 0.928 score using Cronbach's alpha.

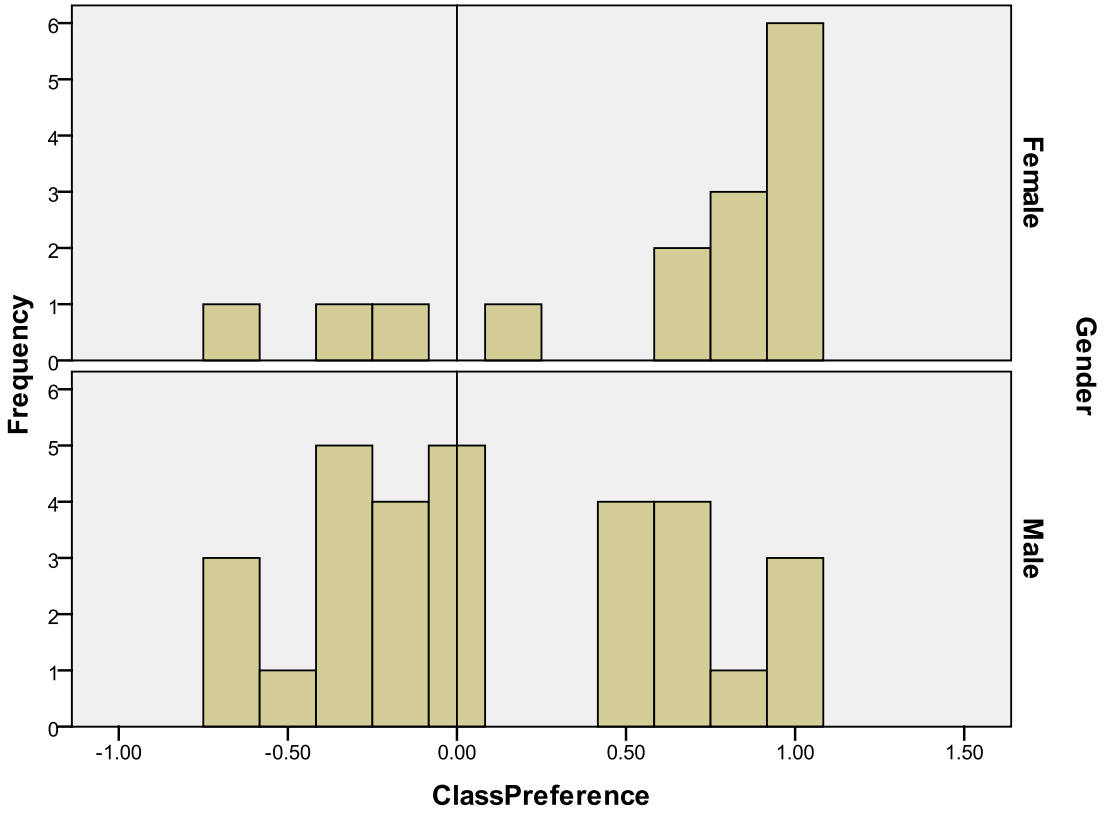
Based on the strong internal reliability of questions 2 to 13 on the survey, overall student preferences were determined for either mixed-gender classes, single-gender classes, or neither. Figure 1 indicates that overall preferences for males and females tended to favor single-gender classes over mixed-gender classes. A -1.00 score indicates that students strongly preferred the mixed-gender environment, while a score of 1.00 indicates a strong preference for the single-gender classroom. A vertical line through the 0.00 score indicates the cut-off score for no preference for the single-gender class or the mixed-gender class. Results indicated 54% of students favored the single-gender learning environment while 62% of students indicated no preference or a preference towards the single-gender classroom



-1.00=mixed gender classroom; 0= no preference; 1.00=single gender classroom
Figure 1. Student preferences for classroom learning

Figure 1. Student preference for classroom learning.

In order to disaggregate the data further, preferences for the classroom environment were also reviewed based on gender (see Figure 2). The data represents 15 female respondents and 30 male respondents. When gender was accounted for, the data suggested that both males and females preferred single-gender classes, although females preferred the single-gender classroom more strongly than males.



-1.00=mixed gender classroom; 0= no preference; 1.00=single gender classroom
Figure 2. Student preferences for classroom learning by gender

Figure 2. Student preference for classroom learning by gender.

Table 2 indicates the mean score for classroom preference, with a score of 0.00 representing no preference. Based on the accumulated student survey data, there was solid evidence suggesting that students perceived the single-gender learning environment as a more engaging environment from which to learn.

Table 2

Class Preference by Gender

Gender	Mean score	Number of students	Standard deviation
Female	.5556	15	.56490
Male	.1028	30	.53725
Total	.2537	45	.58170

The final question on the student survey asked students to identify one subject that they believed they would benefit the most from if they were to take that subject again in a single-gender classroom. Table 3 indicates the results, which included the number of responses and the percentage of responses to that question.

Table 3

Single-Gender Classroom Preference by Subject

Subject	Frequency	Percent	Valid percent	Cumulative percent
English	10	22.2	22.2	22.2
Mathematics	5	11.1	11.1	33.3
Science	3	6.7	6.7	40.0
Social Science	3	6.7	6.7	46.7
Technology	6	13.3	13.3	60.0
Physical Education	11	24.4	24.4	84.4
None	7	15.6	15.6	100.0

The most frequently chosen subject areas in which students identified a preferences for the single-gender classroom included English and Physical Education. Interestingly, students in Grade 9 essential-level programming at school XYZ did not take physical education classes in the single-gender environment during the 2010-2011 school year. However, all other students at school XYZ and across the district did take physical education classes in a single-gender learning environment.

When the data were disaggregated further to include an analysis by gender, the results indicated that males and females had different subject preferences for the single-gender classroom as evidenced in Figure 3. Males (27%) indicated that they preferred single-gender physical education classes, while 20% of male students indicated a preference for no classes in the single-gender learning format. Conversely, 33% of female students preferred English in the single-gender learning format while 94% of female students preferred to take at least one subject in the single-gender classroom.

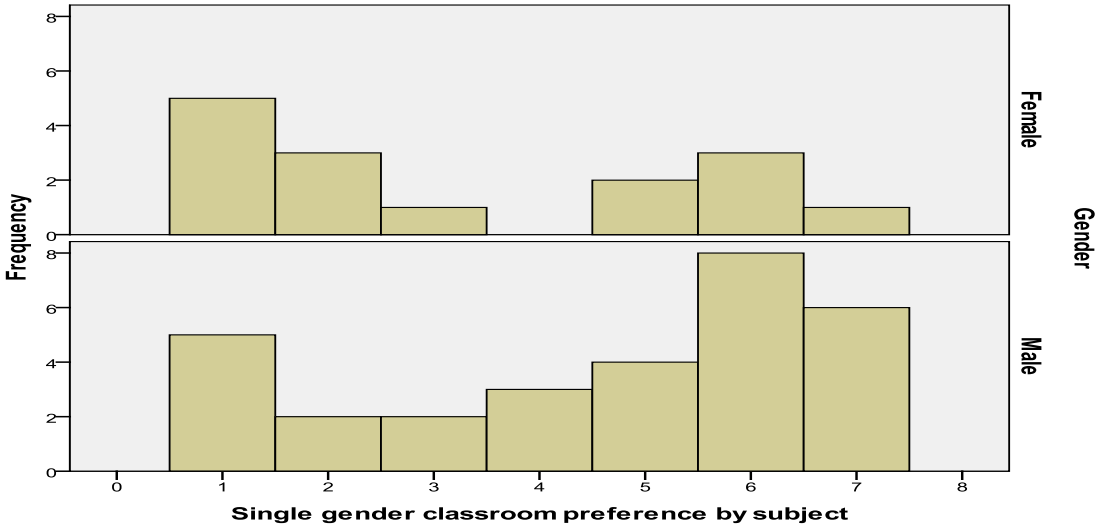


Figure 3. Single gender classroom preferences by subject

Figure 3. Student subject preferences for the single-gender classroom.

