Metaphorical Interpretation: Measuring and Facilitating Growth

Ann Kennerly

Department of Graduate and Undergraduate

Studies in Education

Submitted in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy in Educational Studies

Faculty of Education, Brock University

St. Catharines, Ontario

Abstract

A total of 378 grade 9 students participated in this study to address the problem that although metaphorical literacy and thought are expected and necessary for success in junior and senior high school and beyond, metaphorical concepts and thought are not required to be explicitly taught to these students. The students were from 20 different classes from 4 levels: English language learners (ELL), school to work (SSTW), applied, and academic. All were from 7 secondary schools within a board in southern Ontario. Nine classes made up the control group and 11 classes made up the treatment group. All classes were given 3 pretests and the posttest. The treatment group was given Socratic lessons and direct instruction on metaphorical thought and expressions during 1 semester and in conjunction with their other classroom material. The pretest scores (TOLD, Peabody, preproverbs concrete, and preproverbs abstract) did not reveal any effect of gender, but the academic students had higher scores than the applied students. The SSTW student results are more variable: (a) for the TOLD test, SSTW scores were between those of the academic and applied students; (b) for Peabody scores, SSTW students' scores are the same as academic and are greater than applied; (c) for preproverbs concrete and preproverbs abstract, the SSTW scores are not different from the applied scores. The postproverbs concrete and postproverbs abstract scores for the treatment groups also showed no effect of gender but revealed that all students who received the treatment did better on their post scores. The positive changes of the treatment group illustrate a measured movement from literal understanding to abstract understanding using direct Socratic instruction and proverbs as a medium.

Acknowledgements

I would like to express my deep gratitude to all of the students and teachers who welcomed me into their classrooms and allowed me to conduct this study with them. Thank you to Dr. Rosemary Young, Dr. Kara Smith, and Dr. Merle Richards for their ongoing support. I wish to acknowledge Dr. James Wagner for his assistance creating "The Proverbs Test." Dr. Erin Fraser provided me with assistance during the data analysis and presentation. Thank you to Carl for keeping me focussed and grounded. Thank you in particular to my wonderful children, James and MaryLouise, for their love, support, and encouragement throughout my studies.

Table of Contents

Page

Abstract ii

Acknowledgements iii

List of Tables vi

List of Figures vii

CHAPTER ONE: THE PROBLEM 1

CHAPTER TWO: LITERATURE REVIEW 10

Part 1: Conceptualizing Metaphor 10

Part 2: Metaphorical Learning/Cognition 12

Part 3: Metaphor and Reading Comprehension 16

Part 4: Reading Comprehension and Oral Previewing 20

Part 5: Direct/Explicit Teaching 28

Part 6: Gender and Literacy 36

CHAPTER THREE: METHODOLOGY 41

Part 1: Participants 41

Part 2: Design 42

Part 3: Study Validity 43

Part 4: The Pre- and Posttest Measures 46

Part 5: Procedures 50

Part 6: Evaluation of the Lesson 54

Part 7. Data Analysis 54

CHAPTER FOUR: RESULTS 58

Process of Statistical Analysis 58
Non-ELL Students 59
ELL Students 70
Analysis of Initial Scores 82
Analysis of ELL Students' Initial Scores 87
CHAPTER FIVE: DISCUSSION AND IMPLICATIONS 94
Discussion 94
Implications 100
References 106
Appendix A 121
Appendix B 123
Appendix C 125
Appendix D 132
Appendix E 135
Appendix F 138
Appendix G 139
Appendix H (Part A) 140
Appendix H (Part B) 141
Appendix I 142

List of Tables

Table Page

1: Sample Size of Non-ELL Students 60

2: Sample Size of ELL Students 73

List of Figures

Figure Page

1. Variance among abstract scores. 61

2. Variance results for abstract scores. 62

3. Treatment results for abstract scores. 65

4. Treatment effect for abstract scores. 66

5. Variance among concrete scores. 68

6. Variance results for concrete scores. 69

7. Treatment results for concrete scores. 71

8. Treatment effect for concrete scores. 72

9. Treatment results for ELL and non-ELL students (abstract). 75

10. Treatment results for ELL and non-ELL students (concrete). 76

11. Peabody/Proverbs (abstract) correlation. 77

12. Peabody/Proverbs (concrete) correlation. 78

13. TOLD/Proverbs (abstract) correlation. 79

14. TOLD/Proverbs (concrete) correlation. 80

15. Peabody/TOLD correlation. 81

16. Results of the TOLD test. 84

17. Peabody scores for all groups. 85

18. Results of the abstract scores. 86

19. Results of the concrete scores. 88

20. TOLD score results for ELL students. 89

21. Peabody score results for ELL students. 90

22. Abstract scores for ELL students. 91

23. Concrete scores for ELL students. 93

CHAPTER ONE: THE PROBLEM

Literacy is one key factor necessary for any successful society or individual. The right to education has been identified by the United Nations as one of the basic tenets of human rights. In fact, since the 1990 UNESCO World Conference on Education, literacy along with life expectancy and income has been a key indicator of a state's success in the international community. More locally, standardized tests have resurfaced as governments recognize the importance of, and attempt to measure literacy skills. Yet, despite the awareness of literacy as an important issue both globally and locally, reading achievement, in Canada and in the United States for example, has not improved significantly for nearly 40 years (Education Quality and Accountability Office [EQAO], 1996–2012; Guasti, 2002; Progress in International Reading Literacy Study [PIRLS], 2011). Education and literacy are valued across the spectrum, but a clear path to literacy success in schools and in the research is, to date, elusive.

Literacy can have a broad definition and include such literate behaviors as reading, writing, arithmetic and creative and abstract expressions. Acts of reading literacy may include reading a telephone manual, a Shakespearean sonnet, a PhD dissertation on the genetic code or a political commentary. Each level of reading difficulty is a form of literacy in reading ability. Basic literacy skills, for the purposes of this research, are the ability to read at or about at grade level and function adequately with one's peers in a formal school setting. In fact, the ability to read and advance in school along with one's peers is essential in our literacy focused society and world. Without this basic skill, a child is at a disadvantage and so, in fact, is her/his society. When a student or a nation struggles with basic literacy skills, very often their hope for a full and productive life is

diminished. For the purposes of this research, reading is a basic skill and a skill that, for the most part, once developed can lead to acquiring more sophisticated literacy skills.

Metaphorical literacy and thought represent the growth in cognitive development to the final stage of Piaget's formal operations. The transition to this stage is an important part of a student's cognitive development; similarly, the delay of transition to include abstract thinking skills limits the full cognitive development of a student. The problem then to be addressed is that although metaphorical literacy and thought are expected and indeed necessary for success in junior and senior high school and beyond, metaphorical concepts and thought are not required to be explicitly taught to these students. Metaphorical literacy and understanding can and should be taught explicitly, and this research could identify one way to begin to address and improve literacy, metaphorical literacy specifically. My analysis focused on the effects of direct instruction using proverbs on gender, English Language learners (ELL) and course level selection (specialized school to work (SSTW), applied, or academic). In Ontario, course levels indicate a specific pathway for secondary students: SSTW students will transition to the workplace after graduation; applied level students transition to work or college after graduation; academic level students transition to work, college, or university after graduation. If a student has not become functional in acquiring, using, and understanding abstract ideas in grade 9, then a more direct teaching approach should be used with these children to ensure their success, because the Ontario secondary school curriculum expectations demand this level of cognition (The Common Curriculum 1993; The English Curriculum 1999, 2007; The Transition Years document 1992). Identifying and facilitating the growth of abstract language literacy in students who have not yet mastered

these nuances during elementary school would be a useful educational endeavor. Furthermore, positive and valid results of such a study could be the baseline data for further and longer term studies of cognitive development and student achievement.

Jean Piaget (1964) distinguished between development and learning by stating that learning was the opposite to development; whereas for Piaget, the development of knowledge was spontaneous, learning he felt was limited to being a process that is provoked by external forces.

> So I think that development explains learning, and this opinion is contrary to the widely held opinion that development is a sum of discrete learning experiences… in reality, development is the essential process and each element of learning occurs as a function of total development rather than being an element which explains development…learning is subordinated to development and not vice-versa. (Piaget, 1964, p. 20).

These limits that Piaget put on learning framed his theory and ensured that the emphasis of Piagetians was on the stages of development rather than on learning. While the concept of learning has consistently been a discussion point for educators and cognitive theorists, the study of learning has not always been the primary focus. (Scaruffi, 2006).

Piaget (1954) identified stages in his theory of cognitive development and theorized that, between the ages of 11 and 16, students will reach the formal operations stage, at which time abstract thinking will emerge, begin to develop, and potentially be successfully employed. While the transition from concrete to abstract thinking eventually occurs with age in most cases as Piaget (1954) described, can this transition be taught explicitly to and learned by transition age students? Students in grade 9 are, on average,

14 years of age. Is the education system doing them a disservice by simply waiting and hoping that the formal operational skills will emerge by the age of 16 when they are in grade 11? Can these skills be assessed and developed during the first year of secondary school rather than waiting for the development to emerge? If so, this development would help to level the playing field for students entering secondary school. It can also be argued that it is during secondary school when the academic and private lives of these students become increasingly complex, and that therefore this is when and why they would benefit from having these skills; conversely, this would be when and why, without these skills, the academic and private lives of these students would be increasingly at risk if they continued to function without the use of abstract thinking skills to problem solve. North American research (Bisanz, 2009; Case, 1978a, 1978b; Flavell, 1973, 1982, 2004), has found that the transition from concrete to abstract thinking occurs with age in most cases, but Kennerly (1998) found that this transition can be taught explicitly to and learned by a student through the use of lessons which deconstruct proverbs for students and allow teacher-directed student practice. The Ontario Ministry of Education documents have accepted that primarily concrete thinking exists during the junior to early high school years (The Common Curriculum 1993; The English Curriculum 1999, 2007; The Transition Years document 1992), but this should not preclude the possibility that abstract thinking could be taught and expected and therefore addressed during this stage of transition. In fact, another theory of cognitive development would suggest that most adolescent students are in a continuous process of transition from concrete to abstract thinking rather than experiencing the distinct stages of Piagetian development (Ortony, 1993). Whereas Piaget provided theories and descriptions of stages of the learning

process toward abstract thinking, Ortony and his contemporaries provide theories and descriptions of a continuous learning process toward abstract thinking. Either way, the question remains: Can this learning process be affected by direct instruction? This is an important question because it is only once students have entered the formal operational stage by understanding abstract models that learning can take on a whole new dimension by employing the use of abstract concepts and the building blocks for lifelong literacy and learning.

Whole curriculums and courses of study in Ontario have been written with the expectation that this transition to abstract thinking will occur, through either type of development, stage-based or continuous development. For example, recent and past philosophies from the Ministry of Education in Ontario and implemented by boards of education in the province of Ontario are proof of this point; *The Common Curriculum* (1993); *The Transition Years* document (1992), and the grade 9 and 10 *English Curriculum* (2007) as well as the 2000–2013 Ontario Secondary School Literacy Test (OSSLT) all assume the concrete-to-abstract thought transition. Whichever type of transition is at play, the transition to abstract thinking in the adolescent years is the key point. Given that this transition is anticipated either as a series of stages or as a continuous development, it is therefore unfortunate that no bureaucratic or professional body proffers a document with discussion of and assistance for how teachers can use diagnostic measures or direct instruction to work with students on their cognitive journey from the concrete to the abstract. This transition is expected to emerge in a way unknown to student and teacher by grade 10, when abstract concepts are expected to be fully developed and are subsequently evaluated by a high-stakes test, the Grade 10

Ontario Secondary School Literacy Test (OSSLT), the success of which is a requirement for graduation in Ontario.

According to Ministry documents, Transition Years (1992), abstract thinking is not present in more than 75% of the junior high students and should therefore not be expected to be a requirement of all students. Yet, it is helpful if not essential for their success in grade 9 and as they prepare for the OSSLT and higher, more independent learning, that all students become literate at functioning with abstract concepts. Furthermore, a large part of student success in secondary school literacy and beyond the OSSLT relies upon a clear grasp and use of abstract concepts (MacKinnon, 2005). It seems unfortunate, then, that this transition from concrete to abstract thinking is left to develop and occur entirely naturally and separate from the classroom setting. It is, perhaps, a flaw in our system that lets some students fall through the cracks by not diagnosing their needs for abstract instructional intervention and directly teaching them when necessary throughout their development from concrete to abstract learning, literacy, and creative thinking.

In 1980, when Lakoff and Johnson published their groundbreaking work extensively articulating the use of metaphors as a mode of thought and not just as figures of speech, the importance of metaphorical expressions should have become a critical piece of current approaches to understanding human cognition. Past as well as contemporary cognitive theorists now believe that metaphor makes abstract thinking possible (Lakoff & Johnson, 1980; Kovecses, 2002; Gentner, 2001; Ox and DerElst, 2011). This writer shares their cognitive epistemology and has adopted Lakoff and Johnson's framework of conceptual metaphorical theory (CMT) for this research. Metaphor use is a mode of

thought, and such abstract thinking skills allow for the understanding of concepts and for the transfer of that understanding from one area to another.

Students who cannot effectively employ metaphorical interpretation and thought are not fully literate, requiring that this important issue be addressed by the education system. My dissertation will address the following question: Given this belief, what can be done to remedy the situation for the variety of students who enter high school in grade 9 operating primarily without the use or mastery of metaphorical interpretations and thought, students who are still functioning at the concrete stage of cognitive development? I am investigating metaphorical thought and literacy because I believe it is important to understand how students at the concrete stage can be assisted in their transition to operating effectively with metaphorical thoughts and concepts. Students who are unable to effectively employ abstract thought processes would be consequently limited in their abilities to apply knowledge they acquire to new issues and circumstances. In school, work, and life, learning concepts in one set of circumstances and applying them to other new circumstances (without having to undergo a lengthy and guided learning process in each situation) provides a foundation for practical, timely, and independent cognitive development. Our goal as educators is to guide students into adulthood and responsible citizenry ensuring students reach their full potential and, without this final step, how can we achieve this goal as educators?

How effective is the direct teaching of abstract concepts? One small pilot study with grade 9 students, Kennerly (1998), showed promising results in this area. Forty grade 9 students were used in this study. The experimental group had 22 students, and the control group had 18 students. Both groups were given pre- and post tests to measure their level

of abstract thinking. In the months between the two tests, the control group received no formal training or discussion regarding abstract and concrete thought. The experimental group, however, did receive lessons, complete work sheets and participate in discussions regarding abstract and concrete thought. The results of the post tests show that the experimental group scored much better overall in the area of abstract thinking. It is believed that this is as a result of the direct instruction that they received. Kennerly (1998) was designed to examine the area of reading and metaphorical thought. Specifically, a teaching instrument was successfully designed which moved students in the experimental group further into abstract thought than the control group. This teaching instrument included Socratic lessons, group work, oral work and a series of evaluations. The object of the teaching was to create an arena for dissecting metaphors in the form of proverbs and differentiating between their literal meaning and their more general, abstract inference.

However, can the results of Kennerly (1998) be replicated and applied to benefit a larger sample group with a wider variety of students? Can such a group of students in their first year of high school who score below the provincial average (75%) on a pretest designed to measure abstract thinking be explicitly taught to think abstractly, indicating that they are operating at the formal operational stage by Piaget's criteria? This research will examine the possibility of replicating the small Kennerly pilot and the teaching and learning of abstract concepts to a variety of grade 9 students for the aforementioned reasons. It will also discuss how such a process could benefit these students specifically and possibly students generally. The teaching instrument from Kennerly (1998) was used, which dissected metaphors in the form of proverbs and which included Socratic

(oral) lessons, oral work, group discussions, and a series of evaluations (Kennerly, 1998).

However, the degree of change produced as a result of such instruction has only once been qualitatively measured (Kennerly, 1998). Unfortunately, Kennerly (1998) was a study using only two classes, both small in number and both academic in nature. One class, the control group, had 18 students, and the other class, the experimental group, had 22 students. Both classes were made up of strong academic students from an English literature class. These factors do not render the results of this pilot valid for any kind of generalized conclusions or hypotheses. Kennerly's study (1998), while successful for some of the students in the pilot, was not large enough or varied enough to inform the literature or extend the debate on the metaphorical cognition of students during the transition to the formal operations stage. In an educational or academic context, Kennerly (1998) cannot contribute in a meaningful or significant way to the current educational or academic dialogue. However, if the results of Kennerly (1998) could be replicated with a larger and more diverse sample, perhaps there could be a useful contribution to both educational practice and academic dialogue in the area of direct instruction and the acquisition of abstract concepts such as metaphorical language and thought like proverbs. The results of this present research, where statistically significant, could inform discussions in education regarding literacy, abstract/higher order thinking, and the nature of cognitive development and be the foundation for a longitudinal study of this diverse student sample.

CHAPTER TWO: LITERATURE REVIEW

This section will begin by discussing the idea of the metaphor as a nonliteral concept. As an idea, or conceptual domain, the metaphor is an organizational nonliteral expression of human experience in an understandable and at times educational format. This latter reference to the educational qualities of the metaphor will be explored further in the following section entitled "Metaphorical Learning/Cognition."

Part 1: Conceptualizing Metaphor

Let us first discuss the concept of the metaphor and its expression. Generally, the idea of a metaphor refers to the understanding of one idea using the terms of another idea. However, Sperber and Wilson (2008) articulate the modern concept of the metaphor more specifically: Are metaphors departures from a norm of literalness? According to classical rhetoric … they are. No, metaphors are wholly normal, say Romantic critics of classical rhetoric and a variety of modern scholars ranging from hard-nosed cognitive scientists to postmodern critical theorists. On the metaphor-as-normal side … there are cognitive linguists [like] Lakoff, Talmy, or Fauconier, who see metaphor as pervasive in language because it is constitutive of human thought, and those, like psycholinguists Glucksberg or Kintsch who describe metaphor as emerging in the process of verbal communication (p. 84). This contemporary theory of metaphor can be traced back to two authors, Michael Reddy and Max Black. Since 1979, the contemporary theory of metaphor is rooted in Michael Reddy's "The Conduit Metaphor" (Lakoff, 1994). In that paper, Reddy illustrated how metaphorical spoken and written English in fact is. At the same time, it illustrated the limitations of the traditional understanding that metaphor was merely a frivolous construct, useful only in poetic or in deliberate designs of figurative

language. In that same year, Max Black published "More about Metaphor" (1979b), which outlined the idea that central to the design of a metaphor is the interaction between two subjects; he concluded that this interaction and its inferences create new meaning. The interaction he described is between a primary subject and a secondary subject, and he stated that the primary subject in a metaphor is associated with the secondary subject by way of "associated implications" "projected upon" the primary subject (Black, 1979a). Take for example; the metaphor *school is a jail*. The primary subject, school, is associated with the secondary subject, jail, because of the implied qualities inherent in our understanding of the concept of what a jail is. In general terms, this metaphor implies a pejorative connotation about school. Conversely, the metaphor *Juliet is the sun* infers that the positive qualities of the sun are imbedded in our understanding of Romeo's thoughts about Juliet in Shakespeare's play.

Using one idea to explore or explain another idea can shape the way we subsequently think about each concept, as we have seen in the previous examples of school and Romeo's Juliet. A summary of this contemporary view of metaphor is articulated by Chris Janeke in his article "Language, cognition and metaphor" (1995). But Janeke's article is as important for the questions it posed regarding the implications of this contemporary theory of metaphor on the role metaphor plays in our cognition, since, as contemporary theorists believe, metaphor pervades our language and thought patterns (Janeke, 1995). Janeke suggests that important questions resulting from Black (1962, 1979a, 1979b), Reddy (1979) and Lakoff and Johnson (1980) are questions concerned with understanding metaphorical thought. Why is school is a jail understood and preferred to school is a traffic jam? (Janeke, 1995). Why is Juliet the sun and not the air?

What cognitive role does metaphorical construction and understanding play? Does language shape the way we think and speak and write about ideas in relation to other ideas? If so, how does metaphor shape our language as well as our thought? Lakoff's "Contemporary Theory of Metaphor" (1993) outlines and provides a series of "mappings" Lakoff believes are used to structure our understanding of everyday metaphorical concepts. Lakoff identified three types of metaphors: spatial, physical, and structural. It is at this point that Lakoff began to reason that metaphor does not begin with the words; rather, metaphor begins with thought and with the subsequent association of ideas. Metaphor is used for reasoning, for making sense of the world around us (Lakoff, 1993). Interestingly, Lakoff continued by suggesting that metaphor is so ubiquitous that perhaps it is biological, that our brains and our thoughts are built on metaphorical constructs. Perhaps, he suggested, our brains evolved with "high-level" cortical areas taking input from "lower level" perceptual and motor areas (Scaruffi, 2006). Therefore, Lakoff concludes, metaphorical language is an aspect of our metaphorical brain; metaphor is not only a matter of words but a matter of thought (Scaruffi, 2006). This idea will be further explored in the discussion on reading comprehension and higher order thinking.

Part 2: Metaphorical Learning/Cognition

Andrew Ortony's collection of essays, *Metaphor and Thought* (1979, 1993) was published during this widening interest in and research into the nature, function, and development of metaphor in language and thought. He developed the idea that a metaphor is understood at any level when prior experiences can be associated with the parts of the metaphor (Ortony, 1993). Additionally, Ortony (1993) reflected the varied,

though consistent ideas regarding the theory of continuous development of metaphoric thought that had developed in the 1980s and which still forms the basis of our understanding about language and thought to date. The essays in the first section, "Metaphor and Meaning," are valuable when discussing metaphor as a form of language. The essays in the later section, "Metaphor and Education," are valuable with regard to teaching and learning with metaphors and were the building block for this research.

Historically, symbolic play in toddlers and pretend games in grade school children were thought to be precursors to metaphorical thought and thinking (Verbrugge, 1979; Winner 1979). Interesting examples include a 15-month-old girl who used the word *moon* to refer not only to the moon but also to a half-grapefruit and a hangnail; a 2-year-old boy observed that a crescent moon was "bent like a banana" (Bowerman, 1976). These connections are abstractions from the concrete, but the point has been subsequently presented that such children were using abstract thought but simply lacked the ability to create more sophisticated analogies due to their age and their limited vocabulary (Vosniadou & Ortony, 1983a, 1983b). Therefore, while it is interesting that young children can sporadically experiment with metaphorical language and comparisons, this level of thought or verbalization cannot be and/or should not be formally expected or taught by the educational system until students are in the transition stage to such a cognitive level (Piaget, 1954), such as during the transition to high school in grade 9. As a teaching tool during this transition stage, metaphors and proverbs are useful because they are commonly used when a communicator wishes to convey a difficult concept with more emotional force than a literal statement can provide (Black, 1979b; Ortony, 1994). This type of communication has been classified as abstract thought or higher thinking

skills. A modern metaphor is a direct comparison of two unlike things (e.g., school is a jail). A proverb, which is a type of metaphorical language, is a short, pithy saying (such as "The early bird catches the worm"). Proverbs are unique and most useful for this type of research because in order to fully appreciate each expression individually, the reader must be able to think in both concrete and abstract terms. The school is a jail in a symbolic sense to some who feel trapped, misunderstood, thwarted, or punished. However, in concrete terms, while a school does have restrictive rules, rooms for dealing with problems, and people (teachers, administrators) who render judgments, it is not, in the end, a jail. This metaphor is limited because the literal interpretation must be rejected, and doing so either opens the door to more abstract, higher thinking or causes confusion for the reader or listener.

Proverbs offer more possibilities. While an early bird may indeed catch a worm, in our culture, the proverb is really meant to suggest the more abstract concept that people who start on things without procrastinating will be positively rewarded. Because proverbs can offer both literal and abstract meaning, they allow for a more interesting study of abstract thinking. In fact, the use of proverbs has recently been effective in the study of metaphorical comprehension (Gibbs & Beitel, 1995; Palmer & Brooks, 2004). Hoffman and Kemper (1987) have strongly argued that there is not a special metaphor comprehension process compared to a literal comprehension process. Because the school, in the end, is not a jail, that metaphor really cannot be fully appreciated on a concrete level—the proverb, on the other hand, is not just a description of the early morning hours of a bird's life. Yet, if these concrete thoughts are the only ones a student can appreciate, then he or she is, according to Jean Piaget's (1954) theory, at the stage of cognitive

development called concrete operational. The student has not completed the transition from concrete to abstract thinking, the transition that is necessary for academic literacy.

Given the importance of metaphors to cognition and thought, consideration should be given to how they are created and understood. It has been argued that human cognition is shaped fundamentally by such processes of figuration; much of our thinking is a metaphorical process (Gibbs, 1993; Lakoff, 1980, 1993) and is also part of every individual's cultural background (Suleiman & Moore, 1995). In other words, literal expressions and meanings do not have priority in language usage (Glucksberg & Keysar, 1990, 1993). Figurative language and expressions have become embedded in our everyday oral language and so are generally understood without the user or receiver decoding the context (Boers, 2000). In fact, contemporary metaphorical researchers have determined that once a learner has determined that an expression is not literal (i.e., school is not literally a jail), s/he will then determine which kind of alternate meaning is intended (Ortony, 1993). This understanding of a metaphor's intent can be as easily understood as comparable literal expressions when used in appropriate contexts (Ortony, Schallert, Reynolds, & Antos, 1978). However, an inability to deconstruct unfamiliar figurative language in text comprehension is not only frustrating and discouraging, it can also cause delay in later language and literacy development (Nippold, 2000). This frustration and delay for high school students in Ontario can have a negative impact on learning and on self-esteem (MacKinnon, 2005).

During oral comprehension, the thought process that determines when a statement is obviously and literally false is often both quick and natural. For example, consider the statement: *John is a pig*. To even the youngest student, it would be clear that this is not a

literal statement; John is a classmate, not the name of the animal. Yet what may not be known are the meanings that the speaker intends: Is John a messy eater? Or is John's room messy? It is the intended meanings that may pose communication problems and are interesting points for discussion and comprehension, not the fact that this simple metaphor is not literal (Kennerly, 1998). While some metaphors have a very clear interpretation, others do not. Yet the thought process for interpreting them is the same (Gibbs, 1993; Mate & Malicky, 1990). In reading comprehension, as we shall explore in the following section, once a reader determines that the linguistic meaning is not the writer's entire meaning, understanding the intended meaning can be a source of some difficulty if this meaning is not clear from the metaphor or from the reader's prior knowledge base. For this reason, what precedes the metaphor is key. Gildea and Glucksberg (1983) found that ambiguous metaphors were understood immediately if preceded by relevant context sentences but not when preceded by neutral sentences. The ambiguous metaphor is not therefore misunderstood as a literal statement. Rather, its meaning is not fully appreciated.

