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Addressing Adolescent Content-Area Literacy
Through
Site-Based Instructional Coaching

by

Jenni Donohoo

A Dissertation
Submitted to the Faculty of Graduate Studies and Research
through the Faculty of Education
in Partial Fulfillment of the Requirements for
the Degree of a Doctor of Philosophy at the
University of Windsor

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ABSTRACT

The methodology for this study combined a quasi-experimental design and a collective case study. Quantitative data were collected to determine if strategy-based instruction, delivered through a team teaching approach, would result in a significant increase in metacognitive awareness in participating grade 9 students as measured by the Junior Metacognitive Awareness Inventory (Jr. MAI). Quantitative data were also examined to determine if the *regulation* component of metacognition was more positively correlated with exposure to strategy-based instruction than the *knowledge* component. In addition, this study attempted to understand the experiences of teachers as they learned together.

The posttest results revealed that a) there was no significant difference between the groups of students at the conclusion of the study and b) neither component (*knowledge of cognition* nor *regulation of cognition*) was more correlated with exposure to the strategies than the other. Analysis of additionally collected qualitative data indicated that critical components of strategy-based instruction were likely absent during classroom instruction (e.g. explicit instruction). The intervention was not implemented to the degree needed in order for students to internalize and maintain strategy use.

The results from the qualitative portion of this study suggest the following points of interest. Teachers' initial concerns about engaging in collaborative partnerships with their colleagues diminished and they embraced the idea of team teaching once they took part in the experience. The way in which the instructional coach approached teachers helped to turn reluctant participants into learning partners who came to value the opportunity to collaborate and as a result advocated for the program. Teachers perceived greater student engagement and noted an increase in participation while delivering strategies through a team teaching approach in their classrooms. Teachers committed to incorporate literacy strategies into their future practice. Finally, the focus of classroom instruction was on the instructional strategies and not on the other components of strategy-based instruction including the gradual release of responsibility, promoting metacognition, and students' cognitive processes.

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CHAPTER I

I. INTRODUCTION

A. General Statement of the Problem

Over the past few years, educational policy in the province of Ontario has had a primary focus on improving the literacy of all young children but, in comparison, very little attention or funding efforts have been targeted to improve literacy proficiencies of adolescents. The reality is that many adolescents struggle with reading, writing, listening, representing, and viewing in subject-specific disciplines. Adolescents present very different challenges than younger students. Solutions relevant to adolescent development and appropriate for implementation within secondary school settings are needed.

Research indicates that content-area¹ secondary school teachers struggle with teaching literacy as part of their curriculum for a variety of reasons. As teachers, they do not see teaching reading and writing as one of their primary roles; instead, they are mainly focused on communicating specific content-area knowledge and skills (D'Arcangelo, 2002; Fisher & Ivey, 2005; Jacobs, 2002; Lester, 2000). Lester (2000) noted that secondary school teachers perceived literacy to be a relatively low priority and/or the responsibility of English teachers. Jacobs (2002) suggested one reason content-area reading and writing has not become rooted in our schools is because secondary school teachers are reluctant to think of themselves as reading or writing teachers. Secondary school teachers feel they do not have time to teach both the content of their subject and reading strategies. In addition to the belief that literacy instruction diminishes the fundamental importance of the subject specific content (Fisher & Ivey, 2005), secondary content-area teachers feel that teaching literacy is an added task that is simply

not their responsibility (Lester, 2000). Finally, teachers of adolescents are not comfortable teaching reading (D'Arcangelo, 2002) as they have not had explicit experience or training in this particular area.

Content Literacy Defined

There are minor differences in how content literacy is defined in the academy. In 1990, McKenna and Robinson defined content literacy as the ability to use reading and writing for the acquisition of new content in a given discipline. In 2002, Vacca defined content literacy as the level of reading and writing skill that learners needed in an academic subject to comprehend and respond to ideas in texts used for instructional purposes. However, both definitions of content literacy (McKenna & Robinson, 1990; Vacca, 2002) have limited the scope to reading and writing only. These definitions do not take into account that the concept of literacy has evolved over the past several years.

Beers (2007) suggested that “literacy is a set of skills that reflect the needs of the time. As those needs shift, then our definition of literacy shifts” (p. 7). Ivey and Fisher (2006) suggested that “the definition of what it means to be literate has changed and evolved” (p. xiii). McKenna and Robinson’s and Vacca’s definitions are narrow and too limiting as their definitions do not reflect the shifting needs of the time. More recently, Vacca and Vacca (2005) extended the definition of content literacy to include talking, listening, and viewing as a component to learning subject matter in a given discipline. The National Council of Teachers of English (2006) also defined adolescent literacy as more than reading and writing pointing out the processes (social and cognitive) and functions (analysis, synthesis, organization, and evaluation) it serves.

In *Think Literacy Success, Grades 7 -12: Report of the Expert Panel on Students at Risk in Ontario* (Ministry of Education, 2003), literacy is defined as:

the skills and knowledge in reading, writing, speaking, listening, representing, and viewing that empower learners to make meaningful connections between what they know and what they need to know.

Literacy becomes the ability to understand, think, apply, and communicate effectively to achieve personal and career goals. (p. 12)

For the purpose of this study, the *Think Literacy Success, Grades 7 -12: Report of the Expert Panel on Students at Risk in Ontario's* (Ministry of Education, 2003) more encompassing definition of literacy will be used and expanded to include literacy in content-areas. Therefore, content literacy is defined as the skills and knowledge in reading, writing, speaking, listening, representing,² and viewing in subject specific disciplines that ensure that learners make meaningful connections between what they know and what they need to know (The Ontario Curriculum, English Revised, 2007).

Adolescent Literacy

A report by Jones and Pignal (1996) entitled, *Reading the Future: A Portrait of Literacy in Canada*, released by Statistics Canada, showed that an individual's participation in society and in the economy were constrained by low-level literacy skills. Recent provincial testing results have shown that many students are not achieving the level of success in literacy that might allow them to meet their full potential as a participating member of society. Province-wide results from the 2008/2009 Ontario Secondary School Literacy Test (OSSLT)³ revealed that of the fully participating previously eligible⁴ students 46% were unsuccessful in meeting the standard⁵. In

addition, 15% of the students in Ontario who wrote the OSSLT for the first time failed to meet the standard. During the same year, 49% of the 484 students in a school board in Southwestern Ontario, who were previously eligible to write the OSSLT, once again did not succeed. This percentage was down 4 points from the previous year (53%) and up 1 point from the 2006/2007 school year (48%). In addition, 466 (17%) of the 2739 students in this school board who wrote the OSSLT for the first time failed. This percentage is down 2 points from the previous year (19%) and no different than the results from the 2006/2007 school year (17%). This failure rate is cause for concern. Furthermore, if a provincial success rate of 85% for the first time eligible students seems adequate, then we are admitting that a 15% failure rate is acceptable.

In addition to provincial testing results, credit accumulation rates provide additional information about adolescent literacy. There are a variety of reasons that students fail to earn high school credits but students who have low levels of literacy are likely to struggle in school. Difficulties experienced due to low levels of literacy negatively affect one's potential to achieve in every academic subject. The number of credits accumulated during a student's first year in high school is highly predictive of their chances to graduate (Heppen & Therriault, 2008; Phythian, 2009). During the 2004/2005 school year, almost half (47%) of the entire secondary school student population in the school board in Southwestern Ontario failed to earn 16 credits by the completion of their grade 10 year. Data from the 2005/2006 school year indicated an improvement as 38.2% of the secondary school student population in the same school board failed to earn 16 credits by the completion of their grade 10 year. But in 2006/2007 the number of credits earned dropped again with 39.3% of the secondary school student

population failing to earn 16 credits by the completion of their grade 10 year. In the 2007/2008 school year there was a small improvement as 32.6% of grade 10 students failed to earn 16 credits by the completion of their grade 10 year.

These incremental improvements in the percentage of students who accumulate 16 credits by the end of their grade 10 year and the high percentage of students who failed to meet the standard on the OSSLT is cause for concern. Even though the Ministry of Education in Ontario has attempted to support adolescents for the past couple of years through the Student Success Initiative (SSI),⁶ more supports need to be forthcoming in order to enable more students to reach their full potential. The need to address this problem is extremely pressing due to the fact that “people who are more literate are more likely to have better jobs, have higher levels of productivity and earning, are less vulnerable to long term unemployment and are proportionately less likely to have encounters with the justice system” (Building the Ontario Educational Advantage: Student Achievement, Ministry of Education, 2004). Perhaps part of the solution is finding ways to best support content-area teachers in addressing the literacy needs of their students.

Intervention in One School Board

A school board in Southwestern Ontario responded to the need for interventions for students at risk⁷ and supported content-area teachers by implementing Think Literacy Team Teachers (TLTTs). The TLTT’s role was to collaborate with content-area teachers by co-planning, co-delivering, and co-debriefing lessons with a specific focus on a few of the instructional strategies contained in the *Think Literacy* documents throughout the 2007/2008 school year. The TLTT modeled the instructional strategies that could be used

to scaffold student learning. This school board's primary purpose for implementing a strategy-based approach was based on research that supported the effective use of strategy-based approaches as a means to increase student achievement (Fisher, 2001; Marzano, Pickering, & Pollock, 2001; Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1989; Wilhelm, 2001). Furthermore, it was believed that professional development models that provided on-site supports such as a coach or team teacher were the most effective way to get teachers to change their practice and beliefs. Fullan, Hill, and Crevola (2006) identified professional learning in-context, school-based, and embedded in teachers' daily work, as the only learning that would change classroom instruction. Joyce and Showers (1996) identified coaching as having the highest impact on transferring knowledge and skills learned into classroom practice.

The first goal the school board hoped to accomplish was to increase student achievement as measured by the OSSLT, credit accumulation, credit recovery, and graduation rates. The second goal was for content-area teachers to recognize how strategy-based instruction helps students learn the content in their discipline and as a result, continue to use this instructional model independently. The project's aim was to provide students with purposeful strategies that could be internalized and utilized to help them learn better and help teachers improve student achievement through a team teaching/coaching approach.

The *Think Literacy: Subject Specific Examples* (2003) documents, published by the Ministry of Education in Ontario, were created for the purpose of assisting teachers in developing literacy skills in all subject areas including music, science, history, geography, business studies, computer studies, mathematics, family studies, health, and

physical education, etc. The documents are companion resources to the *Think Literacy Success, Grades 7-12: Report of the Expert Panel on Students at Risk in Ontario* (Ministry of Education, 2003) which is a resource for developing and implementing a cross curricular literacy plan in elementary and secondary schools and school boards. The documents draw on lessons learned from research and cite over 60 sources on which they are based. The strategies contained in the *Think Literacy* documents encourage active involvement with material on the part of the learner. When engaging in thinking processes, monitoring their understanding, selecting and using cognitive strategies, learners become more actively engaged. The *Think Literacy* documents are a compilation of instructional strategies that are aimed to improve literacy. Working together, the TLTT and the content-area teachers implemented the chosen instructional strategies in an attempt to help students master literacy skills and acquire content-area knowledge.

Strategy-Based Instruction and Metacognition

One purpose of this study was to examine the relationship between strategy-based instruction and the development of metacognitive strategies among learners. Flavell was credited with the introduction of the term metacognition in the mid-1970s (Pintrich, 2002). Metacognition is the act of thinking about thinking. Metacognitive awareness has been identified as a characteristic that distinguishes expert from novice learners in regard to their ability to regulate their understanding and transfer their learning to new situations (Bransford, Brown, and Cocking, 2000). Based on cognition research, that has revealed knowledge about how learning takes place, educators are adopting new methods for teaching, learning, and assessing that emphasize understanding. In the learning of mathematics for example, in addition to continuing to focus on procedural understanding,

a much greater emphasis is being placed on developing students' conceptual understanding. This emphasis on understanding, makes it increasingly important for students to learn to recognize when they have not acquired sufficient understanding of concepts and material and monitor their learning in order to identify what needs improving. Bransford et al. (2000) also suggested that helping students become more aware of themselves as learners is one way to improve transfer.

Brown (1978) proposed a theory that included two components of metacognition: *knowledge of cognition* and *regulation of cognition*. *Knowledge of cognition* refers to what learners understand about the way they learn. *Regulation of cognition* refers to how well learners can regulate and therefore have the ability to adjust or correct their learning. Studies have shown evidence that support two distinct components (Schraw & Dennison, 1994; Sperling, Howard, Stanley & DuBois, 2004). There remain questions however, about the exact relationship between the two components (Sperling et al., 2004). Sperling et al. (2004) found that *regulation of cognition* was more highly correlated with strategy use than *knowledge of cognition*. However, in a study of learning strategies in hypermedia instruction, Hartley (2001) found there was no significant difference between the two components and strategy instruction. This outcome might have depended on the context, subject area, or learning task. One purpose for this research is to determine if there is a difference between the two components of metacognition and exposure to strategy-based instruction in classrooms where a Think Literacy Team Teacher worked with mathematics, science, English, and/or geography teachers.

Research suggests that metacognitive awareness can be taught. Approaches to support metacognition in the classroom include strategy-based instruction (Lin, 2001).

The term *strategy* and how it is used is not always clear and therefore a distinction between comprehension strategies, cognitive strategies, instructional or teaching strategies, and strategy-based instruction needs to be made. Shanahan (2005) referred to comprehension strategies as “intentional actions that a reader can take to increase the chances of understanding or remembering the information in a text” (p. 28). Pressley and Gaskins (2006) referred to cognitive strategies as “constructive interactions with text in which good readers and writers continuously create meaning” (p. 101). Both Shanahan (2005) and Pressley and Gaskins (2006) are referring to thinking processes which include predicting, inferring, visualizing, summarizing, making connections, activating prior knowledge, etc. Both definitions are limited to interactions with text. Since the definition of adolescent literacy includes skills and knowledge not only in reading and writing but speaking, listening, representing, and viewing as well, for the purpose of this study, the scope of Shanahan’s and Pressley and Gaskins’s definition of comprehension and cognitive strategies will be extended.

The term cognitive strategies will be used to refer to the internal processes in which *learners* engage to make meaning of *material*. In this respect, processes for meaning making may be activated based on interactions with other individuals (speaking and listening), interactions with works of art such as paintings, sculptures, and architecture (representing and viewing), interactions with multimedia (listening, representing, and viewing), in addition to interactions with text (reading and writing).

Instructional or teaching strategies, by contrast, are activities that a teacher might use to teach a concept. An example of such an activity is a Know-Wonder-Learn chart (K-W-L). These charts contain three columns and ask students to consider (a) what they

know about a topic (to activate prior knowledge), (b) what they wonder about a topic (to establish a purpose for learning and engage students in generating questions), and (c) what did they learn about a topic (to synthesize and consolidate understanding) (Think Literacy Cross-Curricular Approaches Grades 7–12, 2003). Activities such as a K-W-L are designed to engage cognitive strategies such as questioning, predicting, inferring, and making connections, visualizing and summarizing, and activating prior knowledge. For the purpose of this study, activities such as K-W-L will be referred to as instructional strategies.

Finally, strategy-based instruction refers to the instructional methods teachers use for the purpose of promoting deep and interactive engagement with content, providing scaffolds students need in order to meet with success, and developing knowledge of self-as-learner. These methods consist of a combination of the activities referred to above as instructional strategies along with the gradual release of responsibility and engaging students in metacognition (see Figure 1).

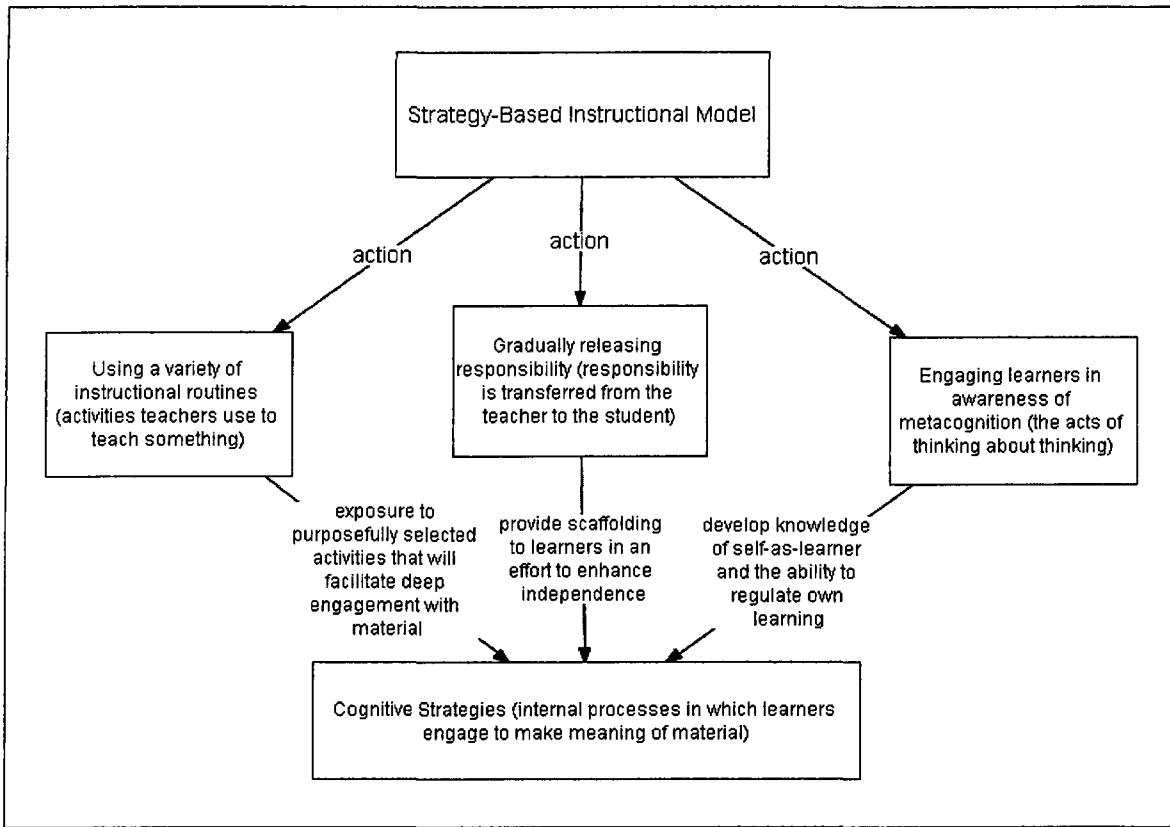


Figure 1. Conceptual Image of a Strategy-Based Instructional Model.

Many of the instructional strategies contained in the *Think Literacy* documents were designed to engage students in complex thinking processes including predicting, inferring, visualizing, summarizing, making connections, activating prior knowledge, etc. In addition, the *Think Literacy* documents contain suggestions for the method in which the teacher might introduce the various instructional strategies (i.e., gradual release of responsibility including explicit instruction and cooperative learning structures).

As stated earlier, one of the goals of the Think Literacy Team Teacher Project was to help content-area teachers recognize how strategy-based instruction could help students learn the content in their discipline. This involved helping teachers understand the thinking processes that support students' attempts to learn which might have in turn, helped all students become actively engaged in their own learning, increasing students'

metacognitive awareness. In an effort to support the goals of the Student Success Initiative (SSI), the school board formed the Student Success Steering Committee (SSSC). The committee was composed of the Superintendent of Student Success, the Student Success Program Consultant, the Guidance and Co-operative Education Consultant, the Intermediate Program Consultant, the Secondary School Literacy Consultant, the Special Education Coordinator, and a Secondary School Administrator. Meetings were held once a month. The SSSC believed that content-area teachers could be supported, through a team teacher approach, in implementing instructional strategies that would lead to an increase in students' metacognition, improved comprehension, and understanding of material.

B. Purpose and Need for the Study

One purpose of this study was to measure the impact that instructional strategies, delivered through a team teaching approach in content-area classes, had on students' metacognitive awareness and to examine the relationship between strategy-based instruction and the two components of metacognition. Previous research had not focused its efforts on a specific collection of strategies such as the *Think Literacy* documents and had suggested that more research was necessary to more fully understand the relationship between the two components of metacognition and strategy use (Sperling et al., 2004).

Another purpose of this study was to describe the interactions of the teachers working together and develop an in-depth understanding of the teachers' experiences based on their participation in the Think Literacy Team Teacher Project. Research on literacy coaching at the secondary level is extremely limited. Blamey, Meyer, and Walpole (2009) suggested that more research was needed on the roles and duties of

secondary literacy coaches to evaluate the impact of the coach on teacher and student performance. Knight (2005) stated that “there is little published research that shows what works and what does not work when it comes to instructional coaching” (p. 16). Dugan and Letterman (2008) stated that while team teaching promised great benefits for students, little systemic research existed to show how such benefits occur.

This study utilized both a quasi-experimental design and a case study approach as quantitative data were collected to measure the impact of strategy-based instructional methods on students’ metacognitive awareness and qualitative data were collected to document the actions and experiences of the teachers as they worked together.

C. Hypotheses and Research Questions

Hypotheses

Hypothesis 1. Grade 9 students who participated in mathematics, science, English, and/or geography classes where *Think Literacy Cross-Curricular Strategies* were delivered, through a team teaching approach at one secondary school, would experience a significant ($p < .05$) increase in metacognitive awareness as measured by the Junior Metacognitive Awareness Inventory (Jr. MAI).

Null Hypothesis 1. Grade 9 students who participated in mathematics, science, English, and/or geography classes where *Think Literacy Cross-Curricular Strategies* were delivered, through a team teaching approach at one secondary school, would experience no significant increase in metacognitive awareness as measured by the Jr. MAI.

Hypothesis 2. Of the two components of metacognition (*knowledge of cognition* and *regulation of cognition*), the regulation component would be more positively correlated with exposure to strategy-based instruction than the knowledge component.

Null Hypothesis 2. Of the two components of metacognition (*knowledge of cognition* and *regulation of cognition*), the regulation component would not be more positively correlated with exposure to strategy-based instruction than the knowledge component.

Research Question

How do teachers describe the experience of participating in a team teaching approach to strategy-based instruction?

Subquestions

- (1) How did relationships inside team teaching teams evolve?
- (2) What new understandings did teachers acquire as a result of their participation in the Think Literacy Team Teacher Project?
- (3) What changes, if any, to instruction and assessment practices resulted from participating in the Think Literacy Team Teacher Project?
- (4) What changes, if any, did teachers observe in their students in relation to their participation in using a strategy-based approach to instruction?

CHAPTER II

II. REVIEW OF THE LITERATURE

A. Introduction

This section introduces three areas of research that are relevant to this study. Firstly, issues of adolescent content literacy are presented. These include difficulties faced by adolescents, reactions to the adolescent literacy crisis, reasons why all teachers must address the issue, and challenges associated with implementing literacy strategies in content-area classrooms. Secondly, metacognition and strategy-based interventions are examined. Suggestions on promoting metacognitive awareness are offered along with a review of research on the effect of strategy instruction on students' metacognitive awareness and factors that impede transfer and generalization. Finally, an overview of professional learning models in which teachers learn from and with each other and issues associated with implementation are considered.

B. Adolescent Content Literacy

Reading and writing proficiency are critical determinants of students' overall success in school (Ippolito, Steele, & Samson, 2008). Province-wide results from the 2008/2009 Ontario Secondary School Literacy Test (OSSLT) revealed that of the fully participating previously eligible students, 46% were unsuccessful in meeting the standard. Since Ontario's provincial assessments use the same measures against the same standard as the Ontario Curriculum⁸, the set standard does not appear to be unreasonable. An unacceptably large percentage of students who failed to meet standards set on large scale assessments were not unique to Canada. One statistic, from the National Assessment of Educational Progress in the United States of America stated that only 32%

of Ohio eighth-graders were reading at a proficient level (Seeton, 2007). Another American report by the Alliance for Excellent Education (Biancarosa & Snow, 2006) estimated that there were eight million struggling teenage readers and writers.

Jacobs (2008) pointed out that the challenges of adolescent readers generally begin when students enter high school but that the stages of reading development suggest that when the “requirements of learning begin to differentiate by content” (p. 15), the challenges actually begin in grades 3 or 4. Providing an overview of the stages of reading (see Table 1), Jacobs (2008) suggested that children, who have not acquired decoding and fluency skills by the end of grade 3, will be severely limited in their ability to master types of text that are characteristic of content-area textbooks.

Table 1

<i>Stages of Reading Development</i>		
Stage	Name/Time	Children
Stage 0	Getting Ready to Read (before children enter school and begin formal reading instruction)	become acquainted with letters, words, and books and how they are used; learn about the roles that reading and writing can play in daily life; begin to build vocabulary and conceptual knowledge by hearing and discussing texts that contain more challenging language and vocabulary.
Stage 1 & 2	Learning and Practicing Beginning Skills (when children enter school)	require direct instruction to learn basic reading skills; learn alphabetic principles; hone phonemic awareness skills; develop an understanding of phonics; decode print accurately.
Stage 3	Reading for Learning the New (beginning around grade 4 and proceeding through grade 7-8)	begin to develop a cadre of skills that they will use to grow into independent readers; learn how to be strategic; learn about the relationship between motivation and intellectual curiosity; use background information and experience to develop a context for their reading; develop metacognitive ability to monitor and adjust their reading as needed; navigate varied text structures; identify and clarify multiple points of view; acknowledge the effect of context on meaning; and draw on background knowledge and previous academic and life experience to construct meaning.
Stage 4	Reading Multiple Points of View (secondary school level)	require broad and deep background knowledge and experience, strategic reading skill, and metacognitive skill to monitor and correct the course of their reading as necessary; analyze and synthesize discipline-specific texts.
Stage 5	Constructing and Reconstructing Meaning (beyond secondary school)	establish their own academic, professional, and personal purposes for reading; read for what is explicit and unsaid in the text; synthesize, analyze, and make judgments about what they read; construct knowledge on high levels of abstraction and generality; possess the skills and self-awareness to be independent readers of multiple disciplines.

Note. Adapted from *Adolescent Literacy: Putting the Crisis in Context*, by V. Jacobs, 2008, *Harvard Educational Review*, 78(1), 7-39.

Differences between poorer and better readers in the later grades were most apparent in their abilities to apply skills of independent reading (Jacobs, 2008, p. 14). Furthermore, various cognitive strategies (i.e., predicting, inferring, visualizing, summarizing, making connections, activating prior knowledge, etc.) and fix-up procedures (i.e., re-reading) that are important skills for students to possess in order to read at a level of independence are not fully mastered by the time students enter secondary school. All students and especially those who have difficulty applying skills of independent reading (such as cognitive strategies and fix-up procedures) benefit from literacy development. Early intervention programs have been the focus but without continued enhanced attention to literacy early gains disappear (Shanahan & Shanahan, 2008).

Reaction to the Issue

Jacobs (2008) provided a historical glance at the reaction to the adolescent literacy crisis in the United States. Arguing that the intensity of concern grew as an outcome of the distressing data on the reading proficiency of adolescents that was shared in two national reports released in the 1980s, the author stated that it was not until the mid-to late 1990s that the time had come to develop responses to problems faced by older readers. Position statements by groups including the International Reading Association (IRA) and the Research and Development Corporation (RAND) helped advance the cause and in 2004 the United States government began to target funds to address literacy needs of struggling adolescents.

Jacobs (2008) also provided a historical overview of how the responsibility for secondary reading instruction was repositioned from the reading specialist to the content-

area teacher. Attention was first drawn to the reading needs of adolescent learners when in 1900s, Huey, the psychology of reading pioneer, advocated for embedding reading instruction in the study of content. It was not until the 1970s however, that the shift from thinking of reading as a discrete set of skills to a meaning making process accompanied the shift in responsibility for reading instruction in secondary schools from reading specialists to content-area teachers. In the 1990s the term adolescent literacy was re-conceptualized leading to a greater focus on critical literacy and the social foundations upon which literacy was based. A growing emphasis on content literacy as opposed to content-area reading gave rise to inquiry-based approaches, active learning, collaborative learning, and constructivist approaches to teaching (Jacobs, 2008).

As stated earlier, province-wide results from the 2008/2009 OSSLT indicated that 46% of the fully participating, previously eligible students were unsuccessful in meeting the standard. These previously eligible students, who did not meet the standard, are at great risk of not meeting graduation requirements. In addition, these students along with first time writers (15% in 2008/2009) who are not meeting the provincial standard in reading and writing face many challenges in content-area classrooms. Implementing teaching strategies that focus on literacy development into content-area classrooms is one solution that has been documented to be successful in addressing students' needs. We need to find ways to successfully implement programs in secondary schools that will address not only adolescent literacy needs but also the needs of teachers who will be expected to deliver the programs.

Why It Is Necessary That All Teachers Address Issues of Adolescent Literacy?

One may ask if it is necessary that *all* teachers be involved in literacy development. “All teachers have a role to play in students’ understanding and use of reading, writing, speaking, listening, and viewing” (Ivey & Fisher, 2006, p.xv). Reasons presented in the section that follows include: literacy skills differ among the disciplines; complex content-based textbooks require specialized instruction; and teaching strategies that focus on literacy assist content-area teachers in advancing the goal of increasing content-area understanding.

Literacy Skills Differ Among the Disciplines. Literacy instruction is not only beneficial to the learner but it is dependent on the content taught. Sophisticated reading and writing skills may vary among disciplines (Ippolito, Steele, & Samson, 2008). It is therefore necessary that all teachers integrate literacy instruction into their content-area classes. Heller and Greenleaf (2007) addressed this issue at length in a report entitled, *Literacy Instruction in the Content Areas: Getting to the Core of Middle and High School Improvement*. The authors stated that, “It has become clear that being literate means very different things in differing contexts and content-areas” (p. 8). They provided examples of characteristics that are unique to various academic disciplines such as the fact that historians tended to be more extracting readers, taking a special interest in circumstances, while chemists tended to pay more attention to physical details. Heller and Greenleaf (2007) argued that the context of the materials matters greatly and that every content-area has its own set of characteristic literacy practices. “All teachers, in every discipline, have reasons to emphasize certain kinds of reading and writing over others, depending on the nature of specific content and skills they want their students to learn” (p. 11).

Further evidence that reading approaches differ among disciplines is provided by Shanahan and Shanahan (2008) based on a data collected during the first two years of a qualitative study on disciplinary literacy. Disciplinary experts studied approached reading in very different ways. Chemists were most interested in transforming information (i.e., text to visuals), historians were most interested in interpreting information (i.e., examining sources for potential bias), and mathematicians were most interested in correctness of information (i.e., re-reading proofs in an effort to determine error-free solutions). Therefore, it must be recognized that literacy skills differ among disciplines.

Content-Area Textbooks. The need for all teachers to address adolescent literacy is further compounded by textbooks that are designed for secondary school content-area classes. The core resource or main source of information provided in most content-area classrooms is a textbook. Textbooks usually contain new vocabulary and advanced text structures that can make them difficult to read (Shanahan & Shanahan, 2008).

Allington (2002) reported that as students progress through the grades, the vocabulary in their textbooks becomes less conversational and less familiar, containing more specialized, technical terms, and abstract ideas. According to Holliday (cited in Barton, Heidema, & Jordan, 2002), a high school chemistry text can include 3000 new vocabulary terms. Vocabulary that has both general and specific meaning increases the challenge (Shanahan & Shanahan, 2008).

In addition to the new vocabulary terms contained in content-area textbooks, the structure of the text becomes increasingly complex. “The syntax of text becomes more complex and demanding. The reasoning about information in text also shifts, with greater emphasis on inferential thinking and prior knowledge” (Allington, 2002, p. 17).

Furthermore, the differences among texts in various disciplines also present unique challenges for adolescent students (Shanahan & Shanahan, 2008).

As indicated earlier, students who have been making progress may begin to struggle because they lack the basic skills that are needed to comprehend their textbooks. Hock and Deshler (2003) reported that only 40% of all high school students read well enough to comprehend their textbooks and Jacobs (2008) reported that students are severely limited in their ability to master types of text that are characteristic of content-area textbooks. By providing literacy instruction in the content-areas, teachers can help students become more successful at reading and learning from difficult and specialized texts. When students have not developed cognitive strategies or acquired fix-up procedures they need help engaging with the content and assistance in thinking about what they do and do not know.

It is unfortunate that as texts become more challenging “literacy instruction often has evaporated altogether or has degenerated into a reiteration of general reading strategies” (Shanahan & Shanahan, 2008, p. 45). In addition, many content-area teachers neglect to provide a wide range of reading materials for students in their classrooms. Ivey and Fisher (2006) noted that “Using one grade-level textbook often ensures that students who struggle will have to rely on just listening to learn the required information” (p. 52). Reasons why teachers neglect to provide a wide range of reading material may be due to the fact that these types of resources are not centrally supplied and teachers may be unaware of where to find such resources. Another reason may be that they fail to see the need or benefit of providing texts of varying levels of difficulty and lack knowledge about how to differentiate instruction.

Teaching Strategies that Focus on Literacy Assist Content-area Teachers in Advancing the Goal of Increasing Content-area Understanding. The argument that literacy development is the responsibility of all teachers can be further addressed by examining the central goal of content-area instruction - the understanding of content. By implementing teaching strategies that focus on literacy development in content-areas, teachers can help facilitate students' engagement in the material at a more elaborate and deeper level. A number of studies suggested that teaching strategies used regularly with students in content-areas would help to achieve increased student achievement (D'Arcangelo, 2002; Fisher, Frey, & Williams, 2003). Moreover, studies have demonstrated that it is most helpful to teach comprehension strategies, text structures, and vocabulary strategies while students are engaged in reading challenging, context-rich text (Fisher, Frey, & Williams, 2002; Heller & Greenleaf, 2007). "Improving adolescent literacy is a school-wide responsibility and does not rest on the shoulders of the English department alone" (Ivey & Fisher, 2006, p. 21).

Challenges to Embedding Literacy into Content-Area Instruction

Unfortunately, literacy practices have not made their way into content-area classrooms on a wide scale (Vacca, 2002). The current reality is that very few content-area teachers embed strategies that focus on literacy during classroom instruction. Often, content-area teachers are not properly trained to address students' literacy needs (Conley, 2008) and therefore do not feel equipped (Cantrell, Burns, & Callaway, 2009; Lester, 2000). Content-area teachers do not understand their role in developing literacy and thinking skills because they failed to see the relevance of literacy to their subject matter (Fisher & Ivey, 2005; Lester, 2000). Therefore, secondary school content-area teachers

feel discredited and are reluctant to think of themselves as teachers of literacy (Fisher & Ivey, 2005). As indicated above, the infusion of literacy strategies into content-area instruction is more closely aligned with inquiry-based learning, active learning, collaborative learning, and constructivist approaches (Jacobs, 2008). Therefore, embedding literacy instruction into content-areas might require a complete reconstruction of existing practice on the part of some teachers (i.e., those who are more traditional in their approaches to teaching). Other challenges include institutional barriers such as isolated work environments caused by self-contained classrooms (D'Arcangelo, 2002).

Teachers do not feel properly prepared to integrate teaching strategies that focus on literacy as they have not been properly trained. Mixed levels of efficacy were reported regarding the extent to which teachers felt equipped to address students' literacy needs (Cantrell et al., 2009). In addition, teachers expressed doubts about their abilities to meet the needs of students with reading difficulties. Lester (2000) found that while teachers were eager to improve instruction, they lacked the knowledge and/or appreciation of the teaching strategies and failed to recognize the influence literacy instruction could have on learning in the classroom. Therefore, instruction that specifically focused on helping students learn from texts was not a priority. Some teachers even resented the idea of emphasizing literacy competencies because they perceived literacy instruction as an added task.

Conley (2008) noted that content acquisition as opposed to strategy-based instruction was the focus of content-area teachers' preparation. "Teacher education currently lacks a focus on the meaningful integration of cognitive strategy instruction, especially in regard to connecting cognitive strategy instruction to student thinking and

learning across the content areas” (p. 96). The author believed that courses in content-area literacy did not provide teachers with the opportunities needed to learn how to use cognitive strategies to promote deeper understanding. Courses only provided instructional activities along with the assumption that teachers would make connections between the content knowledge and implementation of cognitive strategies.