Objective 2. Objective two focused on collecting data generated by the teachers and support staff who consistently worked in the single-gender learning environment for the duration of the 2010-2011 school year. Six teachers and two educational assistants completed surveys at the end of the 2010-2011 school year that reflected their experiences in the single-gender classroom. Of these eight educators, six were female and two were male, and both educational assistants were female. All eight educators worked for the entire year with Grade 9 essential-level, single-gender classes at school XYZ. In addition, all of the eight educators worked with the 2009-2010 cohort of Grade 9 essential-level students in mixed-gender classes. The number of years of cumulative teaching experience of the eight educators who participated in this study is presented in Table 4.

Table 4

Years of Teaching Experience as of the 2010-2011 School Year

Teaching experience	Frequency	Valid percent	Cumulative percent
1-5 years	2	25.0	25.0
6-12 years	4	50.0	75.0
13-20 years	2	25.0	100.0
Total	8	100.0	

Of the two teachers with the least experience, both teachers were in their fifth year of teaching and had previously taught in the Grade 9 essential-level program at school XYZ. In addition, of the eight educators in this program evaluation, none of the eight had ever

previously taught in a single-gender classroom, and all eight educators felt that they did not receive adequate training in preparation for teaching single-gender classes. However, all eight educators indicated that they felt comfortable teaching in the single-gender classroom.

In addition to demographic information, the teacher survey included three sections, which focused on teachers' perceptions of student engagement in the single-gender classroom. Teachers were also asked to compare students' academic achievement levels and students' behavior in the single-gender class versus their previous experiences with students in mixed-gender classes. In addition, a Cronbach's alpha was conducted on each set of questions in order to determine levels of internal reliability for each group of questions. Based on those analyses, high levels of internal reliability were determined for each grouping of questions as indicated in Table 5.

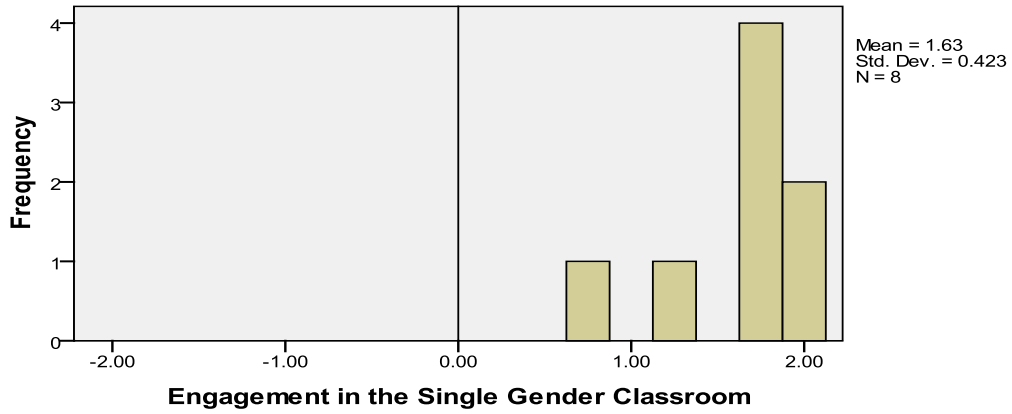
Table 5

Reliability Statistics for Teacher Survey

Survey questions	Cronbach's alpha	Number of items
Section 2: Student engagement	.717	4
Section 3: Academic achievement	.705	5
Section 4: Student behavior in class	.717	5

A reliability coefficient of .70 or higher is considered acceptable in most social science research situations (Gliem & Gliem, 2003); therefore, each section of the teacher survey demonstrated acceptable levels of internal reliability.

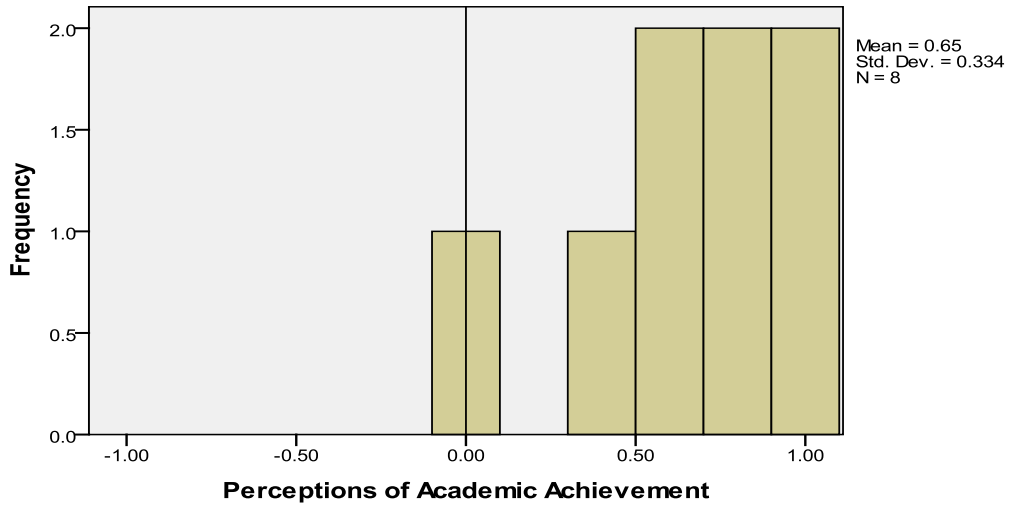
The teacher survey data were coded, cleaned, and analyzed using SPSS, PASW Statistics 18 for Windows. For the first set of questions related to student engagement levels in the single-gender classroom, Likert scale responses were coded as follows: -2 = strongly disagree, -1 = disagree, 0 = no opinion, 1 = agree, and 2 = strongly agree. Therefore a value assigned to the response that was above zero indicated a more positive perception of student engagement in the single-gender classroom, while a value assigned to a response that was less than zero indicated a more negative perception of student engagement in the single-gender classroom. Figure 4 highlights the mean responses to the first four questions in the survey. The mean scores collected in section one of the survey indicated that teachers felt positively that students were more engaged in learning in the single-gender environment. Mean scores were used rather than individual scores based on acceptable levels of internal reliability.



-2-strongly disagree; -1=disagree; 0=no difference; 1=agree; 2=strongly agree
Figure 4. Teachers Perceptions of Student Engagement in the Single Gender Classroom

Figure 4. Teachers' perceptions of student engagement levels in the single-gender classroom.

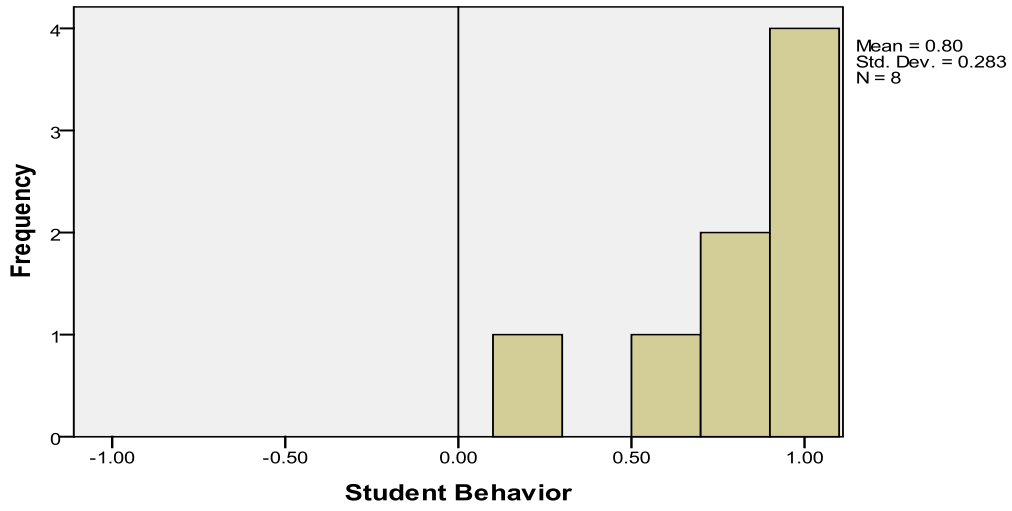
In section three of the survey, teachers were asked to report on whether they perceived a change in academic achievement levels for students in single-gender classes. Scaled responses were coded as follows: -1 = mixed-gender class; 0 = no difference, 1 = single-gender class. Therefore, a value assigned to the response that was above zero indicated a more positive perception of academic achievement in the single-gender classroom, while a value assigned to a response that was less than zero indicated a more positive perception of academic achievement in the mixed-gender classroom. These results indicated that teachers felt positively that students demonstrated greater levels of academic achievement in the single-gender environment when compared to the mixed-gender environment. No teachers indicated that students demonstrated higher levels of academic achievement in mixed-gender classes. Mean scores were used rather than individual scores based on acceptable levels of internal reliability (see Figure 5).