Part 3: Metaphor and Reading Comprehension

David Carroll's *Psychology of Language* (1986) examined sentence structures and the process of extracting meaning and included a lengthy chapter on the process of interpreting meaning from metaphor. David Carroll's work is important, and his terminology is used in the lessons outline later. Specifically, he explores ways in which contextual information is used successfully in the comprehension process. It is important to note that his discussion was not limited by Piaget's theory to students of a particular age or stage. Regarding metaphors, he pursued how to comprehend a meaning that is in

fact literally anomalous but also metaphorically meaningful, amusing, or even thought provoking. Carroll concluded that we understand the levels of metaphorical thought in much the same way that we understand literal passages—we retrieve learned and stored information. If this is the case, it must be argued then that metaphorical thought and comprehension can be taught and learned in classrooms just as literal thought and comprehension are, albeit with the duality of proverbs offering valuable and far-reaching learning power (Kennerly, 1998).

Specifically, Carroll (1986) referred to useful terminology for considering a study of a proverb's three parts. For example, consider the proverb: *The early bird gets the worm.* The topic of the proverb is *bird*. The vehicle is what is predicted or expected of the topic; here it is *worm*. The ground of the metaphor is the implied connection between topic and vehicle. A reader uses the topic and vehicle to infer the ground. Carroll expanded upon studies devised earlier by I. A. Richards (1936) who influenced Lakoff and is referred to frequently by Verbrugge and McCarrell (1977) and Ortony (1980). This terminology is used in the methodology and in the lessons for the experimental group in my research as in the Kennerly (1998) study. This model for studying and teaching metaphors using proverbs and Carroll's terminology is arguably still the most comprehensive one available. Kennerly (1998) used proverbs as a way to test, instruct, and retest a small group of students. The results showed a statistically significant difference in the posttest in the performance of the students who had received direct instruction. At the time, gender was not considered for analysis. I believe the time has come for this direct instruction to be applied again to a much larger sample of students and analyzed by gender, course selection, and English Language Learners.

There is limited research that has shown it is possible to develop and manipulate this understanding. In fact, it was possible for children as young as a few months old to appreciate and comprehend abstract concepts (Bowerman, 1976). Margaret Donaldson's early writing, Children's Mind, is a seminal work which calls in to question the developmental hierarchy of Piaget's theory; Donaldson focused on preoperational children and provide examples of situations where the children were able to make sense of the Piagetian style questions using context or prior knowledge, they were then more successful in accurately providing answers to those questions (Donaldson, 1978). While the level of comprehension is debatable, it is now generally accepted that abstract comprehension is, in fact, a continuous process (Ortony, 1993). This topic of research was quite popular in the late 1970s and 1980s and was led by Andrew Ortony and others who further explored Piaget's work (1954) and the assumptions regarding the emergence and development of a child's classification skills. They argued that the Piagetian position, as it was usually and perhaps mistakenly interpreted, provided a limited perspective from which to view metaphorical thinking and understanding. Piaget's theory spoke of developmental stages, while Ortony and associates eventually developed the concept of a continuous development (Kennerly, 1998).

Vosniadou and Ortony (1983a, 1983b) also found that by 4 years of age, children are able to distinguish comparisons based on metaphorical similarity from those based on literal similarity. Years earlier, several other studies had further discussed this point, and one explained failure to understand metaphors as simply a lack of background knowledge or as exposure to metaphors out of context (Winner, 1979). In 1986, Vosniadou and others found research that discussed whether preschool children were capable of making

deductive inferences when dealing with familiar domains. Most significantly, she reaffirmed the development of both metaphor production and metaphorical comprehension as a continuous process rather than one characterized by stages and that it is primarily constrained by limitations in children's knowledge and information-processing abilities (Vosniadou, 1986).

The debate over Piagetian theory has continued in favour of Ortony's conclusions. While Piaget claimed that any true metaphoric competence was a later development (Inhelder & Piaget, 1958), what constituted an accepted level of competence for Piaget is not known because he did not formally address this issue after 1962. So, for me, burning questions still remain. For example, should predictability or lack of sophisticated vocabulary weaken the degree of metaphorical thinking and understanding a student can achieve? While perhaps Piaget may have thought so, Vosniadou and Ortony (1983a, 1983b) have said *no*. Rather, Piaget developed the argument that metaphor production and subsequent competent comprehension do not develop early (1962). For this, he and his colleagues have been questioned and reexamined, but his terms and descriptions for a learner's developmental stages are still valued, especially if we think of them as somewhat fluid.

The importance of metaphoric comprehension to success in reading and subsequently to academic success cannot be underestimated. Three earlier studies (Pearson, Rapheal, TePaske, & Hyser, 1981) supported the view that metaphors can serve the function of bridging new and old information in unfamiliar textual settings for third-grade and sixth-grade students. These studies discussed the link between metaphor and achievement and used three settings to examine whether, regarding metaphor and recall, metaphors can

help bridge old and new information in unfamiliar textual selections for elementary school children. Similarly, Lyn Robertson (1990) found that using metaphors as bridges to connect a new concept to an old idea was a positive learning experience for less able college age adult readers.

Joan Gallini (1995) and others found that metaphors facilitated new understanding and can be used to increase learning of particular material. In 1992, Sharon Pugh published a booklet for teachers with material and ideas for bridging metaphorical thinking in the context of language discussions. In fact, one study (Baechle & Ming-Gon, 1990) found that direct feedback and practice with metaphors improved the overall performance of children with learning disabilities. A similar study (J. Jones & Stone, 1989) examined the differences in comprehending metaphors by language-learning-disabled and normal-achieving adolescent boys. In this study, both groups responded favourably to the same types of metaphoric interpretations. These studies were similarly outlined in Kennerly (1998) as supporting the notion that abstract thought and understanding can and should be explicitly taught, particularly to students who lack these skills.

Part 4: Reading Comprehension and Oral Previewing

Reading is a complex cognitive process. Reading comprehension can be defined as the ability to decode words and make meaning from them. Reading involves the interaction of sounding out words as well as knowing what the decoded words mean. Thus, as defined, reading is the combination of two skills: decoding and comprehension. Consequently, being good at one of these skills and not the other is a disadvantage for the student. Furthermore, while the two work together, to begin to read independently,

decoding must come before comprehension. A child who can decode words but not understand the message in the words is not a good, independent reader. Conversely, if a child has comprehension when read to but cannot read the words her/himself, the child is not a good, independent reader. Decoding and comprehension act together to produce good reading ability. An interaction of what the reader brings to the text (i.e., prior knowledge, cognitive abilities, motivation) and what the text demands (decoding, vocabulary, syntax) is well described in much of Rumelhart's (1977, 1980) and Ortony's (1994) work. This interactive method is used by good, independent readers who access whichever method can most quickly assist them with accessing the meaning from the text. The important point here is that good readers have developed both top-down and bottom-up strategies and can use both well; when one strategy fails them, they can rely on the other and regularly employ this combination to meet with success (Rumelhart, 1977; Stanovich, 1986).

A good reader, then, can independently make meaning from the written language on a page by decoding words and understanding their meaning in a sentence, paragraph, or chapter. The cognitive process of reading demands that the good reader do four things in the brief time that she/he takes to look at a word: Identify the phonemes, decode the word, access the word meaning, and integrate its meaning into the sentence context. This successful combination of decoding and comprehension leads to successful reading comprehension. On the other hand, one type of poor reader may not be able to decode words well but may have good oral comprehension of word meaning. Another type of poor reader may be a good decoder but may not have a good comprehension of word meanings, so the decoded words are pronounced but have no meaning to the student. The

third kind of poor reader is a poor decoder who also has poor comprehension of word meanings. A good reader must be successful both at decoding and at accessing word meaning.

While the processes of decoding and accessing word meaning work together, logically the process of decoding words must occur first. When the decoding process is interfered with, then comprehension is negatively affected. Poor decoding skills interfere with comprehension, mainly because decoding takes more memory (Stanovich, 1986). When a reader is only or primarily attempting to use decoding strategies to gain meaning from text, she/he is using their short-term memory almost entirely to decode and therefore has less room left over for accessing or building word meaning and prior knowledge. This reader will read far more slowly and with less meaning derived than a reader who has automatized some sight words and is then able to rely on automatized words and prior knowledge along with decoding strategies: the interactive process. Therefore, improving reading through listening may eliminate the time and space spent on decoding and allows the listener to develop a word list through oral language.

If this is true, then reducing the decoding interference by reading the text aloud to the students should help with the comprehension (Stanovich, 1993, 1999, 2000). In readers whose decoding is poor and listening comprehension is normal, then listening might be used to develop word automization, prior knowledge, and ultimately reading comprehension. This can be done by separating the two processes involved in reading (decoding and comprehension) for the purposes of direct instruction. This can be done in two ways. First is by directly teaching decoding skills; Stanovich (1993) states that "direct instruction in alphabetic coding facilitates early reading acquisition is one of the

most well established conclusions in all of behavioral science" (p. 286). Second, modeling the decoding process by reading aloud to reduce decoding interference allows comprehension to develop. The latter process might be called "oral previewing."

Therefore, a poor reader may be a competent decoder (bottom-up model) but not have the expected level of comprehension. If this is the case, given that the child's performance in other cognitive skills is normal, the reason for the low level of comprehension may be due to weak access to word meaning (top-down process). This may be due to lack of exposure to language and/or lack of prior knowledge as a result of the home environment: weak language skills at home, low socio-economic status (Chall, 1996). Oral language is a building block of early reading skills; listening skills and oral receptive vocabulary are the two major building blocks for students entering the school system. Exposure to oral language before learning to read will build a strong list of words and meanings for the child to access; when they learn to decode a word, ideally, they should have that word in their memory bank with meanings and prior experiences associated with it. A deficiency in oral language skills may result in poor language acquisition because the words they are trying to read have not been understood prior to the reading task; lack of prior knowledge and low exposure to oral and written language can also be causes of poor readers in the reading process. This is particularly true among young students from homes or environments where exposure to language and literacy skills, and even books, is limited. Recent researchers have found that when other factors have been ruled out, children who lack the oral language skills due to lack of exposure and guidance experience a lag in language development that schools can, in fact, address and overcome, not through special education but through focused, direct, explicit

instruction (Chall, 1996). These students need a lot of exposure to language and words and books, but they are not all special education or exceptional students. Readers who are behind their peers in decoding and/or word meaning can benefit from oral input as a way to build up their access to meaningful words and assist with the combination reading demands: decoding and comprehension. It is extremely important to address this deficiency, and one way is through the use of oral language.

Both Stanovich (1986) and Chall (1996) have produced work to identify just how important this issue can become. For Stanovich (1986), the issue for poor readers is greater than just not doing well in reading; he in fact showed that poor primary aged readers get relatively poorer at reading as they progress through school. Stanovich's Matthew effect is based on a message in the biblical book of Matthew: The rich get richer and the poor get poorer. Similarly, in reading, he maintains that primary children with inadequate vocabularies and reading skills read less, and when they read, they read slowly and with less enjoyment. The result of this is that these poor readers become even poorer readers. He also describes that at the same time, the reverse is true for other readers; good readers become even better readers. Readers who develop reading skills well and early end up with rates of reading that get faster and better. For them, their increased exposure to reading predicts gains over time in reading and vocabulary. Stanovich's research shows that this knowledge base improves learning and that the opposite is again true; lack of building up this knowledge base in a timely manner ensures that these readers will always be behind their peers who are better readers and that, as the grades go by, the gap between good and poor readers will widen continually.

Stanovich (1986) also revealed that poorer readers were more reliant on context to

facilitate word meaning. That is to say that poorer readers use the top-down approach to reading, which is their Achilles' heel, so to speak. This is because once they move out of primary and into junior grades where the purpose of reading shifts from reading instruction to reading for content, the poorer readers have lost the only strategy they had; the content is not familiar and they cannot use the top-down strategy (and the bottom-up strategy they had never mastered). Stanovich (1986), like Rumelhart (1977), describes reading as an interactive process where readers can use one strategy to compensate for deficits in another, but that both strategies are present in good readers, and the absence of one will result in poor reading comprehension.

For Chall (1996), this Achilles' heel effect takes place in grade 4 for most children in North America. Until grade 3, when children are generally taught how to read, poor readers and their teachers use this time to work on developing the interactive process of reading. Good readers at this time, according to Stanovich (1986), are racing ahead of poorer readers and acquiring strong vocabularies and reading skills. Chall (1996) found that for the most part, however, in these early years, the poor readers could remain at par, at least with the rest of the class. However, if by grade 4 the poorer reader still has not developed appropriate strategies, the reading comprehension gap opens wider because the focus in the class shifts to reading for content. It is after grade 4 that texts become more difficult, vocabulary less familiar, and reading problems are exacerbated. Chall (1996) focused her writing on this reading crisis on poor readers from poor homes; the focus of her study was 30 children of average intelligence from disadvantaged homes where reading and literacy are not able to be a priority. These below-average readers were compared to average or above-average readers in grade 2, 4, and then 6. It is important to

note here that the research results showed that teachable literacy skills, and not cognitive factors, explained the reading problems of these low-income children. Her conclusions suggested that these literacy skills be taught directly as soon as a child shows signs of falling behind and that "reading variety and frequency are essential to the development of automaticity and reading fluency" (p. 34). Vocabulary was also a focus for Chall (1996), and she recommends widening the child's vocabulary with direct instruction. It is this model that has been applied to the grade 9 students in this study to assist those who have not yet reached reading literacy with metaphorical language.

A Socratic teaching strategy focusing on structured oral questioning and discussions led by the examiner will be employed which meets some of Chall's (1990) recommendations and is the model applied in this study. Socratic discussion will help students discover the structure of the proverbs as well as the structure of their own thoughts and experiences and how they can derive meaning and make connections for themselves. Similar strategies that exist are called verbal reports, verbal protocols, reciprocal reading, and think aloud. The examiner will model reading comprehension out loud while reading the text orally and encourage student participation and finally request that they internalize these strategies and talk about the structure of the proverb and the meanings of the proverb as they read as well. This Socratic technique is an important part of the process in this study of constructing meaning from abstract text in the form of proverbs and with classroom and social group interaction. As Dewey (1916/1966) himself wrote in *Democracy and Education*: "Not only is social life identical with communication, but all communication is educative" (p. 8–9). From a social constructivist perspective, the result of participating in the social situation involving

reading and thinking aloud about reading is that students can look to the teacher and other students to help them construct the text and also what it means to read and think and talk about reading (Wilhelm, 2003).

Generally, listening comprehension is a more basic and easier skill than reading comprehension. For a student who is beginning to grasp abstract concepts, the level of listening comprehension will be higher than the level of reading comprehension of those concepts. In reading text, this is true for several reasons. When an early reader listens to a story, there is more cognitive space in the working memory to accommodate the story schema. The working memory is able to store the story schema and retrieve that schema orally to demonstrate comprehension. This is so because there is much less cognitive space being used for decoding when a student is only listening to the story and then responding orally. Unless there is a general learning disability or a hearing impairment, learners will score highest on listening comprehension with oral responses.

This research uses a similar strategy with students to develop metaphorical vocabulary and comprehension, using oral preview lessons and discussion for the recognition of, decoding of, and reading of abstract language in the form of proverbs. The Socratic oral previewing is a direct teaching strategy to assist grade 9 students with the reading comprehension of the abstract expressions of proverbs and to develop the stronger skills and metaphorical literacy of their peers. The researcher read the proverbs aloud to the students, which simultaneously modeled and orally explained the metacognitive reading strategies for abstract expressions such as proverbs. While reading to, decoding, and discussing the proverbs with the students, the experimenter paused frequently to think aloud and ask questions about the proverb, to link the proverb and its

parts to prior or general knowledge, and stopped at key words to study their context in the passage.

If the students have no serious listening or attention problems, by eliminating the decoding process with the proverb, the student's comprehension of the proverb will be developed through listening. Their comprehension can then be assessed by comparing the pre- and posttest results from the Proverbs Tests. In the oral discussions, the students will orally be encouraged to dig deep to understand the meaning and synthesize ideas brought out in the proverb. Students whose problems are only decoding the abstract language and concepts will benefit from this strategy. Decoding skills will be taught directly as a companion to this strategy, using words from the proverb under discussion and Carroll's terminology (1986).

Part 5: Direct/Explicit Teaching

Current pedagogy continues to support direct and explicit teaching among the key strategies to ensure reading comprehension. Professor Maureen McLaughlin lays out the goal of reading instruction as "teaching students to become active, strategic readers who successfully comprehend text" (p. 434), and summarizes 10 principles of reading comprehension from the literature that every teacher should know (McLaughlin, 2012). They include explicitly teaching a variety of reading comprehension strategies that build students' reasoning power. These strategies include previewing, self-questioning, making connections, visualizing, knowing how words work, monitoring (i.e., asking "Does this make sense?"), summarizing, and evaluating. Rupley, Blair, and Nichols (2009) further state that direct instruction is essential, particularly for at-risk readers, and must be an integral part of the teaching of all the components of the reading process,

namely phonemic awareness, phonics, fluency, vocabulary, and comprehension. Rupley et al., base their article on the belief that learning to read is an interactive process and that "students can be effectively taught to become strategic in their comprehension of text" (p. 126).

Not only is there a successful precedent for direct instruction and for using Carroll's (1986) terminology, but there is also a successful precedent for creating a positive and early learning environment for the discussion of metaphors (End & Danks, 1982; Qualls, 2003; Readence, 1986; Thompson, 1986; Tompkins, 2001). Attempts at understanding how metaphors are acquired by elementary students were reported by Gambell and McFetridge (1981). They concluded that teachers can create the environment needed to help a student grow in ability to appreciate and manipulate metaphoric language. Palmer and Brooks (2004) wrote that figurative-language-interpretation instruction is a necessary component of a teacher's reading comprehension curriculum for at-risk students. Given the recent data on gender and literacy, boys as a group could be considered at-risk students.

Earlier, Stella Vosniadou investigated the specific sources of difficulty in the young child's understanding of metaphorical language (1983a, 1983b). Ninety early elementary children were read stories that ended with a metaphorical statement. The children were asked to dramatically interpret the final abstraction, and their acts were marked as literal, correct (abstract), or incorrect. When the stories were predictable and explicit, metaphor comprehension was clear. Similarly, Amy A. McClure (1986) studied elementary children and compared their understanding of poetry after a year of study. She concluded that a significant number of children were able to develop complex and abstract

responses to the poetry with her documented gentle instruction, encouragement, and time. This research explores the value of employing the same process and predicts the same results for direct instruction with grade 9 students.

Recently, McLaughlin (2012) also highlighted the importance of reading teachers working from the concept that comprehension is the active process of constructing meaning as the reader makes connections between prior knowledge and the text.

> It's all about good teaching. Effective teachers", she says, "believe all children can learn; they differentiate instruction using a variety of techniques and groupings; they understand that students learn best in authentic situations; they orchestrate print-rich, concept-rich environments; they have in-depth knowledge of reading, writing, speaking, and listening; they provide lots of opportunities for students to read, write, and discuss; they draw on insights gained from good readers; and they constantly use assessment evidence to fine-tune instruction. (McLaughlin, 2012, p. 438).

Teaching strategies for reading have certainly been affected by the changing philosophies in education over the past few decades. In the 1960s and 1970s, thinking and research on reading comprehension looked at what was wrong for poor readers and tried to devise strategies to correct these errors (Chall, 1996; Stanovich, 2000). Generally, reading instruction was rooted in behavioural psychology, which meant that reading was seen to be the end product in a process composed of several isolated skills. Hence, to help a poor reader, one identified the area or areas of disadvantage in the process and corrected it. For many of the things that were identified as wrong, or not ideal, for poor readers, there were solutions found: Socioeconomic status was identified as a disadvantage and in the US; the Head Start programs were funded and popular.

Decoding, auditory discrimination, and phonemic awareness were seen to be difficult for poor readers, so direct instruction of these deficit areas was promoted. Other issues were identified that kept poorer readers at a disadvantage, such as dialectic differences, home culture versus school culture, dyslexia, neurological deficiencies, whole school issues, teacher factors, and administrative concerns. During this time, energy was primarily focused on correcting conditions for the poorer reader. The focus slowly began to change in the 1970s when Chomsky's works from the 1950s became better known and more accepted. His *Syntactic Structures* (1957) had rejected the behavioralist approach and began the movement toward cognitive psychology (1972, 1986).

K. S. Goodman and Y. M. Goodman published their chapter "Learning to Read is Natural" in Resnick and Weaver's *Theory and Practice* (1979) which identified a cognitive parallel in learning to speak and learning to read. Goodman and Goodman, however, believed that little or no direct instruction was needed for either speaking or reading; children would discover their own strategies to master reading skills as they had to master speaking. The acceptance of this thinking and the "whole language" movement that followed forced the focus of teaching strategies for reading primarily in the direction of identifying what strategies good readers had employed and then teaching them to the poor readers. Activating prior knowledge was one strategy that good readers supposedly employed, so it was included in the list of reading strategies that teachers were expected to teach to poor readers. Therefore, a struggling reader was still thought to benefit in some ways from direct instruction (Pressley, 1998; Vygotsky, 1934, 1986).

But is the use of one's knowledge base a teachable strategy or rather an unconscious cognitive process that cannot be translated into a teaching strategy? To explore this

problem, I would ask one further question. In discussing comprehension skills, the descriptions are primarily spatial metaphors. We speak of "higher" order skills (Bloom, 1956), "lateral" thinking (deBono, 1967), "scaffolding" (Vygotsky, 1986), "bottom-up" and "top-down" (Rumelhart, 1977). But do these terms really reflect anything cognitively, or are they merely metaphors? I suspect they are meant to suggest a hierarchy in the thinking process and that they are based on the assumption that higher order comprehension operates on a lower order data base. Accessing prior knowledge is meant to be considered a higher order comprehension skill that accesses a data base that has already been constructed, perhaps by using primarily lower order skills.

We have accepted thinking that suggests comprehension operates on an established data base of vocabulary, concepts, categories, stories, prior knowledge, and experience, that is, long-term memory. Is higher order thinking taking information from this data base of knowledge and abstracting meaning? Do we build a "higher" meaning from the "lower" information? And if a reader cannot abstract higher order meaning, what is missing in the process? Some new thinking in this area suggests that thought might be parallel and simultaneous rather than a hierarchy, but how this might translate into explicit teaching and learning is not yet clear.

This research and discussion could inform the literature on the issue of teaching and learning of higher order thinking skills. If, as educators, we desire to achieve the higher and deeper level of understanding for our students, we should know what we really mean by higher and deeper comprehension. And how do we know when we have achieved this level of comprehension? Piaget (1954, 1962, 1964) claimed that what children can learn is determined by their current stage of cognitive development. Vygotsky (1934, 1986)

emphasized the notion that cognitive development depends largely on social factors and on language acquisition. According to the information-processing approaches outlined by the recent cognitive development research and revolution led by Walter Kintsch, (Kintsch, 1998a, 1998b, 2000; Kintsch & Erricsson, 1995; Kintsch, Patel, & Erricsson, 1999; & Kintsch & Van Dijk, 1978), cognitive development is associated with increases in knowledge and mental capacity. According to Kintsch and others (Britton & Graesser, 1996; Britton & Gulgoz, 1991; Graesser, Singer, & Trabasso, 1994; McClelland & Rumelhart, 1981, 1986; Rumelhart, 1980), the mind is a system that performs one action after another very rapidly: reception followed by flow into working memory followed by storage into long-term memory followed by retrieval and transfer into working memory. All this activity is meant to result in the construction of meaning.

The twists and turns in language have significant implications for reading and higher comprehension. The type of assumptions a reader makes during the reading process determines his or her level or degree of deeper comprehension. Whether a reader can move from the literal to an intended meaning is key to deeper comprehension or inferencing. Inferencing is a term used to describe one of two processes: connecting/bridging or extending/elaborating. Connecting inferences are assumptions made between a current text and a previous text (Clifton & Ferreira, 1987). However, the question of how and why inferences are drawn has been long debated (Kintsch, 1998a, 1998b, 2000; Kintsch & Erricsson, 1995; Kintsch, Patel & Erricsson, 1999 and Kintsch & Van Dijk, 1978). Rogers and McClelland (2004a, 2004b, 2004c) discuss how semantic features and representations are produced during particular tasks. Higher levels of semantic structure are derived from the organization of semantic information in the brain

after a literal meaning is established. In their recent research on semantic features, Rogers and his team have located the region in the cortex of the brain where it occurs using Wernicke's turn-of-the-20th-century research (Eggert, 1977). Their research digitally replicated this area of the brain and digitally simulated lesions using a computer program which provided similar cognitive patterns with vocabulary as patients with semantic dementia. The lesions' effect is that the mind is eventually unable to distinguish between closely related objects (types of animals) and then between unrelated objects (animals and automobiles).

With all this in mind, let us return to the discussion of metaphor: the master trope. We know that metaphors constrain inferencing (Gibbs, 1994; Rumelhart & Ortony, 1977). Perhaps metaphor comprehension is not simply causal. Unfortunately, no experimental work has been done on the role of metaphorical knowledge in constructing causal inferences, but could it be that these important causal chains are built using metaphorical schemas? And if so, what role does long-term working memory play? Kintsch and Erricsson's (1995) theory extends older skilled memory theory to, among other things, reading. My own research and its results would, in a small way, inform and lead to more discussion and research in this area of reading and comprehension.

Furthermore, the results of this research may offer exciting new answers to questions about teaching strategies and provide some further evidence that teaching strategies should include the base or background knowledge as well as the skill of constructing and deconstructing language. Rogers and McLelland (2004c) have already shown that when lesions take away the metaphor's base, there is no retrieval of meaning. Could their new research explain why, for example, prior learning might help reduce interference and

consequently increase comprehension? Or have they shown that developing a knowledge base alone is not sufficient and that there is a specific place for teaching the strategies? With this research, we may be brought one small step closer to understanding the path to higher order comprehension—that valued commodity in our schools and, indeed, in our society.

Especially in the present climate with the high-stakes EQAO grade 10 literacy test (OSSLT), such a transition from concrete to abstract thinking must be investigated as well as how such a transition could be successfully introduced and taught in a grade 9 classroom to help to prepare students for success in school and on the OSSLT. Certainly, this is not a new problem or issue for educators. However, it is one that has still not been definitively or practically addressed. Ontario teachers are expected to develop critical, abstract thinkers, but explicit teaching units and guidelines to this end have yet to be invented.