In addition to not being properly prepared, teachers’ beliefs are at the forefront. Studies that examined content-area secondary school teachers’ reluctance to think of themselves as reading or writing teachers found that beliefs played a major role in reform efforts (Cantrell et al., 2009; Lester, 2000). Lester (2000) reported on information obtained from secondary school teachers regarding the role of literacy instruction in content-area classrooms. The author reported that teachers differed in their perceptions about the necessity of literacy instruction based on subject matter taught. The importance of literacy instruction was realized when teachers reflected on their own beliefs about the role it played in helping students to understand material in their classrooms. In a study that investigated middle and high school content-area teachers’ beliefs about literacy teaching and learning, Cantrell et al., (2009) also found varied perceptions and concluded that “attention must be paid to teachers’ beliefs about literacy and learning and their own roles as content teachers” (p. 91).

In addition, Cantrell et al., (2009) found that rather than perceiving their role in assisting students to develop cognitive strategies, teachers saw their role as implementing specific teaching strategies (i.e., Frayer diagrams, etc.) into their classrooms. Conley (2008) warned that in order to address adolescent literacy, it was not just about adopting strategies and painted an image of a classroom in which the superficial adoption of

strategies did little to promote students' deep understanding. Conley (2008) argued that "setting out to build adolescents' cognitive tools raises the teaching and learning bar higher than just adopting strategies to teach reading and writing" (p. 91). The author also stated that very little is known about promoting a more integrated and complex approach to implementing strategy-based instruction.

Some researchers who have studied the change process argued that behavioural change preceded a change in beliefs (Guskey, 2000; Reeves, 2008). Guskey (2000) pointed out that "significant change in teachers' attitudes and beliefs occurs primarily *after* they gain evidence of improvements in student learning" (p. 139). This should be kept in mind by staff developers when designing approaches to implementing strategy-based instructional programs.

Institutional Barriers

In addition to lack of proper training and belief systems, institutional barriers exist in secondary schools which prevent cross-curricular planning and integration. Ogle (D'Arcangelo, 2002) believed that the model, in which secondary schools are organized by subject areas, made it challenging for teaching staff to work together on projects and create the kind of learning environment that would foster collaboration. Working in isolation has been a distinct feature of our educational system. These isolated environments, where teachers work in self-contained classrooms, make it less likely that teachers will embrace responsibility for educating the 'whole' student. It has not been common practice for interdisciplinary teams of teachers to regularly consult with each other about how to best meet the needs of students they have in common nor has it been common practice for teachers who teach the same subject to consult with each other

about instruction. Isolated working environments are beginning to be addressed with the formation of professional learning communities and professional learning structures that are embedded in daily practice but in order to move school cultures from isolation to collaboration staff developers must continue to invest their efforts in building the capacity of formal and informal leaders in schools.

Fisher (2001) found that school structures (i.e., the scheduling of courses) played a role in the successful implementation of whole-school literacy initiatives. Student achievement increased after a block schedule was established at one secondary school in California. This entailed changing traditional year-long classes to one term and extending grade 9 and grade 10 English by additional instructional minutes. Although block scheduling was only one component of three in the school's literacy initiative, Fisher (2001) concluded "the block schedule certainly played a role in the increase in reading scores" (p. 100). The secondary school in which this study occurred had a block schedule in place.

In addition to self-contained classrooms and scheduling issues, there are other institutional barriers that prevent the delivery of effective reading instruction in content-area classes in secondary schools. One of these barriers is the lack of screening and monitoring assessments for guided instruction (Shanahan & Shanahan, 2008). The school board where the project took place did not administer a reading comprehension assessment in its secondary schools. In fact, comprehension screening assessments are only beginning to be introduced in secondary schools across the province. It was not until the past couple of years that publishers began to create and market these types of assessments for implementation in secondary schools. Without these types of

assessments, it is difficult for teachers to identify students' needs and plan appropriate interventions.

A review of the extant literature indicated a need in addressing the crisis we face in regard to adolescent literacy. In addition, the reaction to the problem was presented along with a historical glance at how the responsibility has shifted over time from reading teachers to content-area teachers. The challenges involved in embedding literacy instruction into content-area classrooms have been well documented. These challenges included: lack of proper training; belief systems which included the reluctance of secondary school teachers to see themselves as teachers of literacy; and institutional barriers. Many changes need to occur to ensure that all adolescents have better opportunities to develop to their full potential.

C. Metacognition

Flavell was credited with the introduction of the term metacognition in the mid-1970s (Pintrich, 2002). Metacognition is the act of thinking about thinking. Metacognition refers to the ability to reflect upon, understand, and control one's learning (Schraw & Dennison, 1994). Most accounts of metacognition make a basic distinction between metacognitive knowledge (i.e., what one knows about cognition) and metacognitive regulation (i.e., how one uses that knowledge to regulate cognition) (Schraw & Moshman, 1995). Table 2 includes the three different kinds of metacognitive awareness: declarative (about), procedural (how), and conditional (why and when) that make up the *knowledge of cognition* component. *Regulation of cognition* (see Table 3) refers to the set of activities that help students control their learning.

Table 2

Knowledge of Cognition Components of Metacognitive Awareness

Knowledge Component	Declarative Knowledge	Procedural Knowledge	Conditional Knowledge
Sub-Processes	knowing about things	knowing how to do things	knowing when and why to do things
Examples	knowledge about oneself as a learner and about what factors influence one's performance e.g. capacity limitations	knowledge about the execution of procedural skills e.g. how to chunk and categorize new information	knowing when and why to apply various cognitive strategies e.g. knowing when and what information to rehearse

Note. Adapted from Metacognitive Theories by G. Schraw and D. Moshman, 1995, *Educational Psychology Review*, 7(4), 351-371.

Table 3

Regulation of Cognition Components of Metacognitive Awareness

Regulation Component	Planning	Monitoring	Evaluating
Sub-Processes	involves the selection of appropriate strategies and the allocation of resources that affect performance	one's awareness of comprehension and task performance	appraising products and regulatory processes of one's learning
Examples	making predictions; time allocation	engagement in self testing	re-evaluating one's goals; re-evaluating conclusions

Note. Adapted from Metacognitive Theories by G. Schraw and D. Moshman, 1995, *Educational Psychology Review*, 7(4), 351-371.

Schraw and Moshman (1995) reviewed accounts of how *knowledge* and *regulation* of metacognition affected cognitive performance and elaborated on the distinction between the two, noting that they were not independent of one another. Without an awareness of the constructive nature of knowledge and theories, individuals would be unable to strategically modify those theories, and as a consequence, would be

less able to regulate their cognition and learning (p.359). At the age of six, children begin to develop awareness that knowledge and understanding are constructed and that they have some degree of control over this process (p. 360). Older, more experienced learners possess more knowledge about cognition and use that knowledge to regulate their learning before they undertake a task (p. 354). Findings suggested that it was reasonable to place some degree of emphasis on metacognitive theorizing from the time a child entered school regardless of his or her skill level (p. 368).

While most believe that the two components of metacognition are related, there remain questions about the exact relationship between the two components (Sperling et al., 2004). Baker (1989) suggested that it was possible that *knowledge of cognition* was a prerequisite to *regulation of cognition*. Schraw and Dennison (1994) found that those with high *knowledge of cognition* were more likely to demonstrate greater *regulation of cognition*. In the Schraw and Dennison (1994) study, the *knowledge of cognition* component was related to higher test performance while the *regulation of cognition* component was not. Even though the relationship between the two metacognitive components yielded statistical significance ($r = .54$ and $r = .45$), the authors concluded that the two did not share a compensatory relationship based on the unique contributions made by each. Correlations among the two metacognitive components and between measures of cognition, examined in two studies by Sperling et al., (2004), found stronger correlations between the two components (Study 1, $r = .75$; Study 2, $r = .68$) than Schraw and Dennison (1994) had found. This finding further illustrated the significant correlation between the two components - *knowledge of cognition* and *regulation of cognition*.

There is a lack of knowledge regarding the relationship between the components of metacognition – *knowledge of cognition* and *regulation of cognition* and strategy-based instruction. In a study examining the effect of strategy-based instruction in a hypermedia environment, Hartley (2001) hypothesized that students receiving strategy-based instruction, incorporated into hypermedia lessons, would demonstrate improved awareness and use of learning strategies. On a posttest, the differences between the experimental and control groups' *regulation of cognition* were larger than the differences between the groups on the *knowledge of cognition*, but the differences did not reach statistical significance. The author attributed the larger differences between the two components of cognition on the experimental and control groups' posttests as an indication that students already possessed a substantial repertoire of strategies and that little gain would be expected on a measure of cognitive strategy use if use was already very high. Hartley (2001) recommended future studies include a tighter integration of the strategy-based instruction with content instruction.

Sperling et al., (2004) addressed the correlations among the components of metacognitive awareness and the use of cognitive strategies in two studies. It was hypothesized that greater reported *knowledge* and *regulation of cognition* would be related to greater reported strategy use and that *regulation of cognition* would be more correlated with strategy use than would *knowledge of cognition*. Across both studies, data analysis revealed positive and significant correlations between metacognition and strategy use measures. In the first study *regulation of cognition* was more highly correlated with strategies overall than *knowledge of cognition* however, the second study

revealed that *knowledge of cognition* was more highly correlated. One purpose for this research is to further investigate the relationship between these two components.

Metacognition and Learning

The vast amount of knowledge and the rate at which information is growing in today's world requires that learners are equipped with cognitive strategies that will enable them to make predictions and inferences, summarize, analyze, and synthesize that information. Today's society recognizes these skills are essential but in many content-area classrooms, the acquisition of content is valued over the acquisition of cognitive skills. Even though the acquisition of content is valued over the acquisition of cognitive skills, Jenkins (2005) suggested that educational institutions grant students "permission to forget" (p. 1) much of the content by testing short term memory. When students cram for tests, it is unlikely that material will be transferred into their long term memory. In addition, traditional assessment techniques such as tests and quizzes continue to measure students' ability to memorize isolated facts rather than their ability to engage in higher level thinking (Bransford et al., 2000). The approach for teaching, learning, and assessing, that is based on findings from cognitive research emphasizes understanding. Therefore, it is important for people to learn to recognize when they have not acquired sufficient understanding of concepts and material and regulate their learning in order to identify what needs improving.

The report, *How People Learn: Brain, Mind, Experience, and School*, released by the National Research Council (Bransford et al., 2000) highlighted significant implications for the field of education based on the emergence of cognitive science. New knowledge about how people learn, uncovered by cognitive research, emphasized new

instructional approaches that focused on the process of knowing and emphasized understanding rather than the behaviourist or traditional views of teaching that focused on observable behaviour and emphasized memorization. Researchers identified one's ability to be metacognitive in his or her approach to problem solving as one of the characteristics that discriminated expert from novice learners.

The authors highlighted three key findings about teaching and learning that have a strong research base and hold important implications for the educational system. One of these findings identified the role metacognition played in helping students become self-directed learners and pointed to the need to promote metacognitive awareness through strategy-based instruction. It was suggested that learners would benefit from explicit instruction that emphasized metacognitive processes in a variety of subject areas.

Bransford et al., (2000) also reported a number of conditions that affected a learner's ability to transfer his or her learning to new situations. It was suggested that helping students become more aware of themselves as learners was one way to improve transfer. This included students engaging in actively monitoring their cognitive strategies and resources, as well as assessing their readiness for particular tests and performances.

Teaching practices congruent with a metacognitive approach to learning include those that focus on sense-making, self-assessment, and reflection on what worked and what needs improving. These practices have been shown to increase the degree to which students transfer their learning to new settings and events. (Bransford et al., 2000, p. 12)

D. Strategy-Based Instruction

The possession of extensive knowledge in a particular content-area does not guarantee that one can teach others how to learn content material. Marzano (2003) identified school level, teacher level, and student level factors that affected student achievement. The author noted that professionalism (one of the five school level factors) “included a certain level of knowledge about one’s subject area, but perhaps more important, it also involves pedagogical knowledge of how best to teach that subject-matter content” (p. 64). The author indicated that studies had found that a critical minimum level of subject-matter knowledge was needed in order to enhance student achievement but after a certain level was reached, “an increase in subject-matter knowledge was not related to enhanced achievement” (p. 64). What studies showed was that knowledge of pedagogy was consistently associated with student achievement.

Bransford et al., (2000) found that expert teachers had acquired pedagogical knowledge as well as content knowledge which helped them in identifying difficulties that students encountered and providing potential strategies for helping students overcome the difficulties. “Pedagogical content knowledge was an extremely important part of what teachers needed to learn to be more effective” (p.45). It would make sense that knowing *how* to teach is more important than having an extensive knowledge about the subject matter being taught. Strategy-based instruction speaks to the *how* when it comes to teaching.

Strategy-based instruction (see Figure 1) includes instructional strategies, the gradual release of responsibility, and the promotion of metacognitive awareness. Each of these components work together to help students develop a repertoire of cognitive

strategies that will facilitate understanding and move them toward self-regulation and independence. Each of these components is briefly described in the section that follows.

Instructional Strategies

Instructional decisions about which strategies to use impacts student achievement (Marzano, 2003). Teacher level factors identified by the author as having an impact on student achievement were described as “decisions made by individual teachers, including instructional strategies” (p. 71). The author indicated that “all researchers agree that the impact of decisions made by individual teachers is far greater than the impact of decisions made at the school-level” (p. 71). Furthermore, it was noted that implementing effective instructional strategies was one of the three teacher-level factors that affected student achievement.

Teaching or instructional strategies are activities teachers use for the purpose of scaffolding learning, advancing content acquisition and declarative knowledge, and enhancing students’ automatic selection and use of cognitive strategies (procedural and conditional knowledge). Examples are contained in the *Think Literacy* documents and include activities such as Frayer Diagrams (purpose is to identifying similarities and differences), Rapid Writes (purpose is to activate prior knowledge), and Think-Pair-Share (purpose is to scaffold learning through dialogue). Many of the instructional strategies in the *Think Literacy* documents facilitate the reprocessing information and engage students in complex thinking processes such as comparing and contrasting, activating prior knowledge, summarizing, and discussing. This deeper engagement with the material assists not only in advancing knowledge but also in developing cognitive strategies. With additional instruction, these strategies could be transported to other learning situations

and/or contexts. Transporting or ‘generalizing’ strategies in different contexts is the goal of strategy instruction.

The Gradual Release of Responsibility

The gradual release of responsibility is an instructional model where responsibility is transferred from the teacher to the student. It consists of a range of approaches:

Teachers begin by demonstrating, through modeling and/or thinking aloud, effective strategies for reading, writing, talking, listening, and thinking, and then move to coaching or guiding, and eventually arrive at a point where the student practices the skill or strategy independently.

(Ministry of Education, Literacy for Learning, 2004, p. 39)

Teachers provide scaffolds to help students move beyond their current level of achievement. Phases include modeling, shared practice, guided practice, and independent practice. Phases are not sequential but are negotiated accordingly based on student readiness and needs.

Modeling. Wilhelm (2001) stated that the most effective way to teach students how to use cognitive strategies (i.e., internal processes in which *learners* engage to make meaning of *material*) is “to model them in the contexts of meaningful tasks and assist students in their own use of these strategies” (p. 7). During the modeling phase the teacher takes complete responsibility for the cognitive load.

Think aloud is a commonly implemented teaching strategy used during modeling. A think aloud is typically categorized as a reading strategy in which “the reader makes his [sic] reading process manifest to others by articulating all that he [sic] is noticing,

thinking, feeling, and doing as he reads the text” (Wilhelm, 2001, p. 8). Although typically referenced as a strategy to improve reading comprehension, think aloud could be used to support learning in other contexts and in any subject. This occurs when teachers articulate their thinking processes aloud for students to hear. For example, visual arts teachers reveal choices made in regard to principles of design while applying paint to a canvas, mathematics teachers model problem solving strategies, and science teachers model the scientific process by thinking aloud.

Fisher and Frey (2008b) noted that the notion of transparency is critical during the modeling phase of the gradual release of responsibility and that “teachers reveal what goes on in their minds as they solve problems” (p. 34). The authors also suggested that during this initial phase, the teacher must be explicit in the methods they use. When modeling it was suggested that teachers begin by naming the strategy, state the purpose of the strategy, explain when the strategy would be used, and demonstrate how the strategy was completed. Within this phase, the authors noted the importance of teaching for metacognitive awareness. “In the metacognitive focus lesson, the emphasis shifts to direct instruction on a framework for making decisions about the use of the strategy” (Fisher & Frey, 2008a, p. 29). Such explicit instruction not only makes learning transparent to students but increases the likelihood that students will transport strategies into different contexts.

Duffy, Roehler, Sican, Rackliffe, Book, Meloth, Vavrus, Wesselman, Putnam, and Bassiri (1987) provided a rating scale to measure the explicitness of teacher explanations in regard to reading strategies. This rating scale included subcategories for how information was presented about the strategy, the means used to present the strategy,

and intra-inter lesson cohesion. According to the rating scale, a teacher received the highest rating if he or she: conducted an exemplary presentation of the task as an adaptive, flexible strategy; provided a statement about the immediate usefulness of the skills followed by concrete examples; provided information to students about how to recognize that a problem existed and how to select an appropriate strategy to address the issue; modeled the mental steps when performing the strategy; provided guided practice with a gradual release of responsibility on part of the student; required students to verbalize the steps required for appropriate use of the strategy; and provided a summary or review or additional opportunities to use the acquired skills in a natural context.

Shared Practice and Guided Practice. Shared practice means that the teacher still does most of the work but begins to involve students by asking them to participate in certain parts of the lesson. As students participate, the teacher provides feedback and skill levels improve, the teacher increases the amount of participation required by the students. Guided practice is when teachers purposefully group students based on information gathered from formative assessments. This allows teachers to differentiate support as students work in small groups that are determined by need. Teachers reinforce previously taught strategies and skills to assist students in constructing meaning.

Fisher and Frey (2008a) pointed out that most implementation efforts of the gradual release of responsibility limit interactions to teacher and student and overlook opportunities for peer to peer collaboration. The authors suggested that a more complete implementation of the gradual release of responsibility included opportunities for collaborative learning prior to independent practice.

As mentioned above, included in the gradual release of responsibility model is explicit instruction in strategy use. Results from research studies have shown that explicit instruction in the use of metacognitive strategies result in an increase in students' awareness of comprehension strategies, comprehension of text, and achievement (Eilers & Pinkley, 2006; Paris, Newman, & McVey, 1982). Secondly, conversations about learning that focus on the strategies used help adolescents build confidence in their reading and become better readers (International Reading Association, 2006). The gradual release of responsibility model provided a framework for the Think Literacy Team Teacher to follow when working with content-area teachers.

Components of Strategy-Based Instruction

As described earlier, strategy-based instruction includes which instructional strategies teachers choose to employ in their classrooms, how they employ the strategies using the gradual release of responsibility model, and the development of metacognitive awareness to assist students in knowing when and why to execute the use of strategies on their own. In the section that follows, research that supports the use of each of these components is presented.

There is a considerable amount of research that examined many of the same instructional strategies that are contained in the *Think Literacy* documents. In a meta-analysis that analyzed studies on strategies that could be used by teachers, Marzano et al., (2001) identified strategies that had a “high probability of enhancing student achievement for all students in all subject areas at all grade levels” (p. 7). Identifying similarities and differences was the strategy with the highest probability of enhancing student

achievement. Others included summarizing and note taking, setting objectives and providing feedback, and questions, cues and advanced organizers.

Consider the use of graphic organizers. Graphic organizers are tools to support planning and organizing. When students are taught how to use graphic organizers, they become useful supports for independent practice. Robinson and Kiewra (1995) concluded that graphic organizers were a more effective teaching strategy than informational outlines based on the results from two experimental studies of undergraduates enrolled in an educational psychology course. Guastello, Beasley, and Sinatra (2000), in a study examining the use of concept maps in a grade 7 science class, found a statistically significant difference in comprehension between the pretest and posttest for their experimental group. Nesbit and Adesop (2006) conducted a meta-analysis of experimental and quasi-experimental studies in which students learned by constructing, modifying, or viewing mind maps and found that across several instructional conditions, settings, and methodological features, the use of concept maps was associated with increased knowledge.

Explicit instruction is direct teaching whereby the teacher explains in a step-by-step manner the knowledge, skills, and processes that are involved in the learning of a particular concept or strategy (Biancarosa & Snow, 2006). Explicit instruction has been identified as an effective element of adolescent literacy programs. Shanahan and Shanahan (2008) explained that most students need explicit teaching of “sophisticated genres, specialized language conventions, disciplinary norms of precision and accuracy, and higher-level interpretive processes” (p. 43). Jacobs (2008) also argued that students require direct instruction to learn how to learn from text. “If students are to acquire

advanced reading skills and become critical readers within their disciplines, then teachers need to go beyond assigning merely *what* to read by giving students explicit explanations about the *why* and *how* of their reading” (p.14). The author warned that even when students have mastered decoding and fluency to the point where it has become automatic, direct instruction was still required to enable students to learn how to learn from text. Eilers and Pinkley (2006) reported on a project that was designed to assess the effectiveness of explicit instruction of the specific cognitive strategies of using prior knowledge, predicting, and sequencing on the comprehension development of readers in a grade 1 classroom. Results from the study found that explicit instruction in the cognitive strategies resulted in an increase in students’ awareness of comprehension strategies and comprehension of text.

Many research studies have applied experimental and quasi-experimental designs to derive an understanding of how strategy-based instruction affects students’ metacognitive awareness. There is strong evidence of the effectiveness of metacognitive reading strategy instruction. In a meta-analysis of 41 quantitative studies examining metacognitive strategy instruction and reading comprehension that were conducted between 1979 and 1991, Wenjuan (1993) concluded that the average students receiving metacognitive strategy-based instruction improved their reading comprehension from the 50th percentile to the 71st percentile.

In a study that sought to determine the effectiveness of direct instruction of metacognitive strategies on comprehension and vocabulary development of grade 3 students, Boulware-Gooden, Carreker, Thornill, and Joshi (2007) supplemented lessons with vocabulary webs, think aloud, and summary strategies over a five week period.

Multiple instruments that were designed to measure academic skill levels administered in a pretest – posttest design revealed significant improvement in vocabulary and reading comprehension on part of the intervention group over the comparison group. The intervention included 30 minutes of instruction of reading comprehension a day over a 25 day period. Each lesson was laid out in five parts which included: an introduction; modeling of semantic webs to introduce new vocabulary; before, during and after reading strategies including think aloud and a gradual release of responsibility; summarizing key ideas; and questions that required students to connect new learning with prior knowledge. “It was found that the metacognitive reading comprehension instruction significantly improved the academic achievement of third-grade students in the domains of reading comprehension and vocabulary over the other instruction that was offered to the students in the comparison school” (p. 77).

In a study that examined the use of metacognitive questioning strategies in three grade 9 world history classes, Smith, Rook, and Smith (2007) found that a combination of cognitive, metacognitive, and affective journal prompts supported content learning to a much greater degree than just cognitive questions as measured by course grades. This study involved an intervention that combined the utilization of structured journal writing as a means to increase reflective thought with metacognitive and affective journal prompts to increase self monitoring and regulation. The researchers examined the effects of three instructional approaches that were delivered over a 12 week period to three groups who were taught using a common lesson plan. The first group was provided the instruction but not required to write reflectively in a journal. The second group was required to respond to cognitive or text-related journal prompts and the third group was

required to respond to cognitive, metacognitive, and affective questions in their journals. The researchers found that students in the third group not only demonstrated better retention of course material but also appeared to be more actively engaged in the learning process.

In a study examining the extent to which metacognitive strategy use could lead to improvements in oral communication ability, Nakatani (2005) found that students in the metacognitive strategies training group improved their proficiency in oral communications tests significantly more than those who did not receive metacognitive strategies training.

Sperling, Howard, Miller, and Murphy (2002) investigated students taking control and ownership over their own learning by measuring their *knowledge* and *regulation of cognition*. The purpose was to help gain an understanding of how exposure to the strategies affected metacognition and therefore provide direction on how to assist students in becoming more self-directed, independent learners. Students who are self regulated not only exhibit greater independence but are more motivated and have higher self efficacy. Metacognition and strategy use are two constructs comprising self-regulation (Sperling et al., 2002). The authors stated that currently little is known about the relationships among constructs comprising self regulation. For those who are interested in facilitating self regulated learning, there is a need to assess the effects of learning strategy interventions on learners' metacognitive processing and strategy use.

Kramarski, Mevarech, and Arami (2002) conducted a quantitative study that examined the effects of cooperative learning embedded with metacognitive instruction versus the effects of cooperative learning without metacognitive instruction on 91 grade 7

students while they solved authentic mathematical tasks. Metacognitive instruction included training students to ask four types of questions while solving authentic tasks: comprehension questions (designed to prompt reflection prior to solving the task); connection questions (designed to prompt students to focus on similarities and differences); strategic questions (designed to get students to consider which strategies were appropriate and why); and reflection questions (designed to prompt students to reflect on their understanding during the solution process). Findings indicated that students who received metacognitive instruction significantly outperformed those who did not receive metacognitive instruction when solving both authentic and standard tasks.

Kramarski et al., (2002) found that students who received metacognitive training were also better able to reorganize and process information than their counterparts. The researchers surmised that metacognitive instruction caused students to selectively consider appropriate strategies and evaluate their utility, leading to a deeper level of understanding. Probing into the differential effects of metacognitive instruction on lower and higher achievers, findings from this study demonstrated that both groups benefited from metacognitive instruction when organizing and processing information. However, only high achievers reached significant differences when asked to draw a conclusion and justify their reasoning. The researchers suggested this may be due to the possibility that lower achievers in mathematics also experienced difficulty expressing their ideas in writing. The researchers also suggested that the metacognitive instruction in this case was not intensive enough.

Other studies have examined effects of metacognitive instruction on low and high achievers. In a study by Zimmerman and Pons (1986), of high and low achieving grade

10 students, high achieving individuals displayed significantly greater use of 13 categories of self-regulated learning including goal setting and planning, record keeping and monitoring, rehearsing and memorizing, and reviewing records. A study by Kirby and Moore (1987) found that high levels of metacognitive awareness were found in children with above-average reading comprehension ability. Studies have also shown that students who use metacognitive strategies while reading become better readers and more clearly comprehend what they read (Cross & Paris, 1988; Dewitz & Dewitz, 2003; Paris & Oka, 1986). Finally, a study examining the psychological factors of college students with reading difficulties found that low metacognitive ability constituted one of the major reasons for the reading difficulty (Xiu-bo & Zhang, 2006).

Researchers have also considered other factors such as socio-economic status when examining the effects of metacognitive strategy instruction. Schreiber (2003) explored metacognition and self regulation in an enrichment reading program in an elementary school which had a high enrollment of students who came from families of low socio-economic status. In the study, the author examined fluency and comprehension based on a comparison of two interventions - a direct instructional approach and a whole language approach. Schreiber (2003) found that *knowledge* and *regulation of cognition* were causally associated with reading comprehension but this was not true for reading fluency. Schreiber concluded that “while direct instruction has been demonstrated to be effective as an initial pathway to reading competency or as remediation, it may be of questionable use for readers who have mastered strategy use” (p.40).

Qualitative studies have also been conducted to examine metacognition and strategy-based instruction (Vandergrift, 2002; Wall & Higgins, 2004). One that focused

specifically on grade 4 to 6 students' acquisition of the French language examined metacognitive knowledge on the process of listening. Vandergrift (2002) suggested that guiding students through the mental process of successful listening comprehension could promote the acquisition of appropriate metacognitive knowledge about listening. In this study, the sequence of teaching strategies (before, during, and after) was used to guide students through the mental processes involved in listening comprehension through pre-listening , listening, and post-listening activities. By promoting the use of listening comprehension checklists, teachers led students through the process of listening and encouraged them to reflect on language and language learning. It was suggested that this was an effective approach that provided students with strategic knowledge of metacognitive strategies such as planning, monitoring, and evaluating. An increase in motivation was also reported as students were able to take a more active role in their own learning.

Wall and Higgins (2004) used information written by students in speech and thought bubble cartoon templates, along with transcripts from audio-taped discussions of focus groups, to measure the extent to which cartoon templates were effective in engaging students in metacognition. The templates were developed in a cartoon format that depicted various teaching and learning scenarios and designed with the intention of helping learners discuss and record their thinking about their learning based on a recent teaching activity. The cartoon template acted as a stimulus, operating as a reminder of the learning context that was under discussion, while teachers used a focus group format to engage students in recording their reflections in the speech and thought bubbles. Wall and Higgins (2004) reported that in schools where metacognitive talk was the norm, students

were more likely to make process-oriented statements. In schools where metacognitive talk was not the norm, students were more likely to make outcome-related statements or off-task comments. The researchers concluded that the templates provided a practical solution for encouraging talk about metacognition in classrooms and that the templates provided powerful feedback informing both teachers and students about metacognition in different learning environments.

Factors Impeding Transference and Generalization of Strategies

Goals of strategy training are to develop self-regulated, independent learners (Fisher & Frey, 2008a; Harris & Pressley, 1991). In order for strategy training to be effective however, students must generalize or transfer the training (Ellis, 1986). Generality refers to the application of acquired strategies across disparate domains (Garner, 1990). “Transfer includes maintenance of skills over time and generalization across contexts and subject domains” (Schunk & Zimmerman, 1997, p. 205). Transfer seldom occurs spontaneously (Garner, 1990). Individuals experience difficulty applying newly acquired skills to contexts that differ from that in which the skill was initially applied (Beyer, 2008; Wilhelm, 2008).

A number of researchers have suggested reasons why educators do not attain the goal of transfer when employing strategy-based training. These reasons include the effectiveness in the delivery of instruction (Ellis, 1986; Garner, 1990), educators underappreciating what is required to achieve it (Wilhelm, 2008), motivation and classroom structures (Ellis, 1986; Harris & Pressley, 1991; Young, 1997), and varying contexts (Garner, 1990).

Effectiveness in the Delivery of Instruction. Ellis (1986) noted that teacher effectiveness in the delivery of strategy instruction was a key component in students' ability to generalize strategies. A gradual release of responsibility is recommended. Gradual release includes "demonstrating, through modeling and/or thinking aloud, effective strategies for reading, writing, talking, listening, and thinking, and then move to coaching or guiding, and eventually arrive at a point where the student practices the skill or strategy independently" (Ministry of Education, Literacy for Learning, 2004, p. 39). Fisher and Frey (2008a) noted that teachers must be explicit in the methods they use during the modeling phase of the gradual release of responsibility. Within the modeling phase, the Fisher and Frey (2008a) also noted the importance of teaching for metacognitive awareness. "In the metacognitive focus lesson, the emphasis shifts to direct instruction on a framework for making decisions about the use of the strategy" (p. 29). Such explicit instruction not only makes learning transparent to students but increases the likelihood that students will transport strategies into different contexts.

Effective strategies for promoting metacognitive development have been offered by a number of researchers. Lin (2001) examined instructional goals and design characteristics of two basic approaches to support metacognition in the classroom and presented two kinds of content that were taught using the two approaches. The author proposed that over the last two decades, the two basic approaches for developing metacognitive awareness that have been adopted by researchers were strategy-based training and the creation of supportive social environments. Within these two approaches two kinds of content were taught: knowledge about a specific domain and knowledge

about the self-as-learner. The author analyzed examples of metacognitive interventions that fell into each approach and discussed important issues that resulted from the analysis.

In the strategy-based instructional approach, direct instruction such as modeling and prompting were frequently used to teach students domain-specific knowledge and skills. Development of knowledge about the self-as-learner was accomplished through social models in the strategy-based approach. In the approach for creating supportive social environments to support metacognition, domain-specific knowledge and skills were supported through activities that promoted social discourse such as reciprocal teaching and the Jigsaw strategy. “Rather than focusing on teaching individual strategies, interventions are targeted at changing social environments to support metacognitive activities” (Lin, 2001, p. 31). Lin (2001) pointed out that in approaches that attempted to create supportive social environments, knowledge about the self-as-learner was promoted through the establishment of ‘metacognitive mindful’ environments where reflection, questioning, and goal setting were valued and encouraged.

Lin (2001) further stated that there is a “need to build coordination between strategy-based training and supportive social environments for developing knowledge about both domain subject and the self-as-learner” (p. 33). Suggestions for doing so included making learning goals explicit, fostering dialogue where learners openly and honestly shared what they did and did not know, and providing opportunities for students to make their thinking visible. The author concluded by encouraging educators to embed metacognitive activities in the daily process of teaching rather than treating them as separate or isolated activities.

Hartley (2001) believed that the effective use of cognitive strategies could be described in terms of metacognition. The use of a cognitive strategy was dependent on one's *knowledge of cognition*. Use depended on one's awareness of the strategy (declarative), understanding of how the strategy worked (procedural), and knowing when to use the strategy (conditional). Therefore, the author argued that metacognition relied on one's knowledge of their abilities and strategies that may have improved their own learning as well as one's ability to regulate their thinking in a way that took advantage of their *knowledge of cognition*.

Joseph (2006) also offered suggestions to teachers for helping adolescent learners develop metacognitive awareness. Suggestions included modeling, direct instruction, coaching, providing opportunities for guided practice, making self-reflection part of routine instruction, and encouraging questioning and on-going discussion about thinking and learning. The author pointed out that self-reflected learning could be fostered by describing appropriate learning behaviours, asking students to complete reading inventories and discussing the responses with the whole class, and encouraging students to make notes to monitor their comprehension while they read. The author suggested that strategies such as think aloud provided models that exposed students to new methods of processing information. As Lin (2001) suggested, Joseph (2006) also promoted the establishment of socially accepted norms that would "help students understand that self reflective thinking is a vital life skill, a strategic ability that extends beyond the classroom into their everyday lives" (p. 37). Finally, the author pointed out the benefits experienced by content-area teachers when addressing metacognition in subject areas including students experiencing greater understanding of the content-area material.

Jacobs (2002) also offered suggestions for developing metacognitive awareness. These suggestions included: explaining the value of metacognitive activity and emphasizing the need for self monitoring; modeling the type of thinking needed to solve problems by using a think aloud approach; providing time for students to practice the strategy in pairs or in small groups; working with classes on vocabulary growth by examining words in context and encouraging students to connect new words with their prior knowledge and to words they already knew. Professional development for strategy training needs to center on creating safe social environments where metacognition is valued and promoted.

Pressley et al., (1989) argued that strategy instruction would fail to produce long term gains if metacognitive awareness was not promoted. In presenting the obstacles to good strategy use, the authors suggested that maintenance and transfer of strategy use did not follow from strategy instruction alone. An additional obstacle noted was the difficulty people experienced in monitoring their performance:

...[S]tudents also fail to monitor the effectiveness of strategies as they use them. Teaching children to monitor involves detailed instruction. Children need to be taught explicitly a) to compare performances produced by different strategies, b) to attribute performance differences to use of different strategies, and c) to use perceptions and attributions about previous performances in selecting the most potent strategies for future use. Anything less than these three elements, training will fail to produce efficient self-regulation of memory strategies. (p. 319)

Paris, Newman, and McVey (1982) tested strategy learning and maintenance under two instructional conditions. Thirty first and second grade students were randomly assigned to two groups and asked to recall items on 24 picture cards. Both groups were trained in the use of five memory strategies which included: how to sort pictures into groups of similar items; assign a label to each item; rehearse the pictures by group; self-test; and recall pictures by group. Both groups received a demonstration of the strategies. On the third day, one group received a brief explanation of the reasons why each strategy would aid in remembering the pictures and feedback tailored to the actual study behaviour they exhibited. The researchers concluded that better learning resulted when children understood the utility and significance of using the strategies taught.