-1=mixed gender; 0=no difference; 1=single gender
Figure 5. Teachers Percpetions of Academic Achievement in the Classroom

Figure 5. Teachers' perceptions of change in academic achievement in the single-gender classroom.

Finally, in section four of the survey, teachers were asked to report on whether they perceived a change in student behavior in single-gender classes. Scaled responses were coded as follows: -1 = mixed-gender class; 0 = no difference, 1 = single-gender class. Once again, a value assigned to the response that was above zero indicated a more positive perception of student behavior in the single-gender classroom, while a value assigned to a response that was less than zero indicated a more positive perception of student behavior in the mixed-gender classroom. These results indicated that teachers felt positively that students demonstrated improved behavior in the single-gender environment when compared to the mixed-gender environment. No teachers indicated that students demonstrated better behavior in the mixed-gender classroom. Mean scores were utilized rather than individual scores based on acceptable levels of internal reliability (see Figure 6).



-1=mixed gender class; 0=no difference; 1=single gender class
Figure 6. Teachers perceptions of student behavior in class

Figure 6. Teachers' perceptions of change in student behavior in the single-gender classroom.

Objective 3. In addition to the survey data, I collected and analyzed the pretest and posttest DRA data from two cohorts of Grade 9 students in the essential-level program at school XYZ. The first cohort of students consisted of 37 Grade 9 students in the essential-level program who participated in only mixed-gender classes during the 2009-2010 school year. The second cohort of students consisted of 45 Grade 9 students in essential-level programming who participated in the single-gender program at school XYZ during the 2010-2011 school year. However, one student did not complete the posttest and therefore was not included in the analysis. I then conducted an inferential analysis of the collected data based on the following hypothesis:

- Null Hypothesis ($H_0 1$): Student literacy achievement scores in single-gender classes will show no difference from those measured in mixed-gender Grade 9 essential-level classes in school district XYZ.
- Alternate Hypothesis ($H_1 1$): Student literacy achievement scores in single-gender classes will be significantly different from those measured in mixed-gender Grade 9 essential-level classes in school district XYZ.

I used historical data as a benchmark against which to measure change in the pretest and posttest DRA scores. Pretest and posttest DRA data were collected in the Grade 9 essential-level program for 2 years prior to the implementation of single-gender classes. However, I was only able to access archival DRA data from the mixed-gender classes in the 2009-2010 school year for the purpose of comparison in this study. The descriptive statistics for the study are found in Table 6.

Table 6

Descriptive Statistics

Dependent variable: Posttest DRA scores				
Cohort	Gender	Mean	Std. deviation	*N*
Mixed-gender classes	Male	4.96	1.197	24
	Female	5.08	1.498	13
	Total	5.00	1.291	37
Single-gender classes	Male	5.52	1.479	29
	Female	6.13	1.457	15
	Total	5.73	1.484	44
Total	Male	5.26	1.375	53
	Female	5.64	1.545	28
	Total	5.40	1.438	81

The mean posttest DRA scores and standard deviations are indicated in Table 6 and are separated by gender. The data indicated that posttest DRA scores for both genders increased in the single-gender classroom. The differences in scores are significant and represent a moderate effect size with practical implications. Therefore, we know that the single-gender cohort started out with significantly higher DRA scores than the mixed-gender cohort. However, in order to determine if the results reflected the impact of the single-gender classroom or were a result of initial differences in the pretest scores, further analysis was needed.

The interaction effect between the cohorts and the pretest scores was assessed to rule out the violation of regression homogeneity assumption. The *F*-test results in Table 7 demonstrated that the interaction effect was not significant and that the regression

homogeneity assumption was not violated; therefore, the ANCOVA test was run.

Table 7

Tests of Between-Subjects Effects

Dependent Variable: Posttest Scores					
Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	142.804[a]	3	47.601	162.510	.000
Intercept	17.521	1	17.521	59.815	.000
cohort	.025	1	.025	.085	.772
pretest	128.236	1	128.236	437.795	.000
cohort * pretest	.218	1	.218	.745	.391
Error	22.554	77	.293		
Total	2523.000	81			
Corrected Total	165.358	80			

a. *R* Squared = .864 (Adjusted *R* Squared = .858)

To facilitate a decrease error variance in this nonequivalent design, analysis of covariance (ANCOVA) was utilized as the measure of analysis. ANCOVA was chosen over analysis of variance (ANOVA) because of its ability to concurrently assess or control for the effect of other continuous variables on the dependent variable (Dunteman, 2005). After conducting Levene's Test of Equality of Error Variances[a], the data in Table 8 indicated there was homogeneity of variances of the dependent variable across groups, where a significance level greater than 0.05 showed that the data do not violate the assumption of equality of error variances.

Table 8

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Posttest			
F	*df1*	*df2*	Sig.
.713	1	79	.401

Tests the null hypothesis that error variance of the dependent variable is equal across groups.

a. Design: Intercept + pretest+ cohort

Table 9 highlighted the tests of between-subject effects. After adjusting for pretest scores, there was a significant effect of the between subjects factor group, $F(1,78)= 12.54$, $p < .0005$, partial $\eta^2 = .14$.

Table 9

ANCOVA Tests of Between-Subjects Effects

Dependent Variable: Posttest						
Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Corrected Model	142.585[a]	2	71.293	244.189	.000	.862
Intercept	17.311	1	17.311	59.292	.000	.432
pre	131.955	1	131.955	451.967	.000	.853
cohort	3.662	1	3.662	12.544	.001	.139
Error	22.773	78	.292			
Total	2523.000	81				
Corrected Total	165.358	80				

a. *R* Squared = .862 (Adjusted *R* Squared = .859)

The assumption of equal slopes was checked and it was found that the interaction term was not significant. Using ANCOVA enabled the control of the effect of the covariate (pretest DRA scores) and more accurately computed adjusted group means and predicted values for the dependent variable. Table 10 highlights the ANCOVA adjusted means scores by cohort and gender.

Table 10

ANCOVA Adjusted Means by Cohort and Gender

Dependent variable: Posttest DRA scores			
Cohort	Gender	Mean	Standard error
Mixed-gender classes	Male	5.229[a]	.109
	Female	5.037[a]	.147
Single-gender classes	Male	5.472[a]	.098
	Female	5.823[a]	.137

Note. a = the adjusted mean scores

Table 10 indicated that after the covariate of pretest DRA scores was taken into consideration, and the mean scores adjusted, there was still evidence that the posttest DRA scores for the single-gender classes were higher than the mixed-gender classes. Additionally, the improvement in posttest DRA scores for females in single-gender classes was significantly higher than their male counterparts. The average adjusted mean scores for females improved by 0.79 in single-gender classes versus an increase of 0.24 for males in single-gender classes. Therefore, we could reject the null hypothesis for males and females based on these findings.

Assumptions, Limitations, and Delimitations

Assumptions

This study made the following assumptions:

1. that the teachers implementing the single-gender teaching and learning strategies received sufficient training and support to effectively execute these procedures throughout the 2010-2011 school year
2. that the students and the staff were fully cooperative during the study
3. that the control group did not implement any single-gender teaching and learning strategies utilized in this study

Limitations

One of the main advantages of program evaluation was to assist in decision making and aid in constructing recommendations to inform and improve instructional practice (Donaldson et al., 2009; Spaulding, 2008). However, there were several limitations and potential misuses of the program evaluation model. First, the recommendations garnered from a program evaluation are only as good as the data collected (Donaldson et al., 2009; Worthern, Sanders, & Fitzpatrick, 1997). In addition, this study was drawn from Grade 9 essential-level students who were on the student register at the time of the DRA pretest and posttest at school XYZ. The DRA scores were limited to a representation of a student's performance on 1 day and may be influenced by extraneous factors for which there can be no control. Furthermore, the survey data collected at the end of this program represented a posttest-only design, which can only provide data about students and teachers perceptions at one point in time: in this case,

following the conclusion of the program. Therefore, the data collected cannot determine if the single-gender program was effective. Finally, there were limitations in the ability of this study to generalize the results to other schools.