As Kennerly (1998) noted, there is also no method identified to assist a teacher in determining how many and which students in her or his class are concrete thinkers, which are abstract thinkers, and which are in between. Ideally, there should be a diagnostic, a formative and a summative instrument for assessing these students. That there is not is a disappointing and troublesome fact. Given the importance of metaphorical language and thought in general, and specifically the importance of such cognitive abilities to the English curriculum at the secondary level, this is a serious oversight. Again, currently there are instruments to assess metaphorical comprehension at the elementary and intermediate level, and a lack of curriculum materials designed to develop this ability for students from grades 7 to 10 (Glickson, 2001; Hillman, 2001; Klinger, Artiles, &

Barletta, 2006). Likewise, the current absence of teaching strategies that reflect this model of how metaphorical understanding can be developed seems negligent (beyond superficial exposure or practice approaches).

Part 6: Gender and Literacy

Does gender play a role in the understanding or metaphorical thought and reading comprehension? The recent Ontario government publication on male literacy, *Me Read? No Way!* (Ministry of Education, Ontario, 2009) revealed several facts about male literacy in Ontario. Girls in Ontario typically score higher than boys on standardized tests in the language arts. According to the Education Quality and Accountability Office (EQAO) results from grades 3, 6 and 10, boys' scores have been lower than girls' scores in reading and writing every year since 1996 (EQAO, 1996-2012). Similarly, in the 2011 progress in international reading literacy study (PIRLS, 2011), grade 4 girls performed better than boys, and this result was consistent in all 35 countries that participated in the study, including Canada. A decade later, when the study was repeated in 2011 (PIRLS, 2011), the large gender gap in reading literacy continued in favour of girls, who outperformed boys with a 16-point advantage on average across the 45 countries included in this study. It is noteworthy that the reading achievement gap for these PIRLS studies is larger for literary than for informational reading, perhaps because the former required more metaphorical thought than the latter. Furthermore, the 2000 and 2009 Programme for International Student Assessments (PISA) which both focused on reading literacy revealed a gender gap in both years in reading performance and that gap did not narrow in any country over that time period; boys scored lower than girls on the reading portion of their tests in all countries including Canada. Finally, the 2002 School Achievement

Indicators Program (SAIP) found that girls aged 13 to 16 scored higher in literacy than boys of the same age across Canada; the Pan-Canadian Assessment Program (that replaced SAIP) indicated the same results when they studied literacy in 2007. The recent local and global concern for boys and literacy has stemmed from these and other assessments. Ultimately, the poor literacy skills of boys could have a profound effect on their performance in other subjects, on their careers specifically, and on their lives in general.

This problem must be addressed in light of the data that reveal that boys' literacy results are lower than girls'. The motivation behind this research is the serious and immediate need for teaching instruments and strategies that develop abstract and metaphorical comprehension, which will in turn help to improve boys' literacy results. Not only is this cognitive development possible, it is necessary for success at both the intermediate and senior levels in the English curriculum and beyond. All the research described here suggests that metaphor comprehension in reading is an important component of literacy and of the overall academic success of a student. Metaphors can be successfully discussed at any level in the classroom, and the research provides a terminology that breaks down a metaphorical expression into its basic parts.

Me Read? No Way! (Ministry of Education, Ontario, 2009) was, in fact, written in response to EQAO literacy data that showed specifically in 2000/2001 that grade 3 and 6 test results showed a major gender difference, with grade 3 and 6 girls surpassing grade 3 and 6 boys in reading. In fact, further investigation showed that the gap widens as boys move up in grades as per EQAO 2002 results (MacKinnon, 2005) and also in the following years. These Ontario results are also consistent with international data on

reading achievement. In an earlier study in the United States, the data showed that the gender gap in grade 8 reading scores was over 6 times greater than the gender gap in math (Willingham and Cole, 1997). At a school board in southern Ontario, a recent report revealed that in every OSSLT the girls outperformed the boys; in 2003, 80% of the girls passed compared to only 73% of the boys passing (MacKinnon, 2005), and this trend continues. This OSSLT result is significant when compared with the data from the school board's internal testing in grade 9 which show no significant cognitive difference by gender with respect to cognitive development (MacKinnon, 2005). This report also reveals that the gender difference in numeracy, where boys outperform girls, is smaller than the gender differences in literacy, with girls outperforming boys. Finally, a longitudinal study recently published that spanned the years from 1990 to 2000 revealed that boys were consistently lower than girls in language arts skills during that time (Phillips, 2003).

Researchers at the Ontario Institute for Studies in Education (OISE) have some explanation for why the Ontario data show such a gap in boys' literacy. Barbara Bodkin, in The Road Ahead, wrote that boys actually demonstrate literacy in ways the Ontario curriculum does not formally assess. Bodkin (2009) published the results of a recent 2-year qualitative study that examined junior high school boys' perceptions of literacy and their activity "in school and outside of school" with respect to literacy. Her initial findings fit with common beliefs that schools are failing boys, but also reveal more about boys' social literacy practices and provide another layer of understanding for the issue of boys' literacy. She contends that boys are often disadvantaged in academic literacy, but not in all literacies. Boys' numeracy, technical, and digital literacies were acceptable.

However, as a result of Ontario's current emphasis on the OSSLT, boys' reading literacy is not being assessed in a variety of ways. Furthermore, Bodkin states that boys' underachievement in literacy may not directly translate to electronic technologies outside of school—many boys have a great deal of expertise and interest in numerous forms of digital literacies, often even greater than their parents or teachers. However, while these intelligences may inform and transform the strategies and discourses they use in school, this does not translate into higher overall academic literacy performance.

Likewise in Australia, the Report of the Standing Committee on Education and Training, Commonwealth of Australia (Australia Parliament, 2002) found that traditional schooling tends to favour passive learning, to which girls adapt, to the detriment of those male students who prefer interactive and experiential learning styles. The committee's research revealed that boys tend to be action oriented and impatient, inclined to take risks; their report also revealed that boys develop fine motor skills later than girls do. Although boys tend to prefer clearly defined objectives and instructions, short-term challenging tasks, and visual, logical, and analytical approaches to learning, the current curricula in Australia, especially in areas of literacy, often favour the learning styles and areas of interests of girls.

According to work by Peterson (2004), grades 4 and 8 students in Ontario said that girls could read and write about almost anything, including topics that were viewed as "boy topics," whereas boys felt they had to avoid typically girls' topics such as romance and other relationship-oriented literature in order to avoid peer ridicule. In addition, the boys in the study said that being a good writer was not part of their view of being a boy. In the same project, Peterson also assessed girls' writing as more detailed, descriptive,

creative, and having better grammar, punctuation, and spelling than boys' writing. Boys, she wrote, felt that their strengths lay in the active, less compliant aspects of writing: writing exciting, creative stories and writing stories that appeal to their peers by "grossing them out" or making them laugh, for example. Certainly, the desire to resist, ignore or reinvent teachers' and other adults' expectations is a recurring theme throughout the research on the characteristics of boys' writing.

As a Canadian researcher in boys' literacy, Heather A. Blair from the University of Alberta, argues educators need to acknowledge the changing nature of literacy in society. She feels that we need to transform society's ideas about literacy to help boys recognize their strengths and then move them to broader, more global literacies. Educators, she claims, need to better understand boys' "morphing literacies, critique the arguments that would position them as failing and remind ourselves that there are multiple definitions of literacy and multiple paths to becoming literate" (Blair, 2003, p. 77). But this still leaves us with the question of how to improve boys' literacy in our current climate because the foregoing data on literacy indicates that girls are significantly outperforming boys. This research suggests that my own earlier (Kennerly, 1998) research results could also be considered as a way for direct instruction to be applied to boys to improve their academic literacy results, without suggesting that a single strategy could provide the solution to improving boys' literacy.

CHAPTER THREE: METHODOLOGY

My research examined the effect of an instructional program on the development of metaphorical thought in grade 9 students. The impact of this program on grade 9 students as a function of gender, first language and stream (SSTW, applied, and academic) was also investigated. Twenty grade 9 groups from seven high school sites participated in this study. I requested that principals interested in participating communicate with me and, if interested, offer this option to their teachers. All 22 schools volunteered, but for logistical reasons, as the only investigator, I had to select a manageable number of classes that were geographically closer together. There was no relationship between the investigator (me) and participants other than that we work in the same school board.

Nine groups out of the 20 groups were control groups, and they were not taught directly about metaphor interpretation or its components in between the pre- and posttests; the other 11 groups were directly taught the treatment lessons over a period of 4 months in conjunction with their other regular classroom material. The primary hypothesis of the study was that metaphorical thought in the form of proverbs could be broken down and taught explicitly to the experimental grade 9 classes. Clearance for this research was given by the Brock University Research Ethics Board, File # 09-223 – Young as well as by the school board. Letters of invitation and permission forms to participate were issued (Appendices A and B). All permission forms were signed and returned.

Part 1: Participants

From a school board in Ontario, 20 grade 9 classes participated, for a total of 378 students. After the proverbs pretest, the two standardized tests (the TOLD and Peabody)

were administered individually, but, before they were marked, the control and treatment groups were selected. Because of the different class sizes, nine classes made up the control group and 11 classes made up the treatment group. There were 171 students in the control group and 207 students in the treatment group. Before the treatment began with the treatment group, one student from the treatment group chose not to continue with the study, leaving 206 students in the treatment group. The birthdays of all the students were checked, and all students were born in 1996 and were in their 14th year, age appropriate for grade 9. All students were assigned a number for the study, and only this number was used during the study and the data analysis.

Part 2: Design

This thesis employs a pre- and posttest quasi-experimental design to test the causal hypothesis and operates within the quasi-experimental design as set out by Campbell and Stanley (1963), Shadish, Cook, and Campbell (2001), and Creswell (2008, 2012). Independent variables are age, gender, and course. The dependent variable is the understanding of metaphorical expressions such as proverbs. The causal hypothesis is that direct instruction can improve students' understanding of abstract expressions, specifically proverbs. Grade 9 students were used in this study deliberately because, as stated earlier, metaphorical thought is expected and necessary for success in junior and senior high school and beyond, but metaphorical concepts and thought are not explicitly taught to these students, so if they have not developed them they are at a disadvantage in high school. The types of interventions were not chosen at random; rather proverbs and the proverbs test were selected specifically as discussed earlier. The design uses the proverb pre- and posttest measures to assess the causal hypothesis as well as the two

other language instruments (TOLD and Peabody) specifically selected to rule out or identify significant differences in the cognitive abilities of the students and establish a baseline. The design also used a control group which did not receive any of the treatments until after the posttest was administered.

Part 3: Study Validity

Controls for Internal Validity

Throughout the semester during which the study took place, while the data were collected, attempts were made to control as many internal factors as possible. A standard script was used during all the interactions with the students when collecting the data and when administering the lessons in an attempt to control instrumentation. Intersession history was not able to be controlled within groups or between groups; however, teachers were asked not to discuss the study or reteach what was being covered in the treatment until after the posttest. The sessions of treatment and testing were not administered simultaneously because the same administrator, this author, was used for all the tests and interventions. Using the same administrator eliminated the issues surrounding experimental differences in delivery and interaction. However, this did not allow the simultaneous delivery of the material to the participants, and it raises into consideration the possibility of researcher bias. Regression was controlled as much as possible because the results of the pretest and baseline assessments were not known or considered when the experimental and control groups were selected or during the treatment sessions. Also, the experimental and control groups were randomly selected and assigned. Furthermore, once students wrote the pretest, their data were not eliminated from the study; only one student who asked to leave the study was an exception to this. No other student data

were eliminated from the study. The inferential power of this study is enhanced by the design choice made to include two additional pretest observation points (TOLD and Peabody), both of which were administered individually within 7 days of each other and seven days after the proverbs pretest had been administered. The design also strengthens the inferential power by including all secondary schools within the Ontario school board that volunteered (seven out of the 22 high schools in this board were included in this study).

Controls for External Validity

Attempts were made to control as many external factors as possible. However, the selection of the school board was not a random choice, and the selection of the grade 9 classes was not random. All classes selected had the teacher and administrators assigned to them agree to participate. Only one student in the study did not continue after the proverbs pretest was administered. While the tests and intervention lessons were not delivered simultaneously, they were all administered by the author within seven school days of each other and with the classroom teacher in the classroom. All the proverbs pretests were given within the first seven school days of the semester, all the Peabody tests were given within the next seven school days, and the TOLD tests were all given within the seven school days following the Peabody test administration. Likewise, all the proverbs posttests were given within seven days of each other near the end of the semester. The time between the pre- and posttests was 8 weeks; the treatment lessons were delivered within seven days of each other over the 8 week period. Students in the study were told they would all eventually be given the intervention lessons as well as the test instruments. Therefore, the students in the study knew that they were in the study

and that the activities for the study were artificial; that is, the students understood that the activities were not normally part of the curriculum and were not being completed by students not in the study. The students were asked to not discuss the study with their teachers or with their friends until after the posttest, and while they agreed to comply, it is not known what level of compliance there was to this request. Furthermore, every effort was made to ensure that all students felt they were equally involved in the study, even though the control group did not receive the lessons until after the proverbs posttest.

Tests of Significance for This Pre- and Posttest Control Group Design

Both parametric (Anovas) and nonparametric statistical analyses (sign tests) were employed to analyze the data in this study with respect to inferential statistics, interactions, and variance. The first analysis of the educational data set used a general linear model (GLM; Zuur, Iena, and Elphick, 2010). The distribution of the posttest was not normal so that data were reanalyzed using a generalized least squares (GLS) model (Zuur et al., 2010); the GLS analysis confirmed the results of the first analysis of the data set. This double analysis was part of the design and intended to ensure reliable quantitative results.

Limitations of the Design

As a quasi-experimental design, there are limits to the amount of control that is possible, leading to concerns regarding internal and external validity. As such, the possibility of confounding bias cannot be entirely eliminated and must be considered. To address this limitation, the statistical technique of multiple regression was used to identify some possible confounding variables, such as gender. However, the variation in the results of the proverbs pre- and posttest could be contaminated by factors that cannot

be measured or controlled, such as teacher intervention (although all teachers reported they had not retaught or discussed the proverbs material with their classes before the posttest), student interaction (although all students reported they had not discussed the proverbs material in their classes before the posttest), student practice (some students may have further read about, discussed, or investigated proverbs before the posttest), parent involvement and interaction, socioeconomic status, parent education, and culture. Statistical regression, student history, and participant interactions are all threats to this study and limit to some degree the certitude to which inferences regarding a causal impact of the treatment can be made.

Part 4: The Pre- and Posttest Measures

Three pretests were used in the methodology, and one posttest measure was used. As a warm-up activity to the study and after the proverbs pretest, the first standardized test was administered to establish a baseline. The first standardized test used was Subtest Six: Multiple Meanings from the Test of Language Development—Intermediate: Fourth Edition (TOLD-I:4). This pencil-and-paper subtest is an age-based standard score test that was administered individually. The maximum score that can be obtained is 139. Students were read a list of 15 words with multiple meanings that are all applicable. The objective was for the student to select all the words that they know to be applicable, although they are not told that all meanings apply. An example of this exercise is the word/homonym *wrap/rap* which can mean:

- To cover a package with paper
- A garment-like coat
- A type of sandwich made with a tortilla

- The end of a story or news report
- A quick, sharp blow
- A knock on the door
- A type of music
- A criminal charge
- A prison sentence.

There is also a blank line intended to provide an opportunity for the students to say anything else they know the words to mean. This sample has a possible score of 10. As a warm-up, this exercise complements the proverbs study and offers a baseline for data collection. The Multiple Meanings Subtest is a reliable measure of oral language literacy (r = .91) and is a valid measure of oral language literacy with a 95% confidence interval.

The second standardized test administered was the fourth edition of the Peabody Picture Vocabulary Test, PPVT-IV (Dunn and Dunn, 2010) which was also used as a baseline assessment for all participants. This test measures the receptive vocabulary skills. The Peabody was also administered individually and required no reading or writing, making it a fair assessment of oral vocabulary for students with written language problems and/or reading problems. The Peabody is a book in easel form, with four pictures per page. The examiner sits across from the student and reads a script asking the students to point to the picture that best represents the vocabulary word that is spoken by the examiner. The Peabody suggests a starting point, based on the age of the participant by months, so that each participant is likely to begin the test at an age-appropriate location. All students were able to begin at the age-appropriate location because they completed the first eight items suggested for their age group as the basal scores. The

examiner marks which picture the participant points to for each vocabulary word. The test is untimed, and the finish is determined by the number of vocabulary words the participant gets wrong. The Peabody took approximately 10 minutes for each student. No formal training is required to administer this standardized test. It is considered reliable and valid as a measure of oral vocabulary. The results of the Peabody for the participants of this study were scored and calculated manually by the examiner. The test kit includes a chart to convert a student's raw score to the standardized score, and this was completed by the examiner. The standardized scores were used in the final data analysis.

Because the Peabody is administered individually, the author administered it individually in the hallway outside of each classroom. Participants were asked approximately 50 words each, and the test concluded when the ceiling set was obtained, that is to say when students got eight or more errors in a set of vocabulary. Finally, the students seemed to enjoy this one-on-one assessment task, and it contributed in a positive way to the study as it allowed the author to develop a rapport with each student in the study. Consequently, it also may have contributed to the positive tone during the lessons which followed for the treatment group.

Prior to and following the treatment lessons, to test the hypothesis, the proverb test used in Kennerly (1998) was administered at the beginning of term (the pretest) and at the end of term (the posttest) to the entire 20 groups of grade 9 students. Proverbs, a form of metaphorical expression, can have both a literal and a figurative meaning, as we have seen. For the reader to extract the fullest meaning possible, s/he must analyze and then reject a literal meaning in favour of a more profound figurative meaning. When the

literal meaning was not rejected in favour of the figurative one, the reader could be classified as a concrete thinker, whereas when the reader rejected the literal meaning in favour of the figurative one, he or she could be classified as an abstract thinker. After instruction, if these concrete thinkers then began to think abstractly, that is, reject the literal in favour of a more abstract interpretation, then some valuable statements might be made regarding not only the instruction, but consequently also curriculum design. The proverb test is a locally developed assessment, not a standardized test. While there is no established validity or reliability for this measure, it was used effectively in Kennerly (1998) to discriminate between groups in that previous study. It was used to identify students as literal thinkers, as abstract thinkers, or as students in transition from literal to abstract (Appendix C).

Here is an example of the choices on the proverb test and how the proverbs test was evaluated using the example "The early bird catches the worm":

(LX)	The little bird	MISSES	the worst seat.
(AX)	The last person	BITES	the dog.
(AC)	The first person	GETS	the best seat.
(LC)	The first bird	FINDS	its food.

The relationship expected to be understood is the relationship of abstract to concrete, which can also be expressed as:

X = Y (abstract) X = Z (concrete).

For each proverb/metaphorical statement, there are four answers (which appear in parentheses to the left of each phrase above):

A. Literal correct — LC

B. Literal wrong — LX

C. Abstract correct — AC

D. Abstract wrong — AX.

Points were tallied for the AC and LC answers. Students who chose the AC selection as their first choice and the LC selection as their second choice received full marks. That is to say they received 20/20 for the AC tally and 20/20 for the LC tally. Each time a student chose the AC selection as her/his first choice, s/he received a mark toward the AC tally. Students who chose the LC selection as their second choice received a mark for the LC tally. For example, a tally of 15/20 AC meant the student selected the abstract meaning as their first choice for 15 of the proverbs. A tally of 15/20 LC meant the student selected the literal meaning as their second choice for 15 of the proverbs. If a student selected the LC as their first choice and/or the AC as their second choice, s/he did not receive a point.

On the proverbs test, the students in both groups answered questions for 20 proverbs. They were not given any assistance beyond what was outlined in the directions. In fact, this test may also be used as an instrument both to evaluate and to aid in teaching the ideas of abstract and concrete thinking/reading.

Part 5: Procedures

Pre- and Posttest Administration

The proverbs pre- and posttests were administered in the students' classroom with the classroom teacher present. The Peabody and the TOLD however were both administered by the author in the hallway outside of each classroom because they are both individual assessments. If a student was absent, the examiner administered the

assessment when the student returned. While this situation occurred on a few occasions, it was a rare occurrence and easily rectified within the 7 day period. Classroom teachers being present in the classroom ensured that the behavior and participation of the students for the study, both in the hallway and in the classroom, were positive. The proverbs used on the proverbs pre- and posttests were not used as examples in any of the lessons for the treatment groups.

Treatment Groups' Condition and Control Groups' Condition

Every effort was made to ensure that the conditions under which all the participants worked were as similar as possible. The examiner followed the same script and protocol for each portion of the tests and treatment, including how student questions were answered. The presence of the classroom teacher during the lessons also ensured the positive behavior and oral participation of the students in this voluntary activity. All students were encouraged and reinforced with positive feedback by the examiner in the same manner, which may have at times seemed artificial to the students but was necessary for the controls of the experiment.

The Lesson Units for the Treatment Groups

These lesson units were for the experimental group only.

Unit 1.

The students were divided into small groups—five or six groups of three to four students each. The proverb parts (topic, ground, vehicle) were put on cards by the examiner for oral discussion as a class and among the members of each group (Richards, 1936; Verbrugge & McCarrell, 1977). The discussions began with prompting questions to activate background knowledge, create mental images, and make connections

(Fordham, 2006).

For example: topic = the early bird;

ground = gets;

vehicle = the worm.

Then, as in previous work (Kennerly, 1998), a new proverb was written on the blackboard or whiteboard and discussed orally by both the examiner and the participants. Also, a paraphrase of the proverb was provided without the vehicle. Within each group, there were always four alternative vehicle cards provided by the examiner. Each vehicle card had one of the four possible answers (literal correct, literal incorrect, abstract correct, abstract incorrect). The task for the students was to orally discuss and then choose the vehicle card that properly completed the paraphrase. "The early bird" is the topic; *gets* is the ground. Personal links in meaning were requested by the examiner explicitly and verbally from each student throughout the lessons and discussions. When teachers provide opportunities for students to apply their cognitive skills to a personal problem or issue, learning is enhanced; people rarely learn in isolation (Darvin, 2006).

Here is an example of this lesson for the same proverb:

The early bird	catches	the worm.
The first person	gets	THE DOG.
		THE BEST SEAT.
		ITS FOOD.
		THE WORST SEAT.

The students, as a group, were asked to choose the best vehicle card and verbally justify their answer to their group and then to the class. For example, the questions they

responded to orally were: (a) Why did you choose this card? and (b) Why is it the best card compared to the other three? Last, as an individual exercise, each student was asked to record his or her answer in written form.

Unit 2.

Verbal training and verbal justification continued in this unit. Previously, in Unit 1, the students were given the topic and ground of the paraphrase and they were asked to select the vehicle card and justified this choice (as described). In Unit 2, the procedure was similar; however, the students were given only the topic card to accompany a given proverb paraphrase. They had to choose and verbally justify their choice of ground and vehicle card in this unit (as I will show). Again the students were asked to orally explain why they chose their cards over the other choices.

Here is an example of this lesson for the same proverb:

The early bird	catches	the worm.
The first person	MISSES	THE WORST SEAT.
	BITES	THE DOG.
	GETS	THE BEST SEAT.
	FINDS	ITS FOOD.

Unit 3.

Finally, the students were given only a new proverb and had to discuss and design a paragraph orally and later in written form with all three parts and justify their paraphrase. For example, given the proverb, “The early bird catches the worm,” the students were asked to describe out loud to a partner what it could mean to them (in the abstract) in their own words. Then they were asked to write a paragraph incorporating these ideas.

Part 6: Evaluation of the Lesson

The students in the experimental group were quizzed in written form at the end of each lesson on what they had learned in the lessons in Part 5: Units 1, 2, and 3. The quiz for Unit 1 was a written test that was read out loud to the students as a group first; it tested the material covered in Unit 1, as illustrated in Appendix D. The students were asked to choose only the vehicle for a set of paraphrased proverbs. There were four choices, and the quiz was multiple choice. The quiz for Unit 2 was a written test that was also read out loud and tested what was done in Unit 2. The students were asked to choose the vehicle and the ground for the proverbs. There were four choices for the vehicle and four choices for the ground. This was also a multiple-choice quiz, as illustrated in Appendix E. The quiz for Unit 3 was also a written test that tested what was done in Unit 3. The students were read the proverbs and then asked to write their interpretation of the vehicle, ground, and topic for the given proverbs. This was not a multiple-choice quiz; it was a short-answer quiz, as illustrated in Appendix F. Finally, students were read two fables and four proverbs and asked to choose which proverb is expressed in the reading (Appendix G). The maximum score that could be attained in all four quizzes was 50. All the student work in the lessons was part of the treatment and was not included in the data analysis; its purpose was to facilitate the growth in metaphorical understanding of proverbs, their structure, and meaning.

Part 7. Data Analysis

Four separate statistical tests (General Linear Models; Zuur et al., 2010) were done, each of which compared the mean standardized test scores of each of the four tests: Peabody, TOLD, proverbs pretest and proverbs posttest among class type, gender, and

language categories. For the proverbs posttest results, treatment was also included as a variable. Due to a small sample size and skewed distribution, it was not possible to include language (ELL vs. non-ELL) as variables in these tests. They were examined separately. Figures and tables are used to present the data. Figures are also used to illustrate the results of each of the above tests. Appendix H displays the mean standardized test scores (TOLD, Peabody, proverbs pre-t and posttest, the difference between the proverbs pre- and posttest) for each of the individual classes, as well as the class types. An ANOVA was not used to test the significance of group differences since it would only determine whether there is a difference between groups, but not which is different.

Initial Analysis of Scores

There were insufficient observations from the ELL students, and only non-ELL students in the academic, applied and SSTW are included in these analyses. For each of TOLD, Peabody, proverbs pretest (abstract), and proverbs posttest (concrete), a factorial general linear model (GLM) was done, including gender, course, and the interaction of gender and course. These four sets of data (TOLD, Peabody, proverbs pretest concrete and proverbs pretest abstract scores) are all evenly distributed, and because the assumptions of the GLM model require an even distribution, the factorial (GLM) is a valid analysis for these data. For each model, I used backwards stepwise selection, removing nonsignificant terms (starting with interactions) until only significant terms remained in the model.

To determine which pair-wise combinations of courses differed for the TOLD and the Peabody test, a Tukey's posthoc test was used (Pallant, 2010). These results are

presented in a bar graph form. On the bar graphs, different superscripts are used to identify when groups are significantly different. Bars with the same superscript are not significantly different. The bars represent mean ± standard error with sample size indicated inside the bar.

Next, an Excel file was prepared with a spreadsheet creating two columns (called Post-pre A and Post-pre C). These data were calculated by subtracting each student's pretest score from their posttest score for both their Abstract (A) and Concrete results (C) to establish a single "score" for Abstract (A) and Concrete (C). These single scores are the values I used in the final statistical analyses. When looking through these values, I was able to quickly see the general changes in test scores experienced by the different students, and the numbers appeared to be positive. That is, that students improved in the number of their AC first choice responses in the posttest as compared to the pretest. The substantial improvement in the post-test responses resulted in a lack of homogeneity in variance, so, to ensure the validity of the data analysis, a second analysis was done using more complicated statistical model, a generalized least squares model (GLS) to account for the lack of homogeneity in variance and the qualitative results did not change.