Motivation and Classroom Structures. In addition to teachers' effectiveness in the delivering of instruction, motivational factors contribute to generalization of strategies. Ellis (1986) and Young (1997) noted that motivational factors impede generalization. "An individual's analysis of the effort needed can result in the impression that the strategies are simply not worth the trouble" (Ellis, 1986, p. 67). Ellis (1986) outlined teaching practices affecting motivational factors that could potentially impede an individual's generalization of strategies. These practices included: (a) strategies selected; (b) corrective feedback; (c) reinforcement and; (d) classroom structures. In addition, highly structured classrooms which allow for little input or identification of instructional goals from students "reduce student opportunities to learn and use metacognitive skills" (Ellis, 1986, p. 67). The author also noted that extrinsic reward systems may reduce the probability of generalization. Intrinsic systems (e.g. goal setting) were identified as being more consistent with the goals of independent action. The author suggested that student

oriented feedback, in which the teacher asks the student to consider how well he/she did rather than giving direct feedback to the student, would facilitate greater independence in metacognitive processes related to strategy use over time.

Young (1997) demonstrated that students' perceptions of teachers' instructional practices could have a direct effect on student motivation. Results from the author's study showed a reciprocal relationship between motivation and cognition. Students who held performance focused goal orientations (e.g. concerned with achievement scores and out-performing peers) were more likely to utilize surface level processing strategies. In comparison, students who held task focused goal orientations (e.g. concerned with developing competencies) were more likely to utilize strategies that would lead to a deeper understanding. The author suggested that teachers could enhance students' motivation not only through cognitive strategy instruction but by also placing greater emphasis on task focused goal structures over performance focused goal structures. The author suggested that that recognition based on effort and improvement would lead to task focused goal structures. Harris and Pressley (1991) also noted the role motivation played in students assuming greater ownership over strategies and that motivation was especially likely when students were given opportunities to evaluate the utility of the strategy in regard to how it mediated their learning.

Like Young and Ellis, Garner (1990) also believed attributions and classroom goals (i.e., performance goal orientations) do not support strategy use (i.e., learners that attribute failure to effort as opposed to ability are more likely to sustain strategy use however, classrooms where competition is cultivated supports attributing failure to ability). In addition, Garner (1990) proposed other reasons why learners did not maintain

or transfer strategies including poor cognitive monitoring, ineffective routines becoming automatized and therefore are used frequently even though they do not enhance learning (e.g. copying notes verbatim), and individuals are ready to use strategies but lacking information that blocks such use (i.e., test format – multiple choice or essay - is unknown and therefore learners are unsure of which strategies to use to prepare properly).

Varying Contexts. Garner also believed that “when context varies, the nature of strategic activity often varies as well” (Garner, 1990, p. 523). The author argued that strategies that work well in one field may not be applicable in another. Expert learners use strategies to compensate for lack of background knowledge in certain domains. When learners lack knowledge about knowing when to use strategies, transfer is at a minimum. “A learner with only declarative and procedural knowledge about a particular strategy does not adjust behaviour to changing task demands” (Garner, 1990, p. 518).

Studies have shown that strategy-based instruction had the potential to increase metacognition. As metacognition is a construct of self-regulation, increased metacognition can lead to greater independence on the part of the learner – one goal of education. Research indicated that metacognitive awareness could be taught. Teachers play an important role in promoting metacognitive awareness. Wilhelm (2001) pointed out, “We spend most of our time teaching students information, filling them with declarative knowledge (the *what*), instead of assisting them to enact new and more proficient ways of reading, problem solving, and meaning making (the *how*)” (p. 7).

It is worthwhile for educators to incorporate strategies to promote metacognitive development when making decisions about instruction and assessment since metacognition is a trait that distinguishes expert learners from novice learners (Bransford

et al., 2000). As the evolution of standards and curriculum continue to reflect and value deep understanding over the acquisition of knowledge it becomes increasingly important for students to be able to recognize when they have not acquired sufficient understanding. Knowledge about one self as a learner can be developed through strategy-based instruction which includes the gradual release of responsibility as well as engaging students in metacognition. Elaborate strategies that require students to compare and contrast, summarize, and synthesize require complexity in thinking. It is necessary to provide support to teachers so that they can integrate strategies effectively in the classroom. "If research on strategy instruction has demonstrated anything, it is how difficult it can be for teachers to engage in cognitive strategy instruction, particularly at the secondary level" (Conley, 2008, p. 101).

E. Professional Development Versus Professional Learning

There are significant differences between professional development and professional learning in regard to the design, delivery, and quality of the outcomes. Traditional models of professional development take place after hours, outside of schools. They are usually 'one shot workshops' that leave little opportunity for follow-up and little support once participants return to their classrooms. Professional development in its traditional form does not value the professionalism, knowledge, or experience of the participants. It is typically a 'training session' designed by outside experts and does not afford opportunities for the participants to create or share knowledge. Instead, participants are attendees who are expected to consume information which is often imposed upon them. Implementation is optional. The content is usually identified through a systemic need perceived by outside experts and participation is usually mandated.

Traditional training is a poor design for both transfer and retention (Joyce & Showers, 1981).

Professional learning by contrast takes place during the work day inside schools and classrooms. Participants are not only provided the opportunity to reflect on their practice but are also expected to implement and dialogue with others about the successes and challenges met. In this respect, the professionalism, knowledge, and experience of the participants is acknowledged and valued. Participants often take part in the design of the session and help to shape the day's agenda. As the content is determined by the needs of schools, division, or classrooms, it is contextual and relevant. Professional learning often results in a greater sense of ownership, increased efficacy, and a greater likelihood that participants will transfer new knowledge and skills to their professional practice. Models in which teachers learn from each other, including coaching and team teaching, are examples of professional learning designs that have greater likelihood of transfer.

Teachers Learning From Each Other Why Institute a Model Embedded in Daily Practice?

With the number of professional learning models that are available, why institute a model that is embedded in teachers' daily practice? Joyce and Showers (1987) were first to highlight the benefits of providing on-site supports, by demonstrating the likelihood of teachers transferring new skills into practice was 90% when in-situational coaching was provided. More recently, Knight (2009) reported findings from a study in which half of the teachers who received after-school training in new teaching strategies were assigned a coach to provide follow-up support. Observers reported that the newly taught strategies were used during 90% of their observational visits in the classes taught

by teachers who received coaching as opposed to a 30% transfer by teachers who did not. Fullan, Hill, and Crevola (2006) identified professional learning that was both school-based and embedded in teachers' daily work as the most effective way to change classroom instruction. Increasingly, school boards are allocating a greater percentage of professional development funds to support in-situational coaching as the necessity of this type of follow-up support in promoting transfer to practice and changing classroom instruction is being more widely acknowledged.

Another reason why school boards are increasingly instituting staff development models, in which teachers learn from each other, may be due to the fact that educational leaders and policy makers are gaining a better understanding of how to effectively implement systemic change in educational institutions. Over the past ten years there have been numerous articles and books published on the topic of effecting change in schools. There is a general consensus amongst change theorists that spreading leadership widely throughout the system helps to create the conditions necessary for sustained change (Collins, 2001; Fullan, 2008; Hirsh & Killion, 2007; Lindsey, Robins, & Terrell, 2003; Sturtevant & Linek, 2007).

Published studies confirmed that teacher leaders serving in coaching roles have been valuable in building school capacity. Results from a recent study by Reeves (2008) found that "the quality and practice of leadership at every level had a demonstrable impact on organizational health, in general, and on student achievement in particular" (p. 10). Teachers were more likely to be influenced by the professional practices of their peers than they were to be influenced by journal articles or graduate courses. This may be due to the fact that many teachers do not read journal articles as they do not find them of

practical use. Reeves suggested that networks of teacher leaders were an essential component for school change initiatives and that “the direct observation of the professional practices of teachers by teachers must become the new foundation of professional development” (p. 3).

Researchers Flores and Roberts (2008) attested to the power of observation as a means to changing cultures and sustaining school improvement. In this study, researchers sought to identify leadership structures in schools to better understand how principals, teachers, and instructional coaches could work together to produce increased and sustained results in mathematics. Flores and Roberts (2008) concluded that through observation and the sharing of best practices, administrators and teachers would gain a better understanding of how schools transform beliefs, attitudes, and practices into higher student achievement. Sparks (2007) also noted the significant improvements in teaching and learning that the sharing of best practices could make. Furthermore, Lieberman and Miller (2004) recognized coaching as a “leadership role that allowed teachers to make their work public and assist in the reconstructions of the profession” (p. 30).

Increasing knowledge of the factors that contribute to systemic change and a better understanding of the factors that influence individuals to change their beliefs and instructional practices, have required educational decision makers to rethink professional development models. Models in which teachers learn from each other are replacing traditional approaches and becoming more prevalent in school boards.

Defining Terms

There are a number of broadly defined terms used in the literature to describe programs in which teachers learn from each other. Some include peer coaching (Bruce &

Ross, 2008; Murray, Ma, & Mazur, 2009), team teaching (Dugan & Letterman, 2008; McDaniel & Colarulli, 1997), instructional coaching (Jorissen, Salazar, Morrison, & Foster, 2008; Knight, 2009), and literacy coaching (Blamey et al., 2009).

In most cases, the term peer coaching was used in reference to teachers who engaged in mutual coaching relationships with each other. In some studies however, this same term was used to reference situations in which students coached other students (McCourt, 2006). Bruce and Ross (2008) defined peer coaching as “an intensive professional development activity in which teachers provide one another with feedback about their teaching” (p. 347). Murray et al., (2009) described peer coaching as a “mutual consultation between teachers of equal status” (p. 203) making the distinction from other forms of professional development models where hierarchical relationships exist. Most peer coaching relationships, described in the literature, consisted of teachers taking turns observing each other and providing feedback during a formal debriefing session.

The term team teaching was often used in reference to interdisciplinary teams who collaborated on the integration of curriculum across subject areas. In many cases these interdisciplinary teams were responsible for the same group of students, a purposeful design feature meant to promote shared responsibility and allow for easier collaboration and the close monitoring of student progress. McDaniel and Colarulli (1997) explained models of team teaching and positioned various forms of collaboration between team teachers along continuums that reflected four basic dimensions. These dimensions included:

- the degree of integration of perspectives and discipline-based knowledge;
- the degree of interaction of teachers with students in the teaching and

learning process; the degree of active learning and student engagement and; the degree of teacher autonomy or interdependence in the teaching and learning process (p. 23).

The purpose for collaboration between teams of teachers was to develop greater curriculum coherence, reduce curriculum fragmentation, stimulate cross-curricular learning, and motivate students to learn through greater association with their peers.

Dugan and Letterman (2008) identified three forms of team teaching which included: co-teaching (a course taught simultaneously by two teachers); alternate teaching (a course where teachers alternate teaching); and panel teaching (courses taught by three or more teachers). These researchers also acknowledged team teaching as a tool for integrating material from different disciplines. Although Dugan and Letterman (2008) used the term co-teacher to refer to a course taught by two teachers, a distinction needs to be made. The term co-teacher was more frequently referenced in literature related to special education. In the many instances, the term co-teaching was used to reference a combined effort between special education teachers and teachers in general education classrooms teaching groups of predominantly non-disabled students along with disabled students. In co-teaching, in special education classrooms, both educators assumed full responsibility for the education of all students in the classroom, including planning, instructional delivery, classroom management, assessment and evaluation.

Jorissen et al., (2008) defined an instructional coach as a facilitator of professional learning with a broad set of responsibilities who helps “identify appropriate interventions, model teaching strategies, gather data in the classroom, and engage teachers in reflective dialogue to improve professional skills” (p. 17). Literature that described instructional

coaching models often identified an instructional coach as one who offered support, provided feedback, and individualized professional learning. Knight (2009) defined an instructional coach as someone who “partners with teachers to help them incorporate research-based instructional practices into their teaching so that students will learn more effectively” (p. 18). Common elements gleaned from these broad definitions were that an instructional coach is an individual who collaborated, modeled, and engaged peers in reflective practice in regard to strategy implementation and instructional design.

Finally, literacy coaching was another common term used to describe programs in which teachers learn from each other. A study by Blamey et al., (2009), confirmed the ambiguity of the role of literacy coach as indicated by data that roles remain largely undefined. A study by Mraz, Algozzine, and Watson (2008) indicated that perceptions and expectations of the role were widely open to interpretation by principals, teachers, and coaches themselves and uncovered four distinct roles of literacy coaches perceived by principals, teachers, and coaches. These included serving as a resource to classroom teachers, an instructor to students, resource to parents and other community members, and implementer of diagnostic and standardized assessments. As a resource to classroom teachers, coaches engaged in activities that included modeling lessons, mentoring, and resource provider. Principals and teachers disagreed in their views regarding the role of the coach in providing direct instruction to students. While teachers felt it should be part of the coach’s job description, Principals felt it was not an effective use of the coach’s time. In working with parents and other community members coaches often coordinated special events and workshops and sought volunteers to assist in the school. Assessment related tasks were identified as consuming most of the literacy coach’s time.

Blamey et al., (2009) reported results for a survey of 147 coaches in which respondents were asked to indicate responsibilities related to the potential roles of secondary coaches outlined in the Standards for Middle and High School Literacy Coaches (International Reading Association, 2006). The standards outlined by the International Reading Association (IRA) are categorized into three roles – collaborators, coaches, and evaluators. Coaches reported participating in a wide variety of activities including examining best practices, responding to staff needs, working with teachers in groups or individually, demonstrating teaching strategies and helping to determine content-specific reading strategies, organizing (setting schedules for administering and analyzing) formative and summative assessments.

The most common broadly defined terms used in the literature to describe programs in which teachers learn from each other include peer coaching, team teaching, instructional coaching, and literacy coaching (Blamey et al., 2009). Peer coaching usually referred to teachers engaged in mutual coaching relationships while team teaching usually referred to teachers who worked together for the purpose of interdisciplinary planning. Instructional coaches and literacy coaches usually described professionals who were responsible to share best practices, model, co-plan, and engage colleagues in reflective thought aimed to improve practice. While the models are different, they share some commonalities.

Commonalities

Even though researchers and practitioners described a variety of approaches, these models included a number of common elements. In reviewing the literature it became apparent that whether the programs were referred to as peer coaching, team

teaching, instructional coaching, or literacy coaching, they shared more similarities than differences. Similarities included: the foundational components on which they were designed; compliance with the qualities and characteristics of powerful professional learning; goals and objectives; and the theories upon which they were based. The similarities in respect to each of these shared characteristics are explored in the paragraphs that follow.

There are foundational elements that must be in place in order for any of these models to succeed. Firstly, the culture in the school must be one that is open to collaboration. Research ties collaboration to positive school outcomes (Levine & Lezotte, 1990). When people work collaboratively on improvement activities, success is more likely. Collaboration among educators builds shared responsibility and improves student learning (Hirsh & Killion, 2007). Although it is not necessary that collaborative cultures be well established, there must be willingness on the part of staff to invite colleagues in to classrooms and move from individualized practice to a professional community.

Another foundational component upon which each model is built is mutual trust and respect. Relationships whether between peers in peer coaching relationships, teachers in team teaching relationships, or instructional coaches and teachers they are working with, there must be a foundation of mutual trust and respect in order for the program to succeed. In addition, the provision of time is a necessary foundational component. Each model relies on protected time during the instructional day for colleagues to come together to collaboratively improve practice.

In addition to the foundational components, each model is reflective of the qualities of powerful professional learning outlined by Easton (2008) including: arising

from and returning benefits to the real world of teaching and learning; beginning with what will really help young people learn and engaging those involved in helping them learn; resulting in application in the classroom; honouring the professionalism, expertise, experiences, and skills of the staff; content rich because the content is the school or Board itself, its staff, and its learners; establishing a culture of quality; and slowing the pace of schooling by providing time for inquiry and reflection that promote learning and application. The importance of collaboration is also noted:

Learning is powerful when teachers and administrators work to understand how a school can improve learning for all children, identify strategies, collect and analyze data from student work and teacher practice. More powerful designs require learners to take specific action which may include trying a new technique and reflecting on what was learned. When people do things together, their experience is enriched. (Easton, 2004, p. 4)

When teachers learn from each other, through team teaching or coaching models, their work arises from what is happening throughout the day in classrooms. Collaborative interactions center on how to improve teaching and learning and questions posed during discussions are purposefully designed to engage individuals in reflection about their own instruction. The professionalism of the individuals participating is honoured as solutions to problems are generated through collaborative discussions and personal reflection. Peer coaching, team teaching, instructional coaching, and literacy coaching possess all the qualities of powerful learning designs.

The four models also shared similar goals and objectives. The ultimate goal of each model is to improve student achievement. The objective of each model is to improve

the quality of classroom instruction. Marzano (2003) illustrated the profound impact of instructional decisions on student achievement in his synthesis of 35 years of educational research. These models focus on improving the quality of classroom instruction using a powerful professional development approach.

The foundation of each model is the establishment of relationships that are contextually situated in mutual trust and respect. The premise of each program is rooted in both Vygotsky's socio-cultural theory and Bandura's social cognitive theory. Socio-cultural theory recognizes that cognition and meaning-making are socially constructed as opposed to individually constructed and emphasizes the cultural context in which learning and knowledge occur (Hetherington & Parke, 1993). Social cognitive theory stresses that factors including self-efficacy⁹ influence a person's behaviour and recognizes the importance of observation as a key aspect of how we learn (Santrock, 2003). Observational learning is a key component in each of the models.

Professional Learning Model in This Study

The model used in this study is a hybrid of the professional development designs explained above. The Think Literacy Team Teacher Initiative paired teachers, who were well versed in instructional strategies, with content-area teachers in order to facilitate school-based professional learning. The choice to assign the title Think Literacy Team Teacher as opposed to Literacy Coach was deliberately made in an effort to avoid hierarchical impressions that might be associated with the term coach and thus have the potential to negatively influence relationships before they became established. In addition, the choice not to assign the title of literacy coach was made because the individuals chosen to fill the positions came from a variety of content-areas with

expertise and teaching experience in areas including science, mathematics, family studies, geography, and English. In other words, the individuals chosen did not necessarily have additional qualifications that would classify them as reading specialists. The choice to not assign the title of instructional coach was a conscious one as well. The initiative, as it was perceived in its early stages, focused on the instructional strategies in the Think Literacy documents and it was felt that the title of instructional coach did not reflect the specific focus on literacy strategies. Finally, since the individuals hired for the positions were chosen by the Principal from the existing staff within the school, the term team teacher seemed to reflect more of a partnership approach. The position was titled Think Literacy Team Teacher (TLTT).

The model used in this study differed from peer coaching in the sense that the coaching was not reciprocal. Only the TLTT was trained in coaching techniques and engaged in additional professional learning with other TLTTs. The classroom teachers received no training or opportunities to observe the TLTT in the context of his or her own classroom. The model also differed from the more common definition of team teaching as the TLTT's focus was not on interdisciplinary connections. The model used in this study more closely reflected that of an instructional coach.

Only one TLTT participated in the study as the second site for the study did not have a TLTT in place. The TLTT's responsibility was to support classroom teachers by providing the professional development needed for content-area teachers to learn how to serve the literacy needs of all students well. The TLTT collaborated with science, mathematics, English, and geography teachers co-planning, co-delivering, and debriefing lessons for the purpose of assisting teachers in implementing three research-based

instructional strategies in their classrooms. In addition the TLTT also assisted these colleagues in developing and delivering units and lessons based on the gradual release of responsibility framework. Classroom teachers were also encouraged to focus on strategies that promoted metacognition such as explicit instruction, goal-setting, and self-assessment.

Effects on Teacher Practice and Student Achievement

In addition to the lack of a consistent definition of the terms, there is a lack of reporting of what teachers in collaborative relationships actually do in their classrooms (Gately & Gately, 2001). Furthermore, the majority of the literature referencing team teaching or coaching was focused on the development of successful relationships and not on the impact of that relationship on student achievement or teacher practice. A meta-analysis conducted by Murawski and Swanson (2001) found that only a few studies had collected assessments on the impact of team teaching on student achievement. More recently, Murray et al., (2009) found that there are “few empirical data to support any major claim in regard to the relation between peer coaching and student learning” (p. 205). In the section that follows, both qualitative and quantitative studies that examined the impact collaborative partnerships had on teacher practice and/or student achievement are presented.

A study by Murata (2002) used a qualitative approach to discover how team teaching informed teacher practice. Looking specifically at which characteristics of team teaching were perceived as most powerful, Murata (2002) identified co-planning as a key factor in team effectiveness. In this study, teachers in team teaching relationships, structured around planning interdisciplinary curriculum, reported significant changes in

other areas including assessment practices and use of class time, based on their participation in the collaborative relationship. An additional theme reported was an increased sense of community based on trust and respect. The teachers, involved in this study, believed that the strong sense of community that was established affected students' perceptions of the class in a positive way.

An experiment by Bowman and McCormick (2000) that trained one group of teacher candidates enrolled in an undergraduate teacher education program in peer coaching techniques revealed positive results related to field experiences. Advantages resulting from peer coaching included increased effectiveness of competencies related to clarity skills, pedagogical reasoning, and action. Researchers concluded that the consistent feedback provided by peer coaches helped pre-service teachers integrate effective strategies into instruction. In a qualitative study, Darby (2008) reported results from a school-wide change initiative, in which teachers learned new forms of literacy instruction. The support received from the school's full time literacy coach led to improvements in the quality of teaching. Demonstrations of lessons and non-evaluative assistance by literacy coaches attributed to more effective classroom instruction and a stronger sense of professional understanding.

A qualitative study by Sturtevant and Linek (2007) that aimed to understand how participation in a literacy coaching program affected coaches' professional development, also found positive changes reported in classroom practice. Themes included making students more active and responsible for their own learning, modification of teachers' and students' roles, increased use of a wider variety of strategies. In addition, coaches reported becoming more metacognitive and reflective about their teaching decisions.

A study by Bruce and Ross (2008) examined the effects of peer coaching on shifts in instructional practice and teachers' beliefs about their instructional capacity to teach mathematics. Peer coaching was combined with a four session in-service series which was designed to direct peer attention to instructional decisions, enhance content related pedagogical practices, increase implementation of reform-based mathematical teaching, and enhance teacher efficacy. Researchers reported three key findings that occurred over a six-month period in which each teacher was observed by his or her peer on three occasions. The first finding reported that teachers shifted their mathematics teaching practices moving toward a more constructivist approach. The second finding was that the program had positive effects on teachers' beliefs about their capacity as teachers of mathematics, and some participants reported that peer coaching was a more successful approach than previous professional development experiences. Finally, just as Sturtevant and Linek (2007) found, Bruce and Ross (2008) concluded that peer coaching led to more frequent and explicit self reflection.

Contrary to the findings of Sturtevant and Linek (2007) and Bruce and Ross (2008), a study by Murray et al., (2009) concluded that coaching conversations lacked depth necessary to encourage reflection or the renegotiation of current practice on the part of the teacher. Examining the effects of peer coaching in mathematics, focusing specifically on whether it could improve students' achievement, Murray et al., (2009) employed an experimental design to test student outcomes, paired with a qualitative component that examined teachers' collaborative interactions. In addition to concluding that coaching practices did not prompt the dissonance necessary to challenge existing beliefs about instructional practice, researchers found no significant improvement of

mathematics achievement of students whose teachers participated. A lack of training in how to conduct post observation interviews is the likely reason why conversations did not push teachers to question their current mental models. Failure to reach higher levels of collaboration was often attributed to lack of training (Kommer, 2000; Mastropieri, Scruggs, Graetz, Norland, Gardizi, & McDuffie, 2005).

The literature review of the effects of professional development models in which teachers learn from each other had on teacher practice and student achievement revealed key insights that would be particularly relevant to staff developers responsible for the implementation and design of coaching and team teaching programs. Co-planning, consistent feedback, and non-evaluative support were identified as key components in increasing teachers' efficacy, engagement in reflection, and the quality of classroom instruction. Furthermore, it was reported that collaborative partnerships resulted in a greater sense of community. Implications and recommendations for implementation will be further expanded upon in the section that follows.

Issues Associated with Implementation

The literature review also provided insight into issues associated with implementing initiatives in which teachers learn from each other. Research highlighted: the need to establish collaborative relationships based on shared philosophy, compatible personalities, and voluntary participation; the importance of staff development and a clear definition of roles and expectations in fostering collaborative relationships; administrative support including frequent communication and monitoring as well as the provision of common planning time. The literature review that follows examines these issues.

Establishing Collaborative Relationships and Defining Roles and Expectations.

A number of studies examined variables associated with effective collaborative relationships. Gately and Gately (2001), identified components of relationships contributing to the development of a collaborative learning environment and described the developmental stages as team teaching relationships evolved from the beginning stage to the collaborative stage. The authors argued that knowledge of the developmental stages of partnerships may diminish frustration and expedite the movement toward collaboration. Magiera, Smith, Zigmond, and Gebauer (2005) also offered recommendations for the evolution of effective collaborative relationships. They believed that failure to reach the collaborative stage was due to lack of training as well as lack of time to plan and discuss curricular goals and individual student needs.

Murawksi and Swanson's (2001) meta-analysis of research examining collaborative models found that a major variable in the success or failure of a peer coaching or team teaching program appeared to be the teachers' personalities. Noonan, McCormick, and Heck (2003), pointed out the growing body of data suggesting how partnering teachers related to one another, influenced what they did in the classroom and, in fact, whether the collaboration survived. Stewart and Perry (2005) also found that in order for relationships to reach their full potential, interdependence among teachers should be valued equally, pairing must occur through mutual agreement, and teams must have compatible personalities and teaching styles. This reiterates the importance of choosing the right person for the role and providing professional learning focused on relationship building and the development of interpersonal skills.

In addition to understanding the evolution of collaborative relationships and how to foster effective collaboration, participation in such relationships need to be considered. In a case study of team teaching in content-areas (Mastropieri et al., 2005), findings from four long-term qualitative investigations of team teaching in science and social-studies content-area classes were presented. Positive perceptions were not only associated with similar beliefs about teaching and mutual respect of one another but were also reported more by voluntary participants than by teachers who were assigned to team teach. Conclusions outlined by Mastropieri et al., (2005) echoed that of Noonan et al., (2003): successful relationships were fostered through the practice of effective teaching behaviours and compatibility of perspectives. In addition, voluntary participation and administrative decisions regarding matters such as the allocation of common planning time were identified as important in fostering relationships.

Stewart et al., (2005) found that not only was it important to share a common pedagogical philosophy but individuals participating in collaborative relationships needed to understand the roles and expectations associated with that relationship. This finding was based on a two year qualitative study that investigated how the teaming of 14 English teachers and content specialists might be viewed as a model for teacher development. A study by Murray et al., (2009) noted that a lack of clearly defined roles created particularly difficult situations for peer coaches during debriefing. Sturtevant and Linek (2007) also found that uncertainty about what was expected of them created a dilemma for teachers engaging in collaborative partnerships and as a result, relationships were temporarily affected. Reinforcing these findings, Knight (2009) cautioned that teachers who perceived their coach as an administrator rather than a peer would hesitate

to open up about their needs, thus supporting the notion that role definition is important in establishing relationships.

Using a mixed method inquiry design, Mraz et al., (2008) surveyed and interviewed principals, teachers, and literacy coaches to explore the perceptions and expectations of roles and responsibilities of literacy coaches. Participants in this study raised “concerns about the interpretation of the coach’s role, the activities in which the literacy coach engage, and the extent to which coaches are able to apply and enhance their specialized training” (p. 151). In the national survey of high-school and literacy coaches conducted by Blamey et al., (2009), 74% of the respondents indicated that their role remained undefined and that this lack of job clarity made it difficult to devote their time to teachers as they were often used in other capacities unrelated to literacy.

Other research on team teaching also stressed the importance of training in order to prepare individuals to function as teams (Kommer, 2000; Mastropieri et al., 2005; Murray et al., 2009). Murray et al., (2009) recommended that training programs include both role playing and video clips of post observation conferences to help address the ambiguity of roles and therefore, help to clarify roles of teachers in collaborative relationships. Such video clips might also be of assistance in helping administrators to better understand the role of coaches in school and enable administrators to provide better support to coaching initiatives.

Clear Definition of Roles and Expectations. Mraz et al., (2008) reported that principals in individual schools often determined the role of the literacy coach in that school although general guidelines for that role were written at the school board level. Jorissen et al., (2008) pointed out that administrators needed a clear understanding of the

role of the literacy coach or it was unlikely they would be able to communicate expectations. When administrators had a clear understanding of the roles and expectations, literacy coaching initiatives would be more likely to succeed.

Administrative Support. In addition to having a clear understanding of the role and communicating expectations, administrator support is important for the success of the program. Mastropieri et al., (2005) found that positive perceptions of collaborative learning models were associated with administration support. There are numerous suggestions offered on how administrators can support coaching programs.

Murray et al., (2009) stated that the school administrator played a critical role in the success of peer coaching as issues dealing with flexibility and the scheduling of time were within the administrator's control. Time was identified as a barrier in a number of studies focused on coaching or team teaching (Jorissen et al., 2008; Murray et al., 2009). Knight (2009) suggested that the provision of time was a way to increase the effectiveness of coaches.

In addition to scheduling and protecting time, it is the responsibility of administrators to address those on staff who are resistant to change. This can be done through class observations and reinforcement of the work of the coach. Knight (2007a) pointed out the importance of balancing between a top-down and bottom-up approach when implementing a coaching program and warned about the dangers of an implementation strategy that was purely one form or the other. Knight (2007a) cautioned that purely top-down approaches triggered resentment and resulted in a less than an effortful implementation of new strategies while purely bottom-up approaches were limited in the fact that they could lead to unsystematic adoption and incoherent school

improvement. Knight (2007a) indicated that approaches in which principals, coaches, and school staff worked together in support of each other had the highest possibility of impacting student achievement. Therefore, administrators must find a delicate balance when dealing with resisters.

Jorissen et al., (2008) suggested that administrators not only meet regularly with the coach but that they should include their coaches on school improvement teams and department meetings because of the valuable perspective the coach brings. The authors also suggested that administrators regularly place a coaching item on the agenda for staff meetings to maintain the momentum of coaching initiatives. Knight (2009) suggested that an administrator could support a coach by attending coaching workshops, making an effort to understand what the coach does, and actively supporting the conditions that support coaching in his or her school.

Roles for coaches are often ambiguous and expectations unclear. A review of the literature examining collaborative teaching partnerships suggested a need for staff development and explicitly defined roles to help ensure the success of relationships. Teachers who voiced dissatisfaction with the process indicated poorly defined role descriptions and lack of clear expectations from administrators. The need for voluntary participation and careful matching of partners must be recognized if relationships are going to evolve. Collaborative relationships are more likely to succeed if teachers have a shared philosophy and compatible personalities. Furthermore, the allowance of common planning time amongst team teachers is very important. Gately and Gately (2001) suggested that without common planning time, some team teachers move at a very slow pace in the development of their relationships.

Conclusion

The review of the literature brings to attention a number of concepts related to this study. Firstly, there is a need to address adolescent literacy development. Adolescents are lacking literacy skills as indicated by provincial testing results and lack of credits accumulated at the end of their grade 10 year. Individuals who have higher levels of literacy are rewarded and those who are not proficient are penalized, whether considering employment opportunities and job success or active social, cultural, and citizenship participation in society (Jones & Pignal, 1996). Although learners can directly benefit from the explicit teaching of learning strategies and metacognitive reflection, both are frequently overlooked as a tool for learning in secondary content-area classrooms. It is not solely the responsibility of the English teacher to teach literacy strategies. If the goal of content instruction is for students to gain an understanding of the materials, strategies taught in context, will increase the students chances of learning. Reasons why literacy instruction has not been wide-spread is that secondary school content-area teachers do not see the relevance of teaching learning strategies, feel a discredit to their subject area, and feel it is an added task.

Secondly, students who display greater metacognitive awareness also display an increase in achievement (Cross & Paris, 1988; Dewitz & Dewitz, 2003; Nakatani, 2005; Paris & Oka, 1986; Sperling et al., 2004; Zimmerman & Pons, 1986). However, strategy instruction is complex and comprised of a number of elements including the choice of instructional strategies teachers employ in their classrooms along with how teachers employ the strategies. When strategies are employed in conjunction with the development of metacognitive awareness, it is more likely that students will internalize strategy use

and therefore know when and why to execute the use of strategies independently. Harris, Alexander, and Graham (2008) noted that “conceptual and operational specificity must be dealt with even before researchers can begin to formulate measures or interventions that are presumed to target students’ general or domain-specific strategic processing” (p. 89).

Therefore, to obtain conceptual clarity, the following definitions of instructional strategies, cognitive strategies, and metacognition are offered. Instructional strategies are activities that a teacher uses to teach a concept. The three instructional strategies chosen for this study included Frayer Diagrams, Rapid Write, and Think-Pair-Share. Cognitive strategies are internal processes in which learners engage to make meaning of material. Some of these include clarifying, questioning, synthesizing, activating prior knowledge, making connections, visualizing, etc. Metacognitive strategies include learners’ declarative, procedural, and conditional knowledge about their own cognition as well as how they regulate their cognition (including planning, monitoring, and evaluating cognition).

“Instructional strategies chosen by individual teachers have an impact on student achievement” (Marzano, 2003, p. 71). Teachers can employ instructional strategies that are rote or elaborate in nature. An example of a rote instructional strategy is a mnemonic device. Some commonly shared mnemonics include ‘Never Eat Sour Watermelon’ as a means to memorize direction – North – South – East – West and ‘B.E.D.M.A.S.’ to help students recall the order in which mathematical operations should occur (brackets, exponents, division and/or multiplication, addition and/or subtraction). Rote strategies are devices to aid in memorization but do not necessarily engage learner’s in higher level thinking.

On the other hand, elaborate instructional strategies engage learners in deep processing of information as they are often designed to target conceptual understanding. An example of an elaborate instructional strategy is a Frayer Diagram. When using the Frayer Diagram, students are prompted to identify and compare similarities and differences, clarify information, and decide what is important. Rapid Write and Think-Pair-Share are other examples of elaborate teaching strategies. Rapid Write is designed to activate prior knowledge, allowing opportunities for students to make connections between what they already know and the material being taught. Think-Pair-Share allows opportunities for students to share their thoughts with others and reflect on what they know about a topic. Strategies that promote deeper engagement with material, such as the ones described above, can aid in developing conceptual understanding more so than basic memorization or rote strategies can achieve.

Cognitive strategies are “cognitive processes that the learner intentionally performs to influence learning and cognition” (Mayer, 2001, p. 86). Examples include basic processes such as visualization, questioning, or clarifying. Singer and Chen (1994) proposed a classification of cognitive strategies to help interpret studies. The authors selected four major criteria in their conceptualization including: (a) source (externally imposed or self-generated); (b) orientation (task or person); (c) purpose (learning or performance); and (d) scope (task specific or generality). When cognitive strategies are externally imposed the learner relies on the expertise of an external source. The authors noted that learners “may forget to use, or forget how to use, an instructor-imposed strategy when needed” (p. 144). On the other hand, self-initiated strategies require a high degree of trial and error but are preferable to externally imposed cognitive strategies, as a teacher or mentor is not always available to provide assistance. The recommendation is to

teach both while helping individuals to internalize strategies and encourage spontaneous use of strategies. Only when learners are provided with opportunities to implement strategies under a variety of conditions can they understand which strategies work and under which conditions certain strategies are useful. The elaborate teaching strategies used in this study were employed by teachers in an effort to promote the use of cognitive strategies. Therefore the cognitive strategies promoted in this study came from externally imposed sources as opposed to being self-generated.

Finally, metacognition includes knowledge about oneself as a learner, knowing strategies and how to execute strategies, and knowing when and why to use various strategies. For example: knowing that I am a more attentive listener if I sit near the front of the classroom or knowing that studying for a multiple choice test requires different preparation than studying for an essay type test. Metacognition also includes the regulation of cognition which includes the planning, monitoring, and evaluating learning (Schraw & Moshman, 1995). For example: monitoring comprehension while reading or listening. The operational definitions of these strategies must be kept in mind when considering the results of this study. Professional development efforts must focus on developing an appreciation of the benefits related to strategy instruction. Only when teachers examine the relationship between literacy strategies and how strategies can support their instruction will they begin to change their teaching practice.