Delimitations

The boundaries that limited the generalizability of the findings in this study included the focus areas of the literature, the size and sample of the population, the research procedures and parameters, as well as the time frame of the study.

Ethical Protection of Participants

Student identities remained confidential and participants were guaranteed anonymity. The names of students, teachers, the school, and the school district were not used during or after the completion of the study (Kiriakidis, 2008). All data collected was secured in a locked filing cabinet in my home, and the data was analyzed and organized on my personal home computer for which I was the only person to have access to the password (Kiriakidis, 2008). In addition, approval from the Walden University IRB and permission from the school XYZ was ensured prior to the commencement of data collection and analysis. There was no physical or psychological risk of harm to participants in this study, as all data collected was archival in nature.

Role of the Researcher

I was a former administrator at school XYZ, and took a leave of absence from the school during the period of evaluation. Although I was technically an external evaluator for the purpose of this study, I was responsible for preparing staff for the implementation of the single-gender program during the 2009-2010 school year, and therefore the study

was limited by my potential bias. Although I was not in a supervisory position during the implementation of the program, I was responsible for interpreting the results. In order to address any potential personal bias, I reviewed all preliminary data and findings with the single-gender implementation team at school XYZ prior to the final data analysis process. As an external evaluator who understood the background behind the program, I was also able to provide some unique advantages to the evaluation. I had already developed positive, trusting relationships with the administrators, teachers, and support staff involved in the program. My distance from the program allowed me to analyze the data from a more objective perspective, especially because I will not be returning to school XYZ as an administrator. I also have no stake in single-gender education, as I am neither an advocate nor an opponent of the single-gender learning format. My role as the evaluator was to gather empirical evidence based on the evaluation matrix and report my findings to all stakeholders.

Conclusion

The methodology, research design, and data analysis for this program evaluation were described in this section of the project study. Once Walden University grants final approval of this study, the results will be highlighted in a white paper project that will be presented to the stakeholders of school XYZ. An overview of the project is presented in Section 3.

Section 3: The Project

Introduction

The culmination of this program evaluation was the development of a white paper. The primary function of this white paper was to inform the community stakeholders of the findings of this project study and provide data analysis and recommendations regarding the single-gender program at school XYZ. The following sections identify the goals and rationale of using a white paper for the dissemination of information related to a program evaluation, and will include relevant literature, implementation plans, and a review of the implications for social change related to the project.

Description and Goals

The primary purpose of the white paper is to disseminate the findings from the program evaluation conducted on single-gender classes at school XYZ during the 2010-2011 school year. The primary audience for this white paper will consist of school administrators, teachers, educational assistants, and members of the school council, as deemed appropriate by the school principal. The research department of this school district will also receive a copy of this white paper. The paper will include an introduction, a brief overview of the program evaluation methods, a review of the data, program recommendations, conclusions, and a reference section. The primary goal of the white paper is to inform school-based decision making regarding programming and instructional practice at school XYZ, with the ultimate goal of improving student achievement and engagement for all students.

Rationale

The vehicle chosen for the dissemination of findings related to this project study is the white paper, primarily for its ability to present clear and concise information to the intended audience. In addition, the principal of school XYZ requested a report of my findings that could be distributed to the entire school community, which includes parents and school trustees. A detailed research paper or dissertation would not meet the needs of most parents and trustees, given their limited exposure to formal research documentation and language. Although teachers may have the ability to understand the research literature or dissect and analyze the data, most educators have neither the time nor the willingness to scrutinize such material. In an effort to streamline the learning process, and highlight the most crucial points of interest to all involved, a white paper is a natural vehicle for the program evaluation. The clear and concise nature of the paper will make the usefulness of the information more accessible and convenient for all stakeholders, and encourage the development of a culture of data use within school XYZ.

Review of the Literature

The purpose of this literature review was twofold. First, the literature review aimed to explain how the genre of grey literature, including the white paper, is an appropriate vehicle for disseminating research findings involving a program evaluation. Secondly, the literature reviewed the importance of using program evaluations and subsequent white papers to encourage teacher inquiry and make data-driven decisions at the school and district levels.

The literature reviewed for the project piece of this study used a systematic approach in collecting peer reviewed educational research. The investigation into the research employed a variety of online sources and databases, educational publications, as well as well as personal and professional resources. Online databases included ERIC, Education Research Complete, Sage Education full-text, ProQuest Central, Teacher Reference Center, Academic Search Complete, and Emerald Publishing. Search terms included white paper, grey literature, technical communication, data-driven decision making, teacher inquiry, action research, program evaluation, using data in education, and using data to improve student achievement. Additionally, a considerable number of provincial education documents, grey literature, and peer-reviewed research contributed to the focus of the literature review in this project. Many of these documents provided by Ontario Ministry of Education as well as the Education Quality and Accountability Office.

Grey Literature, the White Paper, and Program Evaluation

One of the challenges in conducting this literature review was that it was difficult to locate studies and journal articles specifically related to the white paper as a vehicle for the dissemination of research to the masses. A comprehensive search of peer-reviewed, scholarly resources using the Walden Library and Google Scholar was conducted in preparation for this review. Scholarly studies, articles, and books on the subject of white papers were most frequently associated with the phrases “grey literature” and “technical communication.”

Grey literature typically refers to literature not formally published in books and journals, which is usually original work and recently released (Okoroma, 2011; Pappas, 2011; Stelzner, 2007). Examples of grey literature include, but are not limited to, theses and dissertations, informal faculty research, conferences paper and presentations, student projects, in-house publications of associations and organizations, white papers, and a variety of governmental publications (Juricek, 2009; Mathews, 2004; Stelzner, 2007; Willerton, 2007). In the school board where this program evaluation was conducted, teachers, principals, senior administration, and school councils frequently rely on grey literature to inform practices on a wide variety of school-based issues. School decision making is regularly influenced by documentation and literature provided the by the Ontario Ministry of Education, the EQAO, the Ontario Principals Council, and the Ontario College of Teachers. Additionally, public educators frequently rely on grey literature as a means to access research, based on its capacity to communicate complex and detailed information in straightforward terms. In this way, research becomes more accessible and useable for educators who are already pressed for time at school. Grey literature also plays a significant role in informing the public about complex and technical materials in a manner which is easily comprehended by the lay audience (Okoroma, 2011).

Juricek (2009) determined that white papers, a specific form of grey literature, typically include findings based on original and in-depth research, and present an excellent opportunity for researchers to circulate information to those typically outside of the research community. Perhaps the most crucial element of a conclusive and

comprehensive program evaluation is the dissemination and utilization of the evaluation data. Critical keys to concluding an effective program evaluation include the assurance that the results are perceived as useful, the guarantee that the results are widely disseminated to the appropriate stakeholders, and that the presentation of the findings are clear and concise, so that a wide variety of audiences may be able to access and understand the findings of the researcher (Frechtling, 2010). The white paper provides an excellent vehicle for information dissemination and presents several advantages over other means of information propagation, including timeliness and flexibility in its delivery, and the ability to incorporate the type of detail required by those whose will review it (Auger, 1994).

Teacher Inquiry and Data-Driven Decision Making

In Ontario, as well as much of Canada and the United States, public stakeholders are scrutinizing educational systems and demanding high levels of student achievement and educator accountability. The amplified focus on standardized testing, precision teaching, and educational transparency offers confirmation of such scrutiny (Gunzenhauser & Hyde, 2007). The EQAO, established by the Government of Ontario in 1996, assured all Ontario taxpayers that every elementary and secondary school student would be carefully monitored and assessed using data collected through province-wide assessments. In order to accomplish this, school districts across the province of Ontario were strongly encouraged to use data to enhance decisions to support resource allocation and improve teaching and learning. School districts, senior administration, and practicing educators focused on the belief that constant transparency, fueled by good data collection

is the only way in which to support a cycle of continuous improvement at the school level (Fullan, 2008).