Second Analysis of Scores (GLS)

As previously stated, the first analysis of the data was done using a general linear model (GLM), but it was noticed that the variance was much greater for the proverbs posttest results of the treatment group compared to the control. (However, variance is similar among groups for course and gender.) In checking the assumptions of the model, this difference violates the homogeneity of variance assumption for the GLM model. To address this concern, a separate analysis was completed using generalized least squares

(GLS). The protocol for the GLS analyses are based on the protocol detailed in Zuur et al. (2010). The results from the GLS analyses (the second analyses) confirmed the results from the GLM analyses (the first analyses). With the GLS method, it was possible to include separate variance structures for each group such that homogeneity of variance is not an assumption of the analysis. This analysis was completed with the software package R (v2.9.2; Zuur et al., 2010). However, for consistency, all data presented are data analyzed using the GLM analysis. The GLM data were charted into graphs to visually represent the data findings in Chapter Four and are organized in the following way:

1. Non-ELL students
    a. Proverbs abstract score changes
    b. Proverbs concrete score changes
2. ELL students
    a. Proverbs abstract score changes
    b. Proverbs concrete score changes
3. Pretreatment and standardized test correlations

Nonparametric Tests

Nonparametric sign tests were applied to the data to test the validity of the parametric analyses (Slavin, 2007) and are presented in Appendix I.

CHAPTER FOUR: RESULTS

As discussed previously, I first created two columns. Post-pre A which, is titled Score A and Post-pre C, which is Score C. These data are calculated by subtracting each student's pretest score from her/his posttest score for both her/his Abstract (A) and Concrete (C) score. These numbers are the values that are included in the final statistical analyses. These values reveal the general changes in test scores experienced by the different students.

Process of Statistical Analysis

Overall, the numbers seemed to be positive; that is the students improved substantially in the posttest as compared to the pretest. However, it must be determined if these improvements are significant statistically. As a result of the variance issues in the posttest scores (almost all students scored very highly on the posttest), I also did some slightly more complicated parametric statistics as well as nonparametric sign analyses. The parametric data analyses are presented in graph form within this chapter for discussion. The secondary nonparametric statistical tests also account for the lack of homogeneity in variance between the pre- and posttest scores, and the result of the nonparametric analysis is that the qualitative results from the parametric data analyses did not change. All three statistical analyses of the proverbs pre- and posttest results indicate that the change in scores is statistically significant. The parametric analyses indicate that the treatment is the factor influencing the change; the non-parametric analyses cannot indicate why the change occurred; only that a statistically significant change occurred. The nonparametric test results which support the results of the parametric tests are reported in Appendix I. The non-ELL results make up the first part (and bulk) of the

analysis in this chapter. The ELL results are discussed at the very end. Because the ELL sample sizes were so small, the analysis is more restricted. It was only possible to look at students in applied classes (as this was the only course that had both control and treatment students). However, it is still possible to see some results.

The first analysis of the education dataset used a General Linear Model (GLM). As previously described, four separate statistical tests (GLM) were done, each of which compared the mean standardized test scores of one of the four tests: Peabody, TOLD, Proverbs Pretest (1) and Proverbs (2) among class type, gender, and language categories. For Proverbs 2 results, treatment was also included as a variable. Due to a small sample size and skewed distribution, it was not possible to include language (ELL vs. non-ELL) as variables in these tests. They were examined separately.

Non-ELL Students

This analysis excludes ELL students and students in the "open" course due to their small sample size. There is also missing information for student ID #6, so that record was excluded. Table 1 represents the sample size for this group.

Variance

In checking the assumptions of the model, the results indicated that the variance was much greater for the treatment group compared to the control group; this violates the homogeneity of variance assumption. In the box plots shown in Figure 1, the difference in the spread of the residuals for the treatment groups is obvious. Variance is similar among groups for course and gender. The difference in variance is also apparent when comparing histograms of the raw scores for the two groups (Figure 2).

Table 1

Sample Size of Non-ELL Students

	Female	Male
Control	75	79
Treatment	80	82

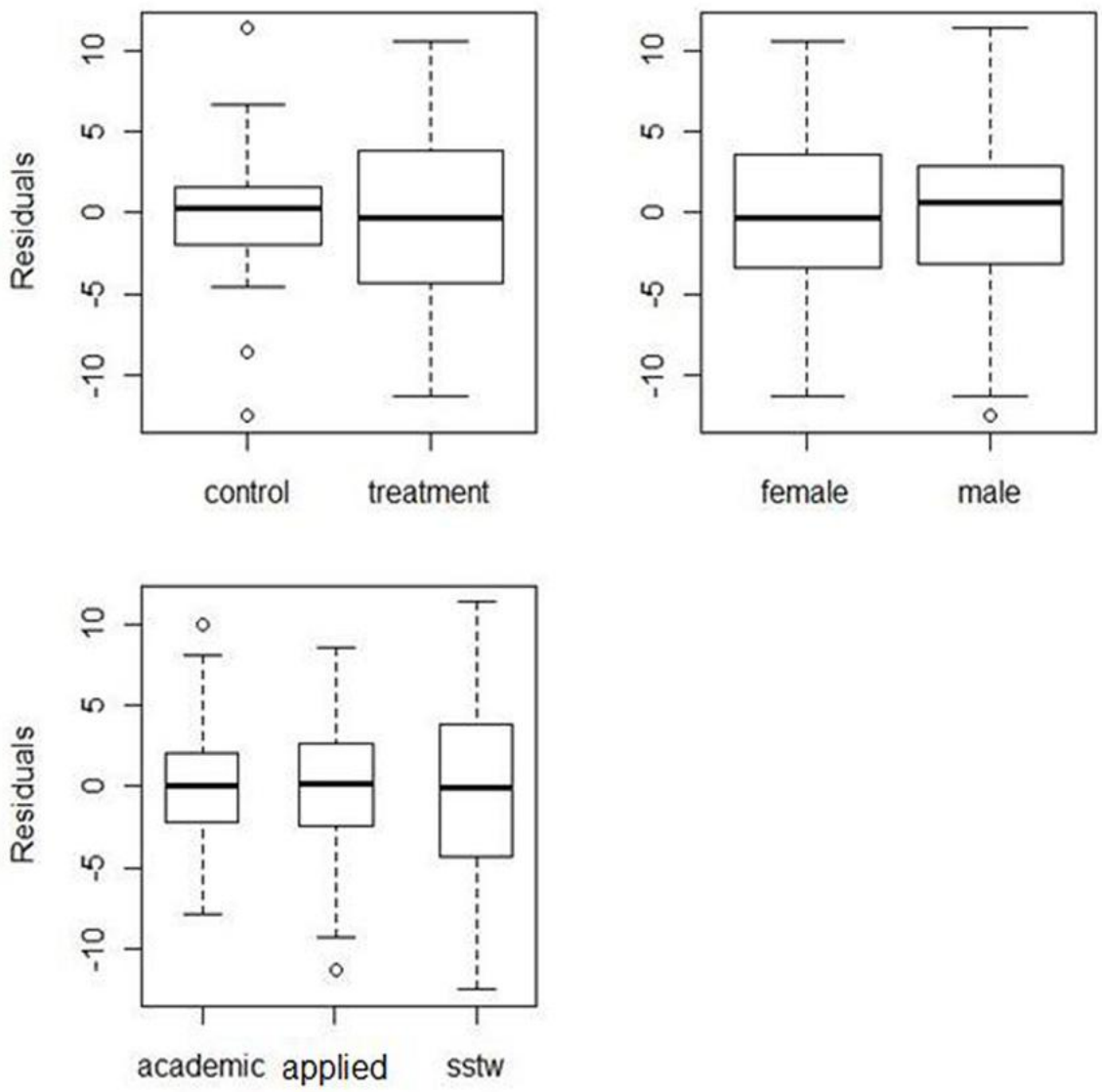


Figure 1. Variance among abstract scores.

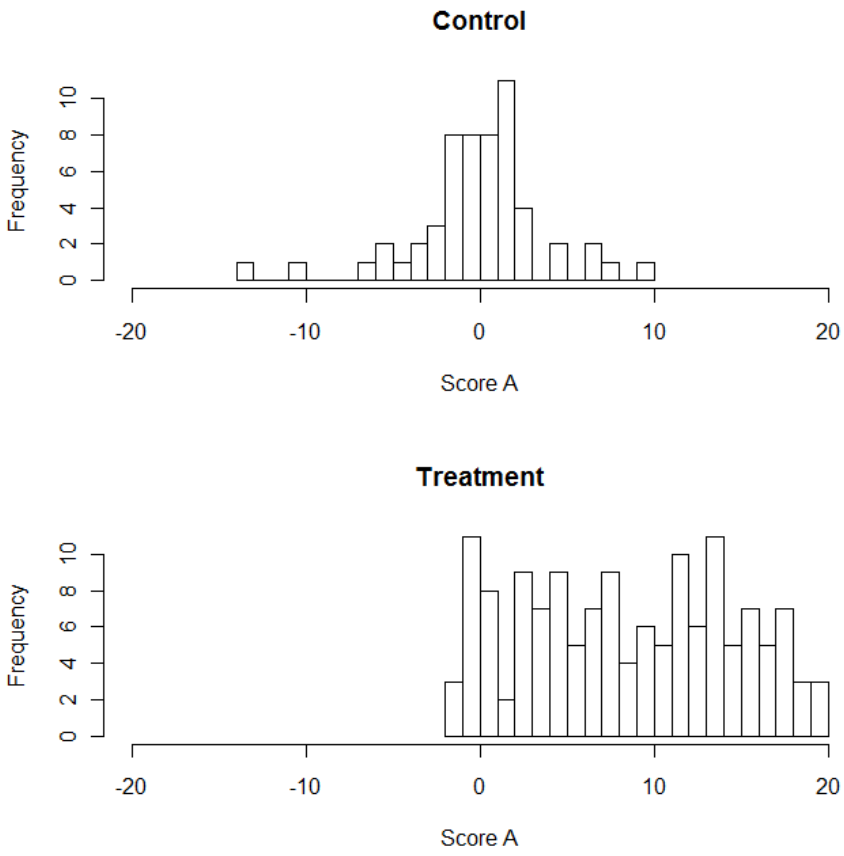


Figure 2. Variance results for abstract scores.

To address this concern, a separate analysis was completed using generalized least squares (GLS). The protocol for the GLS analyses are based on the protocol detailed in Zuur et al. (2010). With this method, it was possible to include separate variance structures for each group such that homogeneity of variance is not an assumption of the analysis. This analysis was completed with the software package R (v2.9.2).

Proverbs: Abstract Score Changes (Score A)

I started by fitting two models—one with no variance structure (equivalent to the GLM analysis) and one with separate variance modeled for the treatment and control groups. Both models had the same fixed structure (treatment, course, gender, and all two- and three-way interactions). Comparing the two models, the model with separate variance for each treatment was the preferred model, as indicated by AIC (1190 vs. 1199) and likelihood ratio test (likelihood ratio = 10.69, $df = 1$, $p = 0.0011$). A visual assessment of residual plots indicated that there are no concerns of violated assumptions for the model with separate variances.

To choose the optimal fixed structure, nested models were compared with likelihood ratio tests. The following formula was followed: Terms were removed sequentially until only significant terms remained in the model. Here is a summary of that process:

- I found that the combination of the treatment scores compared to the student's course and the student's gender did not present significant interaction (likelihood ratio = 1.71, $df = 2$, $p = 0.42$).
- I found that looking at the student's course and the student's gender did not generate a significant interaction (likelihood ratio = 0.55, $df = 2$, $p = 0.76$).
- I found that looking at the student's treatment and the student's gender did not

generate a significant interaction (likelihood ratio = 1.39, $df = 1$, $p = 0.24$).

- I found that the student's gender is not a significant interaction (likelihood ratio = 0.47, $df = 1$, $p = 0.49$).
- However, I did find that looking at the student's treatment and the student's course did generate a significant interaction (likelihood ratio = 14.69, $df = 2$, $p = 0.0006$).

So males and females do not respond differently to the treatment, but there is a difference in the effect of treatment among the three courses (levels of study). The plot in Figure 3 illustrates the interaction.

It appears that the students in the three courses benefitted from the treatment, but academic students do not benefit as much as applied or SSTW students. To confirm this statistically, the three courses were separated to compare the treatment effect for each course individually.

Academic: The treatment effect is significant ($F_{1,44} = 8.15$, $p = 0.0065$).

Applied: The treatment effect is significant ($F_{1,40} = 57.42$, $p < 0.0001$).

SSTW: The treatment effect is significant ($F_{1,108} = 73.49$, $p < 0.0001$).

The 95% confidence interval for the parameter estimate of the treatment effect was calculated for each group and is plotted in Figure 4. This analysis confirms that academic students did not benefit from the treatment as much as the applied or SSTW students. The academic confidence interval is lower and does not overlap with either of the other two courses (which overlap almost perfectly).

Proverbs: Concrete Score Changes (Score C)

The story is essentially the same for Score C. The analysis method was identical to

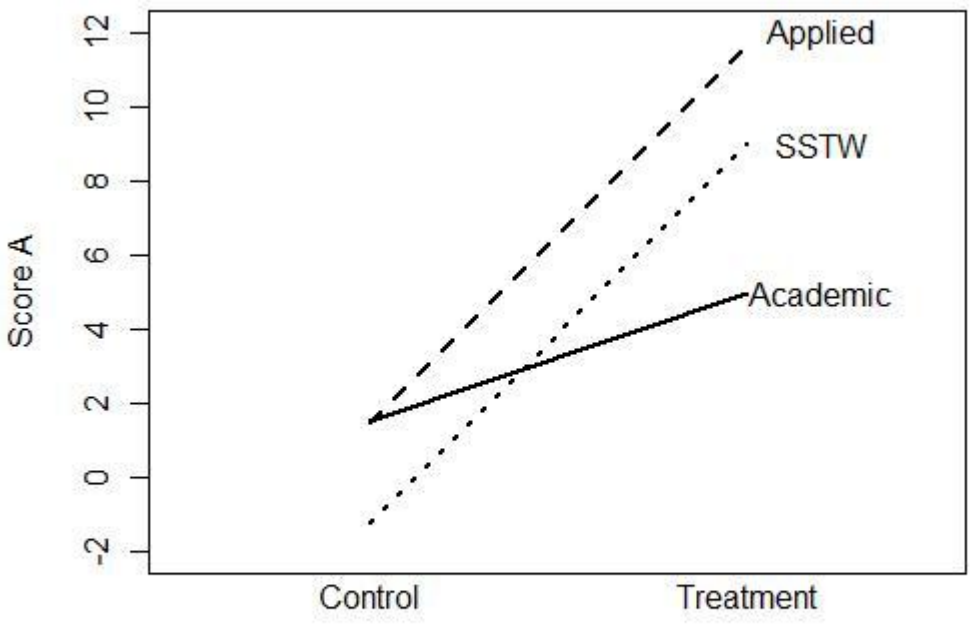


Figure 3. Treatment results for abstract scores.

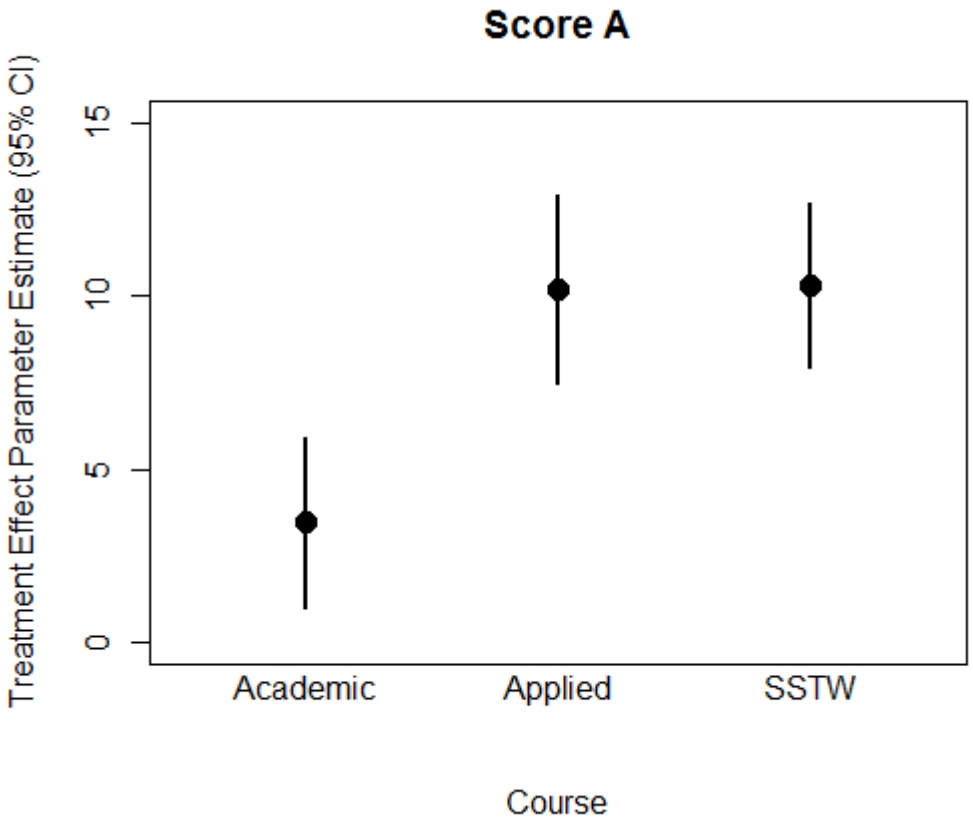


Figure 4. Treatment effect for abstract scores.

that used for Score A. The same problem of heterogeneity of variance was found between the treatment groups (Figure 5), and the same applies for looking at histograms of the raw scores (Figure 6).

The model with separate variances for the treatment groups is the preferred model, as indicated by AIC (1177 vs. 1191) and likelihood ratio test (likelihood ratio = 15.58, df = 1, p = 0.0001). Model validation plots do not identify any violations of assumption with the GLS model which allows for separate variances.

Again, I proceeded with a backwards stepwise model selection procedure using likelihood ratio tests of nested models.

- I found that the combination of the treatment scores as a function of the students' course and the students' gender did not generate a significant interaction (likelihood ratio = 1.34, df = 2, p = 0.51).
- I found that looking at the students' course and the students' gender did not generate a significant interaction (likelihood ratio = 0.23, df = 2, p = 0.89).
- I found that looking at the students' treatment and the students' gender did not generate a significant interaction (likelihood ratio = 1.70, df = 1, p = 0.19).
- I found that the students' gender is not a significant interaction (likelihood ratio = 0.49, df = 1, p = 0.48).
- However, I did find that looking at the students' treatment and the students' course did generate a significant interaction (likelihood ratio = 6.91, df = 2, p = 0.032).

The treatment and course interaction effect appears to be similar to the effect

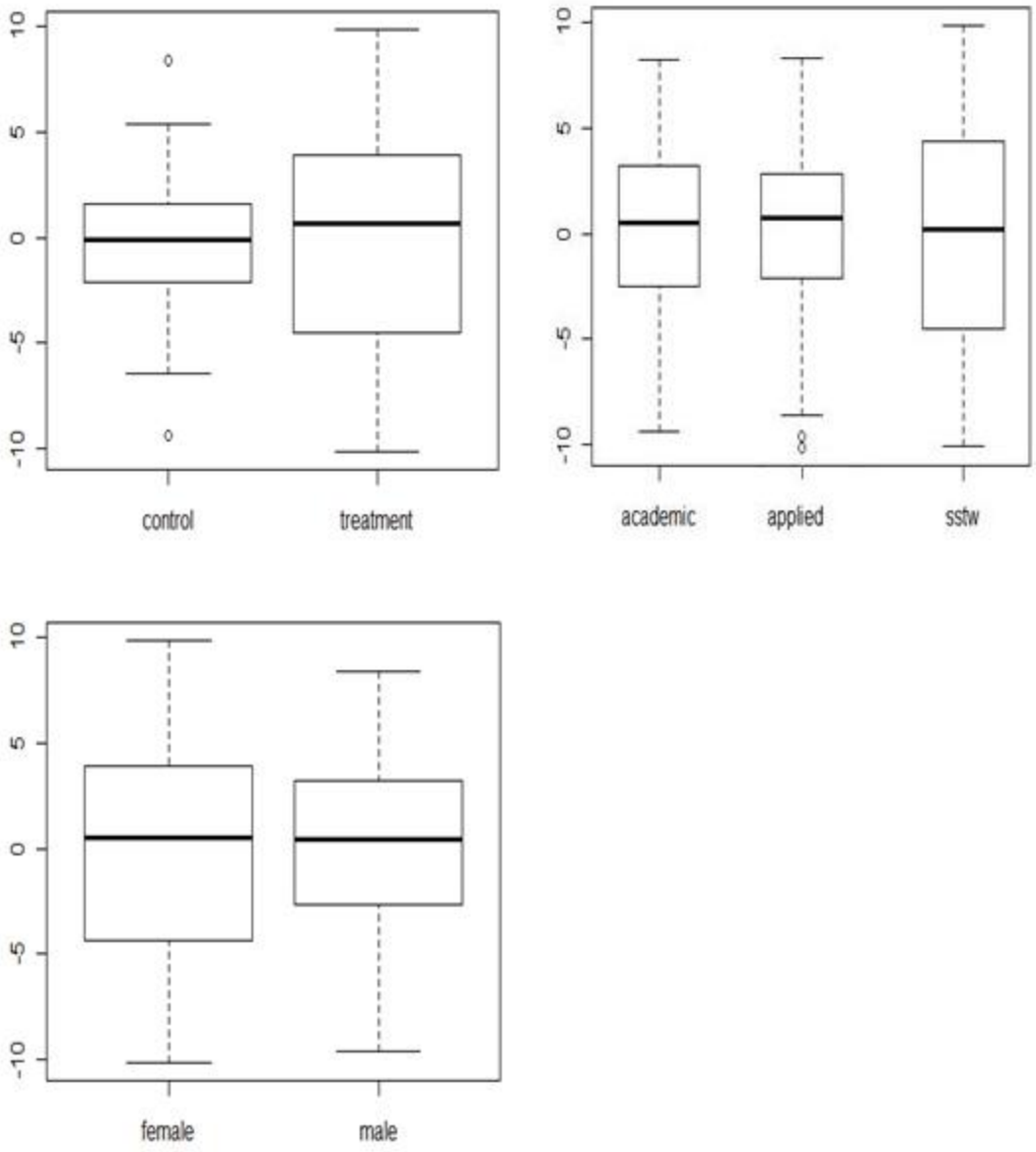


Figure 5. Variance among concrete scores.

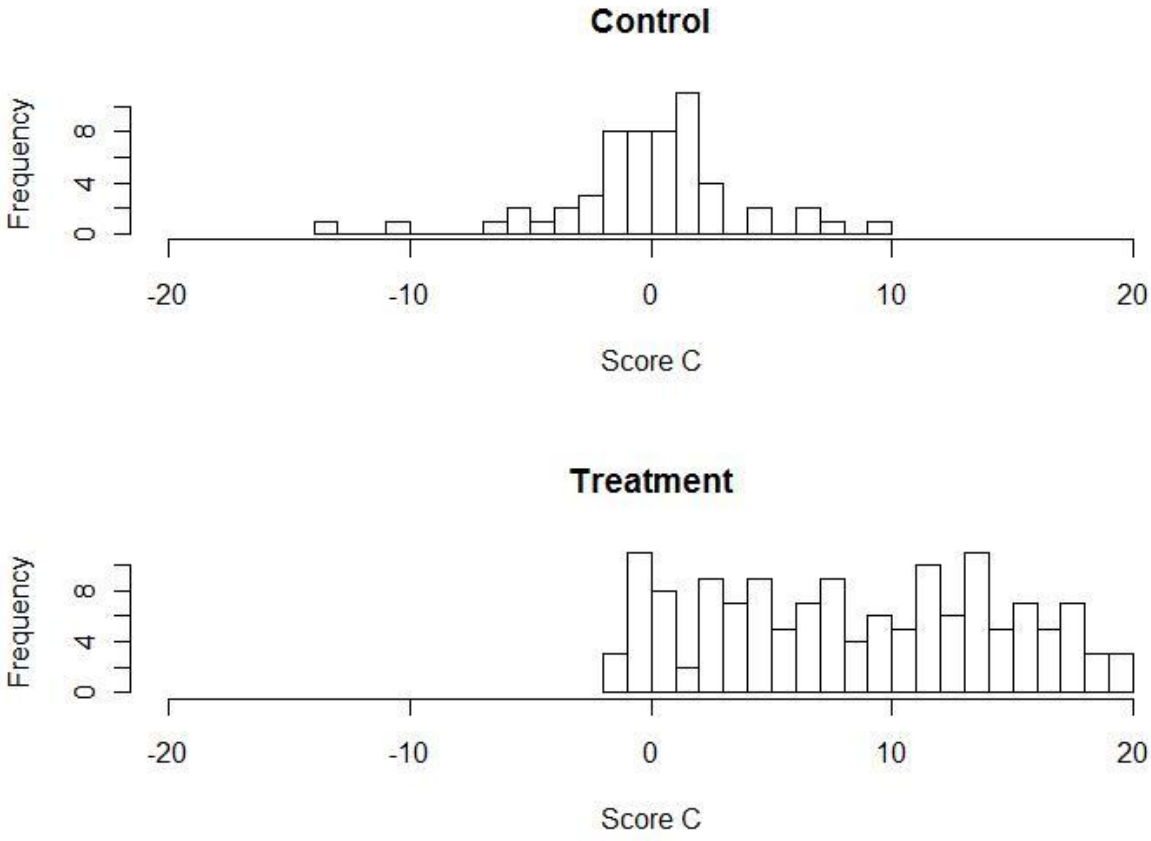


Figure 6. Variance results for concrete scores.

observed for Score A. All courses benefit from the treatment, but applied and SSTW benefit more than academic (Figure 7).

As before, I split the groups to compare the individual treatment effects.

For the academic students: The treatment effect is significant ($F_{1,44} = 14.32$, $p = 0.0005$)

For the applied students: The treatment effect is significant ($F_{1,40} = 69.19$, $p < 0.0001$).

For the SSTW students: The treatment effect is significant ($F_{1,108} = 81.84$, $p < 0.0001$).

As before, the treatment effect is greater for applied and SSTW than academic. There is a slight overlap in the 95% confidence interval of the treatment effect for academic and SSTW, but it is clear that the different response of the academic students is driving the interaction (Figure 8).

ELL Students

Applied is the only course that has both ELL treatment and control students, so academic, open, and SSTW courses are excluded. Sample sizes are fairly small and are represented in Table 2.