Finally, team teaching is broadly defined in the literature. Two common forms include inclusion and interdisciplinary models. Both models included two or more educators who share classroom responsibilities of co-planning, co-delivering, and assessing student work. The provision of common planning time, the support of administration, and the importance of building trust were important factors in moving

teams toward effective collaborative relationships. Research indicates that team teaching has great potential to being an effective model for professional development if carefully implemented.

F. Significance of the Study

This study holds both scholarly and practical implications. There is general agreement that the relationship among self-regulatory learning constructs (including metacognition and strategy use) are largely unknown (Sperling et al., 2004). This study holds the potential to enhance scholarship on the effect strategy-based training (specifically a collection of strategies that have been compiled and released by the Ministry of Education in Ontario) has on students' metacognitive awareness.

Schraw (1998) proposed that metacognitive *knowledge* and *regulation* could be improved using a variety of teaching strategies. This study will examine the effect Think Literacy strategies have on the two components of metacognition. Researchers agree that the two components are related but their exact relationship is unknown (Sperling et al., 2004). Schraw and Dennison (1994) provided evidence that showed students with high *knowledge of cognition* were more likely to demonstrate greater *regulation of cognition* and that *knowledge of cognition* was a better predictor of performance than *regulation*. Reporting on two studies, Sperling et al., (2004) identified that *regulation of cognition* was more highly correlated with strategy use than *knowledge of cognition* in one study and the opposite in another. Hartley (2001) found there was no significant difference between the two components and strategy instruction in a hypermedia environment. One purpose of this research was to determine if there was a difference between the two components of metacognition and exposure to strategy-based instruction in a team

teaching classroom. This study will help uncover if strategy-based instruction, through a team teaching approach, affects the two components of metacognition differently. This is important because the learner's capacity in each of the metacognitive components is vital to success in learning.

Furthermore, there is a lack of research that documents the effects of team teaching on student outcomes and a lack of research that documents what teachers actually do in classrooms where they learn from each other. A meta-analysis conducted by Murawski and Swanson (2001) found that only a few studies had collected assessments on the impact of team teaching on student achievement, and even fewer had reported data on the actions of the team teachers themselves. This study is significant because it will add to the body of knowledge regarding the impact that the delivery model has on students' metacognition and will also provide documentation of the actions and outcomes of the team teaching/coaching approach. This may help school boards to better understand the degree to which team teaching/coaching does or does not support content-area teachers in developing students' literacy skills and in turn, students' understanding of the content being taught. Careful analysis of this information will provide school boards with direction for future program planning.

CHAPTER III

III. DESIGN AND METHODOLOGY

A. Context of the Study

The Student Success Initiative (SSI) is helping to focus attention on literacy at the secondary school level. Also since its inception, results from the Ontario Secondary School Literacy Test (OSSLT), conducted by the Education Quality and Accountability Office (EQAO), indicate that greater attention needs to be paid to literacy in the content-areas. School boards need to support all teachers in providing an instructional environment in which all students succeed. In an effort to build teacher capacity for informed decision-making, the intervention in this study focused on providing school-based professional learning through the Think Literacy Team Teacher Initiative.

Intervention

Serving as an instructional coach for content-area teachers, the Think Literacy Team Teacher (TLTT) worked toward building professional relationships in which collaboration and reflection took place. The TLTT assisted in planning, co-teaching, and debriefing classroom instruction focusing on three instructional strategies (*Think Literacy Cross-Curricular Approaches*) that were chosen with the intent to help students gain a better understanding of the content delivered. The TLTT's role was that of a facilitator, not an evaluator or supervisor. Science, mathematics, English, and geography teachers worked with the TLTT in the second semester of the school year.

Common preparation time was provided, affording the TLTT and content-area teacher time to think, discuss, and plan. Additional time was allocated so that the TLTT could co-deliver instruction in the classroom. During this time, teachers were asked to

collaboratively focus on explicit strategy instruction and prompt metacognition through the delivery of the three instructional strategies which included the Frayer Diagram, Rapid Write, and Think-Pair-Share in each of the subject-areas. After the delivery of the lesson, teachers debriefed in a session that included a discussion about general observations, a reflection on the delivery and perceived impact of the instructional strategy, and planning next steps. The TLTT kept a weekly Log Sheet recording this information. The researcher provided direction on the amount of detail needed for each weekly Log Sheet and reviewed the Log Sheets regularly to ensure that the degree of detail necessary was being met.

The TLTT worked with teachers a minimum of 12 times for each class included in this study. This included four co-planning, four in-class, and four co-debriefing sessions for each class included in this study. Each of the in-class sessions lasted one entire class period, which was 76 minutes in length. Co-planning and co-debriefing sessions did not last the entire length of a class period but were to occur with every team taught lesson.

Four sessions were chosen for a couple of reasons. First, considering the TLTTs schedule, the number of periods available throughout the day, and the number of classes comprising the experimental group, four in-class sessions was a reasonable amount of time to expect the TLTT to devote to each class in this study. Second, four sessions provided an opportunity for the TLTT and content-area teacher to introduce each of the three instructional strategies. Last, four sessions of team teaching amounted to over 300 instructional minutes. This did not include the time teachers spent co-planning and co-debriefing. It seemed reasonable that three hundred minutes of common instructional

time would allow for students to acquire an understanding and assess the usefulness of each strategy and allow for a fair assessment of the intervention.

In a study that examined the relationship between strategy awareness and strategy use, Paris et al., (1982) found differences in children's acquisitions of memory strategies between two groups after only one day of training. The group that received rationale and feedback about the utility and benefits of using five memory strategies taught not only increased their mean number of pictures recalled, they also maintained higher levels of effective strategy use and lower levels of passive behaviour than the group that received a demonstration of the strategy only. However, it should be noted that there was no evidence provided that students retained knowledge of strategies or continued the use strategies.

The *Think Literacy: Cross Curricular Approaches 7-12* were built on the premise that the key to helping struggling students without sacrificing content while continuing to meet the needs of all students is teamwork – a whole school, cross-curricular approach to literacy. “When teachers of all subjects use the same proven strategies to help their students read and write in the language of their subject discipline, they build on the students’ prior knowledge, and equip them to make connections that are essential for continued learning” (*Think Literacy: Cross Curricular Approaches 7-12*, 2003, p. 1).

The goals of the Think Literacy Team Teacher Initiative were to help teachers understand the thinking processes that support students’ attempts to learn and in turn, help all students to become actively engaged in learning by increasing their awareness of their own cognition. This study attempted to accomplish this by utilizing three instructional strategies contained in the *Think Literacy: Cross-Curricular Approaches*,

Grades 7-12 (2003) through an instructional coaching approach while focusing on the gradual release of responsibility and engaging students in metacognition.

The *Think Literacy: Cross-Curricular Approaches, Grades 7-12* (2003) are a series of documents that provide practical teaching approaches and recommend related resources that apply across subject areas in grades 7 to 12. Each instructional activity is introduced with a two page spread containing all the information needed by teachers to use the activity in the classroom. The left-facing page describes the activity and its benefits, and offers tips and resources. The right-facing page describes what teachers and students do before, during, and after the instruction. The documents also contain additional resources for teachers and students such as suggestions for accommodations and black line masters. The documents are divided into four sections: a) reading strategies; b) writing strategies; c) oral communication strategies; and d) appendices. Teachers are encouraged to select the activities that best meet the needs of their students and subject area and to use instructional strategies in each of the areas (reading, writing, and oral communication) as learning is enhanced when skills and strategies are explicitly taught through an integrated program (p. 4).

The *Think Literacy Cross-Curricular Approaches Grades 7-12* (2003) and *Subject-Specific* documents are a compilation of over 60 instructional strategies. Some of these instructional strategies have a greater likelihood of making a significant difference in the learning processes of students than others. Pressley et al., (1989) stated that there is not enough professional evaluation of techniques that are recommended in the literature. Furthermore, the author and his colleagues identified the ideal instructional model as one

where teachers gradually introduce new techniques only after “old” techniques have been mastered (p. 309).

When the TLTT co-planned with content-area teachers, part of her role was to recommend instructional strategies that could be used to optimize learning. Frayer Diagram, Rapid Write, and Think-Pair-Share were the three instructional strategies chosen for this study.

A Frayer Diagram is a visual organizer that is designed to help students understand key words and concepts. In this strategy, students identify essential and non-essential characteristics of a concept. The Frayer Diagram can be used to help develop understanding of key concepts and vocabulary, draw on students’ prior knowledge, and identify relationships between concepts (Think Literacy Cross-Curricular Approaches Grades 7–12, 2003).

Rapid Write was chosen as an anticipatory writing strategy that could be used to access students’ prior knowledge. In this strategy, students are given a pre-determined amount of time to respond to a prompt and directed to quickly record as much information as they can without editing. Teachers can further extend the instruction by having students classify and organize their ideas or having small groups of students share their rapid writing and compose a short collaborative paragraph on the topic (Think Literacy Cross-Curricular Approaches Grades 7–12, 2003).

Think-Pair-Share was chosen as an oral communication strategy with the intent to provide students an opportunity to think aloud and as a process to acquire and reflect on information. In this strategy, students first work individually to consider what they know about a topic or determine a solution to a problem. Students spend several minutes

thinking about and writing down ideas based on a prompt. Next, students partner with a peer to share their ideas. During peer discussions, students have an opportunity to clarify their ideas and understanding as well as develop active listening skills. Finally, the entire class comes together and student pairs have an opportunity to share their ideas with the whole class. The process is intended to encourage students to reflect on subject content, deepen understanding through clarification, and develop skills for small group discussion (Think Literacy Cross-Curricular Approaches Grades 7–12, 2003).

Think Literacy Team Teacher Training

Four aspects of training were addressed in the professional development of the TLTT: (1) The first aspect included information on gradual release of responsibility and metacognition along with an examination of the Frayer Diagram, Rapid Write, and Think-Pair-Share. (2) The second aspect consisted of advancing the TLTT's understanding of the complexity of good strategy use. This included an examination of instructional components, including information processing models, and the characteristics of effective strategy users. (3) The third professional learning opportunity included a focus on the complex role of coaching and ways to strengthen and refine leadership. (4) The fourth aspect in regard to the professional learning of the TLTT had been occurring since the program began in the previous school year and involved facilitated communication amongst the members of the coaching group. The 12 TLTTs were brought together once a month throughout the school year for half a day for a facilitated meeting in which they were encouraged to share successes and challenges associated with their roles and implementation. An electronic e-mail 'conference' was also accessible. TLTTs and members of the Student Success Committee were the only

members who had access to read and write within this electronic environment. The researcher was a member of the Student Success Committee and had unrestricted access to the communications posted in the e-mail conference.

The Think Literacy Team Teacher Initiative

In a recent publication reviewing studies on literacy coaches in school boards in Ontario, Lynch and Alsop (2007) stated that literacy coaches played an important role in elementary schools. In Ontario, school boards use different language to refer to their literacy support specialists – including literacy coaches, facilitators in literacy, itinerant teachers, literacy resource teachers, and family of schools literacy coordinators (Lynch & Alsop, 2007). Team teachers or literacy coaches are not common in secondary schools. Fullan et al., (2006) identified professional learning in-context, embedded in teachers' daily work, as the only learning that would change classroom instruction. Joyce and Showers (1996) identified coaching as having the highest impact on transferring knowledge and skills learned into classroom practice. There is a lack of research regarding the effect team teaching/coaching has on student achievement. This research will help us to acquire a greater understanding of the effect of team teaching/coaching on secondary school students' metacognition. It will also help educators to discover more about the potential of a team teaching/coaching approach in regard to building collegial relationships and changing instructional practice at the secondary school level.

Funded through the Student Success Initiative, the TLTT Initiative began in the second semester of the 2006/2007 school year in nine secondary schools and expanded to two additional secondary schools in the first semester of the 2007/2008 school year. In the second semester of the 2007/2008 school year, the school that was one of the sites for

this study was the 12th school in the Board to launch the project. Each school received funding for one TLTT position. The individuals who agreed to take on the role of the TLTT at each school were existing staff members chosen by the principal based on their interpersonal skills and expertise in the area of classroom instruction. The TLTT's role was to partner with content-area teachers in delivering explicit instruction and prompting metacognition through the use of instructional strategies including the Frayer Diagram, Rapid Write, and Think-Pair-Share. The purpose was to help students become more strategic learners by increasing students' metacognition and to help content-area teachers better understand the thinking processes that support students' attempts to learn. Time was provided during the day for the TLTT to co-plan, co-deliver, and co-debrief lessons with content-area teachers. The team teaching approach facilitated school based professional learning.

Initial training for the TLTTs took place in January 2006. Kathy Egawa, a veteran instructional coach from the northwestern United States of America, facilitated a workshop where she outlined the role of an instructional coach, examined the collaborative skills needed and provided troubleshooting tips. Various professional reading was distributed and each TLTT received a copy of Cathy Toll's book titled *The Literacy Coach's Survival Guide: Essential Questions and Practical Answers*. In February of 2007, the group attended the Consortium on Reading Excellence (C.O.R.E.) Conference. Keynote sessions and speakers included experts in adolescent literacy such as Dr. Douglas Fisher, Dr. Timothy Shanahan, Dr. Susan Neuman, and Dr. E. D. Hirsch. Sessions focused on ways to facilitate student literacy achievement and the creation of school-wide literacy initiatives. The TLTTs and members of the Student Success Steering

Committee received the book, *Creating Literacy-Rich Schools for Adolescents* (Ivey & Fisher, 2006). Monthly meetings were scheduled for the 2007/2008 school year to provide the TLTTs with additional professional learning, support, and time to collaborate. These meetings took place once a month for half a day and were facilitated by teacher consultants and team leaders. Also, an electronic conference set up in the school Board's internal email system, FirstClass, was established providing further opportunities for sharing and reflections.

Delivery of Instruction

Key messages about instructional design and delivery are suggested on page two in *Think Literacy Cross-Curricular Approaches Grades 7-12* (2003). These include: focusing on before, during, and after phases of learning; teaching literacy strategies explicitly before providing a gradual release of responsibility; modeling, teaching, and guiding practice; and encouraging goal setting. These suggestions are rooted in a socio-cultural perspective on learning. The TLTT was asked to follow this outline.

The TLTT was scheduled for two 'teaming periods' per day and assigned one regular class. Together TLTT and the content-area teachers used the three identified activities (Fayer Diagram, Rapid Write, and Think-Pair-Share) from the *Think Literacy* documents. In addition, the TLTT was asked to focus on explicit instruction and prompt metacognition to help students become effective strategy users.

B. Specific Methodology

The methodology for this study combined a quasi-experimental design and a case study. An attempt to answer the research hypotheses required the researcher to measure the effect of the intervention in a natural school environment, and therefore a quasi-

experimental design was used. An understanding of the participants' experiences, during the intervention, required more depth and therefore the researcher undertook a collective case study as appropriate qualitative research method to explore the research questions.

C. Quasi-Experimental Design

Quantitative methodology for this study involved the implementation of quasi-experiments. Quasi-experiments test hypotheses about the effects of treatments that can be actively manipulated to achieve some outcome (Shadish & Luellen, 2006). Quasi-experiments do not include random assignment of participants to groups (Creswell, 2002) and therefore a quasi-experimental, pretest/posttest research design was used in this study since random assignment of participants to control and experimental groups was not possible because of the day-to-day operations of the school.

Sites and Sample

Two secondary schools in a school board in Southwestern Ontario were the sites where this study took place. The schools were both located outside of the city. Both schools operated on a semester system and therefore they had two semesters in the school year, which lasted 97 school days each. There were four 76 minute periods plus a lunch period contained within the school day. The sample for this portion of the study consisted of grade 9 students enrolled in identified science, mathematics, English, and/or geography courses who chose to voluntarily participate in the study.

Both schools were located in middle-class neighbourhoods and served the surrounding area. There was a low enrollment of English Language Learners (ELL) in both schools. The credit accumulation scores for grade 9 students in both schools, in the previous school year, fell within 4.1 percentage points. This indicated that there was not a

large difference in the credits accumulated by students at the individual schools. There was a grade 9 enrollment difference of only fifteen students between the two schools; one with 199 grade 9 students enrolled and the other with 214. Therefore, when comparing participants in all three groups, the researcher was confident they were very similar in regard to socio-economic status, percentage of ELL, and academic achievement.

Data Collection and Sample Characteristics

“A convenience sample, a form of non-probability sampling, in which the researcher selects participants because they are willing and available to be studied” (Creswell, 2002, p.167) was used. There were two control groups for the quantitative portion of this study (see Table 4). One was comprised of grade 9 students who were enrolled in academic or applied science, mathematics, English, and/or geography classes during the first semester of the school year at the same school as the experimental group. They were taught by the same teachers who taught the experimental group during the study. The purpose of having the first control group was to enable the researcher to compare the first control group’s posttest responses (taught by teachers in the first semester) with the experimental group’s posttest results (taught by the same teachers in the second semester). During the first semester the teachers did not have the assistance of an instructional coach and did not use Frayer Diagrams, Rapid Writes, or Think-Pair-Share strategies. In addition, the gradual release of responsibility framework and the metacognitive awareness had not been introduced.

The second control group was comprised of grade 9 students who were enrolled in academic or applied science, mathematics, English, and/or geography classes in the second semester at the school where no intervention took place. The experimental group

for this portion of the study was comprised of grade 9 students who were enrolled in academic or applied science, mathematics, English, and/or geography classes in which the same teacher who taught the courses in the first semester was again teaching the courses in the second semester of the school year.

Table 4

The Make of the Experimental and Control Groups in this Study

Control Group 1 School A February 2008	Experimental Group School A TLTT Project February 2008-June 2008	Control Group 2 School B No Intervention February 2008-June 2008
Grade 9 students enrolled during semester 1 in the following courses (in which the same teacher taught the same course in the second semester)	Grade 9 students enrolled during semester 2 in the following courses (in which the same teacher taught the same course in the first semester)	Grade 9 students enrolled during semester 2 in the following courses:
ENG 1D-01 Academic English ENG 1P-02 Applied English MFM 1P-04 Applied Mathematics SNC 1D-01 Academic Science CGC 1D-03 Academic Geography CGC 1P-02 Applied Geography	ENG 1D-02 Academic English ENG 1P-01 Applied English MFM 1P-03 Applied Mathematics SNC 1D-02 Academic Science CGC 1D-04 Academic Geography CGC 1P-01 Applied Geography	ENG 1D-05 Academic English ENG 1P-01 Applied English MFM 1P-01 Applied Mathematics SNC 1D-03 Academic Science CGC 1D-02 Academic Geography CGC 1P-02 Applied Geography
Post questionnaire only – administered at the end of the first semester	Pre and post questionnaire – administered at the beginning and the end of the second semester	Pre and post questionnaire – administered at the beginning and the end of the second semester

These academic subjects were chosen because it is compulsory that students take these four subjects during their grade 9 year. Science and mathematics were chosen because typically, these subjects do not exclusively focus on the written word in order to make meaning out of course content. English and geography were chosen because the content relies heavily on text for comprehension and meaning making. Where possible, both academic and applied streams were included in order to examine differences between students in these two streams. Examining results from the four compulsory subjects would allow the researcher to draw comparisons across subject areas.

In January, at the end of the first semester of the 2007/2008 school year, grade 9 students who comprised of the first control group were approached by the researcher and asked to participate in the study. Students choosing to participate were asked to sign a consent form and a posttest was administered during one of the regularly scheduled class periods. The second control group (the control group that was located in the school where the intervention did not occur) was asked to complete both a pretest and a posttest. The pretest was administered in February at the beginning of the second semester with the purpose of establishing base line data for this group. The posttest was administered in early June, at the end of the second semester. A similar approach was applied to the experimental group - the questionnaire was administered in February and June as well.

The Instrument

A search was conducted for a reliable and valid research instrument and an examination of various research instruments ensued. The Thinking about Reading Index (TARI) created by Schreiber (2003), a 45-item questionnaire that measures the two components of metacognition on a five-point Likert-scale, was examined. This instrument, developed for elementary school students, enables students to indicate their perceptions about their metacognitive and self-regulatory abilities while reading. The Metacognitive Awareness of Reading Strategies Inventory (MARSI) created by Mokhtari and Reichard (2002) was also examined. This 30-item Likert-scale questionnaire was designed to assess adolescent readers' metacognitive awareness and perceived use of reading strategies while reading academic or school related materials. Both the above mentioned instruments measured metacognition as it relates specifically to reading. The TLTT Initiative focused on a broader definition of literacy. Content literacy is defined as

the skills and knowledge in reading, writing, speaking, listening, representing, and viewing in subject specific disciplines that ensure that learners make meaningful connections between what they know and what they need to know (The Ontario Curriculum, English Revised, 2007). Therefore an instrument that was broader in its measure of metacognition was required.

Other instruments such as the Inventory of Learning Styles (ILS) developed by Vermunt and Vermetten (2004) to measure several components of student learning including metacognitive regulation strategies was located but upon examination, it was found that the ILS was developed for use in higher education. The Learning and Study Strategies Inventory (LASSI), developed by Weinstein, was also considered but it too was considered a measure more appropriate for use in higher education (Flowers, 2003). The Survey of Reading Strategies Inventory (SORS) developed by Mokhtari and Sheorey (2002) was developed to measure adolescent and adult ESL students' metacognitive awareness and perceived use of reading strategies while reading academic material so it too was discarded. The MAI (Schraw & Dennison, 1994), a questionnaire comprised of fifty-two self-report items that were divided into two scales, was also considered. However, this particular instrument was created for an adult population so it too was discarded. Finally, a version of the MAI that was developed for younger students was located and decided upon as the ideal instrument for this study (see Appendix I).

The Jr. MAI (Sperling et al., 2002) is comprised of 18 self-report items that are divided into two scales. These two scales represent the two components of metacognition: *knowledge of cognition* and *regulation of cognition*. First, the *knowledge of cognition* scale measures an awareness of one's strengths and weaknesses, knowledge

about strategies, and why and when to use those strategies. The scale is comprised of nine items. Sample *knowledge of cognition* item is, “I am a good judge of how well I understand something.” The second scale, consists of nine *regulation of cognition* items, and measures knowledge about planning, implementing, monitoring, and evaluating strategy use. An example of a *regulation of cognition* item is, “I ask myself questions about how well I am learning something while I am learning something new.”

Participants noted their agreement with each statement by responding to a 5-point Likert scale. A response of one corresponded to a statement that the individual felt was never true of them. A response of five corresponded to a statement that the individual felt was always true of them.

Sperling et al., (2002) completed a factor analysis¹⁰ that supported distinctions between the two components of cognition – *knowledge of cognition* and *regulation of cognition*. Coefficient alpha for the entire instrument reached .82. “The widely-accepted social science cut-off is that alpha should be .70 or higher for a set of items to be considered a scale, but some use .75 or .80 while others are as lenient as .60” (Scales and Standard Measures). Based on findings from two studies, this inventory had been shown to be a reliable measure of metacognition related to learning academic tasks for younger students (Sperling et al., 2002).

The average completion time was approximately 10 minutes. To help ensure that the students recorded their student identification number, grade, and gender, prior to collecting the questionnaire, the researcher gave students a verbal reminder regarding this information. The inventory included brief cover instructions informing individuals that the purpose of the instrument was to find out more about how they learn. Teachers were

asked to review the instructions aloud with each class prior to administering the instrument. The rating scale (1-5) was provided. Individuals were told that responses were confidential and would not affect class grades in any way and that they should answer each question as carefully and truthfully as possible.

In February, at the beginning of the second semester, all grade 9 students who were enrolled in the identified science, mathematics, English, and/or geography classes comprising the experimental group were approached by the researcher and asked to participate in the study. The Jr. MAI was administered in the same manner as described above. The posttest was administered in early June.

In all cases involving data collection, students used their student number as an identifier in order to ensure that researchers could analyze and draw comparisons between pre and post questionnaire responses. Although it was common practice for students to use their student numbers to identify themselves, teachers were encouraged to have a list of their students' student numbers readily accessible in case a student had forgotten this information. Although there was no time limit set for the instrument, the average administration time was approximately 10 minutes.

Procedures for Data Analysis

The first control group's posttest Jr. MAI data was entered in to a spreadsheet containing 22 fields. Fields represented the students' identification number, grade (in case there was a student who was repeating the course and was in another grade), gender, group status (control or experimental), and the 18 items on the questionnaire. The researcher went through the same process described above with the pretest data from the second control group and the experimental group in February and the posttest data from

the second control group and the experimental group in June. The completed spreadsheet was imported into the statistical analysis software, SPSS (version 13.0). The 22 items from each student in the control group and each student in the experimental group in which pretest and posttest matches were found, were copied and pasted into SPSS, creating a data file containing 40 variables including the student's identification number, grade, gender, group status, 18 pretest items, and 18 posttest items).

The items that comprised each subscale (*knowledge of cognition* and *regulation of cognition*) were computed for both the experimental and control groups. To test the null hypothesis (grade 9 students who participated in mathematics, science, English, and/or geography classes where *Think Literacy Cross-Curricular Strategies* were delivered, through a team teaching approach at one secondary school, would experience no significant positive change in metacognitive awareness), the non-parametric Wilcoxon signed-rank test was used to compare the distributions of the pretest and posttest subscale measures for each group. This was the appropriate test to use because the data were ordinal. Huck (2004) described the Wilcoxon test as ranks that are based on the absolute value of the difference between the two test variables. He stated that the sign of the difference was used to classify cases into one of three categories: differences below 0 (negative ranks), above 0 (positive rank), or equal to 0 (ties). This would allow the researcher to determine if a significant change occurred (and the direction of the change) within each group from the time of their pretest to their posttest. If there was a statistically significant increase in the experimental group, the researcher would reject the null hypothesis. The researcher also analyzed differences between the experimental and control group using the Mann Whitney *U* test¹¹. Analysis of differences between these

two groups' pretest and posttest scores would help the researcher to determine if significant differences existed between the two groups prior to and after the intervention.

Next, the two subscales (*knowledge of cognition* and *regulation of cognition*) would be analyzed using the Spearman rho to test the second hypothesis (of the two components of metacognition, the regulation component will be more positively correlated with exposure to *Think Literacy Cross-Curricular Strategies* than the knowledge component). The Spearman rho statistic measures the rank-order association between two ordinal variables (Creswell, 2002). This was the appropriate test to use since both the variables were ordinal in nature. The second hypothesis would be evaluated based on the statistical analysis of the data. Throughout the study, the researcher made every effort to control for situations that would threaten statistical conclusion validity including enlisting the advice of experts when performing the statistical analysis.

Internal Validity

A number of factors that may have jeopardized the internal validity of the study were considered. Having both an experimental group and a control group in this study assisted the researcher in determining if a historical effect took place. Relatively speaking, both the experimental and control groups would experience the same activities except for the intervention during the experiment. Since the researcher did not randomly assign participants to groups, thus, using a quasi-experimental approach, potential threats such as maturation, selection, and mortality were increased (Creswell, 2002). The threat of maturation was controlled since participants in both the experimental group and control group consisted of grade 9 students who were by nature, generally maturing and developing in similar ways. Guarding against the dangers that accompanied the threat of

selection, specific individuals were not sought out by the researcher to participate in the study. All grade 9 students enrolled in the identified classes at each of the two sites were invited to participate regardless of other variables that they might have had in common (i.e., higher academic achievement). Finally, the threat of mortality was addressed through the potentially large sample size and the fact that there was not a high rate of student transience at the selected sites. Furthermore, the instructional period of one of the control groups concluded near the time in which the posttest was administered so the diffusion of treatments did not occur since the intervention was not yet in place. Diffusion of treatment was unlikely for the second control group since the teachers from the two sites did not make contact with each other on a regular basis.

Sperling et al., (2002) indicated that self-report inventories were in some ways the least problematic technique as measures of metacognitive processing. However, with self-reported instruments such as the Jr. MAI, there is always the possibility of inaccuracy in responses. The researcher suspected that students may be less likely to provide truthful answers if they perceived that their responses may effect their grades in some way. An effort to limit this effect was made by making it abundantly clear to students that the results of the Jr. MAI would not have any bearing on the evaluation of their understanding of course content.

D. Case Study

The researcher used a collective case study to describe the interactions of the teachers and develop an in-depth understanding of the teachers' experiences based on their participation in the TLTT Initiative. "A case study is an in-depth exploration of a bounded system (e.g., an activity, event, process, or individuals) based on extensive data

collection” (Creswell, 2002, p. 485). The selection criteria formed the boundaries for the cases in this particular study. Teachers who had been selected for this case study were bounded by the common characteristics of teaching the same grade 9 compulsory courses during both semesters in one secondary school and their agreement to participate in the TLTT Initiative during the second semester of the 2007/2008 school year.

The researcher sought to explore and understand the experiences of the teachers involved in this project and provide a description of these experiences. In an effort to gain an understanding of individual teacher’s experience, a qualitative approach was necessary and appropriate. Coaching relationships are complex. An understanding of the context in which relationships emerged and evolved was critical to analyzing the experiences of the teachers participating in the TLTT Initiative. Hill and Crevola (1999) argued that changed beliefs and understandings were central to school reform. Insight into the context in which teachers change their beliefs and acquire new understanding is critical to supporting school reform. As such, a collective case study was used to explore the research questions in this study. A collective case study is one in which a researcher describes and compares multiple cases to provide insight into an issue (Creswell, 2002, p. 485). Since there were five teachers involved, each represented a unique and individual case in which their experience in participating in the TLTT Initiative may have varied. In addition, the TLTT’s experience represented a unique case. For these reasons, a collective case study was the most appropriate design to use.

Sites and Sample

The secondary school where the intervention took place was the site for the qualitative component of this study. The school had an enrollment of 936 students and a

staff of 63 teachers. In addition to the TLTT, five teachers had been identified as potential participants for the qualitative component of this study. One was male and four were female. These five teachers ranged in teaching experience from two years to thirty years. Due to the small sample size, in order to protect the anonymity of the teachers involved, specific information regarding individual's qualifications are not shared in this report. Teachers who agreed to participate in this study were asked to sign a consent form.

Data Collection and Sample Characteristics

Homogeneous sampling was used. "In homogeneous sampling the researcher purposefully samples individuals based on membership in a subgroup that has defining characteristics" (Creswell, 2002, p. 196). The defining characteristic these teachers shared was that they taught the same compulsory courses to grade 9 students in both the first and second semester of the 2007/2008 school year in the school in which the intervention is took place.

In case study research, the type of data collection procedures varies depending on the specifics of the research purpose and questions (Creswell, 2002). Forms of data collected for this study included personal interviews and documents. The purpose of the personal interviews was to gain insight into teachers' experiences that resulted from participating in the TLTT Initiative. One-on-one interviews were favoured by the researcher over focus group interviews because the researcher believed that the interviewees would be more comfortable and open in their responses if they were not amongst their colleagues. Prior to conducting interviews, the researcher sought consent from each participant.

In addition to the TLTT, five participants were identified as potential interviewees. Three of these five participants agreed to an interview. For those who agreed, the interviews took place in the teacher's classrooms at the research site the week immediately following their fourth team teaching session. In order to schedule these interviews in the week following the fourth session, the researcher used two methods to monitor the number of times that team teaching occurred for each classroom teacher. First, the researcher kept a record of the TLTT's weekly Log Sheets (see Appendix II). Second, the researcher asked the TLTT to indicate when the fourth team teaching session had occurred with each teacher involved in the project through e-mail. Once the fourth session had taken place, the researcher contacted the classroom teacher by e-mail to arrange for a mutually convenient time during the regular school day to schedule the interview. In accordance with Creswell's (2002) definition of "[d] 'Data recording protocols [as] forms designed and used by qualitative researchers to record information during observations and interviews'" (p. 211), the researcher used an Interview Protocol Form (see Appendix III) as a means of structuring the interview and recording the responses of the interviewee. Interviews lasted 30 - 40 minutes.

Another form of data collected for this study was public and private documents which included Log Sheets, Individual Conference Records (see Appendix IV), e-mail correspondence, monthly meeting minutes, and journal reflections. The researcher sought permission to use the documents from the appropriate individuals. Initially, the researcher assisted the TLTT in completing the Log Sheet and Individual Conference Record to ensure that the TLTT included the degree of detail necessary for data analysis. The Log Sheets provided a record of the instructional strategies that were delivered and the

amount of time the TLTT spent with each content-area teacher. The Log Sheets were submitted by the TLTT to the researcher weekly and stored as a record for future reference. The TLTT also completed an Individual Conference Record to record co-planning and debriefing meetings. The Individual Conference Records were submitted weekly by the TLTT to the researcher. The researcher reviewed both the Log Sheets and the Individual Conference Record upon obtaining them to ensure they had been completed and contain the degree of detail required. The TLTT also posted a weekly reflection in the online conference located within the school Board's internal e-mail. These documents were examined for development or corroboration of themes and for potential topics and issues that may be the basis for interview questions.

Throughout the project, the researcher had regular contact with the TLTT through presence at the scheduled monthly meetings, the exchange of e-mail correspondence, and on-site visits. Additional qualitative data resulted from these interactions. During the monthly meetings, the researcher recorded minutes. The researcher also kept a copy of all e-mail correspondence. Finally, the researcher kept a journal recording reflections of the discussions that ensued during various interactions that occurred throughout the duration of the project. This additional qualitative data served as an additional source to corroborate themes. It was examined using the procedures described in the following section.

“Triangulation is the process of corroborating evidence from different individuals, types of data, or methods of data collection” (Creswell, 2002, p. 280). As mentioned above, a variety of qualitative forms of data collected included personal interviews and documents from a number of different individuals. Transcriptions from interviews and

the additional documents including weekly Log Sheets, Individual Conference Records, e-mails, monthly meeting minutes, and the researcher's journal were collected and analyzed in an effort to corroborate the quantitative evidence.

Procedures for Data Analysis

Content analysis on all qualitative data collected was conducted. The researcher saved information from all of the electronic weekly Log Sheets and the Individual Conference Reports. Data from the shared electronic FirstClass conference and any additional e-mail correspondence which took place between the researcher and those involved in the project was exported in Microsoft Word format and saved in a folder on the researcher's computer. The researcher also saved recorded minutes from the monthly meetings and kept a journal to record reflections throughout the duration of the project. All data that was in written form, such as the researcher's journal and the interviewee's responses that were recorded on the Interview Protocol Forms, was typed and saved as Microsoft Word documents. All electronic data was backed up on a CD ROM and stored in a locked cabinet for safe keeping. The data was explored in an effort to gain insight into the effects of the intervention. The researcher used the data obtained from the interviews to develop an in-depth understanding of each case and conduct a cross-case analysis to identify themes, patterns, and lesson learned that emerged across multiple cases for each research question. The additional qualitative data was used for triangulation of the themes.

The researcher analyzed the data by reading it several times to gain a general sense of the information. During the second reading and third reading, the researcher listed common ideas and highlighted key phrases that were representative of each key

idea. Next, codes were assigned to the data. Creswell (2002) stated that “codes are labels used to describe a segment of text” (p. 266). In an effort to reduce the codes to a smaller number of meaningful and representative themes, the researcher re-examined the codes assigned and clustered those that were representative of broader themes. Themes were selected based on the quality and quantity of evidence to support them. Using the broad theme as a title, the researcher created separate word processing documents and copied and pasted each piece of coded text within the appropriate document. The result was that participants’ responses to each identified theme were amalgamated, allowing the researcher to consider each response coded within the context of a particular theme. These separate documents were examined to ensure that they were representative of several participants’ viewpoints. When this process was completed, the researcher re-read all of the data and additional text that the researcher felt represented the theme, missed in the initial screening was included. The themes were examined again for the purpose of excluding text segments that the researcher felt did not represent the theme identified. This process helped the researcher in identifying subcategories. Next, within each major theme, minor themes were organized and specific quotes were selected to reveal the theme’s authenticity.