From the increased scrutiny and accountability measures placed on the educational system by the public and governments, the term *data-driven decision making* (DDDM) evolved. The DDDM process in education reflects a systematic collection and analysis of school-generated data that is utilized to guide decision making by teachers, principals, and senior administration at the school board level (Ikemoto & Marsh, 2007). School principals and teachers use multiple forms of data combined with stakeholder expectations and professional knowledge to create information used to inform instructional practice. School data regularly collected by the school board in this study included input data (e.g., demographic data), process data (e.g., data related to instruction), outcome data (e.g., data from provincial assessments), and satisfaction data (e.g., student, teacher, parent survey data). Once the data are collected and deficit areas are identified, an action plan focused on a set of targets or goals is implemented at the school level as well as in the classroom. The process of improvement then becomes cyclical, as the new data collected assesses the effectiveness of the action plan and is once again utilized to inform the decision-making process.

At school XYZ and within this school board, an inquiry-focused approach to data collection is grounded in the research conducted by van Barneveld (2008), which stated that:

- Planned use of data is a common characteristic of high-performing schools.

- Successful use of data to drive decision-making results from a strategic focus on specific issues.
- Teachers vary in their conceptions of what valuable data are and of how data should be used.
- Translating data into priorities, goals, and strategies requires that data are clearly linked to school-planning and decision-making processes.
- Teachers need a clear process, time to acquire skills, and guidance from an expert to translate data into useful information. (p. 1)

Using data to inform and improve educational practice is a crucial element in ensuring success for all students (Herman et al., 2008). However, principals and teachers continually face difficulties in collecting and reporting on data. Some of these challenges include the systems used to collect, store, and analyze data as well as a lack of preparation and time associated with data collection and analysis (Snipes, Doolittle, & Herlihy, 2002). Therefore, a tool such as a white paper can alleviate some of the stress and time constraints associated with gathering baseline data. Grey literature and white papers are also excellent research-based tools to inform one's instructional practice and make informed decisions related to teaching and learning. The white paper also provides a vehicle for educators to present their collected findings to administrators and community stakeholders using a flexible and relatively unstructured tool.

Perhaps the greatest value of using the program evaluation and the white paper to disseminate findings to all stakeholders is the development of a culture of quality data. Researchers Louis, Leithwood, Wahlstrom, and Anderson (2010) suggested that the

educational system often does not have the expertise nor the clear vision needed to use data for making instructional decisions that directly influence student achievement. A culture of quality data is the principle that high-quality data are fundamental to effective teaching and learning where all stakeholders believe that the analysis of quality data are essential to improving outcomes for all students (Hamilton et al., 2009; Herman et al., 2008; Literacy and Numeracy Secretariat, 2010b; National Forum on Education Statistics, 2004; Ontario Ministry of Education, 2011). Teacher inquiry projects, action research, and school-based program evaluations provide frameworks for schools wishing to develop competency and confidence in the data gathering and analysis process. Within any of these frameworks, a focus on accurate, secure, useable, and timely information must remain the focus of the data gathering and analysis process (National Forum on Education Statistics, 2004; Ontario Ministry of Education, 2011). Additionally, the collection of data should utilize multiple and varied sources, encourage a team approach to using and interpreting data, and include collaborative communication among teachers (Hamilton et al., 2009; Hannay, Wideman, & Seller, 2010).

Finally, to ensure an understanding of the importance of data use for informing professional practice, educators must see data as a component of professional accountability rather than as a tool from which to judge performance (Earl & Katz, 2006; Ontario Ministry of Education, 2011; van Barneveld, 2008). The view of collecting and reporting on data should allow educators to gauge the current climate of a particular educational dilemma and use the information gleaned to devise an appropriate response to the problem. According to Earl and Katz (2006),

> Educational leaders and school staffs who are committed to professional accountability and making informed professional judgments think of accountability not as a static numerical accounting but as a conversation, using data to stimulate discussion, challenge ideas, rethink directions, and monitor progress, providing an ongoing image of their school as it changes, progresses, stalls, regroups, and moves forward again. (p. 13)

Utilizing an inquiry-based approach to teaching places the educator in a position of informed practitioner who pursues planning, instruction, and assessment with precision and innovation. Data generated from classroom evidence, student responses, and teacher feedback compels educators to ask questions, seek answers, and investigate possible solutions as the cycle of teaching and learning begins anew (Literacy & Numeracy Secretariat, 2010a, 2010b; Ontario Ministry of Education, 2010; Timperley, 2010).

Implementation

In order to implement the proposed project, I will write and deliver my white paper to the principal at school XYZ. Once the principal reviews my findings and recommendations, it is likely that we will have an oral conference to determine the next steps. I suspect that the principal may also ask me to create a PowerPoint presentation to accompany my findings and use the combination of the white paper and PowerPoint presentation to disseminate the findings to the leadership team, single-gender team, and school council. This may require several different presentations.

Delivery of the white paper and the PowerPoint presentation will require no resources or supports. I do not foresee any potential barriers, as the principal of school

XYZ and I have remained in continuous contact during the process of this project study. I am aware that he eagerly awaits the presentation of my findings. The only potential barrier would be if the principal changed his mind and decided not to receive the paper.

Upon completion and approval of my doctoral study, I will complete the white paper and any additional resources requested by the principal of school XYZ in preparation for the presentations of my findings. I will request a timeline for completion of the required resources and ask for potential dates for the presentations. I will deliver the paper to the principal of school XYZ, offer to deliver the white paper to the district school board, and prepare to make presentations as requested by the principal and the district.

Project Evaluation

The project for this study will be a white paper focused on the summative evaluation results of the single-gender program for essential-level students at school XYZ. The problem of student literacy achievement and student engagement for essential-level Grade 9 students, a basic theoretical framework for the study, my research findings, and my recommendations will be included in the white paper. Once the white paper is complete, I will request feedback from the principal of school XYZ to ensure that the paper meets the needs of the intended audience, and I will edit the paper as needed.

Upon determination of the presentation plan, and the dissemination of the paper and any accompanying resources, I will engage in any requested feedback sessions in order to clarify the research, findings, and recommendations. Following the presentation, I will request feedback from my audience via a survey. I will participate in any follow-up

meetings with the school and district as requested and engage in program support if appropriate and feasible.

Implications Including Social Change

Local Community

The white paper has the potential to be noteworthy in several ways. The principal focus of this program evaluation was to determine the effect of single-gender classes on student engagement levels and literacy development for Grade 9 essential-level students at school XYZ. Utilizing a quantitative program evaluation as the framework for the study provided an opportunity for school XYZ to assess the effectiveness of their first-year program based on a set of stated goals and objectives. The white paper will provide teachers and administrators at school XYZ with the type of detailed data analysis for which they rarely have access. By using an outside evaluator to facilitate the evaluation and subsequent white paper, the elimination of bias, often affiliated with in-school action research projects, should be assured. Additionally, the elimination of teacher and administrator stress, usually attached to a lack of available research and reflective time, is expected to be a result of this evaluative process. The finished program evaluation and white paper will assist educators in decision making regarding the continuation or possible expansion of the single-gender program and aid in making recommendations to inform and improve instructional practice of educators at school XYZ. Furthermore, the analysis and recommendations provided in the white paper should assist the principal of school XYZ in his continued push towards developing and expanding a culture of effective and meaningful data usage within the school community.

In addition to the school-specific data analysis and the detailed program recommendations provided to school XYZ, the project has the potential to provide valuable information to the school district and greater educational community. This project should also add to the body of knowledge focused on quantitative program evaluations, single-gender instruction, literacy development, student engagement, and the at-risk student. There are limited data that specifically address the needs of students performing significantly below grade level, especially concerning student engagement and literacy development. Despite a wide variety of provincial academic supports and interventions, at-risk students continue to struggle with engagement in learning and the development of the fundamental literacy skills necessary to navigate high school successfully. The empirical evidence on the effectiveness of engagement programs to support at-risk students is virtually non-existent; therefore, reporting on the findings related to gender differences in the learning environment may provide a vehicle to address this current educational dilemma across the province of Ontario.