Proverbs Abstract Score Change

I started with a general linear model including treatment, ELL, gender, and all two- and three-way interactions, with score A as the response. Variance is not as problematic as it was for the previous analysis, so I did not think it necessary to introduce GLS. I did some backwards stepwise model selection. None of the interaction terms are significant. Gender is not significant ($F1,57 = 0.57$, $p = 0.45$). As expected, treatment is significant

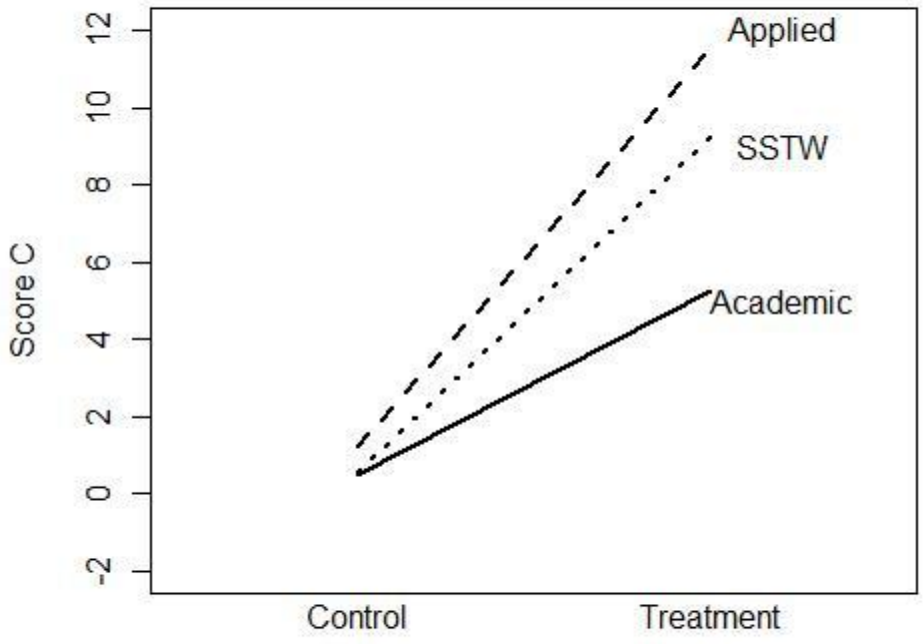


Figure 7. Treatment results for concrete scores.

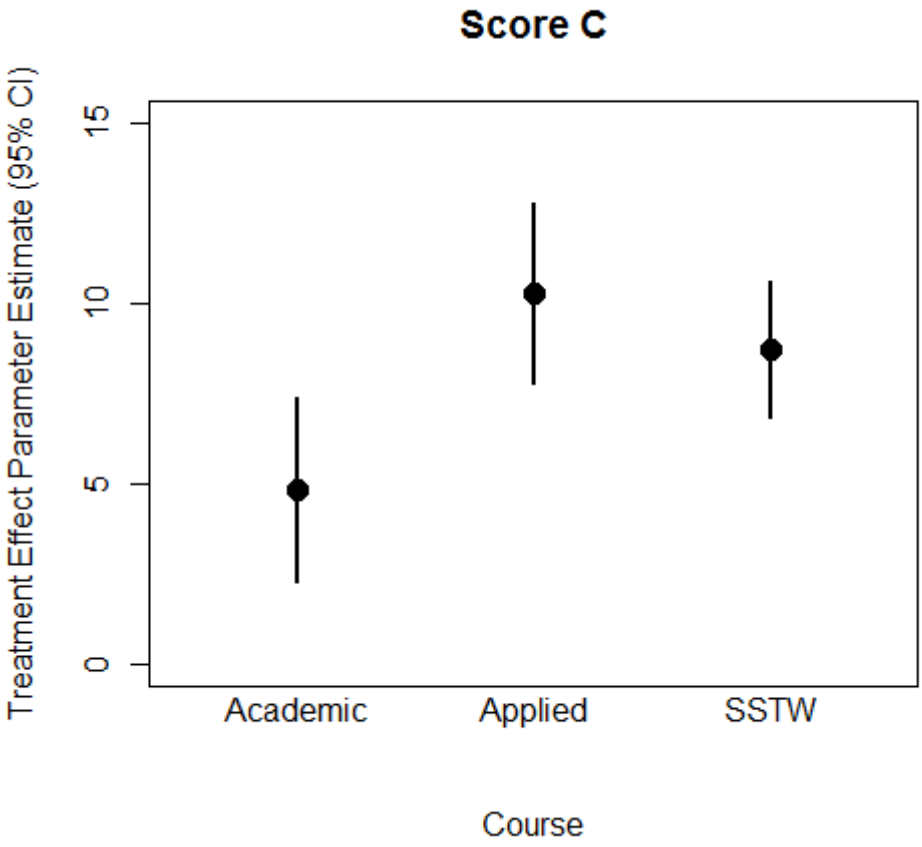


Figure 8. Treatment effect for concrete scores.

Table 2

Sample Size of ELL Students

	Female	Male
Control ELL	4	13
Treatment ELL	14	30

($F1,58 = 53.56$, $p < 0.0001$): students who received the treatment had larger score increases. ELL was also significant ($F1,58 = 5.47$, $p = 0.023$). ELL students had lower increases than non-ELL students (Figure 9).

Proverbs Concrete Score Change

For score C, the analysis is similar, but the result is slightly different: no significant interactions. Gender is not significant ($F1,57 = 0.088$, $p = 0.77$). ELL is not significant either ($F1,58 = 2.10$, $p = 0.15$). Treatment is still significant ($F1,59 = 66.39$, $p < 0.0001$).

So, non-ELL students scored higher than ELL students for score A, but not score C. Note that the ELL and treatment interaction was not significant for either score, indicating that both ELL and non-ELL students responded to the treatment similarly (Figure 10).

Standardized Score Correlations

To determine if correlations existed among the three standardized test scores (prestudy Proverbs Test, Peabody Test, TOLD Test), Pearson Product-Moment Correlation was conducted among all three pairs of test scores (Proverbs test scores were analyzed twice, once for abstract scores and once for concrete scores). Because I was not comparing scores among groups (and I really just wanted to see if the tests tell us the same thing), I included data from all courses (including open and ELL). There were significant correlations among all comparisons, although in general, the strength of the correlations were weak.

Figures 11 through 15 show the correlations between standardized test scores. (Figure 11: Peabody/Proverbs (abstract) correlation; Figure 12: Peabody/Proverbs (concrete) correlation; Figure 13: TOLD/Proverbs (abstract) correlation; Figure 14: TOLD/Proverb

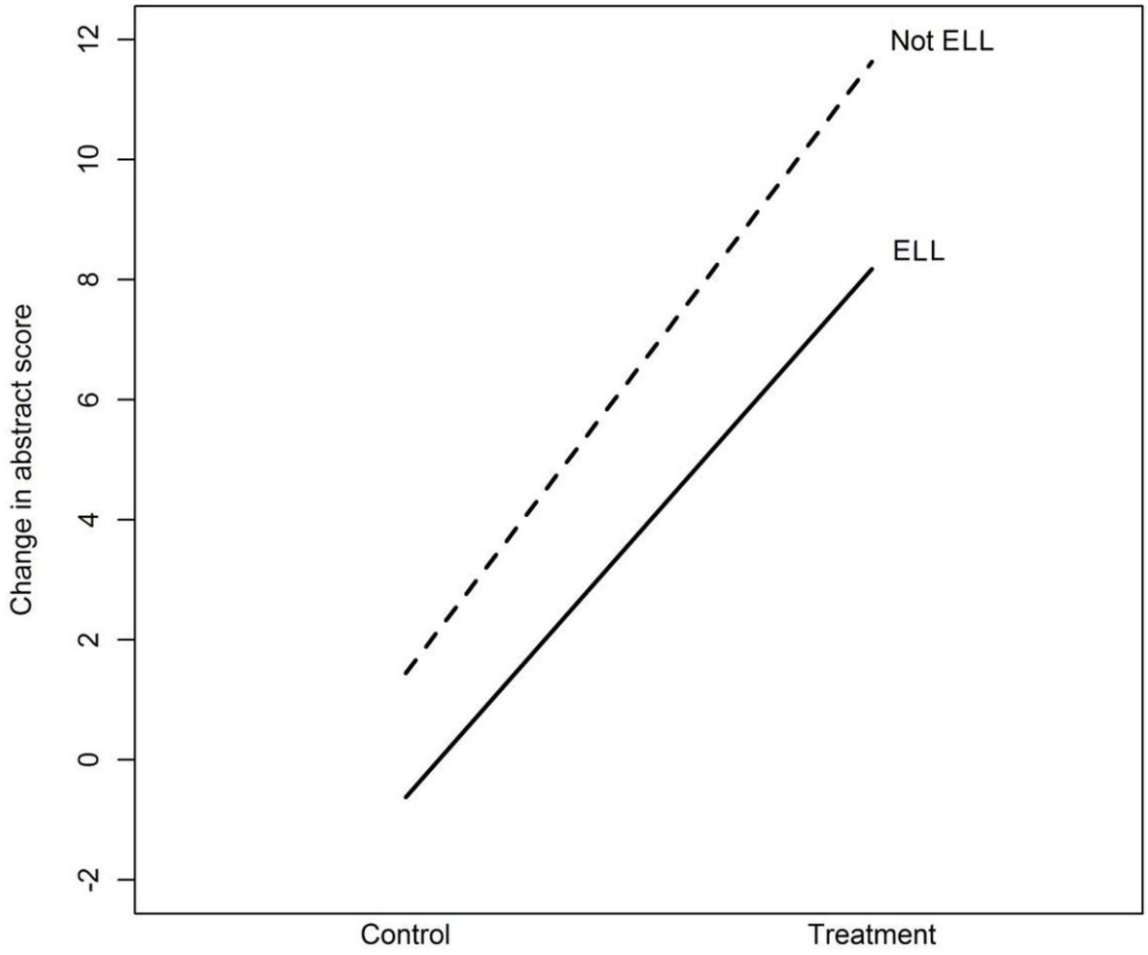


Figure 9. Treatment results for ELL and non-ELL Students (abstract).

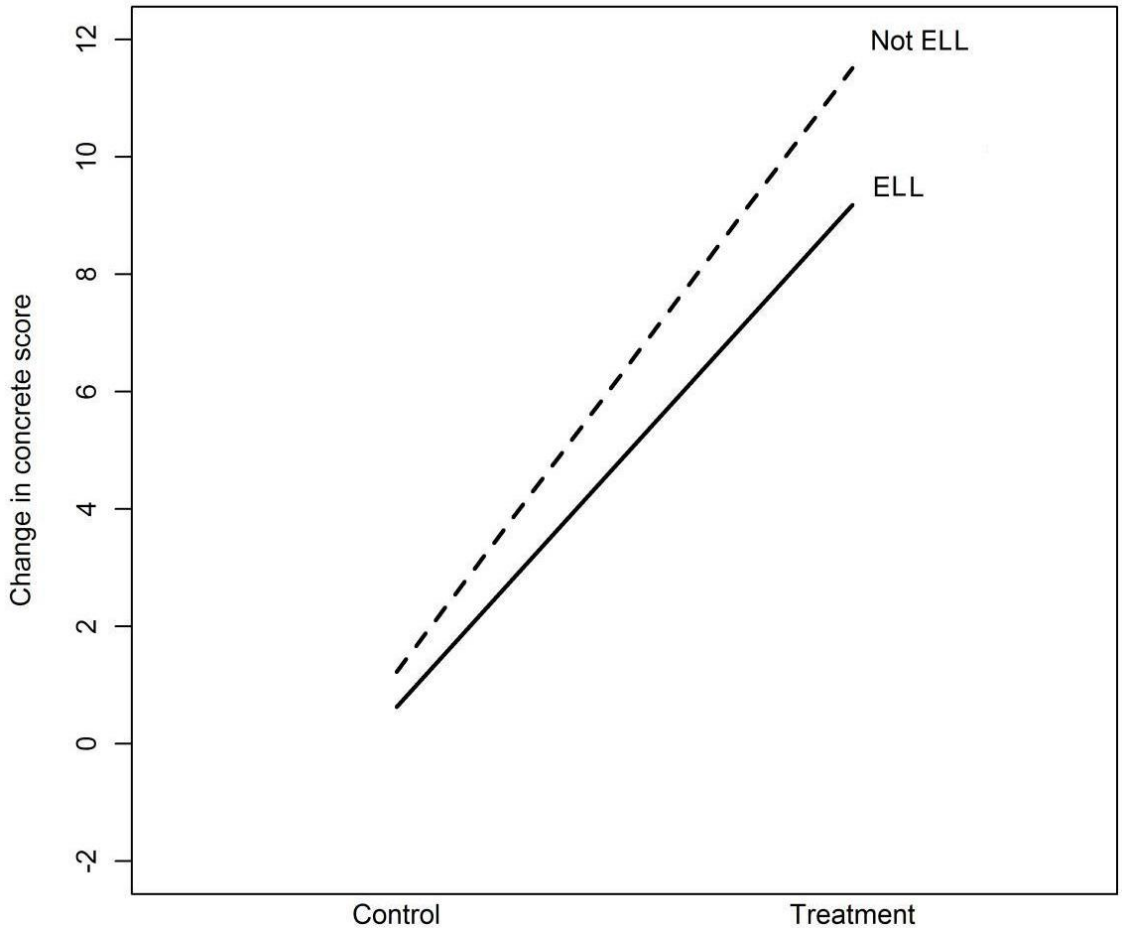


Figure 10. Treatment results for ELL and non-ELL students (concrete).

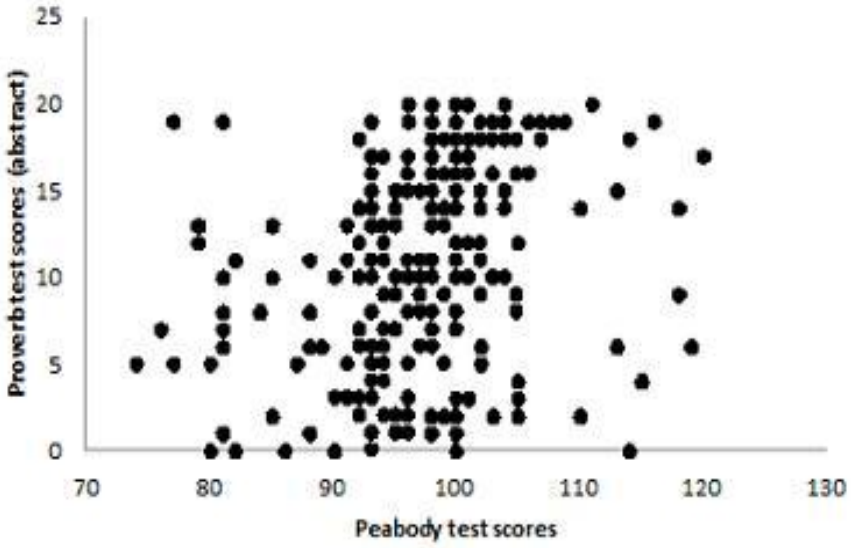


Figure 11. Peabody/Proverbs (abstract) correlation.

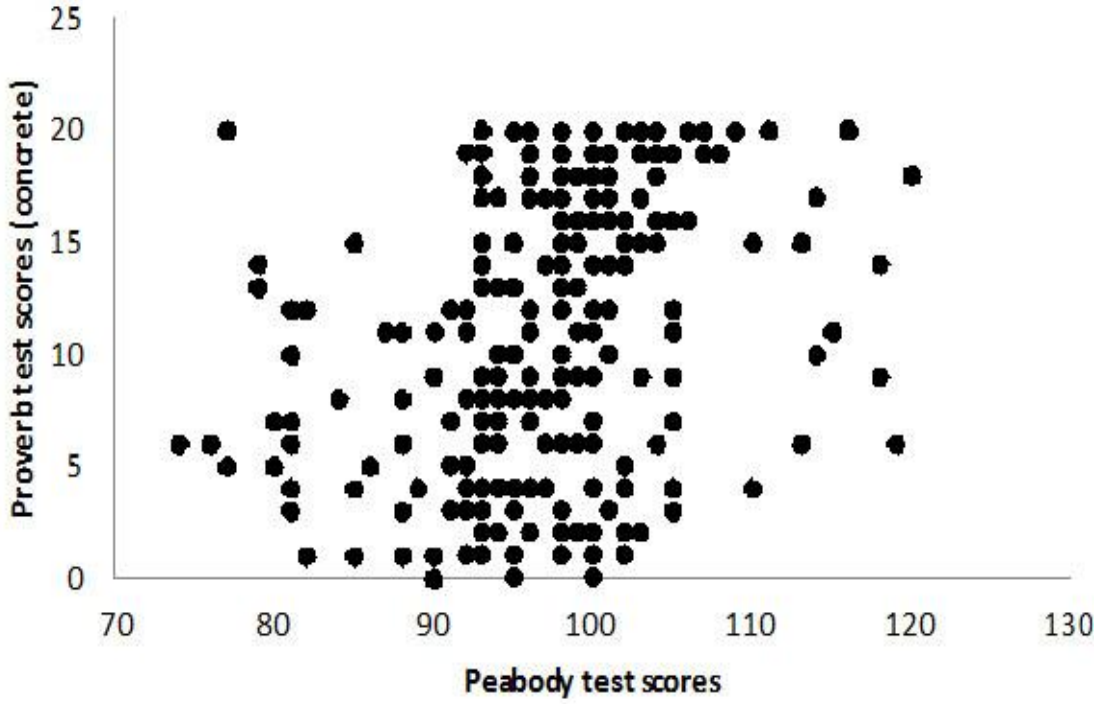


Figure 12. Peabody/Proverbs (concrete) correlation.

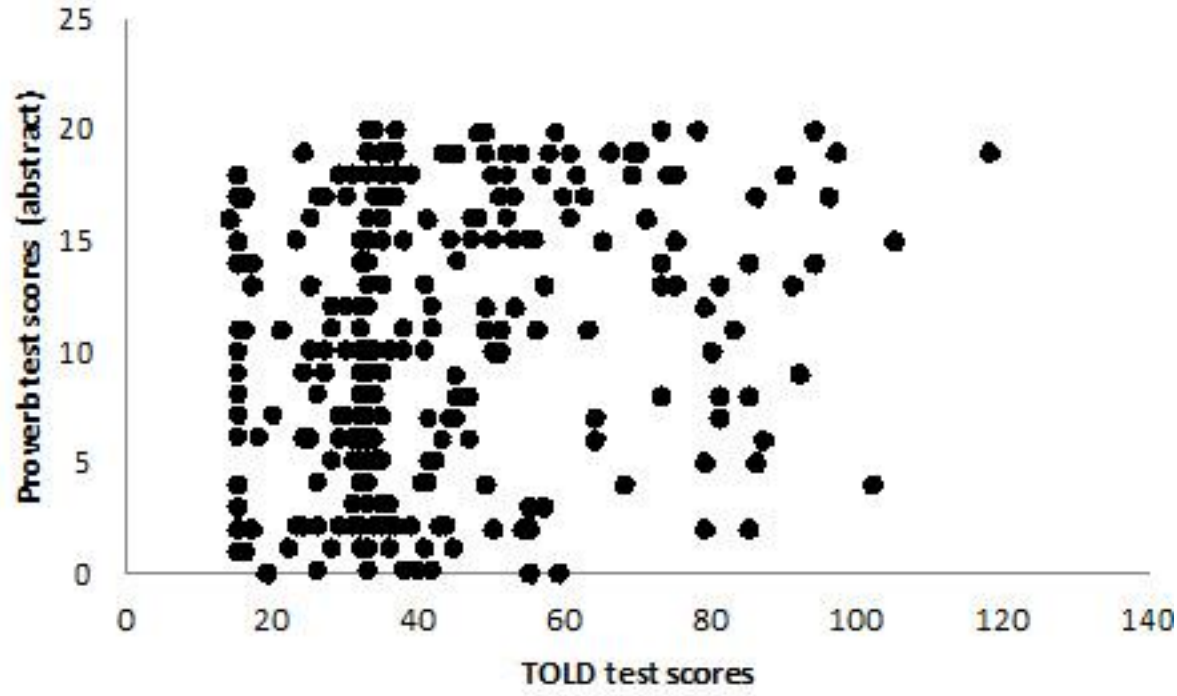


Figure 13. TOLD/Proverbs (abstract) correlation.

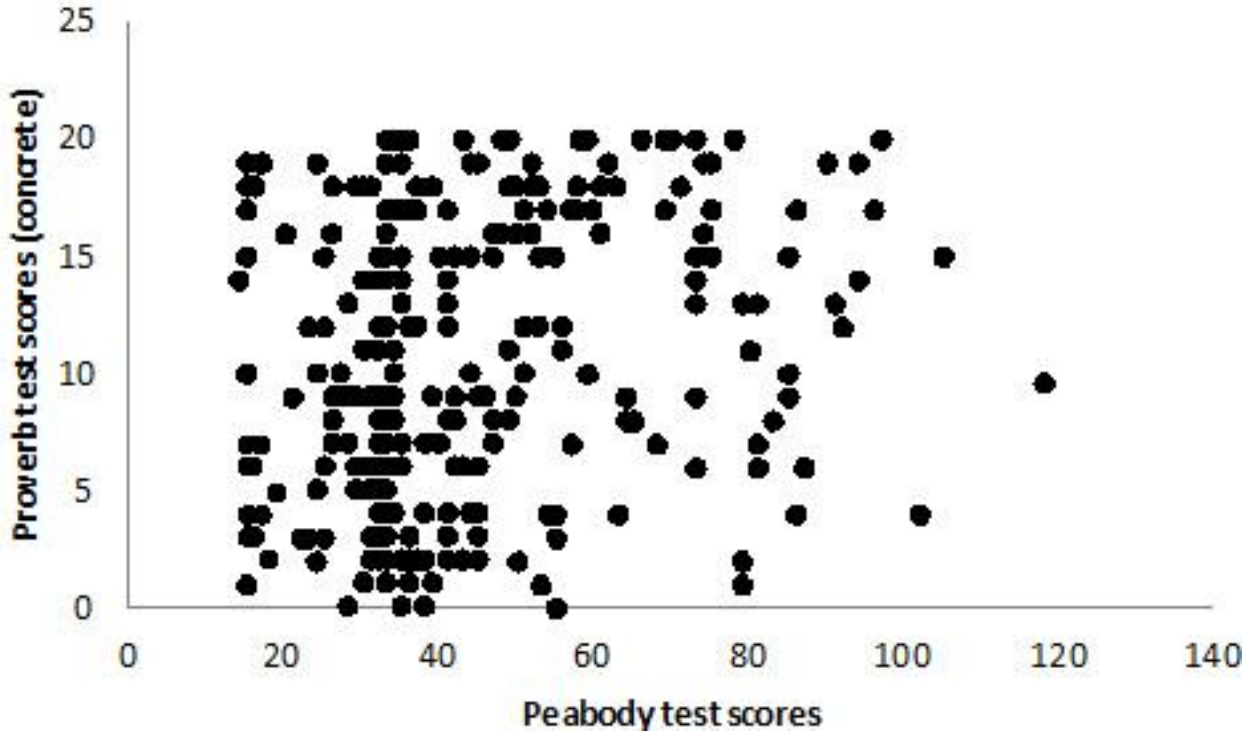


Figure 14. TOLD/Proverbs (concrete) correlation.

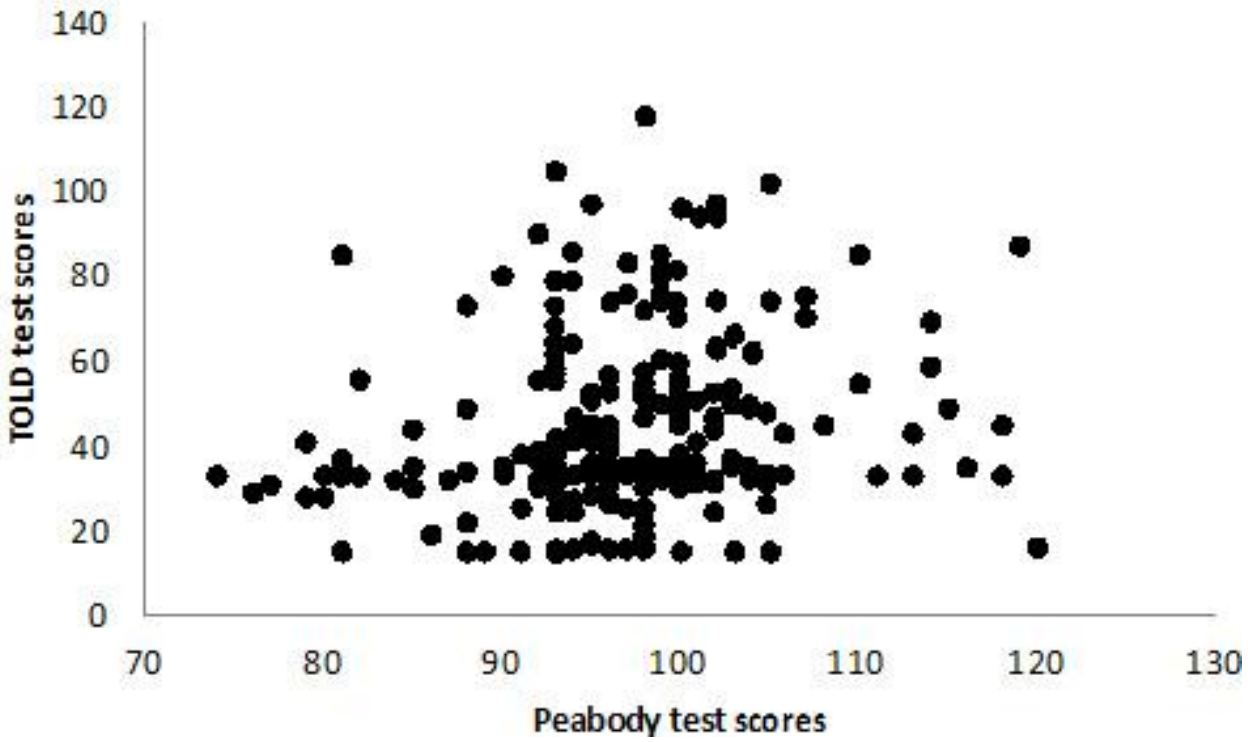


Figure 15. Peabody/TOLD correlation.

(concrete) correlation; Figure 15: Peabody/TOLD correlation).

Figure 11: Proverbs (abstract) – Peabody – $r = 0.277$, $df = 230$, $p < 0.001$.

Figure 12: Proverbs (concrete) – Peabody – $r = 0.300$, $df = 230$, $p < 0.001$.