E. Reporting the Data (Form of Anticipated Findings)

Data shared in the next chapter focused on a number of factors including to what degree the implementation of *Think Literacy Cross-Curricular* strategies in content-area secondary school classrooms effected students’ metacognitive awareness. It also documented the findings revealed from hypothesis testing in regard to the relationship between the components of metacognition and learning strategies and reported on themes

related to teachers' perception of how participation in the project affected their teaching and the students in their classrooms. The results of this study are presented in summary form in the next chapter.

CHAPTER IV

IV. RESULTS

A. Introduction

The methodology for this study combined a quasi-experimental design and a collective case study. Quantitative data were collected to determine if exposure to three strategies (Frayer Diagram, Rapid Write, and Think-Pair-Share), delivered using a gradual release of responsibility through a team teaching approach, would result in a significant increase in metacognitive awareness in participating grade 9 students as measured by the Junior Metacognitive Awareness Inventory (Jr. MAI). Quantitative data were also examined to determine if the *regulation* component of metacognition was more positively correlated with exposure to three strategies than the *knowledge* component. In addition, this study was designed in an attempt to understand the experiences of teachers as they learned with and from each other. The Ministry of Education and school boards are increasing the allocation of professional development funds to support teachers' learning in context through coaching models. Recognizing that coaching relationships are complex, the experiences and interactions of teachers were of interest to the researcher. The researcher used a collective case study to describe the interactions of the teachers and develop an in-depth understanding of the teachers' experiences based on their participation in the TLTT Initiative.

Quantitative and qualitative data were collected separately during the second half of the 2007/2008 school year. Grade 9 students ($N = 199$) who received parental approval participated in this study. In addition, quantitative instruments recorded the degree of change in participants' metacognitive awareness before and after content-area teachers

implemented Frayer Diagrams, Rapid Writes, and Think-Pair-Share strategies while partnering with the TLTT in their grade 9 classrooms. For the qualitative portion of this study, three of the five teachers who participated agreed to an interview. The TLTT was also interviewed. Other data sources included weekly Log Sheets, Individual Conference Records, e-mails, monthly meeting minutes, and the researcher's journal. Triangulation was used to confirm themes and corroborate the qualitative evidence.

Data Collection Procedures

After receipt of approval to conduct the study from the University of Windsor's Research Ethics Board (REB), the researcher first met with the principals at the two secondary schools to discuss expectations for the study. Secondly, the researcher met with the TLTT to discuss the parameters of the intervention and procedures of record keeping for data collection purposes.

B. Quantitative Data

The site in which no intervention took place had 199 students enrolled in grade 9 and the site where the intervention took place had 214 grade 9 students. Classes were not selected based on an identified need. In an effort to control for extraneous factors, the researcher identified science, mathematics, English, and geography classes where the same teacher taught the same course in both the first and second semester at the school where the intervention was taking place. There were six incidences in which this was the case. Each of these courses was also being taught at the site where no intervention was taking place. Students who were enrolled in six courses at each site were identified. Two hundred seventy-eight potential participants met the selection criteria. Of the 278 students who were approached to take part in the study, 58 students failed to return parental

consent forms. In addition, 21 participants were removed from the study during the data entry phase due to following three reasons. The researcher excluded participants: (a) who did not complete both a pretest and a posttest (for the reasons of moving to a different school, absenteeism during the administration of either or both tests, or changing the course in which they were enrolled during the semester); (b) whose records showed that the participant did not answer one or more of the items on the Jr. MAI; and (c) whose records indicated a grade level other than grade 9 (i.e., grade 10 students enrolled in grade 9 courses were not invited to participate).

The first control group consisted of grade 9 students enrolled during semester one in science, mathematics, English, and/or geography courses in which the same teacher taught the same course in the second semester at the school where the intervention took place. This group consisted of 61 participants. The second control group was comprised of 47 participants and consisted of grade 9 students enrolled during semester two in the same courses listed above at the school where no intervention took place. Ninety-one students comprised the experimental group. These students were enrolled in one of the six identified courses in the school where the intervention took place during the second semester of the school year.

The researcher focused on two hypotheses for the quantitative portion of this study. The researcher would fail to reject the first null hypothesis if grade 9 students in experimental group (those who participated in science, mathematics, English, and/or geography classes where *Think Literacy Cross-Curricular Strategies* were delivered through a team teaching approach), did not experience a significant ($p < .05$) increase in metacognitive awareness as measured by the Jr. MAI. In addition, the researcher would

fail to reject the second null hypothesis if, of the two components of metacognition (*knowledge of cognition* and *regulation of cognition*), the *regulation* component was not more positively correlated with exposure to *Think Literacy Cross-Curricular Strategies* than the *knowledge* component. Data were collected to determine if a statistically significant change was achieved in metacognitive awareness after the introduction and use of three specific instructional strategies delivered through a team teaching approach as measured by the Jr. MAI (see Appendix I).

The posttest was delivered by the content-area teachers to the first control group at the end of the first semester in order to collect data that would be used to compare the control group posttest results with the experimental group posttest results. The pretest was delivered to the second control group and the experimental group during the first week of the second semester in order to establish a baseline for each participant with respect to *knowledge of cognition* and *regulation of cognition*. The posttest was delivered to these same two groups at the end of the second semester, immediately following the intervention.

With each test, participants were informed that the purpose of the instrument was to find out more about how they learn. Teachers reviewed the instructions aloud with each class prior to administering the instrument. The 5-level rating scale (1 represented "never" and 5 represented "always") was provided. The participants were told that their responses were confidential and would not affect class grades in any way. In addition the participants were instructed that they should answer each question as carefully and truthfully as possible. The posttest was administered in the same way the third week prior to the end of the second semester.

Descriptive statistics were used to gain an understanding of the measures of central tendency and the spread of scores. Inferential statistics were used to compare groups' means on the pretest Jr. MAI to determine if the two samples belonged to the same population prior to the intervention and to establish baseline data. Additional inferential statistics were used to test the first null hypothesis (grade 9 students who participated in mathematics, science, English, and/or geography classes where *Think Literacy Cross-Curricular Strategies* were delivered, through a team teaching approach at one secondary school, would experience no significant change in metacognitive awareness). In addition, inferential statistics were used to determine if one component of metacognition (*knowledge* or *regulation*) was more positively correlated with exposure to the three instructional strategies (Frayer Diagram, Rapid Write, and Think-Pair-Share). Finally, data were disaggregated by subject area (four subjects) and stream (applied or academic) to obtain a closer look into the mentioned measures among the stated groups of students. Throughout the study, the researcher made every effort to control for situations that would threaten validity of findings including enlisting the advice of experts when performing the statistical analysis.

All data were imported into the statistical analysis software SPSS (version 13.0). The data file contained 41 variables which included the participants' identification number, grade, gender, group status (first control, second control, or experimental), number of times students were exposed to the three instructional strategies, 18 pretest items, and 18 posttest items from the Jr. MAI. Next, the scores representative for students' *knowledge of cognition* and *regulation of cognition* were computed by adding the scores that comprised each subscale and used in obtaining an average score for the

experimental and control groups. Reliability of the measuring instrument was tested using Cronbach's alpha. This procedure is commonly used to check the internal consistency of an instrument or its parts (Fraenkel & Wallen, 2003). Cronbach's alpha has maximum value of 1 if the test items are all the same and minimum value of 0 if none of the test items are related to another. Table 5 lists the components of cognition and their respective Cronbach's alpha based on the pretest data from this study.

Table 5

<i>Instrument Reliability on Pretest</i>			
<i>Scale</i>	<i>Subscale</i>	<i>Cronbach's alpha</i>	<i>No. of Items on Pretest</i>
Junior Metacognitive Awareness Inventory		.836	18
	Knowledge of Cognition	.680	9
	Regulation of Cognition	.796	9

In determining the internal consistency of an instrument or its parts, the researcher was guided by "[t]he widely-accepted social science cut-off ... that alpha should be .70 or higher for a set of items to be considered a scale, but some use .75 or .80 while others are as lenient as .60" (Scales and Standard Measures). The Cronbach's alpha for the items that comprise the *knowledge of cognition* subscale (.68) were below the moderate cut-off level, but close to acceptable. The *regulation of cognition* subscale, however, had reached the most stringent cut-off value of .80. Further discussion on this issue is presented in the conclusion of this paper.

The researcher used the Mann Whitney *U* test to determine if differences existed between the two independent samples, namely the experimental and the first control groups' *knowledge of cognition* or *regulation of cognition* at the end of each semester. This was of interest since both groups had been enrolled in one of the identified subjects

that had been taught by the same teacher during the two semesters. In the first semester, the teachers of the participants in the first control group did not have the assistance of an instructional coach and did not use Frayer Diagrams, Rapid Writes, or Think-Pair-Share strategies. In addition, the teachers did not promote gradual release of responsibility and the metacognitive awareness among students. Analysis of the differences between these two groups' posttest scores have helped the researcher to determine if the intervention had measurable effects in areas the study focused on. The results of the Mann Whitney U test determined that the two groups (first control group and the experimental group) did not differ significantly on the *knowledge of cognition* (Mann Whitney $U = 2660, p = .663$), nor did the two groups differ significantly on the *regulation of cognition* (Mann Whitney $U = 2690, p = .748$).

Next, the researcher used the Mann Whitney U test to determine if differences existed between the experimental and the second control group *knowledge of cognition* or *regulation of cognition* prior to the intervention. These two groups were chosen for this analysis as they came from two different sites and the researcher wanted to ensure that these two independent samples came from similar populations. Analysis of differences between these two groups' pretest scores would help the researcher to determine if significant differences existed between the two groups prior to the intervention. The two groups did not differ significantly on the *knowledge of cognition* (Mann Whitney $U = 2035, p = .641$), nor did the two groups differ significantly on the *regulation of cognition* (Mann Whitney $U = 1856, p = .204$).

The researcher examined the means and standard deviations for *knowledge of cognition* and *regulation of cognition* for the second control group and the experimental group as measured by the pretest and posttest (see Tables 6-7, Figures 2-3).

Table 6

<i>Means and Standard Deviations for Knowledge of Cognition</i>				
Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Control Group 2	Pre Knowledge of Cognition	47	3.86	0.46
	Post Knowledge of Cognition	47	3.84	0.50
Experimental Group	Pre Knowledge of Cognition	91	3.87	0.43
	Post Knowledge of Cognition	91	3.85	0.57

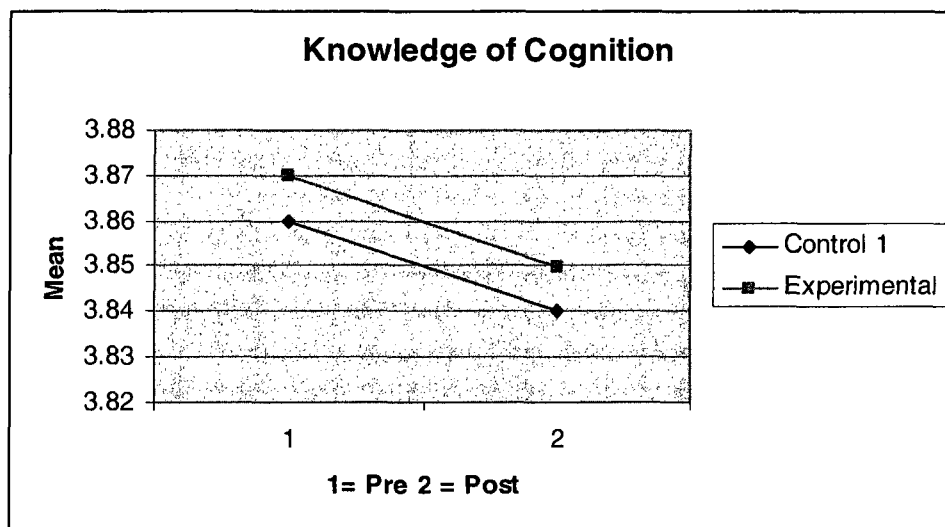


Figure 2. Comparison of pretest and posttest knowledge of cognition mean scores for the second control group and the experimental group.

Table 7

<i>Means and Standard Deviations for Regulation of Cognition</i>				
Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Control Group 2	Pre Regulation of Cognition	47	2.96	0.64
	Post Regulation of Cognition	47	2.80	0.67
Experimental Group	Pre Regulation of Cognition	91	3.10	0.62
	Post Regulation of Cognition	91	3.00	0.62

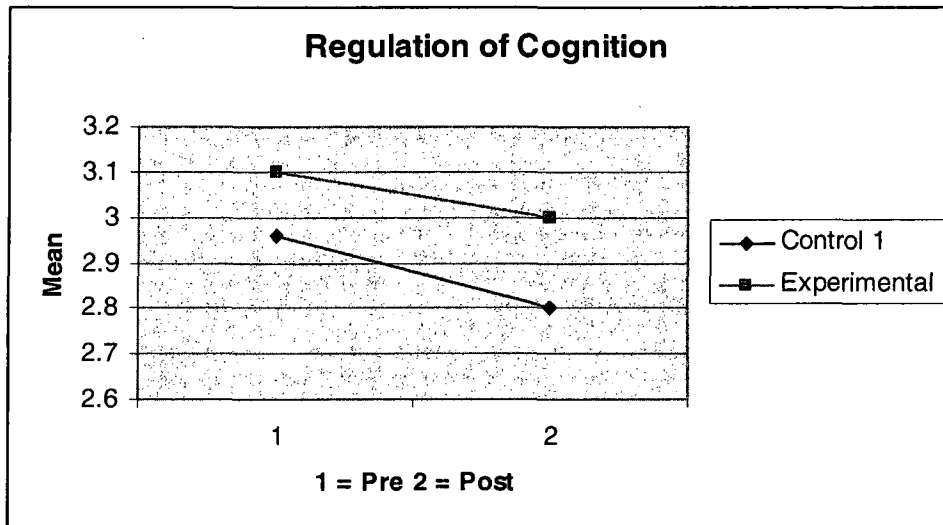


Figure 3. Comparison of pretest and posttest regulation of cognition mean scores for the second control group and the experimental group.

These descriptive statistics demonstrate a very slight decrease in awareness of their *knowledge of cognition* and *regulation of cognition* for participants in both the second control group and the experimental group. As the indicated mean scores decreased, the researcher failed to reject the null hypothesis (grade 9 students who participated in classes where *Think Literacy Cross-Curricular Strategies* were delivered, through a team teaching approach, would experience a significant increase ($p < .05$) in metacognitive awareness as measured by the Jr. MAI). In order to determine if the decrease in scores was at the level of significance, a Wilcoxon signed-ranks test was used to compare the distributions of the pretest and posttest subscale measures for these two groups. With an alpha level of .05, the second control group $p = .828$ and experimental group $p = .667$ for the *knowledge of cognition* component. With an alpha level of .05, the second control group $p = .126$ and experimental group $p = .084$ for the *regulation of cognition* component. Thus although the mean scores for both *knowledge of cognition* and *regulation of cognition* for both groups decreased, the decrease was not at a level of significance. From this analysis, the researcher failed to reject the first null hypothesis

since the intervention did not have a statistically significant positive effect on students' *knowledge of cognition* or *regulation of cognition*.

Regarding the second hypothesis (of the two components of metacognition, the *regulation* component would be more positively correlated with exposure to *Think Literacy Cross-Curricular Strategies* than the knowledge component), the researcher failed to reject the corresponding null hypothesis, since the calculated mean scores indicated that neither component was positively correlated with exposure to the three instructional strategies. However, to determine if there was a larger negative correlation between one of the components (*knowledge of cognition* or *regulation of cognition*) and the intensity of exposure to the strategies, a Spearman rho analysis was performed. This test is useful in determining the strength of the association between two variables that are measured in a way to produce ranks (Creswell, 2002).

The correlation between number of times students in the experimental group were exposed to a strategy and their ranking on *knowledge of cognition* ($r = -.212$) was statistically significant ($p = .043$, two-tailed). The correlation between the number of times students were exposed to a strategy and their ranking on *regulation of cognition* ($r = -.067$) was not statistically significant ($p = .528$, two tailed). A significant negative correlation that was found between the number of times students were exposed to the strategies and their ranking on *knowledge of cognition* explained only 4% of the variance between the two variables. Therefore, although statistically significant, the strength of this relationship was weak in the practical sense of the term. This discussion is expanded upon in the conclusion of this paper.

Further exploration of the data included disaggregating it in order to examine if differences existed between subjects in regard to each of the components. In the following section, the differences that existed in each group by subject are reported.

Table 8

Means and Standard Deviations for Participants enrolled in Science on Knowledge of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Knowledge of Cognition	18	4.07	0.45
	Post Knowledge of Cognition	18	3.94	0.85
Control Group 1	Post Knowledge of Cognition	8	4.21	0.39
Control Group 2	Pre Knowledge of Cognition	12	4.06	0.27
	Post Knowledge of Cognition	12	4.09	0.39

Table 9

Means and Standard Deviations for Participants enrolled in Science on Regulation of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Regulation of Cognition	18	3.07	0.69
	Post Regulation of Cognition	18	3.11	0.66
Control Group 1	Post Regulation of Cognition	8	3.49	0.72
Control Group 2	Pre Regulation of Cognition	12	3.25	0.53
	Post Regulation of Cognition	12	2.84	0.54

In science, the experimental group mean decreased by 0.13 on *knowledge of cognition* after the intervention; while in the same time period, the second control group mean increased by 0.03 on the *knowledge of cognition* component (see Tables 8-9). On the *regulation of cognition* component, the experimental group mean increased by 0.04 after the intervention; while the second control group mean decreased by 0.41. The first control group post mean was higher than both the experimental group and the second control group on both components. The standard deviation for the experimental group showed greater variance in the posttest on the *knowledge of cognition* component.

Table 10

Means and Standard Deviations for Participants enrolled in Mathematics on Knowledge of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Knowledge of Cognition	3	4.11	0.68
	Post Knowledge of Cognition	3	3.89	0.11
Control Group 1	Post Knowledge of Cognition	5	3.67	0.44
Control Group 2	Pre Knowledge of Cognition	4	3.92	0.46
	Post Knowledge of Cognition	4	3.44	0.54

Table 11

Means and Standard Deviations for Participants enrolled in Mathematics on Regulation of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Regulation of Cognition	3	3.44	0.69
	Post Regulation of Cognition	3	2.93	0.13
Control Group 1	Post Regulation of Cognition	5	2.80	0.85
Control Group 2	Pre Regulation of Cognition	4	3.11	0.72
	Post Regulation of Cognition	4	2.33	0.89

In mathematics, the experimental group mean decreased by 0.22 after the intervention while the second control group mean showed a larger decrease (0.48) on the *knowledge of cognition* component (see Tables 10-11). On the *regulation of cognition* component, the experimental group mean decreased by 0.51 the intervention while the second control group mean showed a larger decrease (0.78). The standard deviation for the experimental group showed decreased variability of scores in the posttest on both the *knowledge of cognition* and *regulation of cognition* components.

Table 12

Means and Standard Deviations for Participants enrolled in English on Knowledge of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Knowledge of Cognition	35	3.85	0.34
	Post Knowledge of Cognition	35	3.88	0.35
Control Group 1	Post Knowledge of Cognition	29	3.84	0.42
Control Group 2	Pre Knowledge of Cognition	26	3.80	0.52
	Post Knowledge of Cognition	26	3.79	0.47

Table 13

Means and Standard Deviations for Participants enrolled in English on Regulation of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Regulation of Cognition	35	3.07	0.66
	Post Regulation of Cognition	35	2.93	0.61
Control Group 1	Post Regulation of Cognition	29	2.99	0.66
Control Group 2	Pre Regulation of Cognition	26	2.76	0.58
	Post Regulation of Cognition	26	2.82	0.60

In English, the experimental group mean showed a very slight increase (0.03) after the intervention while the second control group mean showed a very slight decrease (0.01) on the *knowledge of cognition* component (see Tables 12-13). On the *regulation of cognition* component, the experimental group mean decreased by 0.14 after the intervention; while the second control group mean showed a slight increase (0.06). The standard deviation for the experimental group and the control group remained relatively stable between the pretest and the posttest on both the *knowledge of cognition* and *regulation of cognition* components.

Table 14

Means and Standard Deviations for Participants enrolled in Geography on Knowledge of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Knowledge of Cognition	35	3.73	0.42
	Post Knowledge of Cognition	35	3.87	0.49
Control Group 1	Post Knowledge of Cognition	19	3.66	0.34
Control Group 2	Pre Knowledge of Cognition	5	3.56	0.47
	Post Knowledge of Cognition	5	3.93	0.71

Table 15

Means and Standard Deviations for Participants enrolled in Geography on Regulation of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group	Pre Regulation of Cognition	35	3.10	0.85
	Post Regulation of Cognition	35	3.09	0.60
Control Group 1	Post Regulation of Cognition	19	2.67	0.96
Control Group 2	Pre Regulation of Cognition	5	2.88	0.74
	Post Regulation of Cognition	5	3.00	0.92

In geography, the experimental group mean increased by 0.14 after the intervention; while the second control group mean showed a larger increase (0.37) on the *knowledge of cognition* component (see Tables 12-13). On the *regulation of cognition* component, the experimental group mean showed a very slight decrease (0.01) after the intervention; while the second control group mean showed an increase of 0.12. The standard deviations for the control group showed increase in the posttest on both the *knowledge of cognition* and *regulation of cognition* components.

Table 16

Differences between Posttest and Pretest Means for Participants on Knowledge of Cognition by Subject

Subject	Experimental Group	Control Group 2
Science	-0.13	+0.03
Mathematics	-0.22	-0.48
English	+0.03	-0.01
Geography	+0.14	+0.37

Note: Difference is calculated as Posttest-Pretest Score.

Table 17

Differences between Posttest and Pretest Means for Participants on Regulation of Cognition by Subject

Subject	Experimental Group	Control Group 2
Science	+0.04	-0.41
Mathematics	-0.51	-0.78
English	-0.14	+0.06
Geography	-0.01	+0.12

Note: Difference is calculated as Posttest-Pretest Score.

Students enrolled in English and geography in the experimental group on average increased their *knowledge of cognition* (see Tables 16-17). Students enrolled in science in the experimental group on average increased their *regulation of cognition*. Students taking mathematics in both experimental and control 2 groups decreased their *knowledge of cognition* and *regulation of cognition* during the scope of intervention. However, in absolute terms, this decrease was smaller in the experimental group.

Chi-square¹² test of independence was performed to examine the relation between subject area and an increase or decrease in *knowledge of cognition* and between subject area and an increase or decrease in *regulation of cognition*. Since the descriptive statistics hinted that the results of intervention may have something to do with the subject area (e.g., somewhat similar results were obtained between science and mathematics, but these results were very different compared to those obtained in English and geography), the researcher decided to do the following: (a) select only students in the experimental group who were taking only one of these four subjects ($N = 77$); (b) group these students into four groups according to the subject they were taking; (c) create a dichotomous variable out of the ordinal variable *knowledge of cognition* (*regulation of cognition*), by assigning "+1" in case that value on the construct increased during the intervention and assigning "-1" in case that the value diminished or remained unchanged; and (c) perform statistical tests to see if the percentages of students that fell into one of the two new categories differed significantly between these four groups.

First, the independent-samples Chi-square test was performed to examine if the two groups of students who were enrolled in science or geography were identical with respect to percentage split between the two categories on the new response variables. The

difference between these two groups of students was not significant with respect to increase or not increase on the *knowledge of cognition*, $\chi^2 (2, N = 49) = 0.91, p > .05$, or on the increase or not increase on the *regulation of cognition* $\chi^2 (2, N = 49) = 0.00, p > .05$. Whether students were enrolled in science or geography did not make a difference in terms of the percentages of students who experienced increase or not increase (decrease or staying the same) on the *knowledge of cognition* or the *regulation of cognition*.

The independent-samples Chi-square test was performed to examine if there was a difference between the percentages of students enrolled in science or English with respect to increase or not increase (decrease or staying the same) in *knowledge of cognition* (*regulation of cognition*). In both cases, the difference between percentages of students that fell into one of the two categories was not significant (i.e., $\chi^2 (2, N = 44) = 0.80, p > .05$; $\chi^2 (2, N = 44) = 0.77, p > .05$, respectively). Whether students were enrolled in science or English did not make a difference in terms of the percentages of students who experienced increase or not increase (decrease or staying the same) on the *knowledge of cognition* or the *regulation of cognition* components.

The researcher was unable to perform the same tests with mathematics students in addition to science students, as there was insufficient number of such students to perform the test (only 2 students from the experimental group were enrolled in mathematics and a minimum of 5 is required for the test).

Further exploration of the data included disaggregating it in order to examine if differences existed between streams (applied or academic) in regard to each of the components. In the following section, the differences that existed in each group by stream are reported.

Table 18

Means and Standard Deviations for Participants enrolled in Academic and Applied Classes on Knowledge of Cognition

Group	Scale	<i>N</i>	<i>M</i>	<i>SD</i>
Experimental Group Academic	Pre Knowledge of Cognition	38	3.93	0.43
	Post Knowledge of Cognition	38	3.97	0.57
Experimental Group Applied	Pre Knowledge of Cognition	36	3.85	0.45
	Post Knowledge of Cognition	36	3.79	0.31
Control Group 2 Academic	Pre Knowledge of Cognition	26	3.81	0.36
	Post Knowledge of Cognition	26	4.04	0.37
Control Group 2 Applied	Pre Knowledge of Cognition	21	3.76	0.51
	Post Knowledge of Cognition	21	3.62	0.62

For the *knowledge of cognition* component, the experimental group and control groups means increased for students enrolled in the academic stream (see Table 18). The means decreased for students enrolled in the applied stream for both groups.

Table 19

Means and Standard Deviations for Participants enrolled in Academic and Applied Classes on Regulation of Cognition

Group	Scale	N	M	SD
Experimental Group Academic	Pre Regulation of Cognition	38	3.19	0.72
	Post Regulation of Cognition	38	3.09	0.64
Experimental Group Applied	Pre Regulation of Cognition	36	3.08	0.57
	Post Regulation of Cognition	36	2.93	0.43
Control Group 2 Academic	Pre Regulation of Cognition	26	2.88	0.47
	Post Regulation of Cognition	26	3.01	0.45
Control Group 2 Applied	Pre Regulation of Cognition	21	2.99	0.74
	Post Regulation of Cognition	21	2.60	0.89

For the *regulation of cognition* component, the means of students enrolled in both streams decreased for the experimental group. For the control group, the means of students enrolled in the academic stream increased and decreased for those enrolled in the applied stream. .

Table 20

Differences in Pretest and Posttest Means for Participants on Knowledge of Cognition by Stream

Stream	Experimental Group	Control Group 2
Academic	+0.04	+0.23
Applied	-0.06	-0.14

Table 21

Differences in Pretest and Posttest Means for Participants on Regulation of Cognition by Stream

Stream	Experimental Group	Control Group 2
Academic	-0.10	+0.13
Applied	-0.15	-0.39

The data showed that for the *knowledge of cognition* component, students from the experimental group who were enrolled in the academic stream, on average increased slightly; while students enrolled in the applied stream decreased (see Tables 20-21). The same was true for students in the second control group. On the *regulation of cognition* component, students from experimental group in both streams decreased; while students who were enrolled in the academic stream in the second control group increased.

Next, the independent-samples Chi-square test was performed to examine if significant differences exist between percentages of students in two streams that that increased or not (decrease or staying the same) in *knowledge of cognition* (*regulation of cognition*). The difference between these two groups of students was not significant ($\chi^2 (2, N = 77) = 0.52, p > .05$; $\chi^2 (2, N = 77) = 0.80, p > .05$, respectively). Whether students were enrolled in the academic or applied stream did not make a difference in relation to percentages of students who increased or not (decrease or staying the same) in the *knowledge of cognition* or *regulation of cognition* components.

Analysis of the quantitative data led the researcher to fail to reject both null hypotheses. Analysis between the first control group and the experimental group posttests revealed no statistical difference between groups consisting of students enrolled in the same subjects, taught by the same teachers during two different semesters at the site in which the study took place. Analysis between the second control group and the experimental group posttest also showed no statistical difference after the intervention. Both the second control group and the experimental group means decreased slightly on both the *knowledge of cognition* and *regulation of cognition* components between the administration of the pretest and the posttest. The data analysis also revealed that neither

component (*knowledge of cognition* nor *regulation of cognition*) was more correlated with exposure to the strategies than the other. Even though the *knowledge of cognition* component revealed a correlation of significance, it was not significant in the practical sense of the term. Chi square tests showed that there was no significant difference in percentages of students in relation to subject or stream in regard to increase or not increase (decrease or staying the same) on either component of metacognition. These findings are addressed and further expanded on in the conclusion of this thesis.

C. Qualitative Data

The unique experiences of teachers learning together required the collection of qualitative data and therefore, qualitative data were collected to document the actions and experiences of the teachers as they worked together. The research question and subquestions requiring qualitative data analysis were:

Research Question

How do teachers describe the experience of participating in a team teaching approach to strategy-based instruction?

Subquestions included:

- (1) How did relationships inside team teaching teams evolve?
- (2) What new understandings did teachers acquire as a result of their participation in the TLTT Initiative?
- (3) What changes, if any, to instruction and assessment practices resulted from participating in the TLTT Initiative?
- (4) What changes, if any, did teachers observe in their students in relation to their participation in using a strategy-based approach to instruction?

A collective case study was used to explore the research questions in this study. “Collective case studies involve the extensive study of several instrumental cases. The selection of these cases is intended to allow better understanding or perhaps enhance the ability to theorize about a broader context” (Berg, 2004, p. 256.). The content-area teachers, along with the Think Literacy Team Teacher, each represented a unique and individual case regarding what they experienced through their participation in the research project. Therefore, a collective case study was the most appropriate design to use.

Homogeneous sampling was used to determine potential cases for the study. “In homogeneous sampling the researcher purposefully samples individuals based on membership in a subgroup that has defining characteristics” (Creswell, 2002, p. 196). The defining characteristic these teachers shared was that they taught the same compulsory courses to grade 9 students in both the first and second semester of the 2007/2008 school year in the school in which the project took place. In addition to the TLTT, of the five participants identified as potential interviewees, three agreed to an interview. There are a number of possible reasons the other two teachers declined. It was a busy time during the school year. The researcher contacted teachers close to the end of the semester at a time of year when teachers were preparing students for exams. Teachers may not have wanted to devote time during their preparation period, before or after school. The teachers may have felt intimidated to agree to an interview if they perceived their answers might demonstrate their lack of participation during the project or reflect their negativity toward the project. Of the three who agreed to interviews, two were

females. Two were geography teachers and the other was a science teacher. One had two years experience and special education qualifications. One teacher had an honours specialization and 12 years experience. The third teacher had 9 years in the profession and held guidance qualifications. The TLTT was also interviewed.

Data Sources

Data sources used for this study included personal interviews, weekly Log Sheets, Individual Conference Records, e-mails, monthly meeting minutes, and the researcher's journal. These forms of data provided insight into the teacher's and TLTT's experiences while participating in the project.

Personal Interviews. One-on-one interviews were conducted near the end of the second semester in the spring of 2008. The three teachers, along with the Think Literacy Team Teacher, were interviewed using a semi-structured interview protocol (see Appendix III). "An interview protocol is a form designed by the researcher that contains instructions for the process of the interview, the questions to be asked, and space to take notes on responses from the interviewee" (Creswell, 2002, p. 212). Teachers' interviews were conducted in each teacher's classroom and lasted approximately a half hour. The Think Literacy Team Teacher was interviewed in the researcher's office. "In qualitative research, open-ended questions are asked so that the participant can best voice their experiences unconstrained by any perspectives of the researcher or past research findings" (Creswell, 2002, p. 204). The questions developed for the interview were based on information gleaned from the literature review and feedback data obtained from the Think Literacy Team Teacher throughout the school year. The interviews which evolved from the research questions inquired about the experiences of the teachers while

participating in a team teaching approach to strategy-based instruction, new learning acquired, and changes to instruction and assessment practices that resulted from participation.

In conducting interviews, the researcher was guided by Berg's (2004) instruction whereby in order to assist the interviewee in conveying important information the interviewer must establish and maintain good rapport. Rapport was built with participants by establishing a sense of common ground prior to the interview. The researcher shared information about a challenge experienced while teaching an intermediate class so that the interviewees would recognize that the researcher shared a similar background. Echoing, which is, according to Berg (2004), technique interviewers use to communicate that they understand what the interviewee is talking about and convey that they were listening, was another strategy the researcher used to ensure a complete and detailed interview.

Documents. Documents are “sources that provide valuable information in helping researchers understand central phenomena in qualitative studies” (Creswell, 2002, p. 209). A variety of documents were collected to help the researcher investigate the research question. Weekly Log Sheets, Individual Conference Records, e-mails, monthly meeting minutes, and the researcher’s journal were included. Personal interviews and daily logs were correlated, noting repeated perceptions and themes.

Content Analysis

Content analysis refers to the process researchers undergo when they condense, systematically compare, and assign an objective coding scheme to data (Berg, 2004). According to Fraenkel and Wallen (2003), in analyzing qualitative data, researchers

formulate categories that are relevant to the investigation and code the categories accordingly. An inductive approach¹³ was used to determine themes generated from multiple readings of the text. Berg (2004) instructed that “the development of inductive categories allows the researchers to link or ground these categories to the data from which they derive” (p. 273). The identifiable themes are presented in the section that follows.

Theme 1: Teachers’ Initial Trepidation and Uncertainty Gave Way to Assurance and Confidence.

Teachers shared a number of concerns they had prior to engaging in team teaching. Many of the initial concerns stemmed from the anxiety they felt in relation to having a colleague present in their classroom, uncertainty of expectations, and the inability to see how strategies could benefit the learners in their classrooms. These feelings were replaced by self assurance and confidence as their relationship with the TLTT evolved.

Teachers reported feelings of anxiety associated with having another adult present in their classroom prior to the initial team teaching session. A similar observation was made by Gatley and Gatley (2001), who noted that when teachers first engage in collaborative partnerships they may “experience feelings of intrusion and invasion” (p. 42). Prior to working with the TLTT, the teachers in this study had not engaged in any type of teaching partnership since they had permanent teaching contracts. The only time they co-taught was during the preparation year they spent in a pre-service program. Although teachers knew the team teacher’s purpose for working alongside them was not evaluative in nature, they could not help but wonder if there would be a judgment placed

on their abilities to deliver high quality classroom instruction. This situation is best illustrated by the quotes from the journals of the involved parties:

Teacher 1: “I was nervous at first. I wasn’t sure if I would be judged. Not all teachers are receptive to the whole Think Literacy wave. It is difficult to ‘sell’ to them. I think it is because not all teachers are comfortable or receptive to having another [educator] ‘invade’ their space in the classroom and open up their rooms to others’ eyes. Sad but true.”

Teacher 2: “I wasn’t sure when this started and was a bit nervous about having [the TLTT] come into my classroom. Just knowing she was coming made me really think about and perhaps question my ability to teach well.”

TLTT Log: “I am very anxious about getting into teacher’s classrooms. I was able to meet with two teachers today and I could sense their reluctance. They’re worried about being judged and there is so much material to digest.”

Researcher’s Journal: “Even though teachers agreed to participate in this study, I can’t help but worry that they will back out due to the fact that they may experience too much pressure.”

In addition to feeling anxious about having another adult in the classroom, anxiety was also attributed to unclear expectations. Since teachers had not previously engaged in this type of partnership, teachers were unsure about what was expected of them and what they could expect from the team teacher.

Teacher 1: “I had no idea what to expect and that made me a bit nervous.”

Teacher 2: “Had the information been provided in the form of a document, the role of the Think Literacy Team Teacher might have been a little more clear from the start. It might have been less intimidating.”