Far-Reaching

This white paper also has the potential to encourage schools across the district and within the province to investigate the use of outside evaluators as partners in the data collection and analysis process. Many of the school districts in Ontario supply teachers and administrators with the opportunity to take a leave of absence to work in university-based teacher education programs. Additionally, teacher education programs use graduate students to deliver programming to preservice teachers. There appears to be a natural connection between university instructors and researchers who are looking to connect

with school programs to conduct research and the school districts' desires to engage in data collection and analysis.

Conclusion

The intent of Section 3 was to focus on the goals, rationale, supporting literature, implementation plan, evaluation, and implications for social change of my project, which will take the form of a white paper. The white paper will synthesize the research, findings, and recommendations from the program evaluation conducted at school XYZ during the 2010-2011 school year. The development and dissemination of the white paper will occur after my doctoral study has been approved by Walden University.

Section 4 will complete this project study by revealing the strengths and limitations of the project in addressing the problem, and by making recommendations by which to address the problem differently in future research endeavors. The concluding section will also include my reflections on scholarship, project development and evaluation, and leadership and change. Finally, Section 4 will the address my reflections on the importance of the research, what was learned during the scholarly process, and discuss implications, applications, and directions for future research.

Section 4: Reflections and Conclusions

Introduction

The final section of this project study focuses on my reflections and conclusions from the project study conducted at school XYZ. Specifically, Section 4 will reveal the strengths and limitations of the project in addressing the problem, and incorporate recommendations for prospective new research. Section 4 will also present my reflections on scholarship, project development and evaluation, and leadership and change. The importance of the research, reflections on the scholarly process, and a discussion on the implications, applications, and directions for future research concludes the study.

Project Strengths

The program evaluation conducted at school XYZ targeted a chronic, local, and provincial problem: the lack of student engagement and literacy development in Grade 9 students enrolled in essential-level programming. The focus of the white paper project will be to disseminate the findings from the program evaluation conducted on single-gender classes at school XYZ during the 2010-2011 school year. The intent of the project was to provide formal, data-driven feedback to the school and community stakeholders on the effectiveness of single-gender classes in addressing the local problem, while encouraging the use of the data collected from the evaluation to inform future directions involving single-gender education and supports for Grade 9 essential-level students.

The potential strength of this project is the focus placed on the local problem of student engagement and literacy development, and the recommendations for future practice that are specific to the unique needs of students and staff at school XYZ. When

the stakeholders of school XYZ review the white paper, which targets their local community, the data generated from classroom evidence and student and teacher feedback compels stakeholders to ask questions, seek answers, and investigate possible solutions to an identified program need (Timperley, 2010). This project will supply the stakeholders of school XYZ, and potentially the school district, with the type of evaluative data required prior to implementing significant programming changes at the school level. In addition, the project will provide the principal of school XYZ with a supporting document by which to approach the school board for additional resources to continue with the development and implementation of the program in the future.

Another feature of the white paper project is its ability to present lucid and succinct information to the intended audience. Principals, teachers, senior administration, and school councils have little desire, time, and knowledge to effectively and efficiently sift through formal research studies and data. The white paper emphasizes the program evaluation's results in an easy-to-read format based on the target audience's individual needs. The white paper will highlight the most crucial points of interest to all involved, and include clear and concise language making the information more accessible and convenient for all stakeholders. Additionally, the white paper will provide evidence of the necessity to utilize data to inform the instructional practice and decision making within school XYZ.

Finally, the white paper project approaches the school-based problem of student engagement and literacy development from the point of view of providing potential solutions and recommendations rather than that of simply identifying areas of concern. In

the early days of collecting data about student achievement for use by administrators and teachers, secondary teacher unions in Ontario unjustifiably scared teachers into believing that data collection could be used as a tool by which administrators could judge teacher performance (Earl & Katz, 2006). The white paper provides an objective view of collecting and reporting on data by which educators can determine the existing climate of a learning quandary and use the suggestions and recommendations provided by the evaluator to formulate a suitable action plan.

Recommendations for Remediation of Limitations

There are several limitations to consider related to the white paper project of school XYZ's program evaluation. The primary advantage of conducting a program evaluation is to assist principals in key decision-making tasks and support teachers by making recommendations to inform and improve instructional practice (Donaldson et al., 2009; Spaulding, 2008). However, data analysis and the suggestions garnered from a program evaluation are only as adequate as the data collected (Donaldson et al., 2009; Worthern et al., 1997). Therefore, there is an inherent assumption in the white paper that the data analysis and the subsequent recommendations are reflective of quality, unbiased data. Additionally, the recommendations proposed by the evaluator represent a single viewpoint related to the meaning of the data. Consequently, completion of the white paper will occur once consultation regarding the project study's findings obtain acceptance by Walden University, and the principal of school XYZ receives an opportunity for input and feedback.

Another limitation in this project is that the sample population in the study limits the proposed recommendations to those specific to school XYZ. The population in this study draws only from Grade 9 essential-level students who were on the student register at the time of the DRA pretest and posttest at school XYZ. Therefore, there are limitations in the ability of this project to generalize the results to other populations.

In addition, the data collected and analyzed represents a summative evaluation perspective only, which may challenge the evaluator in generating specific recommendations related to improving instructional practice. Furthermore, the evaluator has limited experience in generating program recommendations as an outside evaluator. Therefore, collaborating with the principal, prior to the completion of the white paper, is essential in ensuring the program recommendations and future directions are meaningful and useful to the students and staff at school XYZ.

This project study focused on a very specific problem for the students and staff at school XYZ. After an exhaustive review of the literature, I became aware of the extensive research that had been completed regarding the problems of student engagement and literacy development for students enrolled in essential-level programming across the province. I now know of at least three schools in southern Ontario that either have implemented single-gender classes in Grade 8 or at the Grade 9 essential level. Additionally, I now know of at least five schools interested in using single-gender classes for students at the Grade 9 or 10 essential levels. To improve the validity and reliability of the findings, and to possibly engage in a more potent and collaborative learning process, a study engaging all of the aforementioned participants and potential

contributors may lead to the type of rich data analysis that can never be ensured by conducting a study on a small and very specific school population. Furthermore, the potential for the individual improvement of instructional practices elevates when teachers and administrators share information, challenges, strengths, and strategies in a collaborative effort to improve student learning and achievement.

On perhaps a smaller and more practical scale, a quasiexperimental study, which focuses on all Grade 9 essential-level learners in the school district might prove an interesting approach in gathering data on some of the most challenging students in the school system. The ability to draw comparisons between the experiences of students in essential-level programming between the four district schools that support these students may also prove to inform the decision-making processes at the participating schools and eventually benefit all students.

Finally, I would be very interested in following the students in this particular study through their Grade 10 year when they must take the mandatory Ontario Secondary School Literacy Test (OSSLT). Perhaps gathering some qualitative data through the interview and observation process may once again enhance our understanding of the data gathered during their Grade 9 academic experience.

As a final recommendation, I would suggest that the administrators and the essential-level teaching team at school XYZ commit to implementing a specific plan of action related to the data analysis and recommendations presented in the white paper. I would suggest continuing to track the progress of the students in the 2010-2011 program evaluation, interview the students, and allow them to provide teachers with detailed

feedback about their learning experiences. I would also recommend that the teachers and administrators who work with essential-level students continue to seek out resources, experts in single-gender education, and research in the emerging science of brain-based learning to supports their efforts in the classroom.

Scholarship

From the development of my project study to the planning and implementation of the project, I have learned so much about myself as a scholar, and the perseverance and dedication needed to complete the doctoral study process. I have learned how to start thinking as a researcher, how to develop focus and accuracy in my writing, and how to access the necessary resources and supports in order to achieve success. When I began the doctoral study process, I considered myself a successful and engaged educational practitioner, well-read and knowledgeable about educational theory and practice. As I prepare to complete the doctoral process, I recognize that I have evolved into a scholar who relishes the opportunity to scrutinize literature, collect and analyze data, and produce professional and scholarly writing that is detailed and descriptive.

Throughout my doctoral study, I have learned how to incorporate the concept of scholarship into my professional practice and develop my leadership capacity to ensure that I will make a positive impact in the field of education. By fully engaging in the learning process, conducting innovative research, and amalgamating theory and application, I continue to focus on my primary task of generating new knowledge and improving educational practice. I will continue to engage in ongoing reading and analysis of research, contribute to the knowledge base through research writing, grant-writing, and

professional presentations, and incorporate pedagogically sound research, practice, theory, and experience in my commitment to developing learning communities focused on social change.