Figure 13: TOLD – Proverbs (abstract) – $r = 0.263$, $df = 279$, $p < 0.001$.

Figure 14: TOLD – Proverbs (concrete) – $r = 0.293$, $df = 279$, $p < 0.001$.

Figure 15: TOLD – Peabody – $r = 0.178$, $df = 213$, $p = 0.009$.

For each of TOLD, Peabody, Proverbs (abstract), and Proverbs (concrete), I analyzed the initial scores; all scores were normally distributed, so there was not a problem running statistical analysis on them. Also, there was not any effect for gender, so that variable was dropped. For all four tests, the academic students scored higher than the applied students. The SSTW students are more variable; for the TOLD test SSTW scores are intermediate to both the academic and applied. For the Peabody test, SSTW scores are the same as academic and are greater than applied. For the proverbs pretest concrete and proverbs pretest abstract, the SSTW scores are not different from the applied scores.

Analysis of Initial Scores

The posttest proverbs concrete and posttest proverbs abstract posed some problems statistically because all groups performed very well. This is good from the study point of view, but is challenging statistically because the data are highly skewed and, as discussed, variance is a problem. Because there were insufficient observations from students in the "open" course, only academic, applied, and SSTW are included in the discussions and analyses. For each model, backwards stepwise selection was used, removing non-significant terms (starting with interactions) until only significant terms remained in the model. As such, the only significant component to affect the data was

treatment, which is the direct instruction lesson in the methodology. By isolating the treatment of direct instruction, I can infer that it was indeed the direct instruction that changed the test scores for the students from their pretest scores to their posttest scores.

TOLD

The results of the TOLD test show that the academic students had a stronger oral vocabulary range and use. The TOLD results also show that the applied students have the lowest range of oral vocabulary range and use. Interestingly, the SSTW students had a higher TOLD score than the applied students, which would suggest that their verbal strengths (oral vocabulary range and use) are noteworthy.

To determine which pairwise combinations of courses differed, a Tukey's posthoc test was used (Zuur et al., 2010). In Figure 16, groups with different superscripts are significantly different. Bars represent mean ± standard error.

Peabody Picture Vocabulary Test (Figure 17)

The interaction between gender and course is not significant but the interaction between the Peabody scores and course is significant.

For Peabody, as for TOLD, a Tukey's posthoc test was applied (Zuur et el., 2010) to determine pairwise course differences. Bars represent mean ± standard error. Bars with the same superscript are not significantly different.

Proverbs (Abstract; Figure 18)

In Figure 18, the proverbs abstract scores, it is in fact the interaction between these scores and the student's course that is significant ($F_{2,249} = 15.298$, $p < 0.0001$) because the

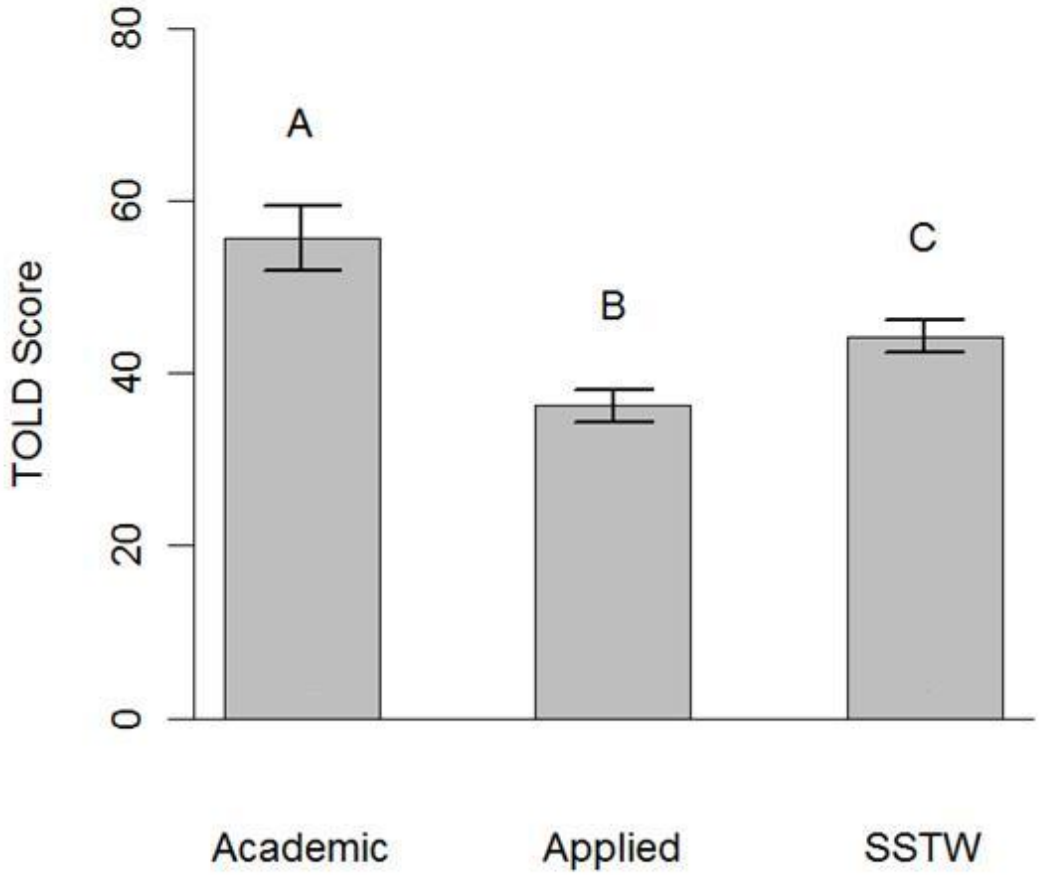


Figure 16. Results of the TOLD test.

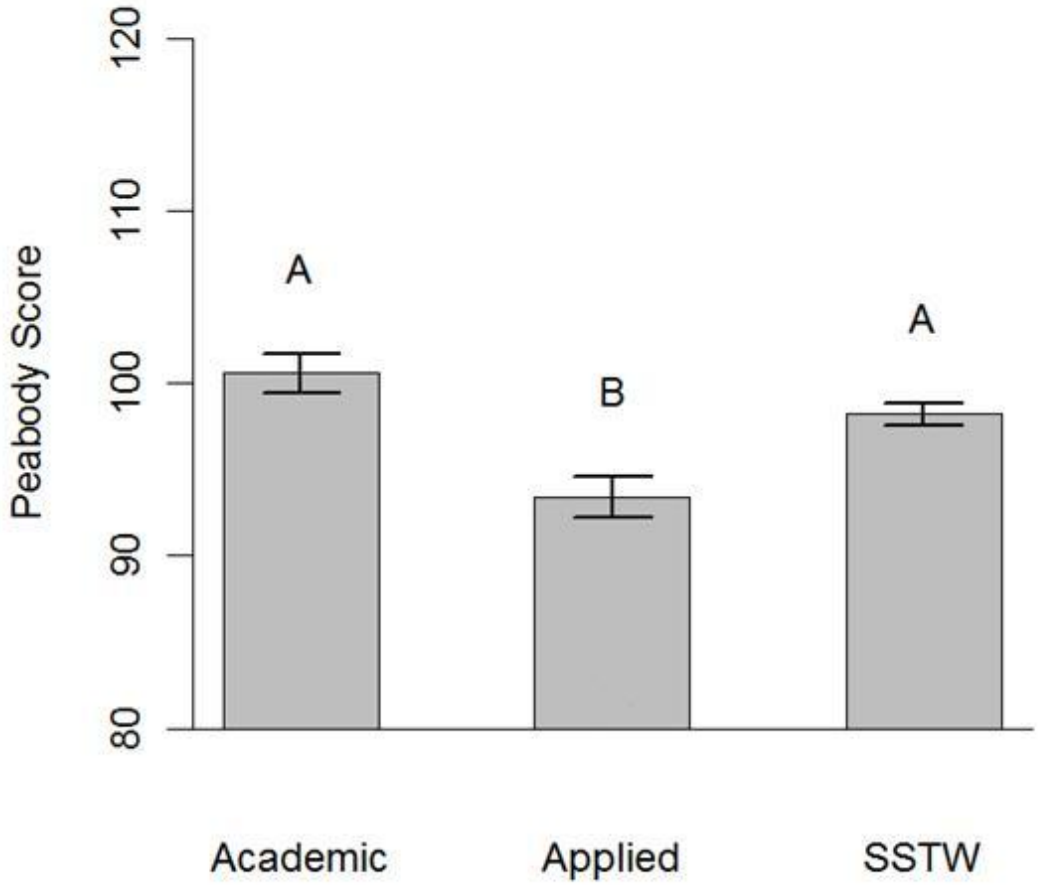


Figure 17. Peabody scores for all groups.

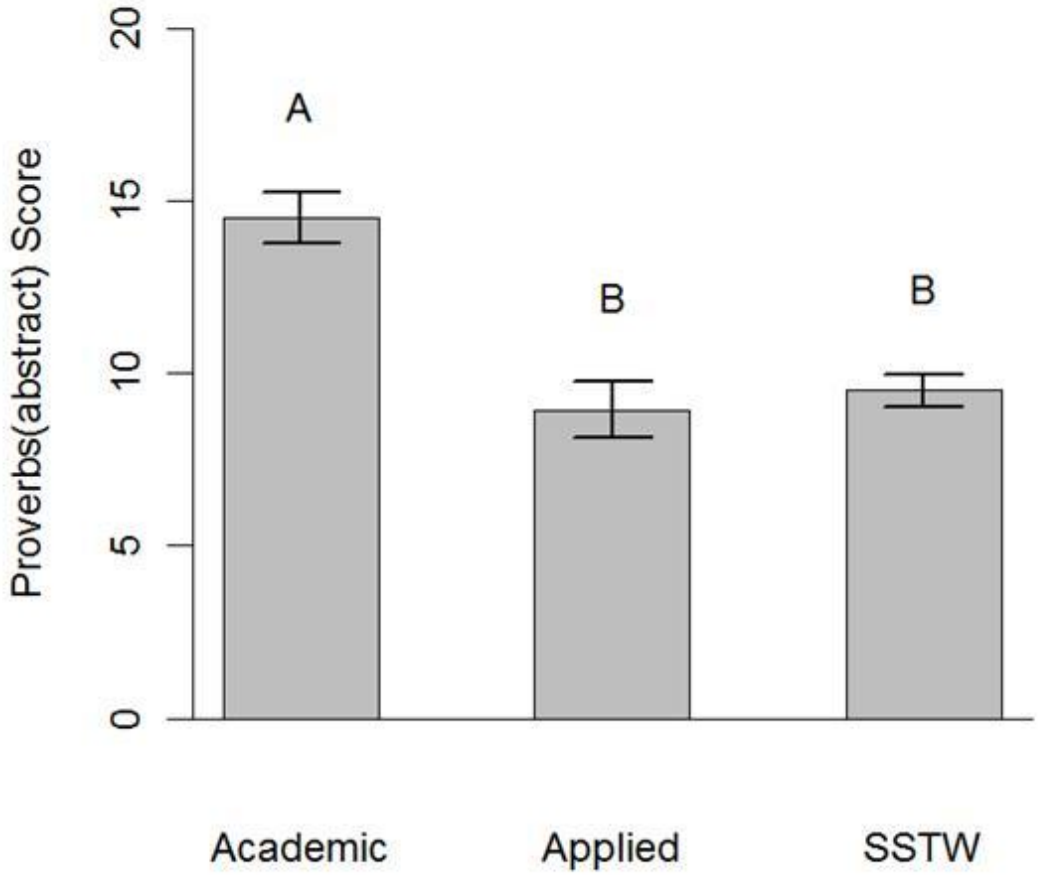


Figure 18. Results of the abstract scores.

academic students have higher scores than the applied and SSTW students.

Proverbs (Concrete; Figure 19)

The interaction between the student's proverbs (concrete) and course is again significant ($F_{2,249} = 22.119$, $p < 0.0001$) because the academic students have higher scores than the applied and SSTW students.

Analysis of ELL Students' Initial Scores

Unfortunately, the sample size is very limited for ELL students. In many cases there are only one to three students, so to increase sample size, I combined male and female students and did not consider gender in the statistical analysis. Even doing this, the sample sizes are still very small, so this analysis should be treated as preliminary. Larger sample sizes are required before making any definitive conclusions.

As above, each analysis is followed by a plot indicating the group means ± standard error. Superscripts identify groups where mean does not differ.

TOLD (Figure 20)

As with the non-ELL students, the interaction between the ELL students' scores on the TOLD test and their course is not significant ($F_{3,43} = 1.6416$, $p = 0.1938$).

Peabody (Figure 21)

Unlike the non-ELL students, the interaction between the ELL students' Peabody scores and their course is not significant ($F_{3,43} = 1.2045$, $p = 0.3216$).

Proverbs (Abstract; Figure 22)

Unlike the non-ELL students, the interaction between the proverbs abstract score and the ELL students' course has no course effect ($F_{3,45} = 1.0888$, $p = 0.3635$).

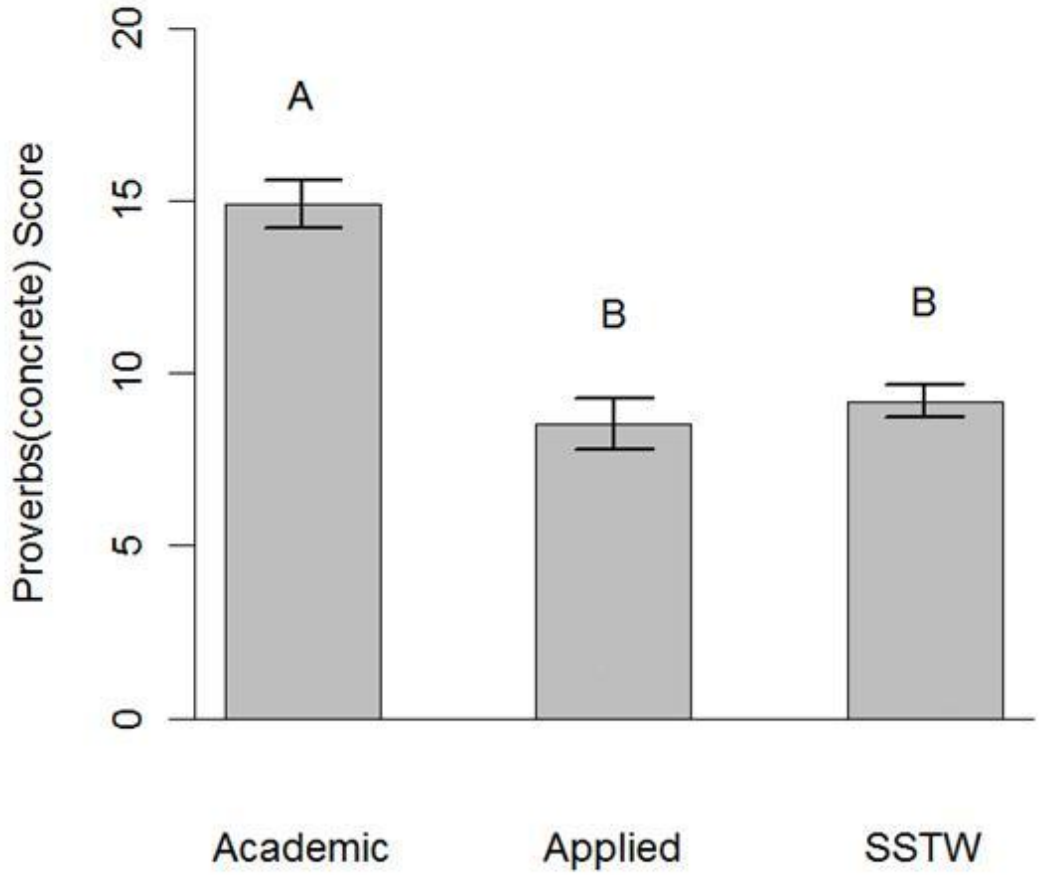


Figure 19. Results of the concrete scores.

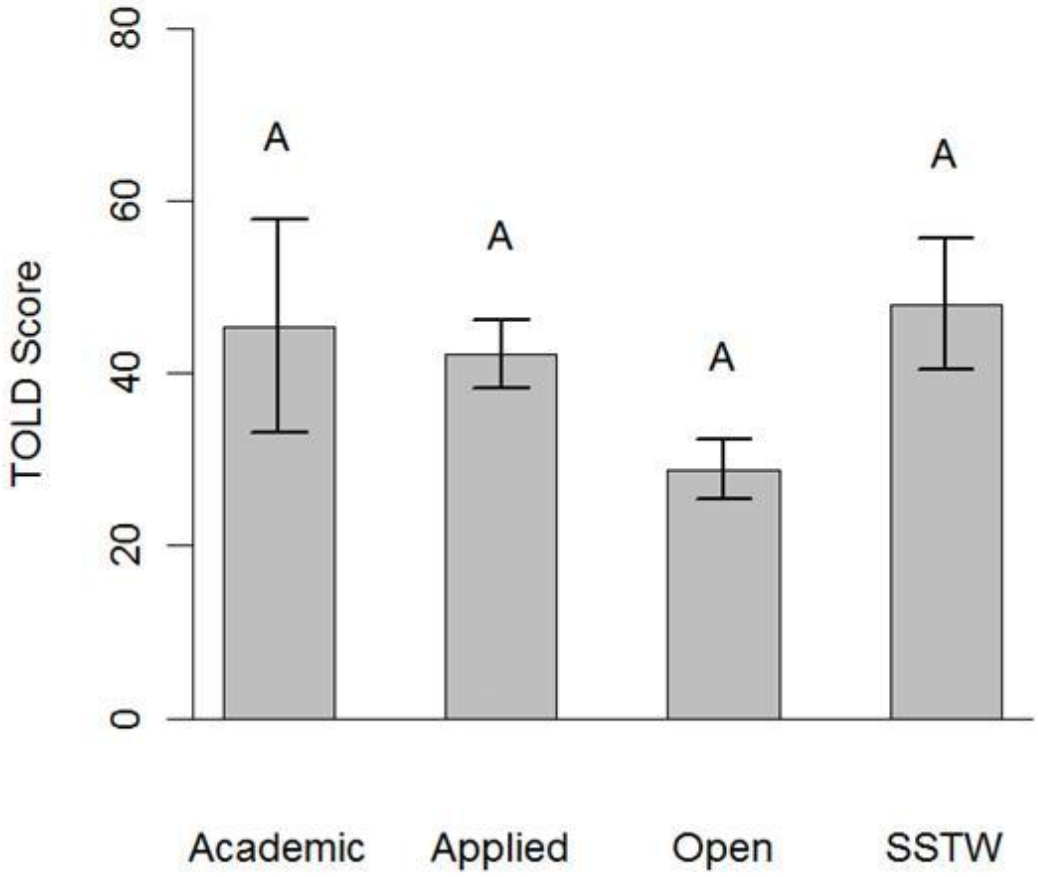


Figure 20. TOLD score results for ELL students.

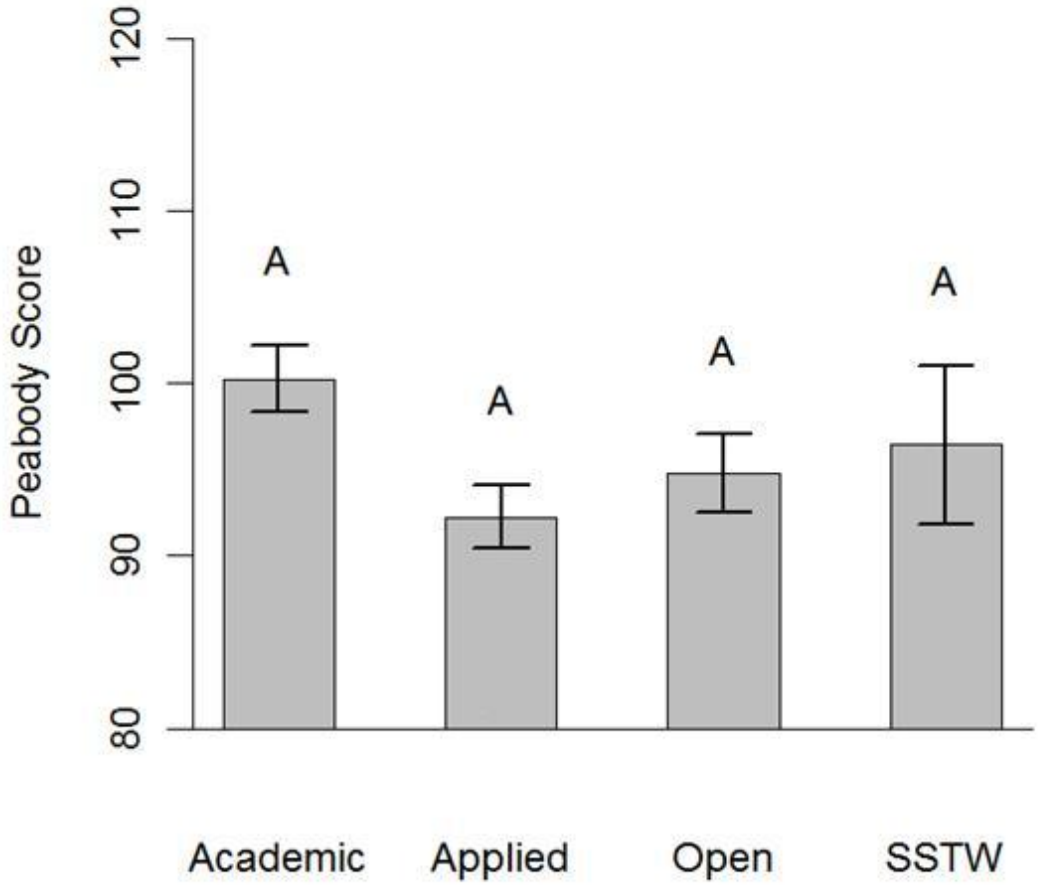


Figure 21. Peabody score results for ELL students.

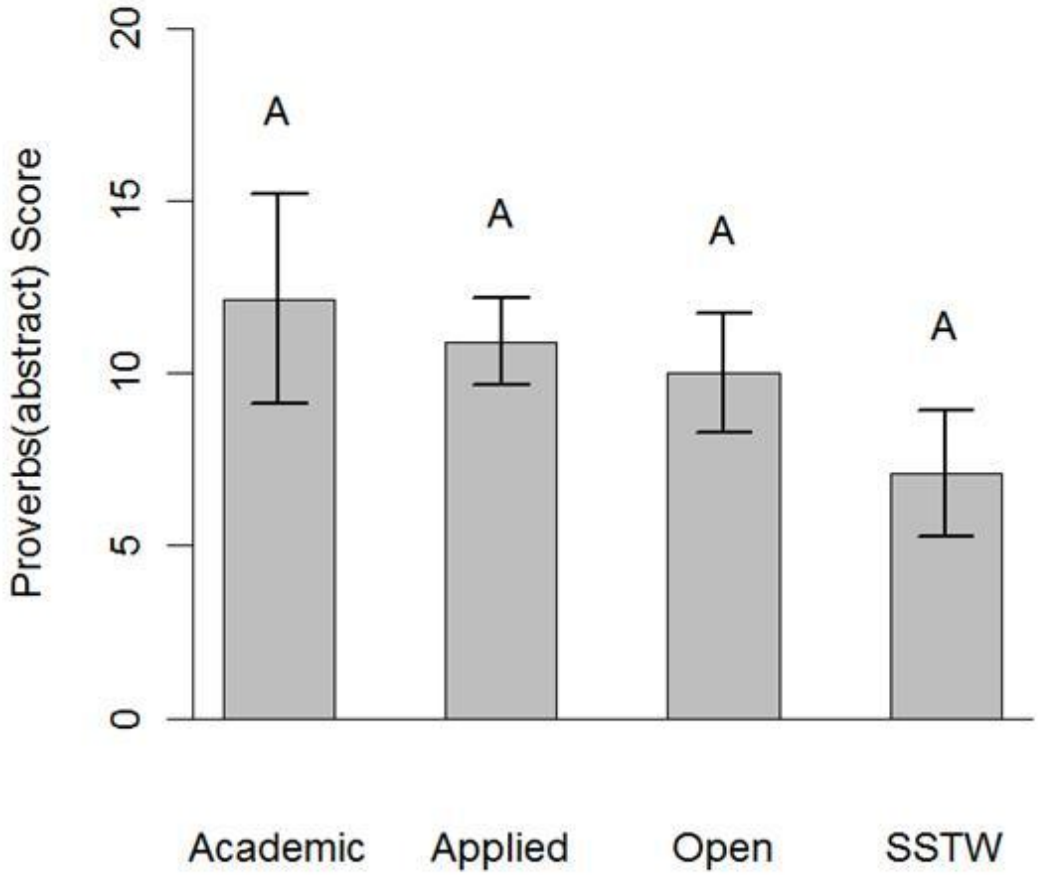


Figure 22. Abstract scores for ELL students.

Proverbs (Concrete; Figure 23)

As with the non-ELL students, there is a significant effect between the ELL students' proverbs concrete score and the course the student is in ($F_{3,45} = 3.7154$, $p = 0.018$).

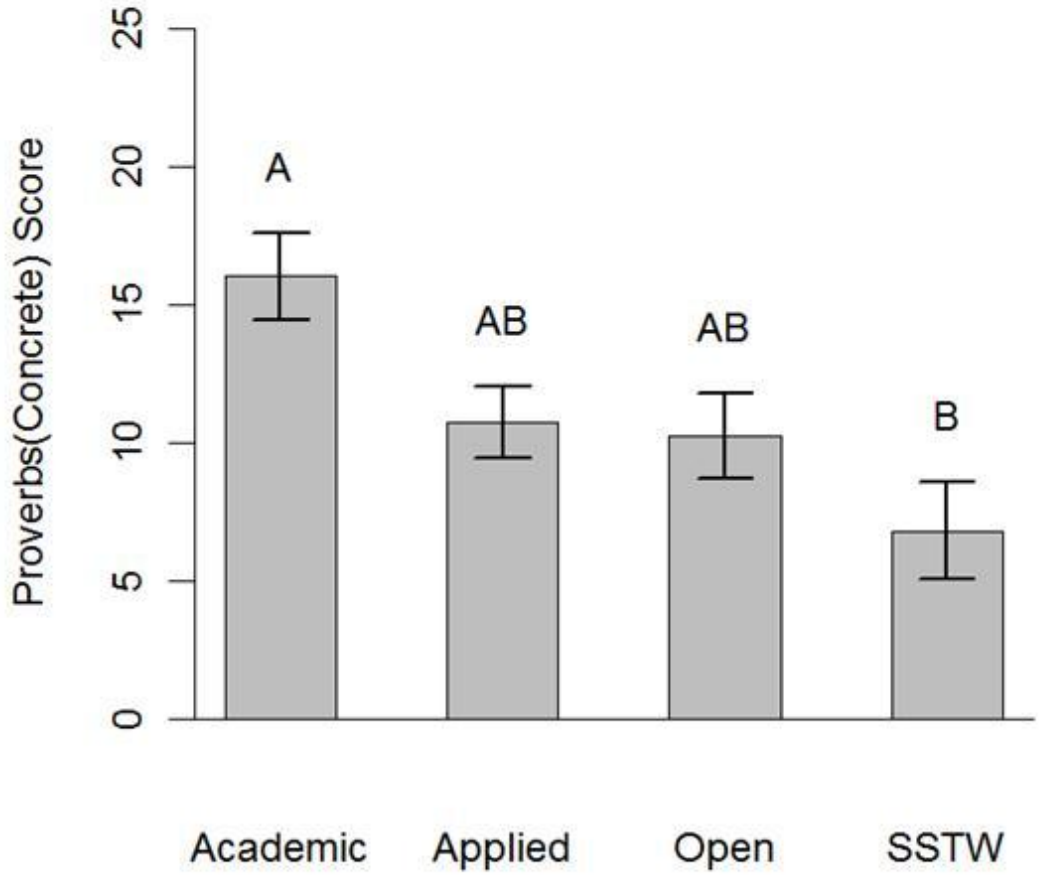


Figure 23. Concrete scores for ELL students.