Teacher 3: “I resisted at first because I wasn’t sure how this whole thing was going to work. I didn’t know if I was supposed to perform and wondered how much extra time it was going to take.”

TLTT Log: “I can sense nervousness and will have to consider how I can put teachers at ease.”

TLTT Interview: "People didn't know what I was there to do. They don't realize you're there for their professional development."

Gately and Gatley (2001) noted that when teachers are in the beginning stages of collaboration they "tread more slowly as they [need to] determine role expectations" (p. 42). This was also true of the teachers in this study.

In addition to feeling pressure about being judged and not having clear expectations, teachers' initial reluctance was due to the fact that they did not see how literacy strategies fit into their curriculum. Lester (2000) noted that secondary content-area teachers feel that teaching literacy is an added task that is simply not their responsibility.

Teacher 1: "I was teaching the chemistry and electricity units and I didn't think I could use her at all. Not every aspect of the curriculum lends itself to this. I thought I could use her for the more generic units and that's when she started to come in."

Teacher 2: "I didn't feel I could use her assistance and thought it might slow things down. I was worried about finding the time and I didn't know what she would be able to do to help out 'literacy wise'."

The third teacher interviewed was also conscious about the need to cover the curriculum and reluctant as she did not see the immediate application of literacy strategies to the subject she taught.

Teacher 3: "The curriculum is so full that it is difficult to complete all required tasks within the time given. I wasn't sure how [the TLTT] would be of any help given the fact that my units were already laid out and I didn't see the fit."

Additional evidence of this theme was noted in the TLTT Log and Researcher's Journal.

TLTT Log: "Teachers do not always see the immediate application. They think it is an add-on rather than a way to engage students. This is something I'll need to point out when working with them."

Researcher's Journal: "[The TLTT] indicated that the mathematics teacher was reluctant to invite her in due to the fact that there was too much material to cover and she could not take the time out of her schedule."

Once the teachers engaged in a collaborative partnership with the TLTT, their anxiety was replaced with assurance and their uncertainty turned into confidence.

Teacher 1: "I am such a 'chalk board' person that sometimes the ideas were out of my comfort zone but she made it easy to try things and she was organized in the way she presented things After working with [the TLTT] I felt much more reassured that what I was doing was right. The things we did was [sic] a lot of what I was doing already in my class and it made me feel good to know I was on the mark."

Teacher 2: "After the first round, I had a better understanding of what was going on and felt much more at ease."

Teacher 3: "Once [the TLTT] came in I felt more comfortable with the whole idea. I really liked working with someone else. It definitely helped me to improve my skills and better address the needs of my students."

TLTT: "Once teachers saw that what I was doing wasn't so difficult, they were willing to try it themselves."

Similar to Gately and Gately's (2001) findings, as a teacher's level of confidence increased, they became more willing to share in planning and teaching. The evidence in this study suggested the same.

Teacher 1: "In the beginning, she did most of the planning. She would take my text book and we would talk. After we worked together a couple of times, I got more involved in the planning."

Teacher 2: "Once I became more comfortable with having someone else in my classroom, it was easy. We fed off each other and I felt I could just jump in when ever I had something to add."

TLTT Log: "Teachers are opening up their doors. My schedule is almost always fully booked."

Even though participants in this study began feeling somewhat reluctant and uncertain about engaging in a partnership with the TLTT, after working together, they

felt more self-assured, comfortable collaborating, and confident to engage in the partnership.

Theme 2: Perseverance Enabled the Coach to Succeed in Turning Reluctant Participants into Vocal Advocates.

Not everyone automatically welcomes or readily adopts new initiatives. Hall and Hord (2006) pointed out the types of concerns that exist when people are involved in change and that “in any given change effort, implementers will be operating in very different ways with new practices” (p. 158). Even though the teachers involved in this study had agreed to participate, they had individual concerns that fostered some reluctance at the beginning of the project. The TLTT took creative approaches and continuously sought opportunities to engage individuals. Once the TLTT gained entry into reluctant teachers’ classrooms, there was less hesitation on the part of the teachers. As they became more knowledgeable and comfortable with the initiative, they vocally supported the program within their school. The TLTT’s approach to recruiting hesitant individuals seemed to be a determining factor in her success as indicated in the following quotes.

TLTT Interview: “I started in my own department and with my friends on staff. Eventually people talk and start referring you to others. I knew we had identified specific teachers for this project so I tried to find ways to be subtle and continued to approach them in as non-threatening a manner as possible.”

TLTT Log: “I did meet with the group of grade 9 teachers individually, then I sat in on one class each, put together a hand-out on ways to use Frayer with subject examples (some for up-coming topics), e-mailed a template to each, gave them some time (some have student teachers right now) and am ready to go back around with Rapid Writing (which I used in [a teacher’s] class twice). I have been casually peeking into their classroom windows and have seen partner sharing going on frequently.”

Teacher 1: “I give [the TLTT] credit for not giving up. She kept coming to me and asking if we could work together. I was resistant because it is easy to do things the way you’ve always done them. In the end, the ideas she shared were easy.”

Teacher 2: “I would be willing to work with her again. I am glad that she didn’t give up.”

The TLTT looked for unique ways to engage teachers and embraced opportunities as they arose.

TLTT Log: “The snow day afforded a wonderful opportunity to discuss strategies with the math teacher. Interest is growing and that is exciting!”

“I found that recruiting has a lot to do with trust. I keep my eyes and ears open. So much can happen by chance, at the photocopier especially, in the library, in the lunch room, during on-call, or supervision.”

“I would listen to what was going on in the school and look for ways to hit on a great idea to work my way into rooms. I would also go on field trips and create things they could use. It was a good way to bring literature into something that would have been dormant. Pulling literature into a presentation or field trip makes it more valid.”

Teacher 3: “My first experience was awesome. [The TLTT] was just going to cover my class for the first ten minutes because I had a specialist appointment in the morning. She was going to cover the first ten minutes but it actually turned into the whole period. When I came in after the first ten minutes had started, she just continued because it was going so well.”

Researcher’s Journal: “Today’s meeting went very well. [The TLTT] shared a number of strategies she is using to create buy in. There is no doubt she is the perfect fit for this position.”

In addition to looking for ways to recruit initial teaching partners, the TLTT sought ways to make all staff members aware of the benefits of the program.

TLTT Log: “I have been thinking a lot about ‘The Tipping Point’ by Malcolm Gladwell and how mavens and connectors work. I have been posting a ‘Flavour of the Week’ on the school’s conference and I think people are reading it ... I try to ‘plant seeds’ and ask questions in the right manner. I have had invitations from some to ‘come in anytime’. That’s easy. I know what I need to do. Some ‘seeds’ are growing.”

The evidence gathered showed that when the TLTT employed strategies for breaking down resistance and entered into partnerships with teachers, they became greater advocates of the project.

Teacher 1: “Working with [the TLTT] was so beneficial that that I felt compelled to spread the word. No one in my department had been working with her but after I told a few teachers, I noticed they began to.”

Teacher 3 – (e-mail correspondence to the TLTT): “Thank you for the visit yesterday. It was really neat to see how the students responded to the lesson. I shared your idea with [another teacher] and he wants to know more about it.”

TLTT Log: “Word is spreading. Yesterday I overheard a teacher sharing a strategy we used with others in the lunch room. Success!”

In this study, the TLTT was determined to recruit teachers and persevered even when teachers who agreed to participate were reluctant to work with her initially. Breaking down barriers requires a skilled individual who possesses unique qualities. Knight (2007a) noted that, “Successful coaches embody a paradoxical mixture of ambition and humility” (p. 29) and that, “Outstanding coaching programs begin with outstanding coaches” (p. 30). If teachers had perceived the TLTT to be overbearing it is unlikely they would have been open to collaborate. The TLTT’s efforts to recruit team teaching partners and work her way into classrooms resulted in teachers actively promoting the project to their colleagues.

Theme 3: Teachers Valued the Opportunity to Collaborate with a Coach.

Evidence indicated that teachers came to value the collaboration that took place during the project. Participants not only appreciated having input from another professional while planning, they recognized the benefits of having another adult in the classroom during instructional time.

Teacher 1: “This project provided a unique opportunity for teachers to collaborate on teaching strategies, classroom management, and assessment. I really appreciated having someone to help bounce ideas around.”

Teacher 2: “It opened my eyes to new ways of approaching student learning that I wouldn't have tried on my own.”

“It was nice to have twice the amount of brain power.”

Teacher 3: “One of the biggest benefits was sharing ideas with each other regarding not just curriculum and teaching practices but effective classroom discipline. Planning was key and in the classroom we would often build on each other's brilliance!”

“It was nice to tackle problems from a new perspective. Having another person's point of view and a different insight really opened up a new door for me and my teaching.”

“Students who may not achieve for whatever reason with the classroom teacher have an opportunity to connect with another teacher in that class.”

TLTT Interview: “It is such an enjoyable experience when you can take the best ideas of two creative minds and use them.”

Teachers also recognized the benefits of gaining someone else's perspective when it came to planning a lesson and incorporating strategy instruction into their subject area.

Teacher 1: “I'm a chalk board person. If you ask me to do creative assignments and group work, it's not my cup of tea. But we're here for the kids and I knew I needed to broaden my horizons. I don't like group work because someone ends up doing all or most of the work. The Think-Pair-Share was a different approach. It worked well. It got me away from the chalk board. I think everyone should take advantage of the opportunity to work with the TLTT.”

“We now do ‘word of the day’. Last year, I wouldn't have said this was science. Now I know the kids need to read a variety of books with science content and they need to decipher words in order to make sense of them. If they don't have the literacy skills it doesn't matter what the subject, they won't be successful. That needs to come first. If they can't read or comprehend what they read, they won't understand - especially when terms are new to them.”

Teacher 3: “We had 5-6 sessions and it was beneficial. I hadn’t considered engaging the students in writing prior to a lesson and was surprised at how well it worked in activating their prior knowledge. In the past I hadn’t provided enough opportunities for students to engage in discussion. I did most of the talking.”

The teachers in this study eventually came to value working with a coach. In addition to valuing input during the planning and team teaching phase, teachers identified the benefits of partnering in regard to the identification of instructional strategies that would lead to increased learning in their classrooms.

Theme 4: Teachers Perceived Increased Participation and Engagement on Part of the Students.

Teachers felt that students increased participation and engagement as a result of this project. Teachers often attributed the increase to having two teachers present in the classroom as well as the strategies used. The following comments revealed evidence of perceived increased participation and student engagement.

Teacher 1: “If the kids aren’t receptive, it’s like you’re in survival mode but I found that the kids liked what we did, they participated more and that really motivated me to continue.”

Teacher 2: “I’ve never seen the students participate like that before. They really responded to that activity.”

TLTT Log: “I think one of the most rewarding compliments is when a student looks at the clock at the end of the period and says, Wow, did that ever go by fast!”

“Someone said near the end of class, ‘Wow, this period went fast!’ It was a warm Friday afternoon when most aren’t motivated. What a difference. That was the week’s best compliment.”

Teachers’ comments also indicated they felt student participation and engagement increased as a result of having two teachers in a classroom.

TLTT: “When the kids saw me come into the classroom they would say, Today we’re going to do something fun!”

Teacher 1: “A lower student-teacher ratio allows for more focused time with each student. A different personality and approach can often help reach a different group of students. Students who did not usually participate started to raise their hands. Teachers can learn from each other through working together.”

Teacher 2: “There are times when we were able to feed off each other to provide the best lesson possible for each student. I noticed that some students responded more often than they normally would.”

“It’s funny because they were almost interested more in the fact that we had a new face in the room. It wasn’t just mine in front of them everyday.”

Teacher 3: “Having [the TLTT] in the classroom not only improved class management, but the students were interested in the idea of two teachers in the classroom. It helped improved interaction and students were more engaged as a result.”

TLTT: “They appreciated seeing a different face to do those activities which I think contributed to engagement. It was out of the norm of the daily lesson structure.”

In addition, teachers felt that students benefited from the strategies used.

Teacher 1: “One of the biggest benefits was that the strategies were engaging. The choice and variety involved in the lessons helped to see the students’ strengths.”

“The students had more fun with the content because of the strategies we used. The variety was there. That made me feel motivated. I thought – if the kids are happy – what the heck. I wanted to do what would help them to learn.”

Teacher 2: “The strategies we used in my class made a huge difference. Students didn’t seem bored and actually engaged in the lessons. I wish I had begun working with her earlier.”

Teacher 3: “A lot of kids were writing – kids that usually don’t produce much were producing more than what was expected. Even in my applied classes. I give credit to the strategies we used.”

TLTT Log: “Ideas are sparked through discussion and brainstorming. The Think-Pair-Share really encouraged students to become more involved in the lesson.”

This theme revealed that teachers perceived an increase in participation and engagement and attributed the increase to team teaching and the strategies used during instruction.

Theme 5: Teachers Committed to Incorporating Instructional Strategies Regularly Into Their Teaching Practice.

Knight (2007a) noted that a coach's role was to remove barriers to adopting strategies as teachers would not adopt practices that were difficult to implement. The evidence suggested that the TLTT was able to remove barriers as teachers comments reflected a commitment to adopting the strategies they used during the project. A number of comments revealed participants' commitment to change their future practice. Some individuals reported on specific actions that they would change in their practice.

Teacher 1: "I think of the ways I could use it next year. For example, in my electricity unit I will use a Frayer to help students understand renewable and non-renewable resources. We could talk about the advantages and disadvantages of renewable and non-renewable resources. I would put a local aspect on it by asking them to think about whether they would want a windmill in their backyard."

"It was more real than sticking to definitions. It's not just about the text book now. Before I would have them just read the text. Now I'll have them do a Rapid Write from daily life - for example, with physical and chemical changes. They can write about the physical and chemical changes they encounter in a typical day. This will help them to see connections to the real world. They see what something is and isn't by using the Frayer diagram. I will definitely use these strategies again next year."

Teacher 2: "The ideas she gave I would use them because things worked out so well. I will try the same strategies as well as other things next year."

"I had never seen a Frayer Diagram before and once [the TLTT] placed it in my mailbox, I thought I would try it. I realized that it was a great instructional strategy. I will continue to use it again."

Teacher 3: “I plan to incorporate these strategies regularly next year. Now that I know they work.”

“Next year, I would start earlier. Once I get to know my class I would have [the TLTT] come in. Ideas don’t have to be done with the whole class. I would like help in providing more individualized instruction. Now that I know how this works, I would like to select groups and create activities that build on strengths for selected groups.”

TLTT Log: “I am seeing teachers adapting existing units of study to in effort to place a greater emphasis on literacy strategies.”

While committing to implementing the strategies does not guarantee that teachers will actually implement the strategies, the fact that teachers perceived that their students benefited (i.e., increased participation and engagement) helps to increase the likelihood of adoption. The researcher expands on this idea in the conclusion of this study.

Theme 6: The focus of classroom instruction was on the instructional strategies and not on students’ cognitive processes or the promotion of metacognition.

Harris et al., (2008) noted a concern among researchers that teachers “may see the strategies as an end unto themselves rather than part of a strategic, problem-solving process that involves good strategy use” (p. 93). The authors cautioned that teachers may therefore “focus on teaching the strategies without sufficient investment in instruction to allow students to come to own the strategies and use them powerfully” (p. 93). In analyzing the data gathered from this study, comments regarding the three teaching strategies (Frayer Diagram, Rapid Write, and Think-Pair-Share) were frequently present. Notably absent were comments regarding students’ cognitive processes and metacognition. In addition to the comments that are highly reflective of the instructional

strategies outlined in the themes previously discussed, there were additional comments regarding the instructional strategies present in the TLTT's Log Sheet.

TLTT Log: "The Rapid Write in geography was used at the end of the period and was the end of a scavenger hunt with longitude and latitude. I'm used to using it as the start of an activity. Several students wrote a page, others only had two sentences. I started writing with them and moved to the ones that were stuck, adding one line to their work in hopes of 'kick starting' them again. They wrote but it seemed like an isolated activity."

TLTT Log: "We began with a large group story telling – it was a good way to reinforce listening skills. I thought it would translate easily to the page but without having them do a Rapid Write first – it meant white page syndrome for some. Writing on the topic first is important."

TLTT Log: "I created packages of the Frayer method with applications for all of my grade nine teachers and told them I would touch base and work with them the second part of this week. The math teacher has already been using it."

TLTT Log: "Today was the kind of day a TLTT dreams of! I walked into school and [math teacher] said, 'I found the perfect film for math. Can you help me do something with it?' Wow! I created a Frayer for it which she planned to use on Friday. She was so excited that she used it with another math class on Thursday to try it out! During our debrief she mentioned another aspect of the film that would work with the Frayer. I have a feeling that this is going to travel right through the math department. Success!"

TLTT Log: "Today was an Earth Day presentation so I got the names of all of the teachers who attended and created a Frayer for it. I sent them each an e-mail and placed the organizer in their mailboxes early on Friday morning. That was eight teachers – including my hit target – clever, eh?"

TLTT Log: "Today at the photocopier I talked with my math teacher who said 'You'll be proud of me, I used the Frayer, photocopied four on a page, to review terms for the test.'"

This theme was also notably absent in the Individual Conference Records and in the researcher's journal.

Researcher's Journal: "[TLTT] indicated that she stopped by the [science teacher's] room and saw a Frayer Diagram on the board."

Researcher's Journal: "During today's meeting [TLTT] indicated she has done a Think-Pair-Share in each one of the classrooms."

Researcher's Journal: "[TLTT] has implemented each of the teaching strategies in the classrooms identified for this study. She indicated that the teachers have been more receptive and have invited her in to work with them more often."

TLTT Conference Record: "When debriefing today's activity, [teacher] noted how much more engaged her students were. She will use the Think-Pair-Share again now that she sees the value."

TLTT Conference Record: "[Teacher] was concerned about how much time this project would take. He liked the Rapid Writing we did today as it was quick and helped his students focus on the content. He is unsure about how he can incorporate a Frayer diagram so I am going to share some examples the next time we meet."

In addition, in examining all the data collected, there were only three incidences of evidence that reflected components of effective strategy instruction. Two were noted in the TLTT's Conference Record (both records were created near the end of the intervention) and one in the TLTT's interview.

TLTT Conference Record: "Our discussion focused on how to use mnemonic devices and when to use this strategy."

TLTT Conference Record: "[The teacher] and I talked about what strategies students currently use and how we could encourage them to use strategies on their own."

TLTT: "When the kids saw me come in the classroom they would ask, 'Are we going to do something fun?' They asked, 'Are you coming to our class?' when they see you in the hall. You end up hitting kids in ways you didn't know. I would love to see kids to realize how well strategies work and if they are using them on their own whether the teacher continued to use it or not. We would debrief after a strategy and ask if students saw any other way you would use it that would be helpful. They were able to remember using the same strategies in grade school – it is rewarding. When they take ownership it is helpful."

At the end of the school year, the TLTT was asked to graph the approach most commonly used when co-teaching given the categories of: co-instructing, modeling, and observing. Co-instructing took up 75 % of the graph while modeling and observing took up only 25%. Based on the data, it seemed that both the TLTT and the teachers involved in the intervention focused strongly on the instructional strategies and not on the additional elements of strategy-based instruction. There were numerous references to the three instructional strategies present in the qualitative data that was collected and in comparison, very few references to cognitive strategies, the gradual release of responsibility, or ways to develop students' knowledge of self-as-learners. Data also revealed that most of the TLTT's time in the classroom was spent co-instructing.

Evidence of Quality

In order to enhance the accuracy of the findings, the following data sources were examined: TLLT's Log Sheets, Individual Conference Records, e-mails, personal interviews, and the researcher's journal. "Researchers triangulate by using different data sources to confirm one another, as when an interview, related documents, and recollections of other participants produce the same descriptions of an event" (Gay & Airasian, 1992, p. 215). Triangulation of the data from these different sources increased the quality of the findings.

D. Summary of Data Analysis

Summary of Quantitative Data

The quantitative portion of this study examined the effects strategy instruction, delivered through a team teaching approach, had on students' metacognitive awareness and determined if the *regulation* component of metacognition was more positively

correlated with strategy instruction than the *knowledge* component. The second control group and experimental group were statistically equivalent at the start of the study based on the responses from the Jr. MAI. The posttest results revealed that there was no significant difference between the groups at the conclusion of the study although both the second control group and the experimental groups' means decreased slightly on both the *knowledge of cognition* and *regulation of cognition* components between the administration of the pretest and the posttest. Analysis of the quantitative data led the researcher to fail to reject both null hypotheses. Neither component (*knowledge of cognition* nor *regulation of cognition*) was more correlated with exposure to the strategies than the other. Even though the *knowledge of cognition* component revealed a correlation of significance, it was not significant in the practical sense of the term. Chi square tests showed that there was no significance in relation to subject or stream in regard to increase or decrease in awareness on either component of metacognition. These findings are addressed and further expanded on in the conclusion of this paper.

Summary of Qualitative Data

The results from the qualitative portion of this study suggested the following points of interest. Firstly, teachers' initial concerns about engaging in collaborative partnerships with their colleagues diminished and they embraced the idea of team teaching once they took part in the experience. The way in which the instructional coach approached teachers helped to turn reluctant participants into learning partners who came to value the opportunity to collaborate and as a result became vocal advocates for the program. Teachers perceived greater student engagement and noted an increase in participation while delivering strategies through a team teaching approach in their

classrooms. Teachers committed to incorporate literacy strategies into their future practice. Finally, the focus of classroom instruction was on the instructional strategies and not on the other components of strategy-based instruction including the gradual release of responsibility, promoting metacognition, and students' cognitive processes. Chapter 5 will present an interpretation of the findings, implications for practice, and recommendations for action.

E. Reflection of the Researcher

My role in this study was more than that of a researcher. I have been a Teacher Consultant in the Program Department of the school board in which this study took place for the past six years. Prior to that, I was a classroom teacher. As the Intermediate Program Consultant, I served on the Student Success Steering Committee. When this study first began, I had input regarding program decisions and some minor involvement in the professional learning of the Think Literacy Team Teachers. Between the period in which this study began and the time when the writing of this dissertation was coming to a conclusion, as I suspect is the case for most doctoral candidates, my thinking changed. I learned a great deal more about adolescent literacy, effective strategy instruction, metacognition, instructional coaching, and professional learning than I had known at the offset of writing this dissertation. I attribute my learning and change in thinking to three distinct factors: (a) a change in my professional portfolio; (b) my involvement with the National Staff Development Council (NSDC); and (c) the reading and research conducted that was related to my new portfolio and educational pursuits.

In the late spring of 2008, following the data collection phase of the study, I was asked to write a grant proposal to the Ministry of Education on behalf of the school

board. The purpose of the grant was to secure additional funding to further support the Think Literacy Team Teacher Initiative by providing more intensive coaching support and release time for all grade 9 content-area teachers in three secondary schools. The move toward a whole-school approach was based on the model employed by Dr. Douglas Fisher at Hoover High School in San Diego, California. This included the adoption of a common set of literacy strategies that would be implemented across the curriculum in an effort to make the strategies transparent and transportable for grade 9 students as they moved from class to class.

In the fall of 2008, the school board received the grant from the Ministry of Education's Literacy initiative - Growing Accessible Interactive Networks Supports (GAINS). This additional funding provided for: a full time instructional coach in each of the three secondary schools; professional resources; a half day release once a month for all grade 9 teachers to collaborate on work related to the initiative; opportunities for teachers to engage in powerful professional learning designs including lesson study and collaborative inquiry; support of outside experts to provide high-quality professional development focused on the learning goals and objectives of the initiative; and the assessment of outcomes at both the staff development level and student level. All grade nine teachers at three schools participated in the project.

In the fall of 2009, my portfolio at the school board changed and I became the Coordinator and Researcher for the project. My new leadership role provided me with the opportunity to collaborate with experts in adolescent literacy, serve as a representative on the Ontario Ministry of Education's Adolescent Literacy Advisory Panel, and develop resources for provincial distribution. In addition, as the 2008/2009

school year progressed, along with a team of others, I was able to shape the project at the school board by: working closely with the coaches at the three secondary schools; designing and delivering professional development to grade 9 teachers; facilitating action research and lesson study; providing opportunities for teachers to network with subject-specific colleagues; monitoring the program's implementation; and assessing the program's impact. A number of products were produced as a result of this project including a video series that demonstrates how secondary school teachers, with the assistance of an instructional coach, can integrate strategies in to their content area classrooms using a gradual release of responsible framework. Case studies and role play scenarios were developed as well as an implementation guide and a professional development series that aims to help content area teachers adopt effective teaching strategies into their practice. A great deal of learning occurred as a result of being immersed in this project.

The second factor that significantly contributed to my change in thinking over the past two years has been my involvement with the National Staff Development Council. In the summer of 2007, I was invited by my Supervising Principal, along with two other colleagues, to apply to the NDSC's Learning Academy. The Academy is a two and a half year inquiry-based approach to professional development that engages participants in solving authentic problems related to student learning and school improvement. The model is designed to exemplify the NSDC's Standard for Staff Development. My involvement in the Academy provided me with opportunities to be guided by experts in staff development, identify barriers to systemic educational change, explore and evaluate potential solutions, and design and deliver workshops at the NDSC's annual conferences.

My experience in the Academy caused me to deeply reflect about my beliefs regarding learning and professional development. I was influenced by a number of individuals including: Dennis Sparks (educational leadership); Shirley Hord (professional learning communities); Lois Easton (powerful designs for professional learning); Jim Knight (instructional coaching); Marcia Tate (brain-based learning); Thomas Guskey and Joellen Killion (evaluating professional development); and Nancy Love (data-based decision making). My learning through the NSDC's Academy has lead me to believe the key to systemic change lies in the hands of the system leaders who fully support and enable leadership at every level in the system and who listen to and act upon what students have to say about their learning. Those in formal leadership positions can recruit, invest in, and support formal and non-formal leaders by ensuring professional growth through well designed professional learning experiences and by establishing collaborative networks that represent the diversity of all stakeholders.

System leaders who hold the key to systemic change know that they need to prepare for various types of resistance to change and proactively support people within the system as they transition through the process. They also know that a concentrated effort should be made to ensure that school improvement and instructional decisions are based on evidence and not intuition and that deep implementation matters. They focus their efforts on a few precise goals and do not allow the pursuit of these goals to be side tracked by daily minutia. They frequently monitor their goals and hold people accountable to produce results. The educational success and well being of every student is the corner stone of every decision these leaders make.

The third factor that has influenced my thinking throughout the duration of this study involved the reading and research that was related to my new portfolio and educational pursuits. In my quest to better understand adolescent literacy I became familiar with the work of Kylene Beers, Jeffrey Wilhelm, Vicki Jacobs, Tim Shanahan, Cris Trovani, Barrie Bennett, and of course, Douglas Fisher. I have learned a great deal about the needs of adolescent learners and how to support content area teachers in implementing literacy strategies into the curriculum. By reading the works of Bransford et al., (2000) and Souza (2001), I learned more about how people learn. The work of Robert Marzano and Barrie Bennett helped me to realize the importance of the instructional decisions and utilizing high-yield instructional strategies. By reading the work of Lorna Earl, I became aware of the importance of assessment *as* learning and delved deeper into ways teachers could promote metacognitive awareness in their classrooms. In addition, Jim Knight's work helped me to better understand the effective components of instructional coaching. Finally, during the 2008/2009 school year, I enrolled in the Supervisory Officers' Qualification Course which increased my awareness of the factors that contribute to systemic change. I was introduced to work of Jim Collins (Good to Great) and Daniel Goleman (Emotional Intelligence) and read material by Peter Senge, Micheal Fullan, Douglas Reeves, and Steven Katz.

I present information about the factors that contributed to my learning and change in thinking for a couple of reasons. Most of the events described above coincided with my data analysis and interpretation of the findings for this study. While the opportunities described above allowed me to grow, they also made it difficult to examine the evidence from this study and present it without bias. While analyzing the data and interpreting the

findings, I made every effort to consciously control my thinking to reduce bias and legitimize the outcomes of the study. However, what follows in the 'implications for practice' and 'implications for action' in the conclusion section, represents what I have learned based on the change in my professional portfolio, my involvement in the NSDC's Academy, and my own professional development over the past two years. Together, the learning that occurred based on the three factors described above made it clearer what needs to be done to meet the needs of adolescent learners and where we went wrong in the intervention in this study. This idea is further expanded upon in the conclusion and limitations section of this paper.

CHAPTER V

V. CONCLUSION

A. Interpretation of Findings

The purpose of this study was to examine the relationship between strategy-based instruction and the development of metacognition and to determine if exposure to three teaching strategies had different effects on an individual's *knowledge of cognition* and *regulation of cognition*. Another purpose of this study was to describe the interactions of the teachers working together and develop an in-depth understanding of the teachers' experiences based on their participation in the Think Literacy Team Teacher Initiative. A mixed-methods design was determined to be most effective approach for this study. Quantitative and qualitative data were collected separately during the 2007/2008 school year. Grade 9 students ($N = 199$) participated in the quantitative component of this study. Five teachers and an instructional coach participated in the qualitative component. Triangulation of findings from different sources was used to increase the validity of inferences made based on the data collected.

The Junior Metacognitive Awareness Inventory (Jr. MAI) was administered at the beginning of the second semester to establish baseline data for the participants in this study and to assess the statistical equivalence of the experimental group and second control group at the start of the study. The Jr. MAI consists of 18 Likert-type questions to which grade 9 students responded on a 5-point scale, indicating the truth of statements as applied to their *knowledge of cognition* and *regulation of cognition*. The instrument was re-administered to both groups during the final two weeks of the semester to determine whether changes had occurred in the experimental group after content-area teachers used

Frayer Diagrams, Rapid Writes, and Think-Pair-Share instructional strategies in their classrooms with the assistance of an instructional coach; and to assess the difference between the two groups at the end of the semester. In addition, the Jr. MAI was given at the end of the first semester to students who comprised the first control group as a means to assess the statistical equivalence of this group with the experimental group at the end of both semesters. The quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS version 13.0).

Qualitative data provided a view of the experiences of teachers as they learned from each other. Three teachers and the instructional coach participated in face-to-face interviews. In addition to the data obtained through the interviews, TLLT's Log Sheets, Individual Conference Records, e-mails, and the researcher's journal were examined. Using an inductive approach, data were coded to develop themes and interrelationships.

B. Interpretation of Quantitative Data

The researcher focused on two hypotheses for the quantitative portion of this study. The researcher failed to reject the first null hypothesis as there was no strong evidence that the grade 9 students, who participated in science, mathematics, English, and/or geography classes where three *Think Literacy Cross-Curricular Strategies* were delivered, through a team teaching approach, experienced a significant ($p < .05$) increase in metacognitive awareness as measured by the Jr. MAI. In addition, the researcher failed to reject the second null hypothesis as there was no strong evidence that of the two components of metacognition (*knowledge of cognition* and *regulation of cognition*) the *regulation* component was more positively correlated with exposure to three *Think Literacy Cross-Curricular Strategies* than the *knowledge* component.

Cronbach's alpha - a procedure that is commonly used to check the internal consistency of an instrument (Fraenkel & Wallen, 2003) was used to test of reliability of the scales. With a maximum value of 1 (indicating that all the items are the same) and minimum value of 0 (indicating that none of the items are related to another), the items that comprised the *knowledge of cognition* scale were below the moderate cut-off level but close to acceptable. The *regulation of cognition* subscale, however, reached the most stringent cut-off value of .80. The fact that the internal consistency of the *knowledge of cognition* scale was below .70 may have affected the results of this study.

The Mann Whitney *U* test revealed that the first control group and the experimental group did not differ significantly on the *knowledge of cognition* component ($U = 2660, p = .663$), nor did the two groups differ significantly on the *regulation of cognition* component ($U = 2690, p = .748$) on posttest results. This was of interest to the researcher since both groups were enrolled in the same classes taught by the same teacher in different semesters during the same school year. If the intervention would have had the expected effect, the researcher would have found a difference between these two groups' posttest scores.

The Mann Whitney *U* test also revealed that the second control group and the experimental group did not differ significantly on either component prior to or after the intervention. It is important to note that these two groups came from two different sites (one where the intervention was taking place and one where there was no intervention). The difference between the pretest and posttest mean scores for *knowledge of cognition* and *regulation of cognition* for both these groups represented very slight decreases in students' awareness. This was an indication that intervention was not effective or that the

methodological limitations of this study came into play. In order to determine if the decrease in scores was at the level of significance, a Wilcoxon signed-rank test was used to compare the distributions of the pretest and posttest subscale measures for these two groups. Tests revealed that although the mean scores for both *knowledge of cognition* and *regulation of cognition* for both groups decreased, the decrease was not at a level of significance, a further indication that the intervention had no good or bad effect.

In addition to examining the effects of strategy instruction on grade 9 students' metacognitive awareness, the purpose of this study was to determine if intensity of exposure to the strategies had different effects on an individual's *knowledge of cognition* and *regulation of cognition*. The research performed a Spearman rho analysis to investigate this relationship. The results of the Spearman rho analysis revealed a statistically significant ($p = .043$, two-tailed) correlation between the number of times students who comprised the experimental group were exposed to a strategy and their ranking on *knowledge of cognition* ($r = -.212$). Although statistically significant, this outcome was a result of the size of the sample ($N = 91$) which required a smaller difference in means in order to detect a difference and reach the significance level.

Fraenkel and Wallen (2003) indicated that, "When ever we have a large enough random sample, almost any result will turn out to be statistically significant. Thus, a very small correlation coefficient, for example, may turn out to be statistically significant but have little (if any) practical significance" (p. 237). Huck (2004) stated, "a large sample can sometimes cause a trivial difference to end up being statistically significant" (p. 176). The author also stated, "the estimated strength of a relationship is best assessed by squaring the sample value of r . Discovering that a correlation coefficient is significant

may not really be very important – even if the results indicate $p < .01$ or $p < .001$ – unless the value of r^2 is reasonably high” (p. 223). In this particular case, with $r = -.212$, the proportion of explained variance was equal to 0.04. Therefore, although statistically significant, the strength of this relationship was practically weak. This significant negative correlation pointed that the intervention explained only 4% of the variance in *knowledge of cognition*.

Further exploration of the data included disaggregating them in order to examine if differences existed between subjects in regard to each of the components of cognition. Of particular interest to the researcher were differences between science and mathematics and English and geography. Science and mathematics were chosen because typically, these subjects do not exclusively focus on the written word in order to make meaning out of course content. English and geography were chosen because the content relies heavily on text for comprehension and meaning making. Difference in mean scores between the pretest and the posttest revealed differences in participants enrolled in science and mathematics and English and geography on the *knowledge of cognition* component. While students enrolled in science and mathematics mean scores decreased, the means of students enrolled in English and geography increased. Independent-samples Chi square tests revealed that there were not any cases in which the four subject-areas made a difference in relation to increase or decrease in *knowledge of cognition* or *regulation of cognition*. However, the researcher was unable to perform the same tests to compare the relation between both mathematics and English and mathematics and geography to an increase or decrease in *knowledge of cognition* or an increase or decrease in *regulation of cognition* as there was an insufficient number of such students to perform the test (only 2

students from experimental group were enrolled in mathematics and a minimum of 5 is required for the test).

The researcher was interested to determine if there were differences between students enrolled in the two streams (academic or applied courses) and an increase or decrease in either component. Difference in mean scores between the pretest and the posttest revealed that while students enrolled in academic classes increased their *knowledge of cognition*, students enrolled in applied classes decreased their *knowledge of cognition*. An independent-samples Chi-square test was used to examine this relationship. These tests showed that stream did not make a statistically significant difference in relation to increase or decrease in *knowledge of cognition* or *regulation of cognition*.