Project Development and Evaluation

The program evaluation conducted at school XYZ will culminate in the development of a white paper. Although there were many approaches that I could have utilized to publicize the results of my study, the white paper seemed to be the most appropriate vehicle for the dissemination of my findings and recommendations based on its capacity to present clear and concise information to the intended audience. In conversations with the principal at school XYZ, the white paper was also the format by which the principal wished to receive the findings and recommendations of the study. The match between my personal need to develop a project for completion of this study and the principal's desire to have a clear and concise summary of the findings and recommendations enabled the study to conclude in an appropriate and successful manner for all of those involved in the study.

Although the implementation of the project will conclude following my successful completion of the doctoral process at Walden University, I look forward to sharing my work and inviting feedback from the school community. The principal, single-gender team, and the school district may require additional resources to support the white paper, and I am prepared to facilitate the collection of any additional information and resources necessary to support the work completed at school XYZ. Once I have consulted with the principal at school XYZ and requested his input into the white

paper, I will complete the final version of the white paper for his review. I look forward to receiving feedback from the school principal and members of the school community. Although the process of developing an evaluation and implementation plan involved some collaboration with the principal, the process of conducting a program evaluation as an outside evaluator can seem isolating at times. I look forward to requesting and receiving feedback from various audiences, and using a survey to generate data for my own personal reflection and review. I will participate in any follow-up meetings with the school and district as requested and engage in program support if appropriate and feasible.

In reflecting on the project development and evaluation component of this journey, I recognize that investigative research continues to generate more questions, data, and further research. The development of the project and the dissemination of the white paper are only the first steps in creating and supporting student achievement and data-driven change at the school level. I hope that my research, expertise, and close ties to school XYZ enable me to continue sustaining and supporting the excellent efforts put forth by the entire school community on behalf of all students, and that the forward thrust to use research to inspire change continues to develop.

Leadership and Change

This project study revealed the impact that individual teachers have when they collaboratively focus on teacher inquiry. In my district, teacher inquiry is the process in which teachers and administrators examine their own educational practice systematically and carefully, using the techniques of research. Research techniques included defining a

question to investigate, creating an action plan, collecting and analyzing data, reflecting on this information and using it to inform one's practice. Similarly, Brookfield (2006) described critical thinking as a continuous process composed of alternating phases of reflection, testing new solutions, reflecting on those actions, and further refining those actions. The doctoral study process reflected a highly intricate combination of formal research study, critical thinking and analysis, and the reflective learning process. I have become a true scholar–practitioner and utilized the research and the reflective process to improve student achievement. In the process, I have shared best practices and encouraged reflective practices amongst colleagues as a means to promote personal and professional growth and development.

Amulya (2004) insisted that reflective practice is the cornerstone of effective inquiry, making it an integral element of the continuous learning process and an essential component of the doctoral process. The reflective process encouraged me to look at problems and conflict as opportunities to inform my own professional practice and seek out solutions based on research and data analysis. While seeking out the research required for completion of my doctoral study, I experienced the direct impact and influence school administrators and classroom teachers have on the quality of instruction and students achievement (Chen, Heritage, & Lee, 2005; DuFour, DuFour, Eaker, & Karhanek, 2004). Great administrators and teachers can and must establish an environment where a cycle of continuous reflection and data-driven decisions work in harmony to improve outcomes for students (Hawley, 2007). The teachers in this project study committed to collaboratively working together to address a specific problem in their school. The

dedication to a cyclical approach to teacher inquiry, critical thinking, and reflective practice by the teachers and administrators at school XYZ demonstrated the tremendous grassroots leadership necessary to address the problem of student engagement and literacy development for at-risk Grade 9 students, and provided a model of exemplary leadership for other educators to follow.

Analysis of Self as Scholar, Practitioner, and Project Developer

When I first began the doctoral journey, I attended an academic residency very early on in the process. I took away one significant piece of advice regarding the development of my problem, which served me well in the development, implementation, and analysis of my project study. The advice focused on determining the specific problem early on in the doctoral process in order to focus course discussions, papers, and research on one specific topic. Although I felt this approach, at times, was one-dimensional and simplistic, that advice proved immeasurable as I proceeded into the field of research. Becoming an expert in one particular field seems limiting in some respects. However, I quickly learned that having a focus in your work does not mean that the doctoral research process is more simplistic or any easier to complete.

Although my work continuously focused on single-gender education for at-risk students, the breadth and depth of research I uncovered became overwhelming at times. I thought my understanding of action research, in my role as a vice principal, and the incredible amount of material covered in our doctoral course, would effectively prepare me to engage in the development of a project student. However, I now realize that I started the project study and research phase with a very limited comprehension of the

complexities of doctoral research. The more I researched, the more complex the study became, and the more focused I needed to become in refining the problem and the study. I often wanted my Chair to jump in and focus my efforts, but I realize now that the focus had to come from me in order to own the finished product and truly become an expert in my field of study.

Once I clearly defined my problem and the focus of my study, delving into the research for the literature review and methodology was a daunting and time-consuming task. Many days I questioned my level of productivity because I could spend hours researching information that would produce less than a paragraph of writing. Thankfully, I stayed motivated by my passion and dedication to the students and program I hoped to support through my research. I encountered many roadblocks in the preparation and investigation into the research, and now realize that those obstacles enhanced my ability to become more precise and persistent in addressing the problem.

This project study will have a positive impact on the students and staff and school XYZ. The finished program evaluation and white paper will support educators in making informed data-driven decisions, while aiming to improve the instructional practice of educators at school XYZ. Furthermore, the analysis and recommendations provided in the white paper should assist the principal of school XYZ in his continued push towards developing and expanding a culture of effective and meaningful data usage within the school community. Finally, the project study will include research and recommendations on supporting our most challenging students, including those who achieve below grade level, those who experience disenfranchisement with the educational system, and those

who believe that they are no longer capable of succeeding in school. I am proud to contribute to the body of knowledge that supports our most at-risk students.

The Project's Potential Impact on Social Change

This project study tackled significant issues at the local school level and in the field of education. Perhaps the most important school-level implication this project addressed was the determination of whether single-gender classes had a positive impact on student engagement levels and literacy development for Grade 9 essential-level students at school XYZ. The quantitative program evaluation provided the framework for teachers and administrators at school XYZ to effectively and systematically review school-specific data generated by staff and students in the single-gender program. The systematic collection and analysis of this data is a significant advancement in the pursuit of improved student achievement by teachers and administrator s. At school XYZ, teachers and administrators regularly collect classroom data including tests scores, formative assessments, and survey data. However, rarely are classroom data disaggregated in a manner, which effectively informs instructional practice, enhances intervention strategies, or leads to direct improvement in student learning. This completed program evaluation and white paper will support teachers and administrators in making critical program and instructional-based decisions on behalf of students, while continuing to develop a culture of teacher inquiry and reflective practice for all staff members. The program evaluation will also serve as an exemplar for future formative and summative evaluations within the school and the district.

In addition to the school-specific data analysis and the detailed program recommendations to be generated by the program evaluation and white paper, the project will potentially provide important information to the school district and greater educational community. This project will add to the body of knowledge focused on quantitative program evaluations, single-gender instruction, literacy development, student engagement, and the at-risk student. Limited data exist that specifically points to solutions for students who consistently perform significantly below grade level. At-risk students continue to struggle with engagement in learning and the development of the fundamental literacy skills necessary to navigate high school successfully, despite a significant proliferation of provincial educational supports and interventions,. The practical evidence supporting the diverse needs of at-risk students is virtually nonexistent; therefore, the findings in this program evaluation may provide a medium from which to address this existing educational impasse across the province of Ontario.

Finally, this evaluation and white paper may potentially encourage schools across the district and within the province to utilize a program evaluation model to investigate school-based problems. Most educational institutions continue to make important instructional and program decision without accurate and meaningful data (Chatterji, 2008; Slavin, 2008). Although this school district encourages teacher inquiry, the program evaluation model may encourage schools to focus more directly on the analysis of data as an effective means to informing instructional practice and decision making.