CHAPTER FIVE: DISCUSSION AND IMPLICATIONS

Proverbs are a unique type of metaphorical language because a proverb can offer a literal meaning and an abstract meaning simultaneously. When the concepts in a proverb are introduced orally, decoded, and then taught directly, the playing field, so to speak, is leveled for those students' whose oral language skills are stronger than their reading skills, allowing the dual nature of the proverb to be explored and understood by more students.

Discussion

This study used a pre- and posttest quasi-experimental model to measure the growth in understanding of the abstract messages in proverbs following the eight weeks of Socratic lessons. The data collected showed the overall success of oral preview and direct instruction on the understanding of the abstract messages in proverbs for the groups of students in grade 9. An interesting finding was the amount of growth in understanding that occurred for the SSTW students, who also scored well on the two oral vocabulary baseline tests completed at the beginning of the study by all students. This finding suggests a possible link between the success of the SSTW students and the Socratic oral previewing of the discussions and instructions they received, particularly in Units One and Two. These results could also, in a small way, extend the literature on Socratic oral previewing. The literature identifying the parts of the proverb related to this study (Carroll 1986) and outlined in Chapter Two is also complemented by the results of this study.

The results of this study tend to contradict the literature in the Literature Review in two areas: gender-based literacy and whole language based literature. Gender did not

play a role in results of the pretest as there was no significant difference in the results of adolescent males and females in the pretests. There was no significant difference between the effects of the treatment results for gender; male students and female students performed similarly. Ironically, in the past decade, there has been considerable thought given to education for girls: how education can be structured, what curricular areas need focus and attention, and how to create successful environments for girls, particularly in the area of science. Until recently, serious thought has not been given to the curriculum as it is offered to boys. It was a consideration that literacy issues in boys may be most informed by this research. Boys' literacies tend to differ from the literacies valued in school; to be a successful literacy learner in school often means being able to read and write in ways that are valued by mainstream educational society and their English curriculum writers, who focus mainly on traditional fiction. Yet, often boys are reading their favourite texts, such as magazines, CD-ROMs, videos, comics, card collections, comedy, science fiction, crime novels, and nonfiction, but this is not recognized by their teachers or even by the boys themselves as *really reading*. In fact, according to, MacKinnon (2005), some students, most often male, who are not ready for this abstract approach to instructional based literacy, are likely to lag behind and/or be called into the school's guidance office for testing. As Peterson (2004) revealed, because these reading choices by boys are not necessarily what society values, boys feel they are not *really* reading outside of school because they are not reading what teachers think is "real" reading. In the area of the acquisition of abstract language and thought, however, there was no significance in the way the data from male and female students was affected by this research. Similarly, there was no significant difference in the improvement or lack of

improvement in the posttest results for male students. While Goodman and Goodman (1979) suggested that reading is a natural process, this study would add to the literature that suggests the need for direct teaching as the posttest results improved significantly, particularly in students who had not naturally reached the level of abstract comprehension necessary for understanding the abstract meaning in proverbs.

A significant result of this study is the growth in understanding measured by the posttest which apparently demonstrates that the SSTW students, who also scored strongly on the two standardized pretests as a group, have strong oral language skills and vocabulary and thus benefited from the Socratic questioning and discussion involved in the lessons of the study. Unfortunately, as opposed to cognitive research on the reading process, there are very few articles or studies in the field of oral and listening comprehension. Listening comprehension is a cognitive process that, while difficult to study, measure, and record, should be further researched and understood. The impact of the listening process on the reading process has yet to be fully understood, but in the research that exists, there is the belief that these skills are one of the important building blocks of literacy. It is perhaps the oral receptive vocabulary and listening comprehension that form the first building blocks for literacy development. If these literacy skills are underdeveloped for whatever reason, it has been shown that this is a causal factor of poor overall literacy performance in children (Chall, 1996; Pressley & Afferbach, 1995). Furthermore, the importance of these oral language skills is not understood or appreciated by many educators in schools and in curriculum planning roles today, and the teaching of reading and writing skills should be planned and delivered after ruling out what might be the causal factor for a poor reader: oral language

deficiency. While a learn-by-doing reading model is a favourite of curriculum theorists, it may be ignoring the causal factors and linguistic root of many reading and language lags.

Some research does exist, but primarily to deal with the problems in oral language such as language delays (specific oral language impairments or SLI) and the deficiencies Chall et al. (1990) described in children from some low economic situations. SLI in children has been researched by neuropsychologists for the past two decades and is used to identify a student with a lag in phonological awareness, grammar, and vocabulary. In the past, SLI has also been referred to as a language delay. Reasons for such an impairment in this debate do not include hearing loss, brain damage, or low IQ scores. Reasons for the delay in SLI students will only include: lack of exposure due to socioeconomic or cultural issues (Chall et al., 1990), inability of the brain to process sounds from the ear at a rate necessary for listening comprehension which is not a hearing loss, and/or a reading genetic disorder (Rice, 2000). Whatever the cause, and there is considerable debate and research surrounding the causes, working to improve these skills orally has been shown to be highly effective for these students and beneficial to their overall literacy development; this specific and direct contribution of input, discussion and practice using oral language for the development of phonological awareness skills and early reading skills is clear (Cooper, Roth, Speece & Schatschneider, 2002). Therefore, although there may be several possible reasons for the delay, early and continuous intervention with respect to the development of oral receptive vocabulary and listening skills is, indeed, beneficial. Conversely, students with a delay who do not receive intervention orally will all suffer the same outcome: they will be poor

readers and subsequently they will not be as successful as they should be in the school system and generally after leaving the school system as well. Teachers are not entirely to blame for ignoring or missing a student with an oral language delay; they are trained and work in environments that promote the learn-by-doing models. The curriculum does not address oral language skills well, even in the younger grades, although research has shown that in all grades, oral language and listening comprehension development improves language and literacy skills markedly (Chall, 1996).

Furthermore, some needed research could center around the practices of Socratic lessons and discussions and oral language activities such as reciprocal teaching and storytelling, which are really oral language skills and are traditional, historic human practices. What is really at play here for struggling readers is increased exposure to the language and skills they need. Storytelling has instructional potential that can serve the needs of readers in their homes and classrooms. Hearing the stories can help build the necessary vocabulary and prior knowledge the research has shown readers need to become good or better readers. Socratic lessons oral preview and discussions allow all students to be exposed orally to new words and information, to the parts of a story or an expression, and to the conventions of language which generally improves the students' overall language development (Fisher, 1985; Kintsch & van Dijk, 1978).

In secondary school, Socratic lessons, discussions, storytelling, and basic oral language strategies should be incorporated and further studied as to their ability to assist the literacy development of poor readers. Dreher's article (2003) in *The English Journal* gives a detailed account by a high school English teacher who successfully used oral input to bridge the different reading levels in his English Literature classes. He found

such a variety of reading skills in his class, and he organized the reading aloud of the literature in the class into three groups: One could be read to, one could do the reading and the other could read silently. As we know, after grade 4, reading is not taught anymore; it is just expected for learning. The reality is that the struggling readers we have been discussing may get to secondary school and yet cannot read well enough to fully benefit from text they are expected to read.

This research and all the above ideas can apply to improving the reading comprehension of grade 9 students who still struggle and possibly the grade 10 literacy test (OSSLT) results for these at-risk students, like the SSTW students in this study. In all high schools in Ontario, there are students who struggle with basic literacy skills but must write the high-stakes OSSLT in grade 10 as part of their graduation requirement. The literacy that is so valued is not easily or naturally attainable by some adolescents; the strategy to assist these students in developing the metaphorical reading skills they need for the literacy test and beyond is the Socratic oral previewing strategy employed in this study. The Socratic oral previewing strategy is designed to capitalize on the oral language skills of students with average cognitive abilities and no hearing impairments. For many of these students, the indirect, learn-by-doing literacy instruction used in traditional classrooms has not translated into high literacy scores. Direct instruction, using Socratic questions and oral previewing, may increase some performance scores on this high-stakes assessment.

Another suggestion for future research would be to more closely analyze the results of the Proverbs pretest. Students who chose the AC selection as their first choice and the LC selection as their second choice more than 75% (provincial average) of the time could

be considered abstract thinkers. Students who chose the LC selection as their first choice more than 80% of the time could be considered literal thinkers. Students with a variety of selections could be considered in transition. Then, the results from students who were mostly transitional in the Proverbs pretest 1 could be more closely observed and observed for a longer period of time such as for the OSSLT and in their marks in language-based courses throughout their 4 years of high school, since at the beginning of such a study, they were not yet abstract thinkers, and how they progress after the treatment could provide information on how best to assist students in transition when they enter high school.

Implications

If this research and its results were to be presented to teachers for further thought and discussion, would more students benefit from the oral previewing, Socratic lessons and direct instruction? Would the permanent effects of such direct instruction inform future learning? Would the concepts in the direct instruction be successfully adapted to other subject areas? Would a longitudinal study of the possible ongoing development, academic, and employment successes of the students be informative?

The lack of learning and mastering metaphorical thinking by grade 9 may lead to lower understanding, lower academic achievement, and lower self-esteem. These issues are perhaps particularly evident amongst the more at-risk student population (applied and SSTW learners), populations where the majority of the students in these categories are male, and possibly from a lower socioeconomic status homes; among these students are some identified, either formally or informally, with demonstrated lower intellectual capacity and limited success in achieving credits in secondary school. As government

documents and research have shown, students in these categories who achieve fewer than 16 credits by the age of 16 are at increased risk of leaving secondary school without graduating. This in turn has implications for schools and families specifically and for society in general. On an individual level for the students, the development of this layer of thought could enhance the creativity and understanding of cultural, musical, and literary references that would enrich the lives and thinking of these young people. Their connection to metaphorical thought and thinking is another way for them to deepen their understanding and sense of connection to the world around them, thus engaging these young people in learning, in employment, in their culture, and possibly with each other.

Secondary schools should not only directly teach facts (the what), but should also directly teach analytical, critical and conceptual thinking (the why and the how) to help students acquire knowledge and develop critical and problem-solving skills throughout life. Because the current curriculum is both taught and assessed with a level of abstract thinking expected, then the abstract concepts and thinking should be both taught and assessed. Currently, although abstract thinking is not taught, it is assumed as an outcome and is often an expectation. The larger change in the level of abstract thinking this study shows for the applied and SSTW students suggests that the academic students are already at this level of thought and are already enjoying the benefits of using this additional layer of understanding and thought in their school and daily lives.

The most interesting results are in the change in abstract scores for the SSTW students and in the results of the TOLD test for the SSTW students. The high results on the TOLD test by the SSTW students indicate their high level of oral/verbal vocabulary knowledge. The high results on the abstract scores on the posttest indicate that these

students benefited most from the oral discussion and direct instruction in this study. Together, these high results force some questions for the education system these students access, such as: Are these students given sufficient or effective direct instruction to help build their language skills? Are these students encouraged to use their verbal strengths to demonstrate their learning? Are these students encouraged to use their verbal strengths to problem solve? Are these students encouraged to use their verbal strengths to scaffold their learning? Are these students being short-changed if the results of this study go unnoticed or untested? With more direct instruction, verbal assistance, and by tapping into their verbal strengths, could SSTW students perform better in the academic areas of the education system and thereby be better trained and have access to a wider range of options upon graduating from high school? Could employing this strategy be one of the steps toward closing achievement gaps in our formal education system?

Other questions posed by the results of this study surround the academic student results. Why was there no increase in the academic students' abstract results? Why was there an increase in the academic students' concrete results? Is it possible that the academic students scored lower on the pretest concrete questions because their literal decoding of an abstract idea is less developed or presently underutilized because they have begun to operate more frequently and, or, more successfully working with abstract concepts than with literal concepts? Is it also possible that their parents, teachers, siblings, peers operate in a more abstracted environment, thus exposing them to less frequent literal thinking and expression? Students faring better initially with the concrete concepts may likewise be in an environment where concrete thinking and expressions are more predominant. These are questions that can be posed based on the results of this

study, but are questions that cannot be answered without further study. Two areas, then, of potential future research could involve discovering any socioeconomic links between initially low concrete/high abstract students and any socioeconomic links between initially high concrete/low abstract students. It is interesting to note that a study that was initially focusing on developing abstract thinking in fact may also have provided inverse development of concrete thinking in those students already exhibiting developed abstract thinking skills.

Similarly, there are questions left unanswered about the effects of this teaching unit on a proper sample of ELL students. ELL students are unique in that this study of proverbs, which unlike idioms translate literally, could prove to be as successful with ELL students as it was for all three groups of English language speakers in this study. For example, a highly developed abstract reader and thinker in her or his own language and culture could, by way of this study's methods, develop both literal and abstract literacy in English. Or conversely, a weak reader and, or, thinker in her/his own language could benefit in both concrete and abstract lessons this study provides in English.

Further research could also include a larger sample of ELL students, a sample of formally identified learning disabled students, and other at-risk student populations in the secondary schools to test the transferability of the success of these direct teaching methods on the growth of understanding of metaphorical language.

Another area for possible implication and future research is in the reeducation of the brain-injured student. When a brain injury affects the student’s ability to grasp abstract concepts, such research could inform and address problems of practice in this area of education (Clark 1996; Ylvisaker & Feeney, 1998, 2000; Ylvisaker, Jacobs, and Feeney,

2003; Ylvisaker et al., 2001). Further studies should also include the development and the content of alternate and additional lessons and approaches with respect to the ELL learner. Presently, there is engaging research in this field with respect to the use of proverbs in finance education for ELL students (Biktimirov, 2009, 2012; Biktimirov & Feng, 2006). A more complex area for possible explorations could be among students within the autism spectrum as well as with students with brain injury. Further research could include a focus on how this direct instruction could benefit all these students and adults. Areas of inquiry would be the transferability of this Socratic, direct teaching method and ultimately, the transferability of these language skills.

One of the unique aspects of humanity is our ability to think abstractly. A productive and positive outcome of this type of thinking for students is that it could provide a broader range of interpersonal communication skills, allow them to absorb lessons more quickly, and provide them with a greater range of cognitive and possibly future employment activities. If education is indeed the great equalizer of the human condition, perhaps this strategy is one piece of that hope.

So, individually students can benefit, and it is also possible that collectively there can be a benefit. Collectively, perhaps groups of individuals with abstract thinking skills positively developed can be better social communicators, more engaged citizens, better problem solvers, active critical thinkers, and better able to envision problems and create solutions before negative situations arise. If this direct teaching strategy can have such immediate and positive results on a small group of students, what would be the results if it were to be applied to a larger student population?

In conclusion, reading comprehension is a basic literacy skill. Reading involves an

interactive process of decoding and accessing prior knowledge and vocabulary. The development of oral language is a step to building these basic literacy skills in poor readers, yet it requires more research. Improving literacy skills such as decoding and comprehension through the ear using direct instruction has the potential to help many poor readers begin to build the skills they need to improve. More research in this area is certainly needed to explore questions such as: Can listening be used to overcome the problem of decoding interference in reading?

In the meantime, parents and teachers could be encouraged to increase the opportunity for children to talk and listen through the use of direct instruction. Parents of young children need to talk to their children from a very early age to provide good modeling of the oral language. Fewer chances for the child to hear and express her/himself may disadvantage the child and/or delay the discovery of a disability. Fewer chances at oral expression and reception may also decrease the child's confidence level, impeding learning and exacerbating any disability or shortcoming.

Furthermore, teachers in the early years need to be strong models of oral language to allow their students to listen to good practice and to be challenged by new vocabulary. Teachers in the junior, intermediate, and senior years need to be encouraged to continue the focus on oral language, both by modeling and teaching explicit strategies for oral language.

References

Australia Parliament. House of Representatives, Standing Committee on Education and Training. (2002). *Boys getting it Right: Report on the inquiry into the education of boys.* Canberra, Australia.

Baechle, C. L., & Ming-Gon, J. L. (1990). The effects of direct feedback and practice on metaphor performance in children with learning disabilities. *Journal of Reading Disabilities, 23*(7), 451–455.

Biktimirov, E. (2009). Wherever you go, do as you see others do: Using Spanish proverbs for teaching finance to hispanic students. *Advances in Financial Education*. *7* (1–2).

Biktimirov, E. (2012). When in Paris do as the Parisians do: Using French proverbs for teaching French-speaking students. *Advances in Financial Education*.

Biktimirov, E., & Feng, J. (2006). Different locks must be opened with different keys: Using Chinese proverbs for teaching finance to Chinese-speaking students. *Journal of Teaching in International Business. 17* (3).

Bisanz, J., Watshorn, R. P. D., Piatt, C., & Sherman, J. (2008). On "understanding" children's developing use of inversion. *Mathematical Thinking and Learning. 11*, 10–24.

Black. M. (1962). Metaphor. In M. Black, *Models and metaphors* (pp.25–47. Ithaca, NY: Cornell University Press.

Black, M. (1979a). Metaphor revisited. In A. Ortony (Ed.), *Metaphor and thought* (pp. 19–41). New York, NY: Cambridge University Press.

Black, M. (1979b). More about metaphor. In A. Ortony (Ed.) metaphor and thought (pp. 19–43). New York, NY: Cambridge University Press.

Black, M. (1993). More about metaphor. In A. Ortony (Ed), *Metaphor and thought* (2nd ed., pp 19–41). Cambridge, UK: Cambridge University Press.

Blair, H. (2003). Boys demonstrate literacy in ways the current curriculum doesn't assess. *Language Arts, 77*(4).

Bloom, B. S. (1956). *Taxonomy of educational objectives.* Handbook 1: The cognitive domain. New York, NY: David McKay.

Bodkin, B. (2009). The road ahead: Literacy teacher inquiry project report. Ontario Ministry of Education.

Boers, F. (2000). Enhancing metaphoric awareness in specialized reading. *English for Specific Purposes, 19,* 137–147.

Bowerman, M. (1976). Semantic factors in the acquisition of rules for word use and sentence construction. In D. Morehead & A. Morehead (Eds.), *Directions in normal and deficient child language* (pp. 142–178). Baltimore, MD: University Park Press.

Britton, B. K., & Graesser A. C. (1996). *Models of understanding text.* Hillside, NJ: Lawrence Erlbaum Associates.

Britton, B. K., & Gulgoz, S. (1991). Using Kintsch's computational model to improve instructional text: Effects of repairing inference calls on recall and cognitive structures. *Journal of Educational Psychology, 83*(3), 329–345.

Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research. Chicago, IL: Rand McNally.

Carroll, D. W. (1986). *Psychology of language*. Pacific Grove, CA: Brooks/Cole.

Case, R. (1978a). "A developmentally based theory and technology of instruction." *Review of Educational Research. 48,* 439–469.

Case, R. (1978b). "Intellectual development from birth to adulthood: A neo-piagetian interpretation." *In young children's thinking: What develops?* Edited by R. Siegler. Hillsdale, NJ: Erlbaum.

Chall, J. S. (1996). *Stages of reading development* (2nd ed.). Fort Worth, TX: Harcourt Brace.

Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind.* Cambridge, MA: Harvard University Press.

Chomsky, N. (1957). *Syntactic structures*. The Hague, Netherlands : Mouton

Chomsky, N. (1972). *Language and mind*. New York, NY: Harcourt Brace Jovanovich.

Chomsky, N. (1986). Knowledge of language: Its nature, origin, and use. New York, NY: Praeger.

Clark, H. H. (1996). *Using language*. Cambridge, UK: Cambridge University Press.

Clifton, C., & Ferreira, F. (1987). Discourse structure and anaphora: Some experimental results. In M. Colheart, Ed., *Attention and Performance XII: The psychology of reading* (pp. 635–654). Hillside, NJ: Lawrence Erlbaum Associates.

Cooper, D. H., Roth, F. P., Speece, D. L., & Schatschneider, C. (2002). The contribution of oral language skills to the development of phonological awareness. *Applied Psycholinguistics 23.* (2002), 399–416.

Creswell, J. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson Education.

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4rd ed.). Upper Saddle River, NJ: Pearson Education.

Darvin, J. (2006). "Real-world cognition doesn't end when the bell rings": Literacy instruction strategies derived from situated cognition research. *Journal of Adolescent and Adult Literacy, 49*(5), 398–407.

deBono, E. (1967). The use of lateral thinking. London, UK: Penguin. Johnathan Cape.

Dewey, J. (1966). *Democracy and education: An introduction to the philosophy of education.* New York, NY: MacMillian. (Original publication: 1916).

Donaldson, M. (1978). Children's minds. Glasgow, UK: Fontana Press

Dreher, S. (2003). A novel idea: Reading aloud in a high school English classroom. *English Journal, 93,* 50–53.

Dunn, L., & Dunn, L. (2010). *Peabody picture vocabulary test*. Minneapolis, MN; Pearson.

Education Quality and Accountability Office (EQAO; 1996–2012). *EQAO: Ontario's provincial assessment program - its history and influence.* www.eqao.com.

Eggert, G. H. (1977). *Wernicke's works on aphasia: A sourcebook and review* (Vol. 1). The Hague, Netherlands: Mouton.

End, L. J., & Danks, J. H. (1982). *Comprehension of metaphors: Priming the ground.* Paper presented at the Annual Meeting of the Midwestern Psychological Association, Minneapolis, MN.

Fisher, W. R. (1985). The narrative paradigm: In the beginning. *Journal of Communications 35*(4), 73–89.

Flavell, J. (1973). *The development of inferences about others.* In T. Misebel (Ed.). Understanding other persons. Oxford: Blackwell, Basic & Mott.

Flavell, J. (1982). *Structures, stage and sequences in cognitive development.* In W.A. Collins (Ed.). Minnesota Symposia on Child Psychology. *15*, 1–28. Hillsdale, NJ: Erlbaum.

Flavell, J. (2004). Theory of mind development: Retrospect and prospect. *Merrill Palmer Quarterly, 50* (3), 274–290.

Fordham, N. W. (2006). Crafting questions that address comprehension strategies in content reading. *Journal of Adolescent and Adult Literacy, 49*(5), 390–396.

Gallini, J. (1995). Metaphors and learning new text. *Journal of Reading Behaviour, 27*(2), 187–199.

Gambell, T. J., & McFetridge, P. A. (1981). Children's use of simile and metaphor and their reading. *Reading Improvement, 18*(4), 329–334.

Gentner, D. (2001). Spatial metaphors in temporal reasoning. In M. Gattis (Ed), *Spatial schemas in abstract thought* (pp. 203–222). Cambridge, MA: MIT Press.

Gentner, D., & Stuart, P. (1984). *Metaphor as structure-mapping: What develops.* Paper presented at the meeting of the Society for Research in Child Development, Detroit, MI.

Gibbs, R. W. (1993). Process and products in making sense of tropes. In A. Ortony (Ed.), *Metaphor and thought* (pp. 252–276). Cambridge, UK: Cambridge University Press.

Gibbs, R. W. (1994). The poetics of the mind: Figurative thought, language and understanding. Cambridge, UK: Cambridge University Press.

Gibbs, R. W., & Beitel, D. (1995). What proverb understanding reveals about how people think. *Psychological Bulletin, 118*(1), 133–154.

Gildea, P., & Glucksberg, S. (1983). On understanding metaphor: The role of context. *Journal of Verbal Learning and Verbal Behavior*, *22*, 511–590.

Glickson, J. (2001). Metaphor and consciousness: The path less taken. *The Journal of Mind and Behaviour*, *22,* 343–363.

Glucksberg, S., & Keysar, B. (1990). Understanding metaphorical comparisons. *Psychological Review*, *97*(1), 3–18.

Glucksberg, S., & Keysar, B. (1993). How metaphors work. In A. Ortony (Ed.), *Metaphor and thought* (pp. 401–424). New York, NY: Cambridge University Press.

Goodman, K. S., & Goodman, Y. M. (1979). Learning to read is natural. In L. B. Resnick & P. A. Weaver (Eds.), *Theory and practice of early reading*, Vol. 1 (pp. 137–154). Hillsdale, NJ: Erlbaum.

Graesser, A. C., Singer, M., & Trabasso, T. (1994). Constructing inferences during narrative text comprehension. *Psychological Review*, *101,* 371–395.

Guasti, M. T. (2002). *Language acquisition: The growth of grammar*. Cambridge, MA: MIT Press.

Hillman, J. (2001). Myths, storytelling and grouping: Literacy for the 21st century. *New England Reading Association Journal*, *37*(2), 14–19.

Hoffman, R. R., & Kemper, S. (1987). What could reaction time studies be telling us about metaphor comprehension? *Metaphor and Symbolic Activity*, *2*(3), 149–186.

Inhelder, B., & Piaget, J. (1958). *The growth of logical thinking from childhood to adolescence.* New York, NY: Basic Books.

Janeke, C. (1995). Language, cognition and metaphor. *Language Matters. 26* (1).

Jones, J., & Stone, C. A. (1989). Metaphor comprehension by language learning disabled and normally achieving adolescent boys. *Learning Disabled Quarterly, 12*(4), 251–260.

Kennerly, C. A. (1998). *Metaphorical interpretation*. M.Ed. project, Brock University, St. Catharines, Canada.

Kintsch, W. (1998a). *Comprehension: A paradigm for cognition*. New York, NY: Cambridge University Press.

Kintsch, W. (1998b). The role of knowledge in discourse comprehension construction-integration model. *Psychological Review, 95*, 163–182.