Students' metacognitive awareness did not increase as a result of strategy-based instruction. Possible reasons why a statistically significant difference was not found between the control group and the experimental group in relation to metacognitive awareness may be due to the internal consistency of the instrument and/or the lack of essential instructional components in the classrooms where the intervention took place. As mentioned earlier, the internal consistency of the instrument did not reach the acceptable level on the *knowledge of cognition* component and therefore may have affected the results of this study. Secondly, analysis of additionally collected qualitative data indicated that critical components of strategy-based instruction were likely absent during classroom instruction (e.g., gradual release of responsibility and the promotion of metacognitive awareness). Teachers (and the TLTT) may not have been explicit enough in their teaching. This is likely the reason that significance was not found. The

intervention was not implemented to the degree needed in order for students to internalize and maintain strategy use.

Implications for Practice

Implications that can be gleaned from the quantitative findings of this study are that strategy instruction is complex and therefore teachers require a great deal of support. Additional qualitative evidence from this study indicated that teachers may not have been explicit enough in their instruction. Evidence also indicated that teachers may not have promoted students' declarative, procedural, or conditional knowledge of cognition. There may not have been enough support provided during this intervention to allow the TLTT and teachers to implement strategy-based instruction to the degree necessary to affect changes in students' metacognitive awareness. "When teachers receive only vague guidelines, without concrete examples and procedures, implementation of new practice is often erratic" (Gersten, Vaughn, Deshler, & Schiller, 1997, p. 469). Data gathered revealed that about 75% of the TLTT's time in the classroom was spent co-instructing and that the remaining 25% of the time was split between modeling and observing. This imbalance may have occurred because the coaching model was a new form of professionally learning at the site where this study took place and the TLTT had a lack of experience in the role. Flores and Roberts (2008) concluded that through observation and the sharing of best practices, administrators and teachers would gain a better understanding of how schools transform beliefs, attitudes, and practices into higher student achievement. Perhaps teachers were not provided with enough opportunities to observe effective strategy instruction in action. This idea is expanded on in the limitations section of this report.

Studies that examined the sustained use of effective strategy-based interventions revealed that a great deal of support was needed in order for teachers to understand and implement strategies effectively in their classrooms (Hilden & Pressley, 2007; Pressley & El Dinary, 1997). A study that outlined the challenges of translating research-based strategy instruction into school-based interventions demonstrated that in order for educators to adopt strategies in their instruction they needed to be assisted to a great extent (Pressley & El Dinary, 1997). Hilden and Pressley (2007) documented how teachers were supported in developing effective strategy instruction and noted a “wide variety of daunting challenges” (p. 57) that teachers faced when trying to implement strategy instruction. Furthermore, Harris et al., (2008) noted that a common concern among researchers was that teachers did not invest sufficiently in instruction that would allow students to gain ownership over the strategies taught and that even learning to use a small repertoire of strategies could take a school year. Given that the quantitative findings in this study showed that the intervention did not find effect students’ metacognitive awareness, this is not meant to imply that coaching models are ineffective. In literature, coaching has been well documented as an effective method to support teachers in transferring new knowledge and skills into practice (Joyce & Showers, 1996; Knight, 2009). The reasons for ineffectiveness found in this study may stem from the amount of training and quality of the professional development provided to the TLTT. For example, it is likely that the TLTT was not provided enough support to advance her knowledge of effective strategy instruction or in understanding the importance of providing teachers with opportunities to observe best practice. Additionally, these reasons may be combined with the strategies chosen.

Evidence in this study suggested that the intervention was not implemented to the degree necessary to affect changes in students' metacognitive awareness. In addition to the intervention lacking the necessary supports for the TLTT to scaffold teachers in implementing strategies effectively, this outcome may possibly be attributed to the scope and magnitude of the intervention. Gersten et al., (1997) identified the scope and magnitude as a principle that affected implementation and stated that "many interventions have foundered due to either overly ambitious or ill defined scope" (p. 469). The authors indicated that innovations that do not ask teachers to radically change what they do are more likely to be adopted. Offering an example of a study in which teachers asked students to generate predictions and then assess their accuracy, the authors indicated that "for many teachers it was a first step toward teaching reading in a more constructivist fashion" (p. 470). However, observations revealed that teachers "would ask students to generate predictions but would not follow up by having the class evaluate whether the students' predictions were supported by the text" (p. 470). The authors believed that the overall low quality of this practice was due in part to the scale in which it was implemented and the failure to provide sustained professional development. Perhaps the scope of what was being asked of the teachers in this study was too much of a radical change for teachers to implement all at once. Results indicated that teachers agreed to adopt the teaching strategies but there was no evidence to indicate that teachers embraced the gradual release of responsibility or engaged learners in metacognitive activities which are both necessary components for the transfer and maintenance of strategy use.

Implications for Action

School boards must find ways to provide the support necessary for coaches and teachers to adopt strategies and professional development must be designed to scaffold teachers' learning. As Gersten et al., (1997) pointed out, the scope and magnitude of the intended change contributes to the sustained use of interventions. If the scope and magnitude requires "radical, fundamental changes in teaching in a short period of time" (p. 469) sustained change is unlikely to occur. Therefore, it might be of benefit for staff developers to identify learning progressions needed in order for teachers to master strategy instruction. By breaking down the essential understandings needed to effectively implement strategies and identifying a series of sub-skills that would serve as building blocks, it would allow staff developers to introduce components incrementally, narrowing the scope and lessening the magnitude of the change. Teachers would feel less overwhelmed of what they are being asked to do. Only after teachers attain mastery of the sub-skill and provide evidence of sustained implementation, would staff developers move to the next level of instruction. This approach would not only allow staff developers to meet teachers in their zone of proximal development (Vygotsky cited in Literacy for Learning, Ministry of Education, 2004), it would ensure for deeper levels of implementation.

Effective strategy-based interventions require that teachers are explicit in their instruction. Evidence from this study indicated that it was unlikely that teachers were explicit in their instruction. Staff developers must concentrate their efforts in helping secondary school teachers realize the importance of explicit instruction. Pressley et al., (1989) made recommendations for teachers to become strategy instructors including:

finding out what strategies were available; selecting a few across-domain, goal-limited strategies to teach; motivating students to use the strategies they were taught by making the effects of strategy use obvious to students; and encouraging other teachers to learn about and teach strategies.

In order for strategy training to be effective, students must generalize or transfer the training (Ellis, 1986). Reasons why educators do not attain the goal of transfer when employing strategy-based training have been suggested by a number of researchers (Ellis, 1986; Garner, 1990; Harris & Pressley, 1991; Young, 1997) and include the effectiveness of the delivery of instruction, motivation and classroom structures, and varying contexts. While transfer is more likely obtained when teachers are explicit in their instruction and incorporate metacognitive awareness, evidence from this study indicated that both were absent from the instruction that was delivered. Phases of the gradual release include modeling, shared practice, guided practice, and independent practice are often missing in secondary school instruction. Shanahan and Shanahan (2008) identified the lack of screening and monitoring assessments for guided instruction as one barrier to the delivery of effective reading instruction in content-area classes in secondary schools. Publishers are beginning to recognize the need for reading comprehension assessments at the secondary level. Tools such as the Ontario Comprehension Assessment could be administered to students and teachers could work collaboratively using a moderation process to assess student responses. Based on learning profiles, teachers could determine the research-based, high-yield instructional strategies and the instructional activities to be implemented.

Strategy-based instruction entails instructional strategies, cognitive strategies, and metacognition. In this study, teachers involved in the intervention focused strongly on the instructional strategies and not on the additional elements of strategy-based instruction described above. Both quantitative and qualitative data collected lead the researcher to believe that components of strategy-based instruction were missing during the intervention. It is suspected that coaches and teachers did not share with students the utility and significance of the strategies. In addition, it is suspected that teachers did not promote metacognitive awareness. Teachers' explanations were also very likely lacking the explicitness necessary.

Wilhelm (2008) suggested that “educators underarticulate and underappreciate what is required to achieve” (p. 13) effective strategy instruction. Ellis (1993) pointed out that generalization could be a significant challenge when strategies are taught in isolation and called for an integrative approach to strategy training for teaching content area material. Describing teachers as mediators of the learning process, the author noted that mediation occurs through the manner in which teachers and the tools (e.g. textbooks, video, etc.) and instructional techniques (e.g. Think-Pair-Share) they employ to “communicate subject matter and promote student interaction with the information through students' use of powerful cognitive strategies (e.g. activating prior knowledge, goal setting, predicting, paraphrasing, self-questioning, monitoring, etc.) to facilitate understanding and remembering” (Ellis, 1993, p. 359).

Harris et al., (2008) and Block (2008) pointed out Pressley's conclusion that isolated, single strategy instruction was less effective than instruction that included multiple strategies. Pressley recommended that self-regulatory strategies be taught in

conjunction with task specific strategies and that maintenance and transfer required “strategy instruction that is metacognitively rich and that demands self-regulated use of academic strategies that have been developed” (Harris et. al., 2008, p. 92). Critical elements of instruction included the teacher introducing declarative, procedural, and conditional knowledge about the strategies while scaffolding support as students learn and use new strategies.

Gersten, Fuchs, Williams, and Baker’s (2001) review of the research on reading comprehension reinforced Pressley’s recommendation in regard to the application of multiple strategies increasing the likelihood of transfer effects. In reviewing studies of strategy-based interventions, the authors compared the effects of single-strategy instruction and multiple strategy instruction on learning disabled students’ comprehension of expository text and concluded “work on multiple strategies offers promise of transfer to more generalized measures of reading achievement” (Gersten et al., 2001, p. 307). Professional development and teacher education programs that are designed to advance strategy instruction must assist teachers in understanding the value of multiple strategy instruction including the promotion of metacognitive awareness and share effective ways that metacognition can be promoted in classrooms.

Strategy instruction is complex and therefore teachers need to be better assisted in order to effectively deliver strategy instruction. Necessary supports must be provided and staff development must be scaffolded. The ultimate goal of strategy instruction is the generalization and transfer of strategies to different contexts. The quantitative portion of this study determined that strategy instruction, delivered through a team teaching approach, had no good or bad effect on students’ metacognitive awareness and that there

was no difference in correlation between exposure to strategies and the two components of metacognition. Additional qualitative evidence led the researcher to believe that the intervention did not produce the outcomes anticipated because there was not a deep enough understanding of strategy-based instruction on the part of the TLTT or the teachers involved. This outcome may be attributed to the researcher's simplistic conceptualization of the intervention which caused the researcher to underestimate the support that was necessary to affect change. It could also be due to the fact that the change that was required was too radical in nature for the teachers involved.

C. Interpretation of Qualitative Data

The results from the qualitative portion of this study confirmed what research tells us about coaching programs and relationships (Blamey et al., 2009; Flores & Roberts, 2008; Knight, 2009; Lieberman & Miller, 2004; Mraz et al., 2008). The data also speak to the challenges and supports necessary when implementing strategy-based instruction in secondary school classrooms. A lack of a clear definition of roles and uncertainty of expectations contributed to teachers' initial reluctance to engage in partnerships. As teachers' confidence increased, coaching relationships evolved. The personality of the coach and her resolve helped to break down the teachers' initial resistance. The coach's resourcefulness in creating 'buy-in', helped to turn hesitant teachers into vocal advocates who came to value the opportunity to collaborate and team teach with a colleague.

The results from this study also confirmed what research tells us about secondary school content-area teachers' beliefs and adoption of strategy-based instruction. The participants in this study did not readily see how teaching strategies fit into the curriculum. Nor did they make connections about how teaching strategies enhanced

students' cognitive strategies. In addition, two key elements of the project were notably absent in the data upon analysis. *There was no evidence that teachers gained a better understanding or appreciation of how students benefit from explicit teaching and metacognitive instruction.* They did however, believe that students were more engaged and participation increased as a result of team teaching and the use of the three teaching strategies. As a result, teachers committed to incorporating teaching strategies into their teaching practice. Each of these themes is expanded on in the section that follows.

Finding 1. The lack of clearly defined roles and uncertainty of expectations initially caused teachers to be reluctant about engaging in a team teaching relationship.

The role of coaches in schools remains either largely undefined, too broad in nature, or unknown to key stakeholders. Other studies confirm the ambiguity of the role (Blamey et al., 2009; Mraz et al., 2008). A study by Mraz et al. (2008) indicated that perceptions and expectations of the role were widely open to interpretation by principals, teachers, and coaches themselves and that disagreements regarding the role of the coach existed within schools. Rainville and Jones (2008) found that confrontation could result when a teacher and a coach differed in their expectations of roles. Even if the coach's role has been defined, defining the role does not guarantee that everyone will have a clear understanding of what the role entails or what is expected of them. This uncertainty can result in a number of unintended consequences including teachers' reluctance to engage in collaborative partnerships. In order to alleviate these problems, ways must be found to make everyone's role in a coaching program understood to all stakeholders.

In this study, the role of the TLTT was defined at the school board level and communicated to administrators at the schools. The TLTT's role was to co-plan, team-

teach, and de-brief with teachers. The TLTT's purpose was to provide support to teachers as they learned about and implemented teaching strategies in their classrooms. Particular emphasis was placed on what the TLTT was not to do while in classrooms and that was act as remedial support for students. The role was defined in terms of staff development - not in terms of learning support for students.

The concept of a Think Literacy Team Teacher was new to the participants in this study as the program was introduced in the same semester in which the study took place. Even though the role of the TLTT had been defined at the school board level, teachers were unsure of what the role entailed and unaware of what was expected of them. This uncertainty caused anxiety and reluctance to initially engage in partnerships. In addition, even though the TLTT's role was not evaluative in nature teachers expressed their concerns about being judged by a colleague

Implications for Practice

When administrators, coaches, and teachers do not share a clear understanding of roles and expectations, it can impede the progress of coaching programs. Figure 4 displays a framework for successful program implementation.

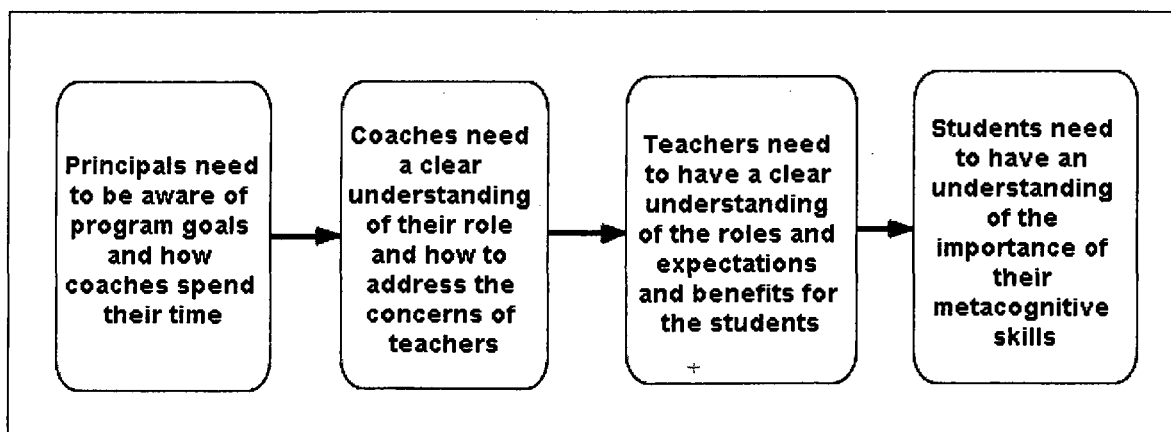


Figure 4. Framework for Successful Program Implementation

When principals are unaware of how coaches spend their time or what the program entails, it can directly impact implementation as they are unable to identify best practices and/or place expectations on teachers. When coaches do not have a clear understanding of their role and how to address the concerns of teachers as they arise, it can result in damaged relationships which impact the rate of adoption. When teachers do not have a clear understanding of the roles and expectations, it can lead to resistance and reluctance to engage in collaborative partnerships. As isolated work environments have been a distinct feature of our educational system, it makes it even more difficult for collaboration to permeate school cultures. Rates and levels of implementation result from lack of clarity and clearly defined roles. Ultimately, it is students who suffer the consequences.

When administrators do not have clarity around the roles and expectations, they are unable to vocally, visibly, and actively support programs. Knight (2007a) stated that approaches that did “not have the principal’s guiding hand as the instructional leader will lead to teachers adopting teaching practices but unsystematically – with some and not others implementing the change so school improvement may progress incoherently” (p. 27). If principals are unsure what to look for during walk-throughs or teacher performance appraisals, it makes it difficult for them to place expectations on teachers. Furthermore, if administrators seem unconcerned, teachers are not going to feel any pressure to adopt strategies. Jorissen et al., (2008) noted that when administrators had a clear understanding of the roles and expectations, coaching initiatives were more likely to succeed. When administrators have clarity of roles and expectations, successful implementation is more likely.

When coaches do not have a clear understanding of their role and the expectations teachers will have of them, it can impede the evolution of collaborative relationships. Rainville and Jones (2008) found that performing as a coach required “participants to engage themselves in particular ways that are most appropriate to the time, place, people, and practices that set the stage” (p. 440). Coaches required the skills to take on “new and different relational dynamics in different contexts” (p. 440). When coaches are unclear about their role and expectations associated with their roles, they may be less likely to determine appropriate ways to negotiate the dynamics associated with collaborative relationships and thus, the program might suffer as relationships stall.

In addition to knowing what teachers will expect of them, coaches also need to make clear what is expected of teachers. Knight (2007b) stated that in order for coaches to be effective, they have to “be careful to explain exactly what teachers can expect when they try something new” (p. 206), as teachers who do not understand what is required to implement a new strategy may be quick to dismiss the practice. When coaches are clear about their role and what is expected of teachers, implementation efforts are more likely to succeed.

Teachers’ reluctance to participate is often a result of anxiety due to unclear expectations. Hall and Hord (2006) identified the stages of concerns that individuals go through as the change process unfolds. The authors argued that individual’s initial concerns involve questions regarding requirements for use and implications of the program on his/herself and colleagues. If individuals are unaware of what is expected of them or unaware of the demands required, they need to be supported through their stages of concern in order for learning to occur.

Implications for Action

(a) The Think Literacy Team Teacher Initiative would benefit if communication about roles and expectations came from both the ‘top-down’ and ‘bottom-up’. In this study, the role of the TLTT had been defined by the school board and communicated to principals at the school but teachers were still uncertain of the role and expectations. In addition, the researcher had met with the principal and TLTT to share what was expected from participation in this study. The TLTT communicated the expectations to the teachers involved and regardless, teachers still expressed reluctance about team teaching with a colleague as they were not sure what to expect.

The issues resulting from unclear roles and expectations can be partially met through more effective communication. Informing key stakeholders of what the coach’s role entails and what it does not entail may be one place to begin. But communication has its limitations. All communication becomes filtered as it passed from one person to another. Reeves (2008) outlined the limits of hierarchy in communication and how facts deteriorate when exchanged through word of mouth. As a consequence, it is important to not only find effective ways to communicate, one must ensure that the messages being communicated are indeed the messages that were being delivered and that they are clearly understood by all key stakeholders. Reeves argued that “networks of teacher leaders, not hierarchal communication, we be essential for the next school change initiative” (p. 22). While this study did not compare these two types of communication, it confirmed that the communication between the TLTT and the teachers helped to create ‘buy-in’.

(b) Communication around the roles and expectations associated with coaching in secondary school is important but it is not enough. Even if communication is clear, understanding what coaching looks like in action is beneficial in gaining clarity around roles and expectations. This can be done through watching videos of coaching scenarios, examining case studies, participating in role plays, and/or reflecting on or developing Innovation Configuration Maps (IC Maps).

Rainville and Jones (2008) aimed to “investigate and describe how and for what purposes literacy coaches negotiate their varied identities in ways they felt were most beneficial for the relationships they were cultivating” (p. 441). The authors recommended role play scenarios and video of teachers and coaches so that those involved could gain a better understanding of how to position themselves during actual experiences. Well developed case studies are another way to gain clarity of roles and expectations as they can be designed to present common coaching challenges in which coaches and teachers can identify and make parallels to their own practice. Barnett-Clarke and Ramirez (2008) promoted the use of case studies as they believe case studies act as “catalysts for personal introspection and shared inquiry” (p. 91). Training and preparation for the teachers and the TLTT involved in this study did not include the elements suggested above. Had video, role play, and case studies been included as an integral component of the professional learning for the participants who took part in this study, different outcomes may have resulted.

Hall and Hord (2006) noted that “a frequent problem for teachers and others who are expected to implement new practices is that they are not clear about what they are being asked to do” (p. 110). The authors suggested that innovation configurations (IC

Maps) could be developed in order to construct a common understanding about the change by everyone involved. Innovation configurations “identify the major components of an innovation and then describe the observable variations of each component” (p. 116). The goal in writing descriptions of variations of each component is to be as visual as possible in an effort to help principals, coaches, and teachers see what successful use entails. Ivey and Fisher (2006) developed a set of Quality Indicators for Secondary Literacy (see Table 22). These indicators, like an IC Map, identify practices along a continuum of the most desirable to the least compatible.

Table 22

AREA 5: Leadership and School-Wide Support

Is there school-wide emphasis on literacy, and does this focus develop teacher expertise?					
	5	4	3	2	1
The school has a culture of collaboration and peer coaching.	Teachers are provided with opportunities to observe and give feedback to one another; teachers are regularly observed sharing ideas and books with one another.		The school has a peer coach who provides feedback to teachers about their lessons. Teachers meet as departments to plan lessons and discuss their success.		Teachers operate as independent contractors and have no opportunities to observe their colleagues. There are no conversations about learning and teaching across classrooms.

Note. From: *Creating Literacy-Rich Schools for Adolescents* by Ivey, G., & Fisher, D. (2006). Association for Supervision and Curriculum Development. Alexandria, VA.

The National Staff Development Council, an American organization, has developed a series of innovation configurations, including one for school-based staff developers (Moving NSDC’s Staff Development Standards into Practice: Innovation Configurations Volume I, 2003). Tools such as these can be used or developed by teams to gain an understanding of what an ideal coaching model looks like. These tools were

not included in the professional learning designed for this study. Had they been, they may have helped in clarifying expectations.

(c) Administrators can help create clarity around the roles and expectations by vocally, visibly, and actively supporting coaching programs. Principals have the highest levels of influence over what happens in schools (Leithwood & Mascal, 2008). In a study that examined roles and relationships in schools that were undergoing major coaching reform efforts, Kirby and Meza (1997) found that “Commitment to the change process is directly influenced by the level of support from those in authority” (p. 87) and concluded that the principal was the “most crucial link in securing commitment from the staff” (p. 87). Kral (2007) noted that “Principals can relieve teachers’ anxiety about coaching by giving them good information about the purpose of coaching, what they will get out of it, what it will ask of them, and how coaching sessions will be organized” (p. 2). Schools where administrators are aware of coaching roles and expectations, help to make them clearer to staff, and hold staff accountable for engaging in collaborative relationships, are more likely to have less reluctance on part of staff members and deeper implementation of coaching models. Data were not collected from the Principal at the site where this study took place so it is unknown of the role this particular administrator had on the effect of the intervention in this study. It is recommended that professional learning include administrators so they obtain a clear understanding of the program’s goals and intents, and so that they can provide the support necessary to obtain commitment needed for deep implementation.

Mraz et al., (2008) found that the roles of literacy coaches were undefined and open to interpretation. In this study, teachers’ initial anxiety and reluctance to engage in

coaching relationships was not due to the fact that the coach's role was undefined. It was due to the lack of communication about the role and uncertainty of the expectations involved in participation. Communication about the roles, expectations, and successes encountered, taking place between teachers, at the school level, is one way to help alleviate concerns about coaching programs. When administrators, coaches, and teachers have opportunities to experience coaching in action through video, role play, case studies, and IC Maps, they will gain a better understanding of roles and expectations, and it will help to alleviate teachers' concerns about the unknown. Administrators can share what is expected and what coaching entails with staff in an effort to ease the transition from a culture of isolation to that of collaboration. Once key stakeholders have gained an understanding of the roles and expectations, it would be advantageous to staff developers to provide opportunities for staff to shape the direction of the program.

Finding 2. Once teachers engaged in collaborative partnerships, they gained confidence which helped the relationship evolve and resulted in the sharing of success with others.

The collaborative partnership consisted of content-area teachers co-planning, team teaching, and debriefing with the TLTT. During this study, participants' level of confidence increased as a result of the partnership. Teachers felt more "comfortable", "at ease", and "reassured"; and as a result indicated that they would try things on their own. In other words, there was evidence of increase in teachers' self-reported efficacy.

According to Bandura (1977), efficacy is a belief about the capability teachers feel they will exhibit in a particular situation. Self-efficacy beliefs shape our thoughts and feelings and affect our behaviour. When teachers have a sense of low self-efficacy, it can

result in a lack of confidence and a fear of taking risks, ultimately influencing the choices they make in regard to classroom instruction and assessment. Those with high self-efficacy believe they can perform well and are more likely to see challenges as something to be mastered.

In addition to increasing efficacy, as collaborations continued, teachers became more deeply engaged in the partnership. Partnerships began with the coach trying to find ways to enter teachers' classrooms. The TLTT in this study began by recruiting teachers from within her own department and found creative ways to engage others. The TLTT was conscientious of the participants' concerns and considered how to put teachers at ease. Strategies for gaining entry into classrooms included gathering resources, photocopying blackline masters, and suggesting instructional strategies. As teachers collaborated with TLTT they took on more responsibility for planning and team teaching and vocally advocated for the program to their colleagues.

Implications for Practice

The evidence obtained through this study, as well as literature in the area confirm that leadership must be distributed throughout organizations. The core idea of the TLTT program is to provide teachers with opportunities to learn from each other. Lieberman and Miller (2004) recognized coaching as a "leadership role that allowed teachers to make their work public and assist in the reconstructions of the profession" (p. 30).

Four possible sources of teachers' sense of self-efficacy are widely accepted in the research (Goddard, Hoy, & Hoy, 2000). These sources include: mastery experiences (when teachers feel their actions produced successful outcomes); vicarious experiences (when teachers see others' action meet with success); social persuasion (when teachers

receive positive feedback about their performance); and affective states (joys and pleasures teachers feel that are associated with teaching). Even though the TLTT indicated that she spent only a small percentage of her time modeling, the teachers indicated that the TLTT met with much success and made what they were doing “seem easy.” Based on the evidence gathered, it is likely that an increase in efficacy resulted from vicarious experience. When the coach modeled the instructional strategies the teachers noted an increase in engagement and participation on part of the students. By seeing that the coach’s actions were accepted by students, teachers felt they could also succeed. This supports the conclusion that by providing time for teachers to engage in purposeful, peer observation, school boards can increase the likelihood that teachers will try new strategies.

Teachers not only increased their efficacy as a result of being involved in this research project, they advocated about the merits of the program to their colleagues. This holds implications that speak to the nature of change in educational institutions. Teacher leaders can serve as change agents in schools. Many change experts believe that building the capacity for teacher leadership is the key to effectively implementing systemic change in education (Fullan, 2008; Hirsh & Killian, 2007; Lieberman & Miller, 2004, Reeves, 2008). Reeves (2008) pointed out that the “failure of hierarchical models are understandable when we consider how human belief systems are formed” (p. 62). According to Guskey (2000) “significant change in teachers’ attitudes and beliefs occur primarily *after* they gain evidence of improvements in student learning” (p. 139). While the teachers involved in this study did not readily notice improvements in student

learning, they did recognize that students were more engaged and that participation increased and therefore committed to integrating the strategies into their teaching.

Reeves (2008) also noted that “change throughout the system depends on a distinctly non-linear communication” (p. 63); and that by establishing networks of teacher leaders, change will be enabled in a manner that is faster and more effective than change filtered through hierarchy alone. Knight (2004) noted that ideas spread when “somebody tries it and another teacher talks to another...” (p. 35). Teachers in this study shared what was happening in their classrooms and the success they felt with colleagues. In doing so, by essence, they became agents of change.

Implications for Action

There is a need to refine professional learning for teachers as we collectively focus our efforts on improving the quality of instruction in all classrooms. Key components include professional learning that: occurs at the school site; builds on the experience and expertise of teachers and informal leaders; determines content based on the needs of schools, division, or classrooms; is organized around the continuous cycle of improvement which engages educators in analyzing data, defining learning goals, implementing strategies, and assessing impact; aims to build teacher leadership through networks as opposed to hierarchal structures; is assessed to determine its effectiveness.

“Teacher leaders are in a unique position to make change happen” (Lieberman & Miller, 2004, p.12). In an effort to improve learning for all, there is an imperative need to build the capacity of formal and informal leadership and provide structures that will lead to sustained collaborative cultures. This includes a commitment to well-designed professional learning that provides: shared leadership; time during the instructional day

and resources to support professional learning communities in our schools; instructional coaches to assist teachers in transferring knowledge and skills to their daily practice; a wide range of inquiry-based and project-based leadership development opportunities; continuous monitoring and assessing of staff development programs.

In a study that examined a coaching intervention which aimed to bring about school change through shared decision making and inquiry-based learning, Kirby and Meza (1997) found that success depended on a number of factors. The authors concluded that “empowerment was not easily accomplished” (p. 89), and attributed the success of the program to the distribution of power across multiple roles. Knowing that teacher leaders make a difference and that teachers are more likely to be influenced by the professional practices of their peers (Reeves, 2008), it is necessary to build the capacity of teachers to seriously engage in transforming their school community. Hierarchical structures fail to create sustainable change (Lieberman & Miller, 2004; Reeves, 2008) and conflict with “the collegial nature of the reforms that teacher leadership was designed to bring about” (Lieberman & Miller, 2004, p. 17). Therefore, school boards need to rethink professional development designs. Network designs provide opportunities for teachers to lead and for teachers from subject-specific disciplines to connect with each other. Networks designs include peer observation. Ivey and Fisher (2006) believed that peer coaching needed to become a school-wide structure and that all teachers should be provided with “the time necessary to observe one another teach” (p. 100).

Professional isolation has been identified as a contributing factor to teacher burn out (Kirk & Walter, 2001). It is imperative that we build collaborative cultures through shared teacher leadership. “The concept of learning in practice is now viewed as

foundational to teacher leadership; it rests on the idea that learning is more social, collaborative, and context-dependent than was previously thought” (Lieberman & Miller, 2004, p. 21). Teachers are influenced by the actions of other teachers and in response often become agents of change. This seemed to be the case in this study as teachers expressed the merits of the TLTT Initiative to their colleagues. Therefore, “The direct observation of the professional practices of teachers by teachers must become the new foundation of professional development” (Reeves, 2008, p. 3).

Finding 3. The personality of the coach is a key component that will have a direct impact on the successful implementation of the program.

This finding is aligned with Knight’s (2005) statement that “*How* a coach goes about working is just as important as *what* the coach knows” (p. 19). The TLTT in this study took creative approaches and continuously sought opportunities to engage individuals. Recruitment approaches included helping teachers locate information and materials, creating and sharing activities that could be used to consolidate ideas following a field trip, and recommending resources. Once the TLTT gained entry into reluctant teachers’ classrooms, it resulted in less hesitation on the part of the teachers, deeper engagement in the collaborative partnership, and sharing of successes encountered with other staff members – an important component when considering the wide adoption of the program. When trying to recruit teachers, the TLTT needed to know when to be persistent and was never overbearing. The TLTT’s approach to recruiting hesitant individuals seemed to be a determining factor in her success as indicated in the interview data collected.

In addition to being creative in recruitment efforts, success of the program depends on the coach's ability to establish rapport and build trust. Understanding and responding to teachers' feelings and perceptions about change will help coaches in doing so. Exercising non-judgment and practicing active listening will also assist coaches in establishing relationships. The degree to which teachers adopt strategies will also depend on how easy the coach makes it for them to implement. The coach's job is multi-faceted and complex. It takes a highly skilled individual to be able to serve the needs of a staff when they come from a variety of disciplines and address individuals' anxiety about change when they express different stages of concern.

Implications for Practice

Knight (2004) noted that hiring the "right instructional coach is important to successful implementation" (p. 35). Careful consideration must be given to a number of factors when selecting the person for the job. In studying how new forms of leadership emerged, Kirby and Meza (1997) examined a coaching program that was launched in 11 school boards and found that "districts were allowed considerable latitude in their choice of coaches" (p. 85). Coaches perceived the reason they were chosen was not due to their skills or expertise but because they were willing and available. As a result, coaches associated their role as an added responsibility rather than an honour. To overcome this association, the authors recommended that expressions of interest and interviews become part of the selection process. The authors also found that the success of the coach depended on perception of the coach as an expert. Coaches who were placed at their home schools were less likely to experience problems when trying to obtain commitments from staff members. Coaches who had recently been or continued to serve

as classroom teachers were seen as more credible and thus more likely to exert influence on other teachers.

In the school board where this study took place, the principals were given the autonomy to select a coach from their existing staff. They were directed to choose a person who was an effective classroom teacher who would be willing to take on the leadership role. The coach in the site where this study took place was a respected English teacher with many years experience. In addition to being a respected teacher, she was well liked and considered approachable by staff members. In addition to working as a coach, the TLTT continued to teach in her own classroom for one period per day.

While an English teacher seems like an obvious choice for someone serving as an instructional coach, principals in other schools did not necessarily select English teachers. Coaches in other schools came from a variety of backgrounds including science, family studies, social science, and mathematics. The benefits of this variety were twofold. When the instructional coach's background is in a subject other than English, it helps to send the message that addressing the literacy needs of students is the responsibility of *all* teachers – not just English teachers. In addition, the TLTTs benefited from each other's diverse backgrounds. When the group came together for monthly meetings, they were able to learn from each other and build knowledge on how literacy can be integrated in various subject-specific disciplines.

Implications for Action

There are two implications for action resulting from this finding. Criteria for selection of instructional coaches should be developed around the program's intents and

goals, and shared with those responsible for the selection process. Secondly, coaches will require on-going training and support in order to become effective agents of change.

A number of factors should be taken into consideration by those responsible for hiring instructional coaches. First and foremost, the person responsible for hiring should have a clear understanding of the program's intents and goals. This background knowledge will help them when making decisions regarding issues such as: the amount of experience the coach may need to gain credibility; which types of qualifications are most important (i.e., does holding an English degree make one person more appropriate for the position than another?); the coach's emotional intelligence; and their knowledge of adolescent literacy.

As mentioned above, there are benefits to choosing an instructional coach whose degree is in a subject other than English. It helps in teachers embracing the notion that literacy instruction is not the sole responsibility of the English teacher. In identifying school level, teacher level, and student level factors that affected student achievement, Marzano (2003) noted that professionalism of staff (one of the five school level factors) "included a certain level of knowledge about one's subject area, but perhaps more important, it also involves pedagogical knowledge of how best to teach that subject-matter content" (p.64). The possession of extensive knowledge in a particular content-area does not guarantee that one can teach others how to learn content material. The author indicated that studies had found that a critical minimum level of subject-matter knowledge was needed in order to enhance student achievement but after a certain level was reached, "an increase in subject-matter knowledge was not related to enhanced

achievement” (p.64). What these studies showed on the other hand was that knowledge of pedagogy was consistently associated with student achievement.

Bransford et al., (2000) found that “expert” teachers had acquired pedagogical knowledge as well as content knowledge which helped them in identifying difficulties that students encountered and providing potential strategies for helping students overcome the difficulties. The authors concluded that “Pedagogical content knowledge was an extremely important part of what teachers needed to learn to be more effective” (p.45). It would make sense that knowing *how* to teach is more important than having an extensive knowledge about the subject matter being taught. While the present study did not measure student achievement in relation to the pedagogical knowledge of teachers, it is easy to see the benefit of having coaches who are well versed in pedagogy when working with teachers who are rich in content knowledge. In such partnerships, both parties benefit from collaborating on implementing strategy-based instructional approaches.