Implications, Applications, and Directions for Future Research

The program evaluation and white paper project provide an excellent starting point for the staff at school XYZ to investigate the potential effectiveness of single-gender programs in addressing issues of student engagement and literacy development for students enrolled in Grade 9 essential-level curriculum. However, this project study is a point of entry into the development of appropriate supports for at-risk students, and may be used to encourage an inquiry-based approach to inform the practices of teaching and learning. Data generated from classroom evidence, and student and teacher feedback should encourage educators to ask questions, seek answers, and investigate possible solutions using a cyclical approach to teacher inquiry and action research.

Therefore, the potential for future research is limitless when considering how to best support student learning and engagement. In this particular case, I would like to see research conducted that focuses on the specific instructional, behavioral, and management strategies utilized by classroom teachers to engage at-risk students in learning. One of the inherent weaknesses in this program evaluation included a lack of specific data focused on the specific instructional practices of teachers in the single-gender classroom. If we believe the research that classroom teachers have the most significant and direct influence on student achievement and engagement (Marzano, 2003; National Comprehensive Center for Teacher Quality, 2008), then assessing the specific instructional strategies used by teachers in the single-gender classroom is an essential component of truly understanding the complete picture of single-gender education.

Conclusion

Section 4 of this project study focused on my reflections and conclusions derived from my doctoral journey. Prior to my initiation into the doctoral study process, the heart of my career as an educator focused on teaching and working to support at-risk students. I have spent the vast majority of my career in Special Education, working with educators who teach at-risk students and supporting the families and caregivers of these students. As an administrator, my work increasingly zeroed in on student engagement and literacy development, particularly for those students deemed at risk by the educational system. After conducting my study and engaging in scholarly research and data analysis, I am even more committed to supporting the needs of our most at-risk students and their teachers through the teaching and learning process.

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Appendix A: Student Survey

Question Number	Question	Response Options
Q1	What is your gender?	Male or Female
Q2	In your opinion, do you enjoy school more in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q3	In your opinion, is it easier to learn in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q4	In your opinion, do you try to improve your math skills more in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q5	In your opinion, do you try to improve your writing more in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q6	In your opinion, do you try to improve your reading more in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q7	In your opinion, are you more confident about your work in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q8	In your opinion, do you follow class and school rules more in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q9	In your opinion, do you like trying new learning activities more when you are in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q10	In your opinion, are you more able to focus on school work when you are in a single-gender classes or a mixed gender class?	Single Gender No preference Mixed Gender
Q11	In your opinion, are you more motivated to complete school work when you are in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q12	In your opinion, do you enjoy learning more in a single gender class or a mixed gender class?	Single Gender No preference Mixed Gender
Q13	If you had the opportunity, would you want to be in single gender class or a mixed gender class next year?	Single Gender No preference Mixed Gender
Q14	In your opinion, which class would benefit you the most by being single gender? Please select only one.	English Mathematics Science Social Science Technology Physical Education None of the above

Appendix B: Teacher Survey

Section 1. Demographic Information		
Question Number	Question	Response Options
Q1	How many years have taught?	1-5 , 6-12, 13-120, 21-30, 30+
Q2	How many years have you taught single gender classes?	1-5 , 6-12, 13-120, 21-30, 30+
Q3	What is the highest level of Education you have attained?	High School, College, Bachelors, Masters, Doctorate
Q4	Gender	Male, Female
Q5	I have received adequate training to successfully teach in a single gender classroom.	Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree
Q6	I am comfortable teaching in a single gender classroom.	Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree
Section 1. Single Gender Classroom Perceptions		
Question Number	Question	Response Options
Q7	Students enjoy participating in a single gender classroom.	Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree
Q8	Students are active learners in a single gender classroom.	Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree
Q9	Single gender classrooms can motivate students to learn.	Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree
Q10	Single gender classrooms help create a positive attitude about school for students.	Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree
Section 2. Academic Achievement.		
Question Number	Question	Response Options
Q11	In which setting have you noticed an increase in students' time on-task?	Single Gender Mixed Gender No Preference
Q12	In which setting have you noticed an increase in assignment completion?	Single Gender Mixed Gender No Preference

Q13	In which setting have you noticed students grades increase?	Single Gender Mixed Gender No Preference
Q14	In which setting have you noticed more participation by females?	Single Gender Mixed Gender No Preference
Q15	In which setting have you noticed more participation by males?	Single Gender Mixed Gender No Preference
Section 3. Student Behavior		
Question Number	Question	Response Options
Q16	In which setting have you noticed students' self-esteem increase?	Single Gender Mixed Gender No Preference
Q17	In which setting have you noticed student distractions decrease?	Single Gender Mixed Gender No Preference
Q18	In which setting have you noticed a decrease in gender stereotypes?	Single Gender Mixed Gender No Preference
Q19	In which setting have you noticed a decrease in discipline referrals?	Single Gender Mixed Gender No Preference
Q20	In which setting have you noticed an improvement in students' attitude toward school?	Single Gender Mixed Gender No Preference

Curriculum Vitae

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Education

2012	**Doctor of Education, Administrator Leadership for Teaching and Learning** Walden University, Minnesota, U.S.A.
2008	**Master of Science in Education, Curriculum, Instruction, and Assessment** Walden University, Minnesota, U.S.A.
2007	**Graduate Credit, Assessment and Evaluation** San Diego State University, California, U.S.A.
1994	**Bachelor of Education, Intermediate/Senior English, Intermediate/Senior Physical and Health Education** University of Toronto, Toronto, Ontario
1993	**Bachelor of Physical Education** McMaster University, Hamilton, Ontario
1990	**Bachelor of Arts, English Literature** McMaster University, Hamilton, Ontario

Additional Academic Qualifications

2007	**Principal's Qualification Program, Part 2** Ontario Principals' Council, Toronto, Ontario
2005	**Principal's Qualification Program, Part 1** Ontario Principals' Council, Toronto, Ontario
2005	**Special Education Specialist** Queens University, Kingston, Ontario
2005	**Junior Division Qualification** Queens University, Kingston, Ontario
2004	**Honour Specialist, Physical and Health Education** University of Western Ontario, London, Ontario

Teaching Experience

2010-current	**Course Instructor,** OISE/University of Toronto – Concurrent Education
2010-current	**Online Course Instructor, Queen's University**
2010	**Course Developer,** OISE/University of Toronto – Concurrent Education
2008-2010	**Vice Principal,** XYZ District School Board
2006-2008	**Special Education Program Leader,** XYZ District School Board
1994-2006	**Classroom Teacher,** XYZ District School Board
2005	**EQAO Evaluator,** Toronto ON
2005	**Textbook Evaluator,** Curriculum Services Canada

Research Experience

2010	**Research Lead - XYZ District School Board.** *The impact of single gender classes on student learning and achievement.*
2009	**Teacher Inquiry Lead - XYZ District School Board.** *Improving applied level student literacy through the use of technology.*
2006-2008	**Teacher Inquiry Lead - XYZ District School Board.** *Improving literacy and numeracy in at-risk grade 9 students through peer mentorship.*

Presentations and Publications

2011	**Course Writer**. Concurrent Teacher Education Program – University of Toronto
Oct 2010	**Presenter**. NASSPE's Sixth International Conference – Las Vegas, NV.
2008-2009	**Presenter**. XYZ District School Board
2008	**Writer.** *Teacher Inquiry Report* – XYZ District School Board
2006	**Presenter**. XYZ Student Success Conference
2006	**Writer.** *XYZ District School Board Assessment and Evaluation Policy*
2005	**Writer.** *XYZ District School Board Credit Recovery Team*

Administrative Experience

2010	**Project QT Team Lead,** XYZ District School Board
	Literacy Team Lead, XYZ District School Board
	Pathways Team Lead, XYZ District School Board
2010-2009	**Applied Level Teaching Team Lead**, XYZ District School Board
2007-2009	**Making the Change Team Lead,** XYZ District School Board
2004-2008	**RAMS Co-creator/Team Lead,** XYZ District School Board

Academic Associations

2009-present	Association for Supervision and Curriculum Development - member
2008-present	Ontario Principals' Council - member
1997-present	Ontario College of Teachers - member