In addition to having an understanding of sound pedagogy, in order to be successful in their role, coaches need to be emotionally intelligent. The importance of emotional intelligence has only recently begun to be recognized. Goleman (1995) was one of the first to show the role that emotional intelligence played in our lives and concluded that it was at least as important as cognitive ability. Fullan (2008) suggested that when recruiting individuals for leadership positions, emotional intelligence should be considered over intellectual intelligence and opportunities and support for continuous growth on the job should be provided for system leaders. Emotionally intelligent people have the ability:

to read the political and social environment, and landscape them; to intuitively grasp what others want and need, what their strengths and weaknesses are; to remain unruffled by stress; and to be engaging, the kind of person that others want to be around. (Stein & Book, 2006, p. 14)

Since coaches are change leaders, emotional intelligence should be highly considered in the selection process.

Coaches need to have an excellent understanding of adolescent literacy and the difficulties faced by adolescents in today's educational system in order to be effective in their role. They need to know how to effectively embed strategy-based instruction into content-areas, that adolescents present different challenges than younger students, and how definitions of and purposes for older students reading differ from children reading at an earlier age. Coaches need to understand the skills and abilities mastered by expert readers and the challenges faced by struggling readers, in order to better help students succeed.

To be effective as change agents, coaches will require training and support in a number of areas including strategy-based instruction, emotional intelligence, and adolescent literacy. In addition, to support coaches in developing as effective agents of change, their professional learning should focus on theories of change. Leadership development often ignores change theory even though coaches would be better suited in their roles if they had an understanding of the process of change.

Strategy-based instruction is one area in which coaches require training and support. In this study, both quantitative and qualitative evidence suggested more training was required to have an impact at the student level. Both coaching and teaching were not

explicit enough and did not promote metacognitive awareness. Pressley et al., (1989) argued that strategy instruction would fail to produce long term gains if metacognitive awareness was not also promoted. In reviewing the obstacles to good strategy use, the authors made recommendations for teachers to become strategy instructors. Coaches would benefit from knowing about and understanding these obstacles as they attempt to overcome challenges.

Emotional intelligence is a second area where coaches need to be supported. Stein and Book (2006) argued that emotional intelligence will “define the differences between those who possess high intelligence quotients” (p. 29). Emotional intelligence can be measured and developed. Coaches who possess strong emotional intelligence will be more effective and as a result, programs will be implemented to a greater degree. School boards should invest in training courses that help change agents such as coaches become aware of their emotional intelligence and work toward improving it. Even those with highly developed emotional quotients could benefit from such training.

Coaches need support in gaining information about common themes that have emerged from the research literature as effective practices for adolescent literacy instruction. They also need to understand the complexity and challenge of addressing adolescent content literacy along with the historical reasons why content area teachers have resisted the notion that they are teachers of reading (Jacobs, 2008). Professional learning in this area is important not only for their credibility but for the success of the program.

Coaches need to be supported as they assist individuals going through the process of change. Coping with ambiguity, change, and confusion is inherent in the role of the

coach. In order to be effective agents of change, coaches need to know about change theory. Becoming aware of the process of change will serve them well as they deal with the complexity of change and work toward building ownership for change within their buildings. School boards can support coaches in understanding change using the Concerns Based Adoption Model (Hall & Hord, 2006) which enables leaders to know what concerns people have and to respond appropriately.

UNRELATED	0 Awareness	Teachers show no interest in learning about the initiative.
SELF	1 Informational	Teachers indicate a general awareness about the initiative and interest in learning more detail about it. They are not thinking of the effects on themselves; teachers just want more details about characteristics, effects, and requirements for general use.
	2 Personal	Teachers are concerned about what implementation means for them. Concerns include, but are not limited to, their ability to implement the new approaches, the personal time commitment required to adapt their instructional practice, and the opinions of other teachers.
TASK	3 Management	Potential users of the new approaches are concerned with the practical aspects of implementation. Concerns include, but are not limited to, acquisition of resources, time allotment for total content coverage, and additional time needed for implementation. Efficiency is of utmost importance when it comes to organizing, managing, and scheduling the implementation of the new approaches.
IMPACT	4 Consequence	Teachers in this phase are concerned about the effects of the initiative on students' development and the effects on the school. They are focused on the relevance and evaluation of the initiative as it relates to student outcomes. Teachers are also considering what might need to be changed in order to increase student outcomes.
	5 Collaboration	The focus at this stage is sharing ideas and working with other teachers to meet the goals set out for the initiative.
	6 Refocusing	Teachers explore the universal benefits gleaned from the initiative. They understand and are ready to consider changes or replacements for more powerful alternatives.

Figure 5. Stages of Concern in Relation to Participation in the Change Process
Note. Adapted from Stages of Concern as outlined in *Implementing Change – Patterns, Principles and Potholes* (Hall & Hord, 2006).

Success of adolescent literacy coaching programs depends highly on the personality of the coach – which leads to important implications for those who are in

positions to hire coaches. Before hiring a coach, it would be prudent to gain a clear understanding of the program's intents and goals so that a 'criteria for selection' can be thoroughly considered and developed. Coaches are change agents and thus they not only need a certain level of knowledge but must possess the skills and behaviours that will summon others to act. School boards need to support coaches by providing professional development. Fullan (2008) suggested that in order to build the capacity of the system to change, school boards should attract talented people (who are emotionally intelligent) and then help "them continually develop individually and collectively on the job" (p. 63). Coaches will require on-going support in a number of areas including strategy-based instruction, emotional intelligence, adolescent literacy development, and change theory. School boards must not only invest financially in coaches must also look at coaches as an investment in change.

Finding 4. Not only did teachers initially fail to see the impact of how teaching strategies could advance their student achievement goals, they lacked a depth and understanding of strategy-based instruction.

Conley (2008) indicated that we know very little about promoting a more integrated and complex approach to implementing strategy-based instruction and argued that "setting out to build adolescents' cognitive tools raises the teaching and learning bar higher than just adopting strategies to teach reading and writing" (p. 91). Evidence in this study suggested that teachers merely adopted strategies and did not make the connection about how the strategies could enhance students' use of cognitive strategies. Notably absent in both the quantitative and qualitative data is evidence that instruction was explicit and metacognitive awareness was promoted. The perceptual data indicated that

teachers only saw the value in how the strategies engaged the students in their classes. The quantitative data showed that the second control group and the experimental group did not differ significantly on the *knowledge of cognition* ($U = 2035.00, p = .641$), nor did the two groups differ significantly on the *regulation of cognition* ($U = 1856.00, p = .204$). Furthermore, both groups' means showed a slight decrease in students' awareness of their *knowledge of cognition* and their *regulation of cognition* for participants in both the second control group and the experimental group.

The lack of increase in students' metacognitive awareness may be due to the fact that the intervention was in its infant stages. The TLTT was not only new to her role but the concept was new to the school. Even though the TLTT's training included the gradual release of responsibility and how to promote metacognitive awareness, it seems that the TLTT supported only one part of the strategy-based instructional model (see Figure 1) - the three teaching strategies. Therefore, the instruction delivered in the classroom was not explicit enough to make a difference in student outcomes (as demonstrated by a decrease in metacognition). A number of authors (Bransford et al., 2000; Fisher & Frey, 2008a; Wilhelm, 2001) identified the role metacognition played in helping students become self-directed learners and pointed to the need to promote metacognitive awareness through strategy-based instruction. It was suggested that learners would benefit from explicit instruction that emphasized metacognitive processes in a variety of subject areas. As noted earlier, it would seem this aspect was missing from classroom instruction during the intervention in this study. Lester (2000) noted that there was a consensus amongst teachers that a clearer explanation of the role of strategy instruction in learning content material at the secondary level was needed. This study confirms that teachers need clear

explanations in order to make connections to how teaching strategies can help advance students' use of cognitive strategies. It also points to the need for well designed professional learning experiences for coaches and teachers.

Evidence of deep reflection was another aspect of the coaching model which was absent in the qualitative evidence gathered in this study. The TLTT's logs showed that debriefing periods were short and infrequent. At the end of the school year the TLTT was asked to graph ways she spent her time during the day given the following categories: co-planning, co-teaching, debriefing, and 'other'. Results showed only about 5% of the pie graph represented debriefing. In addition, interview data showed that teachers' reflections only examined the superficial aspects of how strategies could enhance the learning of their students. This led the researcher to suspect that the TLTT did not engage the participants in the depth of reflection that would enable them to reconstruct existing beliefs through self-examination. Similar conclusions were reached by Murray et al., (2009) in a study that examined teachers' collaborative interactions. The authors identified a lack of training in how to conduct post observation interviews as the reason why conversations did not push teachers to question their current mental models. Regardless of the fact that teachers in this study were not engaged in the depth of reflection necessary to renegotiate current practice, they expressed commitments to continue to use the strategies during the follow year or in up coming units.

Implications for Practice

This study confirms that secondary school teachers did not readily see how strategies could be used to advance their content goals and were initially reluctant to participate in the project. This is aligned with the observation of Sturtevant and Linek

that, “In North America, research has documented a long history of difficulty in convincing secondary content teachers to use literacy strategies” (2007, p. 249). All students and especially those who have difficulty applying skills of independent reading (such as cognitive strategies and fix-up procedures) benefit from literacy development. Solutions relevant to adolescent development and appropriate for implementation within secondary school settings are needed.

Embedding strategy-based instruction into content-areas might require a complete reconstruction of existing practice on the part of some teachers (i.e., those who are more traditional in their approaches to teaching). Therefore, it is necessary to support teachers through the process of change. Lester (2000) found that “with regard to students' literacy competencies, teachers who take the time to reflect upon the interaction between the student and the instructional materials presented are better positioned to determine if and what changes are needed” (p. 15). Reflection must be an embedded aspect of the coaching process. Learning partners must take the time necessary to go through the coaching cycle (co-planning, team teaching, and debriefing) and recognize the value in debriefing. Coaches must be trained to engage teachers in reflective practice during the debriefing phase. Protocols designed to engage individuals in reflection need to be developed and shared with coaches so that they can be used during the debriefing process. This aspect was not well developed in the professional development provided during this study.

Interventions that aim to enhance adolescent literacy have to be well designed and implemented fully. Components of adolescent literacy programs must be well understood, especially by those delivering them. Professional learning must adhere to the

characteristics of powerful learning designs described previously in this report. Training and continuous monitoring are key aspects of implementation.

Implications for Action

Teachers in this study did not gain an in-depth understanding of how teaching strategies could be used to enhance students' use of cognitive strategies. Solutions to embedding strategy-based instruction into content-area classrooms are needed. A number of questions are addressed in the section that follows including: what are important aspects of training?; which professional learning model will provide the best support to content-area teachers so that they do more than merely adopt instructional strategies?; and what are the solutions to the institutional barriers?

Well designed training programs may be the key to embedding strategy instruction into content area classrooms. The characteristics of powerful professional learning are highlighted throughout this report. Professional development must not only be embedded in teachers' daily practice but it must also introduce teachers to high yield, research-based instructional strategies. Increasing teachers' knowledge about the needs of struggling adolescents, providing teachers with a means to examine how and why instructional strategies facilitate content-area learning, and providing opportunities for trial and error paired with on-site support are incredibly important aspects of training. Scaffolding teachers' learning by identifying learning progressions and introducing critical components in small increments will assist in ensuring that the scope and magnitude of the change required remains manageable. In addition, whole-school approaches have been shown to be effective. When whole school approaches are

designed, teacher leaders should be involved in the creation of such programs and implementation should be closely and continuously monitored.

Professional learning that is embedded in daily practice takes place during the work day inside schools and classrooms. Teachers are not only provided the opportunity to reflect on their practice but are also expected to dialogue with other teachers about the successes and challenges met. In this respect, the professionalism, knowledge, and experience of the teachers are acknowledged and valued. This type of professional learning often results in a greater sense of ownership, increased efficacy, and a greater likelihood that teachers will transfer new knowledge and skills to their professional practice. It also builds teacher leaders who, unlike leaders who are external to such professional learning, have the ability to network about the success of the program which leads to deeper levels of implementation.

Jabobs (2008) recognized the importance of high-quality professional learning in advancing teachers' expertise stating that "professional development was at the heart of curricular reform" (p. 23). The author suggested that most in-service programs offered teachers a variety of strategies but did not ask them to examine their instructional goals and then consider how well various instructional strategies actually supported those goals. The author believed that a starting point was for teachers to define their content-area learning goals collectively and then reflect on what they already do to support their student's achievement of those goals. Shanahan and Shanahan (2008) noted that disciplinary experts approach reading in very different ways and also recommended that staff developers recognize that literacy skills differ among disciplines. Ivey and Fisher (2006) suggested that professional development must help teachers of adolescents "use

literacy within their disciplines as a way of teaching their disciplines” (p. xxiii). Bringing teachers from the same subject-specific discipline together to examine their curriculum, content goals, and texts, and identify the literacy needs followed by the strategies that will help address those needs would be advantageous. This aspect was missing from the design in the present study.

In addition, professional learning must help secondary school teachers become aware of the needs of struggling adolescent readers. Jacobs (2008) explained that in order to address the problem of adolescent literacy educators needed to understand how definitions of and purposes for older students reading differ from children reading at an earlier age. Beers (2003) grouped adolescent’s reading difficulties into three areas and identified three confidences dependent readers need to develop into independent readers. The author suggested that dependent readers a) lack the cognitive abilities to read; b) have negative attitudes toward reading; and c) do not know what types of books or authors they might enjoy. Beers concluded that dependent readers not only needed to develop cognitive confidence but also social and emotional confidence and text confidence.

There is also a need to build more collaborative environments where teachers participate in professional learning communities (PLCs) in an effort to address the isolation that results from secondary schools being organized by subject areas. Knowing that teacher leaders make a difference and that teachers are more likely to be influenced by the professional practices of their peers, the necessity to build the capacity of teachers to seriously engage in transforming their school community is recognized. Therefore, the establishment of school-based professional development teams comprised of teachers

who will voluntarily lead and set direction for adolescent literacy initiatives is proposed. PLCs could be designed around networks in order to provide opportunities for teachers from subject-specific disciplines to connect with each other. Embedded in the PLCs could be powerful designs such as collaborative inquiry and peer observation. These designs are organized around the continuous cycle of improvement which engages educators in analyzing data, defining learning goals, implementing strategies, and assessing impact. This will help to promote the level of reflection that is necessary to examine and re-consider one's own practice. While a deep level of reflection was not achieved in the present study, it is worth promoting.

The focus on adolescent literacy has to be a school-wide effort. There are examples of whole school literacy programs that have been successfully implemented through school-wide efforts (Darby, 2008; Fisher, Frey, & Williams, 2003). Focus and commitment to a three year professional development plan in which literacy strategies in content-areas became common place resulted in raised achievement scores (Fisher, Frey, & Williams, 2002). "When teachers of all subjects use the same proven strategies to help their students read and write in the language of their subject discipline, they build on the students' prior knowledge, and equip them to make connections that are essential for continued learning" (*Think Literacy: Cross Curricular Approaches 7-12*, 2003, p. 1).

In order to be sure entire staffs are aware of what the program will entail, staff development teams could create and share their theory of change. Killion (2008) described a theory of change as "a comprehensive representation of how the program is intended to work" (p. 41) and suggested that program designers develop theories of change to assist them in articulating the various components of the program, provide an

explanation of how the change is expected to occur, and make known the intended outcomes. The author emphasized that theories of change help program evaluators “determine those aspects of the program on which to focus the evaluation’s data collection” (p. 43). It will also help to make expectations clear to key stakeholders. The designer’s theory of change for this initiative was not made public.

School-wide efforts must be carefully implemented in order to obtain the commitment of all staff members. Reeves (2008) stated that “No matter what works in theory, the actual implementation of effective practices depends on providing teachers with the opportunity to reflect on research and consider the personal and professional implications of compelling research findings” (p. 36). The author also suggested that most projects are declared failures due to the fact efforts are abandoned well before deep teacher engagement happens. Reeves (2008) provided evidence that only at deep levels of implementation (efforts in which 80 percent or more of the staff implemented a strategy) did efforts significantly improve student achievement. Therefore, in order to make a significant difference in student achievement, structures such as time and leadership must be supported to allow for a high degree of implementation and meaningful reflection.

Teachers in this study did not readily see how literacy instruction could help advance their content goals. Teachers did gain an understanding of *how* to use the three teaching strategies but it is suspected that the training was not intensive enough to move teachers beyond a superficial understanding so that they could articulate *when* and *why* they might use strategies to help advance student understanding. Teachers saw the instructional strategies as a novel way to engage students in learning and increase participation in class. Teachers did not make connections between how the instructional

strategies could be used to enhance students' use of cognitive strategies. Explicit teaching and the promotion of metacognition were noticeably absent from the anecdotal evidence collected. This finding is supported by the quantitative data which revealed no significant difference between the experimental or control group in metacognitive awareness after the intervention.

The challenge of addressing adolescent content literacy is complex. High quality professional development may be the solution. Staff developers need to focus their efforts on building teacher leadership and establishing networks by providing opportunities for staffs to come together to identify the literacy needs of their subject-specific disciplines. Reeves (2009) believed that by establishing networks, change will be enabled in a manner that is faster and more effective than change filtered through hierarchy alone. In addition, attention needs to be paid to increasing teachers' knowledge and appreciation of strategy-based instruction by encouraging teachers to think about how literacy instruction would help to advance students' understanding of material. Without recognizing the impact strategies can have on students' understanding, content-area teachers are unlikely to focus their efforts on strategy-based instruction. Programs also need to focus on creating safe social environments where metacognitive instruction is embedded in daily practice. Implementation needs to be monitored and school boards need to commit to providing the resources and support needed to attain high levels of implementation. Efforts should not be removed until a high degree of implementation is a certainty.

Finding 5. Based on participation in this project, teachers committed to incorporating strategies regularly into their practice.

Even though teachers seemed to lack a depth of understanding of strategy-based instruction they indicated that they would continue to use the strategies in their practice. This commitment could be attributed to two reasons. Firstly, the TLTT was instrumental in helping teachers become comfortable with the strategies. Knight (2007a) stated that “one of a site-based coach’s primary tasks is to do everything possible to make it easier for teachers to implement new teaching practices” (p. 28). Participants in this study felt that the TLTT “made it easy” and increased their self-efficacy as a result. Secondly, the TLTT helped teachers to see positive outcomes for the students. Guskey (2000) stated that “new practices are likely to be abandoned in the absence of any evidence of their positive effects” (p. 141). The TLTT made a point of helping teachers to see the application as indicated in the following log entry:

TLTT Log: “Teachers do not always see the immediate application. They think it is an add-on rather than a way to engage students. This is something I’ll need to point out when working with them.”

As a result, teachers felt that the strategies were not too difficult to implement and noted the positive effects the intervention had on students. Participants indicated that they would adopt strategies regularly into their instruction. This evidence led the researcher to believe that participants changed their beliefs about how the teaching strategies fit into their subject area. Even though teachers did not adopt all the components of strategy-based instruction, evidence indicated that they were beginning to see the benefits at a student level.

Implications for Practice

Secondary school teachers hold certain beliefs about content-area literacy. Research has shown that secondary school content-area teachers believe literacy instruction diminishes the fundamental importance of the subject specific content (Fisher & Ivey, 2005). They also feel that teaching literacy is an added task that is simply not their responsibility (Lester, 2000). In addition, they do not see the teaching of reading and writing as one of their primary roles (D'Arcangelo, 2002; Fisher & Ivey, 2005; Jacobs, 2002; Lester 2000) and therefore literacy is a relatively low priority. At the start of the intervention, participants did not readily see how strategies could complement their instructional goals. After the TLTT worked with teachers and helped them to see how the teaching strategies benefited their students, teachers began to believe the strategies had value. There is a need to address teacher's beliefs through professional learning.

Guskey (2000) pointed out that professional learning goals can be classified into three categories including: cognitive goals; psychomotor goals, and affective goals. Cognitive goals involve participants' understanding of the content, theory, practices, and expected outcomes involved. Psychomotor goals involve "participants' ability to use the content in new and different contexts, make adaptations when necessary, and determine the effectiveness of implementation efforts" (p. 125). Affective goals refer to the attitudes and beliefs participants develop as a result of professional learning experiences. The author argued that a change in behaviour preceded a change in beliefs. In other words, teachers must learn the new technique and implement it in their classrooms. Upon assessing the effectiveness of the new strategy in regard to student learning outcomes, only if teachers note the benefits, will they change their mindset accordingly. A change in

beliefs results in the reconstruction of existing practices. One of the reasons participants in this study committed to changing their practice was because they noted an increase in student engagement and participation. Programs must be designed with this in mind. Not only is follow-up support needed in order to ensure greater transfer of skills and knowledge into practice, but staff developers (including coaches) must attend to the affective aspects of change - that is the attitudes and beliefs of teachers.

Implications of Action

Systemic change depends on teachers reconstructing their existing mental models. Mental models are beliefs and assumptions that guide teachers' instructional decisions (Duffy, 2003). When reconstructing mental models it often entails that teachers challenge their past beliefs about teaching and learning. "Teachers hold fast to their views of teaching and learning based on their own experience as students" (Conley, 2008, p. 97). As stated earlier, secondary school teachers perceived literacy to be the responsibility of English teachers (Lester, 2000). This model of literacy instruction, where literacy development was exclusively the responsibility of English teachers, was most likely the model that today's secondary school teachers experienced when they were students.

Beers (2003) also acknowledged the importance of teachers addressing their own beliefs about teaching, about learning, and their role in both. The author suggested that once teachers examined their beliefs they could "make intelligent choices about the instruction that best suits the needs of students" (p. 39). Professional learning that is designed to address such mental models can lead to significant and enduring changes in classroom practice (Donohoo & Hannay, 2009).

Professional learning needs to be designed so that it addresses not only the knowledge and skills needed to advance adolescent literacy but also the attitudes, aspirations, and behaviours as well. In order for educational reforms to be successful, staff developers must design professional learning in a way that causes educators to challenge their existing mental models. “Staff development is the planned, coherent actions and support systems designed and implemented to develop knowledge, skills, attitudes, aspirations, and behaviors to improve student achievement” (Killion, 2008, p. 135).

Committing to incorporating strategies does not necessary lead to long term retention and use of the strategies. The beliefs secondary school content-area teachers hold regarding their role as it relates to strategy instruction needs to be addressed through well designed professional learning experiences. Guskey (2000) believed that teachers were more likely to change their beliefs if they experienced first hand, that instruction could benefit students in some way. In order to ensure that long term systemic change takes place – that is teachers commit to and actually change their practice, coaches need to ensure that teachers see how students benefit from strategy-based instruction. Only by witnessing the benefits and reflecting on their existing practice will content-area teachers understand and move toward redefining their role as it relates to literacy instruction.

Qualitative data identified a number of issues related to implementing strategy-based instruction through a team teaching model. Included were the need for clearly defined roles and expectations, redefining professional development practices so that school boards build teacher leadership, careful selection of coaches, a focus on explicit instruction and promoting metacognitive awareness, and addressing teachers’ beliefs in

an effort to reconstruct existing mental models. It is critical that system leaders address these issues as each holds far reaching consequences that can impact the implementation of adolescent literacy coaching initiatives.

A number of suggestions were made to address these issues. Problems of unclear roles and expectations could be addressed through a communication plan that is a combination of a top-down and a bottom-up approach. Models of coaching in action, delivered through video, case studies, role plays, or innovation configurations can help key stakeholders gain clarity around program goals and expectations. Distributive approaches to leadership that enable teachers to observe and share best practices will build the capacity of teacher leaders. The multi-faceted role of the coach requires that they receive on-going training and support in order to be effective change agents. In order to improve practice, staff developers must focus their efforts on engaging teachers in reflective practice and monitor the degree of implementation. They must also ensure that maintenance and generalization are planned for and supported; otherwise, it is unlikely the goals of strategy-instruction will be realized.

D. Limitations

The fact that there was no relationship between strategy-based instruction and students' metacognitive awareness may have been due to the limitations and flaws in the study and the intervention. The instrument's *knowledge of cognition* subscale's internal consistency was slightly below the acceptable limit. Also, the 18-item instrument may have been too short to provide an in depth understanding of changes in metacognition during the intervention. Another limitation comes from the fact that the researcher used a convenience sample and participants who volunteered. The small number of students

enrolled in mathematics who completed both the pretest and the posttest limited the researcher from comparing the effects of the strategies in this subject. The researcher removed participants who had an incomplete pretest or posttest. The results from these participants whose data were not taken into account ($N = 10$) may have revealed additional information about the two components of metacognition as well as about the problems they experienced with answering test questions.

In addition, the intervention in this study may have been flawed. Pressley (2003) noted that “when instruction is provided by teachers who are poorly prepared to deliver it” (p. 68) external validity is threatened. Based on the findings in this study, the professional development that was provided to the TLTT or the teachers before the intervention was not enough to prepare them to effectively deliver strategy-based instruction. Furthermore, Pressley and Harris (1994) noted that “educators’ implementations are in many ways different from researcher operationalization of interventions” (p. 272). The impact of the intervention on the students’ metacognitive awareness may have been more successful if the researcher had shared her theory of action with all stakeholders in an effort to make everyone aware of the expected outcomes as suggested by the literature. After reviewing the literature and the results from this study, it is likely that the professional development provided lacked the quality and quantity necessary to produce results.

In addition, factors related to the qualitative data collection may limit the validity of some results because of the researcher's inexperience in conducting interviews. The records documenting the instruction that took place in the classroom could have been more detailed. Another limitation is that the intervention for this study took place in

grade 9 of one school and in one school board and therefore findings may not be generalizable to other grades, schools, or school board. The fact that two teachers of the five involved in the qualitative portion of this study did not consent to an interview limited its results. Reasons why teachers chose not to participate in interviews may have been due to the time of year or their lack of comfort or participation in the project. One-on-one interviews with these two teachers would have provided a better overall picture that may have lead to the identification of additional themes.

Other limitations include the fact that the researcher was also an employee in the school board in which the study took place and had some involvement in the Think Literacy Team Teacher Initiative. As a result, the TLTT and the teachers involved may have had some reluctance with respect to the project and the researcher's involvement in the project. This is difficult to determine as the teachers that did agree to interviews seemed comfortable and accommodating.

E. Recommendations for Future Research

The quantitative portion of this study focused on how strategy-based instruction affected students' metacognitive awareness. The qualitative portion examined the collaborative relationship between instructional coaches and content-area teachers during the implementation of strategy-based instruction. The results from this research demonstrated the need for a further in-depth study to identify necessary structures to support secondary teachers in integrating strategy-based instruction effectively. Future investigations should take the role of the administrator into account. More research is needed to determine if certain strategies are more effective in subject-specific disciplines than others. A change of survey and better stratification of the population would also be

the focus on future research in this area. Also, to determine specific instructional effects, Harris, Alexander, and Graham (2008) stated that “more direct measures of processes are required” and suggested that capturing students’ think alouds would help “illuminate how the instruction affected reading processes more directly.” Capturing students’ think alouds on audio or video would provide further documentation of students’ metacognitive thinking. These sources could be used to triangulate the data collected. Also observing classroom practice would allow for better documentation of the intervention.

The results from this study also showed the need for a further in-depth study of how collaborative relationships between instructional coaches and their learning partners evolve. Future investigations should be undertaken to understand how instructional coaches can be used to advance teachers’ understanding of metacognitive instruction and students’ metacognitive awareness.

F. Conclusion

One purpose of this study was to measure the impact of instructional strategies on students’ metacognitive awareness and to examine the relationship between strategy-based instruction and the two components of metacognition. It was determined that strategy instruction, delivered through a team teaching approach, had no effect on students’ metacognitive awareness and that there was no difference in correlations between exposure to strategies and the two components of metacognition. It was suspected that the intervention did not produce the outcomes anticipated because maintenance and generalization were not properly planned for or supported. The quantitative data obtained in this study revealed that teachers were not explicit enough in their teaching of metacognitive strategies.

Teachers involved in the intervention focused strongly on the instructional strategies and not on the additional elements of strategy-based instruction (e.g., modeling and metacognitive awareness). Both quantitative and qualitative data collected lead the researcher to believe that components of strategy-based instruction were missing during the intervention. It is possible that TLTT and the teachers did not share with students the utility and significance of the strategies. In addition, it is possible that teachers did not promote metacognitive awareness. Teachers' explanations were also very likely lacking the explicitness necessary to affect students' metacognitive awareness. It is likely that staff developers underestimated what was required to support the TLTT and teachers in implementing strategy-based instruction. This may be the reason the intervention did not result in the outcomes expected.

Since it is possible that all the components of effective strategy instruction were not present during the intervention to the degree required to facilitate transfer, one would be mistaken to conclude that the three teaching strategies were ineffective. Evidence suggested that the aspects of instruction that are required in order for transfer to occur were not present. While the results of this study revealed very little about how the three instructional strategies chosen affected student outcomes, the following conclusion can be drawn. "it is ... difficult ... for teachers to engage in cognitive strategy instruction, particularly at the secondary level" (Conley, 2008, p. 101).

A number of issues related to implementing strategy-based instruction were revealed including the need for clearly defined roles and expectations, redefining professional development practices so that school boards build teacher leadership, careful selection of coaches, a focus on explicit instruction and promoting metacognitive

awareness, and addressing teachers' beliefs in an effort to reconstruct existing mental models. It is critical that system leaders address these issues as each holds far reaching consequences that can impact the implementation of adolescent literacy coaching initiatives.

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APPENDIX I

Junior Metacognitive Awareness Inventory

Student Number: (fill in 8 digit Student Number)

Grade:

Gender: Male or Female

Directions: We are interested in what learners do when they study and want to know more about how you learn. Please read the following sentences and select the answer that relates to you and the way you are when you are doing school work and how work. Please answer as honestly as possible.

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Always

- | | | | | | |
|---|---|---|---|---|---|
| 1. I know when I understand something. | 1 | 2 | 3 | 4 | 5 |
| 2. I can make myself learn when I need to. | 1 | 2 | 3 | 4 | 5 |
| 3. I try to use ways of studying that have worked for me before. | 1 | 2 | 3 | 4 | 5 |
| 4. I know what the teacher expects me to learn. | 1 | 2 | 3 | 4 | 5 |
| 5. I learn best when I already know something about the topic. | 1 | 2 | 3 | 4 | 5 |
| 6. I draw pictures or diagrams to help me understand while learning. | 1 | 2 | 3 | 4 | 5 |
| 7. When I am done with my schoolwork, I ask myself if I learned what I wanted to learn. | 1 | 2 | 3 | 4 | 5 |
| 8. I think of several ways to solve a problem and then choose the best one. | 1 | 2 | 3 | 4 | 5 |
| 9. I think about what I need to learn before I start working. | 1 | 2 | 3 | 4 | 5 |
| 10. I ask myself how well I am doing while I am learning something new. | 1 | 2 | 3 | 4 | 5 |
| 11. I really pay attention to important information. | 1 | 2 | 3 | 4 | 5 |
| 12. I learn more when I am interested in the topic. | 1 | 2 | 3 | 4 | 5 |
| 13. I use my learning strengths to make up for my weaknesses. | 1 | 2 | 3 | 4 | 5 |
| 14. I use different learning strategies depending on the task. | 1 | 2 | 3 | 4 | 5 |
| 15. I occasionally check to make sure I'll get my work done on time. | 1 | 2 | 3 | 4 | 5 |
| 16. I sometimes use learning strategies without thinking. | 1 | 2 | 3 | 4 | 5 |
| 17. I ask myself if there was an easier way to do things after I finish a task. | 1 | 2 | 3 | 4 | 5 |
| 18. I decide what I need to get done before I start a task. | 1 | 2 | 3 | 4 | 5 |

APPENDIX II

Logsheets - Instructional Coach: _____

Week of: _____

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1					
2					
3					
4					

School	Comments
Monday	Reflection:
Tuesday	Reflection:
Wednesday	Reflection:
Thursday	Reflection:
Friday	Reflection:

APPENDIX III

Interview Protocol Form

Project: Think Literacy Team Teacher Project

Time of Interview: _____

Date: _____

Place: _____

Interviewer: _____

Interviewee: _____

One purpose of this study is to measure the impact that *Think Literacy* strategies, delivered through a team teaching approach in content area classes, have on students' metacognitive awareness. Another purpose of this study is to describe the interactions of team teachers and develop an in-depth understanding of teachers' experiences based on their participation in the Think Literacy Team Teacher Project. Data has been collected from a variety of sources (including Log Sheets and Individual Conference Records) and from a number of participants including your colleagues who volunteered to take part in this project. The data will be analyzed and a report will be written detailing the findings. This may assist the school Board in making decisions regarding future team teaching projects. You can be assured that confidentiality will be maintained – your name will not be attached to specific responses that you share during this interview. No one will be able to identify you. The interview should take approximately 30 – 40 minutes. (Review the consent form and ask the interviewee to sign it).

Questions:

1. How long have you been teaching?
2. Besides your participation in the Think Literacy Team Teacher Project, how often have you co-planned, co-taught, and debriefed a lesson(s) with a colleague?

3. How would you describe the experience of team teaching?
4. What were the benefits of team teaching?
5. What were the challenges associated with team teaching?
6. How has your approach to instruction and assessment changed based on your participation in the Think Literacy Team Teacher Project? Why did you make these changes?

APPENDIX IV

Individual Conference Record

Teacher: _____ Subject: _____

Coach: _____ Date: _____

Concerns of Teacher:

Items Discussed: (Objective of Lesson, Overview of Lesson, Resources, etc.)

For Future Discussion:

Next Steps

Goal/Strategy:

Action Steps:

Target Date: _____

Teacher:

Coach:

Next Meeting _____

Bring to Next Meeting:

FOOTNOTES

¹ Content-area teachers include all teachers who teach subjects other than English.

² A means of conveying information through graphics, photography or physical performance.

³ The Ontario Secondary School Literacy Test (OSSLT) by the Education Quality and Accountability Office (EQAO) provides an overview of how well students are learning and evaluates students using the same measures against the same standard (EQAO News Release, 2004).

⁴ Previously eligible students are those who retake the test. This category includes all students who were not successful when they wrote the test previously, who were previously absent, or who deferred taking the test.

⁵ EQAO uses a four-level scale to report on student achievement. The scale is based on The Ontario Curriculum and sets Level 3 as the provincial standard. Levels 1 and 2 indicate achievement below the provincial standard, while Level 4 indicates achievement above the provincial standard.
<http://www.eqao.com>

⁶ An initiative launched by the Ministry of Education in Ontario that focuses on providing students equal opportunities to succeed in high school including customizing high school learning experiences around relevant learning opportunities and providing additional ways to accumulate credits to graduate. Student Success/Learning to 18, Ministry of Education in Ontario (2007).

⁷ The term *students at risk* is defined in *Think Literacy Success, Grades 7 -12: Report of the Expert Panel on Students at Risk in Ontario* and includes: secondary students who studied at the Modified or Basic level in the previous curriculum; secondary students who are performing significantly below the provincial standard, earning marks in the 50s and 60s and who do not have the foundations to be successful in the new curriculum; and students who are disengaged, with very poor attendance (Ministry of Education, 2003).

⁸ The Ontario Curriculum, Grades 1-12 describes what students should know and be able to do at each stage of their schooling. The curriculum describes four levels for reporting student achievement. Level 3 is the provincial standard. Levels 1 and 2 are below the standard, and Level 4 indicates achievement beyond the expected standard.

⁹ According to Bandura (1977), efficacy is a belief about the capability people feel they will exhibit in a particular situation. Self-efficacy beliefs shape our thoughts and feelings and affect our behaviour.

¹⁰ "Factor analysis computes the correlations among all the variables and then divides factors by finding groups of variables that are correlated highly among each other, but lowly with other variables" (Gay & Airasian, 1992).

¹¹ Mann Whitney *U* test is a "nonparametric inferential statistic used to determine whether two uncorrelated groups differ significantly" (Fraenkel & Wallen, p. 242).

¹² "A chi square test compares the proportions actually observed in a study to the proportions expected, to see if they are significantly different" (Gay & Airasian, 1992, p. 479).

¹³ "The primary purpose of an inductive approach is to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies" (Thomas, 2003, p. 2).

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