Kintsch, W. (2000). Metaphor comprehension. A computational theory. *Psychonomic Bulletin & Review, 7*, 257–266.

Kintsch, W., & Erricsson, K. A. (1995). Long-term working memory. *Psychological Review, 102*(2), 211–245.

Kintsch, W., Patel, V., & Erricsson, K. A. (1999). The role of long-term working memory in text comprehension. *Psychologia, 42.* 168–198.

Kintsch, W., & van Dijk, T. A. (1978). Toward a model of text comprehension and production. *Psychological Review, 85*, 363–394.

Klinger, J. K., Artiles, A. A., & Barletta, L. M. (2006). English language learners who struggle with reading: Language acquisition or LD? *Journal of Learning Disabilities, 39*(2), 108–128.

Kovecses, Z. (2002). *Metaphor: A practical introduction.* New York, NY: Oxford University Press.

Lakoff, G. (1993). Contemporary Theory of Metaphor http://cogsci.berkeley.edu/lakoff/MetaphorHome.html

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: University of Chicago Press.

MacKinnon, P. (et al). (2005). *Gender and its impact on student success.* St. Catharines, Canada: District School Board of Niagara.

Mate, Z., & Malicky, G. (1990). The affect of salience imbalance on children's metaphor comprehension. *English Quarterly*, *22*(1), 64–78.

McClelland, J., & Rumelhart, D. (1981). An interactive activation model of context effects in letter perception. Part I: An account of basic findings. *Psychological Review, 88*, 375–407.

McClelland, J., & Rumelhart, D. (1986). *Parallel distributed processing. Explorations in the microstructure of cognition:* Vol. 2. Psychological and biological models. Cambridge, MA: MIT Press.

McClure, A. A. (1986). *Children's responses to poetry in a supportive literary context.* Paper presented at the Annual Meeting of the National Council of Teachers of English, San Antonio, TX.

McLaughlin, M. (2012). Reading comprehension: What every teacher needs to know. *The Reading Teacher*, *65*(7), 432–440.

Ministry of Education, Ontario. (1992). *Transition years, grades 7, 8, and 9: Policies and program requirements*. Toronto, Canada: Ministry of Education.

Ministry of Education, Ontario. (1993). *The common curriculum, grades 1–9.* Toronto, Canada: Ministry of Education.

Ministry of Education, Ontario. (2007). *The English curriculum, grades 9–10.* Toronto, Canada: Ministry of Education.

Ministry of Education, Ontario. (2009). *Me read? No way!* Toronto, Canada: Ministry of Education.

Nippold, M. A. (2000). Language development during the adolescent years. *Topics in Language Disorders, 20,* 15–28.

Organization for Economic Co-operation and Development (OECD; 2010). PISA 2009 Results. *Learning trends: Changes in student performance since 2000*. Volume V.

Ortony, A. (Ed.). (1993). *Metaphor and thought*. New York, NY: Cambridge University Press.

Ortony, A. (1994). Understanding figurative language. In P. D. Pearson (Ed.), *Handbook of reading research* (Vol. 1, pp. 453–470). New York, NY: Longman.

Ortony, A. (1980). Metaphor. In R. J. Spiro (Ed.), *Theoretical issues in reading comprehension.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Ortony, A., Schallert, D. L., Reynolds, R. E., & Antos, S. J. (1978). Interpreting metaphors and idioms: Some effects of context on comprehension. *Journal of Verbal Learning and Verbal Behavior, 17,* 465–477.

Ox, J., & Van Der Elst, J. (2011). How metaphor functions as a vehicle of thought: Creativity as a necessity for knowledge building and communication. *Journal of Visual Art Practice, 10* (1), 83–102.

Pallant, J. (2010). SPSS survival manual: A step by step guide to data analysis using SPSS for Windows, (4th ed.). Berkshire, UK: Open University Press.

Palmer, B. C., & Brooks, M. A. (2004). Reading until the cows come home. *Journal of Adolescent and Adult Literature, 47,* 370–379.

Pearson, P. D., Rapheal, T. E., TePaske, N., & Hyser, C. (1981). The function of metaphor in children's recall of expository passages. *Journal of Reading Behaviour, 13*(3), 250–329.

Peterson, S. (2004). Supporting boys' and girls' literacy learning. *Orbit, 34*(1), 33–35.

Phillips, S. (2003, Fall). Tracking the trends — Tackling the gender gap. *Education Analyst: Society for the Advancement of Excellence in Education*.

Piaget, J. (1954). *The construction of reality in the child*. New York, NY: Basic Books.

Piaget, J. (1962). *Play, dreams and imitation in childhood*. New York, NY: Norton.

Piaget, J. (1964). Development and learning. In R. E. Ripple and V. N. Rockcastle (Eds.), Piaget Rediscovered (pp. 7–20).

Pressley, M. (1998). *Reading instruction that works: The case for balanced teaching*. New York, NY: Guilford Press.

Pressley, M., & Afferbach, P. (1995). *Verbal protocols of reading.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Progress in International Reading Literacy Study (PIRLS; 2011). *International Association for the Evaluation of Educational Achievement (IEA).* TIMSS & PIRLS International Study Centre, Lynch School of Education, Boston College, Chestnut Hill, MA and International Association for the Evaluation of Educational Achievement (IEA), IEA Secretariat, Amsterdam, the Netherlands. Copyright © 2013.

Pugh, S.L. (1992). *Bridging: A teacher's guide to metaphorical thinking*. Urbana, IL: NCTE.

Qualls, C. D. (2003). Age, working memory, figurative language type, and reading ability: Influencing factors in African American adults' comprehension of figurative language. *American Journal of Speech - Language Pathology*, *12*(1), 92–103.

Readence, J. E. (1986). Direct instruction in processing metaphors. *Journal of Reading Behaviour, 18*(4), 325–339.

Reddy, M. (1969). A semantic approach to metaphor. *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society,* (pp. 240–251). Chicago, IL: University of Chicago – Linguistics Department.

Reddy, M. (1979, 1993). The conduit metaphor: A case of frame conflict in our language about language. In A. Ortony (Ed.), *Metaphor and thought* (pp. 164–201). Cambridge, UK: Cambridge University Press.

Rice, M. L. (2000). Grammatical symptoms of specific language impairment. In D. V. M. Bishop & L. B. Leonard (Eds), *Speech and language impairments in children: Causes, characteristics, intervention and outcome* (pp. 17–34). East Sussex, UK: Psychology Press.

Richards, I. A. (1936). *The philosophy of rhetoric*. New York, NY: Oxford University Press.

Robertson, L. (1990). Using metaphor to improve the learning of less able students. *Ohio Reading Teacher, 24*(3), 30–37.

Rogers, T. T., & McClelland, J. L. (2004a). *A parallel distributed processing approach*. Cambridge, MA: MIT Press.

Rogers, T. T., & McClelland, J. L. (2004b). *Semantic cognition: A parallel distributed processing approach.* Cambridge, MA: MIT Press.

Rogers, T. T., & McClelland, J. L. (et al). (2004c). Structure and deterioration of semantic memory: A neuropsychological and computational investigation. *Psychological Review, 111*(1), 205–235.

Rumelhart, D. E. (1977). Toward an interactive model of reading. In S. Dornic (Ed), *Attention and performance* (pp. 164–201). Hillsdale, NJ: Erlbaum.

Rumelhart, D. E. (1980). Schema: The building blocks of cognition. In R. Spiro, B. Bruce, & W. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 33–58). Hillsdale, NJ: Lawrence Erlbaum Associates.

Rumelhart, D., & Ortony, A. (1977). The representation of knowledge in memory. In R. Anderson, R. Spiro, & W. Montague (Eds.), *Schooling and the acquisition of knowledge* (pp. 99–135). Hillsdale, NJ: Lawrence Erlbaum.

Rupley, W. H., Blair, T. R., & Nichols, W. D. (2009). Effective reading instruction for struggling readers: The role of direct/explicit teaching. *Reading & Writing Quarterly, 25.* 125–138.

Scaruffi, P. (2006). *The nature of consciousness.* Silicon Valley, CA: Omniware.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2001). Experimental and quasi-experimental designs for generalized causal inference, pp 623. Boston, MA: Houghton Mifflin.

Slavin, R. E. (2007). *Educational research in the age of accountability*. Boston, MA: Allyn & Bacon.

Sperber, D. & Wilson, D. (2008). A deflation account of metaphors. In Gibbs 2008. 84–105.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21,* 360–406.

Stanovich, K. E. (1993). Romance and reality. *The Reading Teacher, 47,* 280–291.

Stanovich, K. E. (1999). The sociopsychometrics of learning disabilities. *Journal of Learning Disabilities, 32*(4), 350-372.

Stanovich, K. E. (2000). *Progress in understanding reading: Scientific foundations and new frontiers*. New York, NY: Guilford Press.

Suleiman, M. F., & Moore, R. (1995). *Figures of speech, symbolism and the communicative process in the multilingual classrooms*. Paper presented at the annual meeting of the Speech and Communication Association of Puerto Rico, San Juan, Puerto Rico.

Thompson, S. J. (1986). Teaching metaphoric language: An instructional strategy. *Journal of Reading, 30*(2), 105–109.

Tompkins, G. E. (2001). *Literacy for the twenty-first century*. Upper Saddle River, NJ: Prentice Hall.

Verbrugge, R. R. (1979). The primacy of metaphor in development. *New Directions in Child Development, 6*, 77–84.

Verbrugge, R. R., & McCarrell, N. S. (1977). Metaphoric comprehension: Studies in reminding and resembling. *Cognitive Science, 9*, 494–533.

Vosniadou, S. (1986). *Children and metaphors* (Tech. Rep. 370). Washington, DC: National Institute of Education.

Vosniadou, S., & Ortony, A. (1983a). Emergence of the literal-metaphorical-anomalous distinction in young children. *Child Development, 54*, 154–161.

Vosniadou, S., & Ortony, A. (1983b). *Testing the metaphorical competence of the young child.* Paper presented at the Symposium on Development of Competence in Metaphor, Meeting of the Society for Research in Child Development, Detroit, MI.

Vygotsky, L. S. (1986). *Thought and language* (A. Kizulin, Trans.). Cambridge, MA: MIT Press. 1986. (Original publication 1934).

Wilhelm, J. D. (2003). *Navigating meaning: Using think-alouds to monitor comprehension.* In J. D. Wilhelm, Improving comprehension with think-aloud strategies (Chap. 4). New York, NY: Scholastic Professional Books.

Willingham, W. W., & Cole, N. S. (1997). *Gender and fair assessment.* Mahway, NJ: Lawrence Erlbaum Associates.

Winner, E. (1979). New names for old things: The emergence of metaphoric language. *Journal of Child Language, 6,* 469–491.

Ylvisaker, M., & Feeney, T. J. (1998). *Collaborative brain injury intervention: Positive everyday routines*. San Diego, CA: Singular.

Ylvisaker, M., & Feeney, T. J. (2000). Construction of identity after traumatic brain injury. *Brain Impairment, 1,* 12–28.

Ylvisaker, M., Jacobs, H. E., & Feeney, T. (2003). Positive supports for people who experience behavioral and cognitive disability after brain injury: A review. *Journal of Head Trauma Rehabilitation, 18,* 7–32.

Ylvisaker, M., Todis, B., Glang, A., Urbanczyk, B., Franklin, C., DePompei, R … Tyler, J. S. (2001). Educating students with TBI: Themes and recommendations. *Journal of Head Trauma Rehabilitions, 16.* 76–93.

Zuur, A. F., Ieno, E. N., & Elphick, C. S. (2010). A protocol for data exploration to avoid common statistical problems. *Methods in Ecology and Evolution,* 2010 (1), 3–14.

Appendix A

Consent Letter

February 2010

Dear Parent(s) Or Guardian(s):

I am writing to ask your permission for your child to participate in a Brock University research project on the development of reading skills in students. This project will be conducted over the next several months. We are interested in identifying the reading skills that students use to recognize familiar proverbs and abstract expressions. Students may use this knowledge to recognize a new or abstract concept in all their written and reading material. Our project may help us understand more about children's development of this reading skill.

The project in which your child has been invited to participate is expected to be an enjoyable experience. However, the decision about participation is yours. To help you in this decision, a brief description of the project is provided. Students will meet with the researcher and with their classroom teacher individually on one occasion only. In this session, they will be asked to read a list of words as well as a list of "pretend" words. They will also do an orally presented task in which they are to say a word without one of its sounds. At several times during the session, and as fast as they can, they will say the names of familiar letters and digits printed on a page. Finally, a series of words and pretend words that share some letter patterns will be presented on a computer screen. The children will be asked to say these words as accurately and quickly as possible. Then, as a class, the students will all be given six lessons on how to recognize familiar proverbs and abstract expressions. Their classroom teacher will be present during all of these sessions.

All children's performances are considered confidential and individual children's results will not be shared with school staff. However, information based on the results of the group of participants will be provided. Only children who have parental permission, and who themselves agree to participate, will be involved in the study. Also, children or parents may withdraw their permission at any time during the study without penalty by indicating this decision to their teacher, the principal and/or to the researcher. There are no known or anticipated risks to participation in this study.

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at Brock University. In addition, it has been approved by the Research Committee at the DSBN, and has the support of the principal at your child's school. However, the final decision about participation is yours. Should you have any concerns or comments resulting from your child's participation in this study, please contact the Office of Research Ethics at Brock University at 905-688-5550 or call me at 905-735-0700.

We would appreciate if you would permit your child to participate in this project, as we believe it will contribute to furthering our knowledge of children's developing reading skills. Please complete the attached permission form, whether or not you give permission for your child to participate, and return it to the school by February 15, 2010.

If you have any questions about the study, or if you would like additional information to assist you in reaching a decision, please feel free to call me. Thank you in advance for your interest and support of this project.

Yours sincerely,

Ann Kennerly

Appendix B

Assent Letter

STUDENT CONSENT FORM

Your parents have allowed me to talk to you about a project that I am working on. The project is on reading comprehension. I am going to spend a few minutes telling you about our project, and then I am going to ask you if you are interested in taking part in the project.

Who am I?

My name is Ann Kennerly and I am a student at Brock University.

Why am I meeting with you?

We want to tell you about a study that involves children like yourself. We want to see if you would like to be in this study too.

Why am I doing this study?

We want to find out what reading and thinking skills help children learn to read and comprehend what they read.

What will happen to you if you are in the study?

If you decide to take part in this study there are some different things we will ask you to do. First, I will say some words and after each word I would like you to tell me its meaning. Second, I do a few activities with you and your class using proverbs. While doing these things all you have to do is try your best. If you have tried your best and do not know what to say or do next, you can guess or say 'I do not know'. It will take you about 35 to 40 minutes to do each of the tasks.

Are there good things and bad things about the study?

What we find in this study may be used to describe how reading comprehension using proverbs works. Being in this study will not hurt you and it will not make you feel bad.
Will you have to answer all questions and do everything you are asked to do?
If we ask you questions that you do not want to answer then tell us you do not want to answers those questions. If we ask you to do things you do not want to do then tell us that you do not want to do them.

Who will know that you are in the study?

The things you say and any information we write will not have your name with it, so no one will know they are your answers or the things that you did.

The researcher will not let anyone else see your answers or any other information about you. Your teachers, principal, and parents will never see the answers you gave or the information we wrote about you.

Do you have to be in the study?

You do not have to be in the study. No one will get angry or upset with you if you don't want to do this. Just tell us if you don't want to be in the study. And remember, if you decide to be in the study but later you change your mind, then you can tell us you do not want to be in the study anymore.

Do you have any questions?

You can ask questions at any time. You can ask now or you can ask later. You can talk to me or you can talk to someone else at any time during the study. Here are the telephone numbers to reach us.

Ann Kennerly 905-735-0700

IF YOU WANT TO BE IN THE STUDY, SIGN YOUR NAME ON THE LINE BELOW:

Student's name, printed: _____

Date: _____

Signature of the Student: _____

Date: _____

Appendix C

The Proverbs Test

1. Listen while I read the sentence at the top of the page.
2. Listen while I read each of the four sentences right below the sentence at the top.
3. Then indicate, by using a check mark, which two (2) sentences are the closest in meaning to the one at the top.
4. Remember to check two (2) sentences each time even if you have to guess.
5. OK? Each time you must check two (2) sentences that come close in meaning to the one at the top.
6. After you have checked two (2) sentences, then choose which one of the 2 is the BEST meaning for the sentence at the top. Circle the check mark of the best answer.

Remember, sometimes you may have to guess which 2 come close in meaning and then circle the check mark of the one that is the closest.

Let's do some examples together.....

Sample A

What cures John may make George sick.

a) What is right for one person may be wrong for another _____
b) Medicine that makes John feel better may make George feel better _____
c) What is right for one person may be right for another _____
d) Medicine that makes John feel better may make George feel worse _____

Sample B

Stairs are best swept downwards.

a) Stairs should be swept at the top and the bottom _____

b) Some jobs should be done in only one way _____

c) Stairs should be swept from the top to the bottom _____

d) Some jobs should be done in many different ways _____

Sample C

Don't put all your eggs in one basket.

a) When solving a problem you should stick with one approach _____

b) You should put your eggs in a number of baskets _____

c) When solving a problem you should try different approaches _____

d) You should put your eggs in one basket _____

Are there any more questions? OK, now let's begin.

1) It's no good crying over spilled milk.

   a) After you have made a *mistake* do something better than worrying about it _____

   b) After you have spilled milk crying about it is a good thing to do _____

   c) After you have spilled milk do *something* better than crying about it _____

   d) After you have made a mistake worrying about it may help_____

2) Everyone loves the fire which gives him warmth.

   a) People like the fire that makes them feel warm _____

   b) People like the things that other people like _____

   c) People like the things that make them feel good _____

   d) People like the fire that starts quickly_____

3) If you walk on snow you cannot hide your footprints.

   a) Sometimes it is easy for people to see what you have done _____

   b) Sometimes it is hard for people to see what you have done _____

   c) When you walk on snow your footprints will show _____

   d) When you walk on snow you can hide your footprints_____

4) A man's teeth often bite his own tongue.

   a) By saying something nasty a person often hurts others _____

   b) By saying something nasty a person often hurts himself _____

   c) A man uses his teeth and his tongue to eat_____

   d) A man often bites his tongue with his teeth _____

5) You cannot eat your cake and keep it too

   a) You can either eat your cake or keep it _____

   b) You can eat your cake and ask for more _____

   c) Sometimes you can only do one of two things _____

   d) Sometimes you can do everything that you want to _____

6) Too many cooks spoil the soup.

   a) When many people do a job together they do it well _____

   b) When many cooks make the soup together they spoil it_____

   c) When many cooks make the soup together they make it better _____

   d) When many people do a job together they do it poorly _____

7) Don't count your chickens before they hatch.

   a) You can be sure of the future only after it has happened_____

   b) You should count your chickens before they have hatched _____

   c) You can be sure of the future only when you plan ahead _____

   d) You should count your chickens only after they have hatched _____

8) Four eyes see more than two eyes.

   a) A group can understand things the same as one person can _____

   b) One person can see as far as two people can_____

   c) Two people can see more than one person can _____

   d) A group can understand things better than one person can_____

9) Hunger finds no fault with the cooking.

   a) When a person is hungry he eats only the best cooking _____

   b) When a person is in serious trouble he chooses only the best help _____

   c) When a person is hungry he eats cooking of any kind_____

   d) When a person is in serious trouble he takes help of any kind_____

10) The early bird catches the worm.

   a) The bird that gets up early sees the sunrise_____

   b) When everybody is after the same thing, the person who starts first gets it_____

   c) When everybody is after the same thing, each person should try to share it_____

   d) The bird that gets up early finds worms_____

11) A dog will not howl if beaten with a bone.

a) When a person beats a dog with a bone the dog will howl _____

b) When a person beats a dog with a bone the dog will keep quiet _____

c) When people we like hurt us we can put up with it _____

d) When people we like hurt us we let them know about it _____

12) You cannot teach an old dog new tricks.

a) As people grow older they find it harder to change_____

b) If you try to teach an old dog new tricks you will fail _____

c) If you try to teach an old dog new tricks you will succeed _____

d) As people grow older they become wiser _____

13) The leopard cannot change it spots.

a) When the leopard tries to change its spots the spots change _____

b) When you try to change some things they often change _____

c) When the leopard tries to change its spots the spots stay the same_____

d) When you try to change some things they stay the same_____

14) The cat is mighty dignified until the dog comes along.

a) The cat acts very dignified until a dog appears _____

b) The cat acts very dignified when a dog appears_____

c) Some things make proud people become more proud _____

d) Some things make proud people lose their pride _____

15) Health is not valued until sickness comes along.

a) People really appreciate the value of some things when they find them _____

b) People really appreciate the value of their health when they feel great_____

c) People really appreciate the value of things when they lose them ____

d) People really appreciate the value of their health when they get sick_____

16) He who plants thorns should not hope to gather flowers.

a) What a person gets out of something depends on what he puts into it _____

b) What a person gets out of *something* depends on his good luck _____

c) When a person plants thorns he can hope to gather flowers _____

d) When a person plants thorns he should expect to gather thorns_____

17) The restless sleeper blames the bed.

a) When a person has trouble sleeping he tosses and turns _____

b) A person gets angry with himself before he gets angry with other things _____

c) A person gets angry with other things before he gets angry with himself_____

d) When a person has trouble sleeping he blames the bed _____

18) Dry hands won't catch fish.

a) To catch a fish a person must get a good fishing spot_____

b) To do some jobs a person must put up with some discomfort _____

c) To do some jobs a person must feel comfortable_____

d) To catch a fish a person must get his hands wet _____

19) He who climbs the ladder must begin at the bottom.

a) A person must learn hard things before learning about anything else _____

b) A person must climb a ladder by stepping very carefully _____

c) A person must learn *simple* things before learning about harder things _____

d) A person must *climb* a ladder by starting at the bottom _____

20) If the blind lead the blind both will fall down.

a) When *blind* people lead each other both will fall down _____

b) Two people with the same weakness will be able to help each other _____

c) When *blind* people help each other *both* will walk more easily_____

d) Two people with the same weakness will have difficulty helping each other ____

Appendix D

Proverbs: Quiz #1

Directions: Choose the word or words that best *complete* the paraphrase of the proverb by circling the corresponding *letter.*

1) *Birds of a feather flock together* means *people* who have *similar* interests:
    a) dislike each other
    b) like each other
    c) spend time together
    d) vacation together.
2) *Don't cry over spilled milk* means once something has happened, you *should*
    a) cry
    b) laugh
    c) worry
    d) forget it.
3) *A penny saved is a penny earned* means when you save money, it is
    a) saved
    b) like spending it
    c) like earning it
    d) lost.

4) *It never rains but it pours* means that things happen:

    a) for a reason

    b) in *i*solation

    c) for no reason

    d) all at once.

5) *Marry in haste, repent at leisure* means if you marry too quickly, you will*:*

    a) get divorced soon

    b) be unhappy forever

    c) be happy for a *long* time

    d) regret it for a long time.

6) *lf the shoe fits, wear it* means that if something suits you, you *should:*

    a) use it

    b) *sell* it

    c) fight it

    d) ignore it.

7) *People who live in glass houses shouldn't throw stones* means people who are guilty of something:

    a) should confess or get caught

    b) shouldn't complain about others doing it

    c) should go free

    d) shouldn't live in a house.

8) *Two wrongs don't make a right* means if you respond to a mistake by also making a mistake, you are:

   a) right

   b) wrong

   c) guilty of both

   d) in trouble.

9) *The pen is mightier that the sword* means that violence is:

   a) not as effective as letters

   b) as effective as fighting

   c) not effective at all

   d) the only thing that work.

10) *Necessity is the mother of invention* means if we need something, then:

   a) it should be invented

   b) it must be invented

   c) it will be easy to invent

   d) it will be hard to invent.

Appendix E

Proverbs: Quiz #2

Directions: Choose the word or words that best complete the paraphrase of the proverb by circling the corresponding letter.

1) *When the cat is away the mice will play* means when the boss *is*

   a) unhappy

   b) on vacation

   c) in debt

   d) sick

the employees will:

   e) not work

   f) not lie

   g) work hard

   h) sleep.

2) *The proof of the pudding is in the eating* means to see if something is:

   a) rotten

   b) good

   c) foreign

   d) popular

you should:

   e) ask someone

   f) experience it

   g) buy it

   h) make it.

3. *Time is money* means that if you work:

    a) slowly

    b) efficiently

    c) carelessly

    d) when you are sick

the *cost* of *your* work will be:

    e) unimportant

    f) less

    g) more

    h) I don't know.

4. *A friend in need is a friend indeed* means that a friend who is:

    a) unhappy

    b) always home

    c) there for you

    d) in trouble

is a _____friend.

    e) true

    f) false

    g) rainy day

    h) new.

5. *He who hesitates is lost* means that if you:

a) start on time

b) wait

c) don’t know the answer

d) are lost

you will not

e) be happy

f) be successful

g) be popular

h) be rich.

Appendix F

Proverbs: Quiz #3

Directions: In your own words, in the space below, write what the proverb means to you. Each answer may be a sentence or two in length. Each proverb is worth two marks. (Twenty marks.)

1. Let sleeping dogs lie.

2. Curiosity killed the cat.

3. Half a loaf is better than none.

4. A fool and his money are soon parted.

5. Leave no stone unturned.

6. Still waters run deep.

7. Good fences make good neighbours.

8. Beggars can’t be choosers.

9. Out of the frying pan and into the fire.

10. Haste makes waste.

Appendix G

Fables Quiz

1. The Shepherd and the Wolf

    a) If you grow lemons, you can make lemonade.

    b) If you are evil, you will teach evil.

    c) If you try to change, you can.

    d) If you teach evil, you must expect evil.

2. The Dog and the Shadow

    a) Don’t go for the promise, wait for the goods.

    b) Grasp at the shadow and lose the substance.

    c) When time has run out, grab whatever you can.

    d) Take what you want and you will get what you need.

Appendix H (Part A)

Raw Data

CATEGORY	MEAN							
	Proverbs abstract difference	Proverbs concrete difference	Peabody-corrected	Proverbs Pre abstract	Proverbs Pre concrete	Proverbs post abstract	Proverbs post concrete	TOLD
CLASSES								
AMI-101-01	7.0	7.9	103.5	11.9	11.4	18.8	19.1	38.0
AVI-0K	8.5	9.0	99.1	11.0	10.7	19.5	19.6	37.7
AVI-101-03	12.3	12.7	95.6	6.6	6.1	18.6	18.5	42.1
BTT-101-02	0.8	1.0	94.6	11.8	12.9	10.7	12.3	28.3
CGC-1D1-03	1.0	1.8	98.8	16.9	16.7	17.9	18.4	50.1
CPC-1P1-03	-0.2	1.2	94.1	13.4	13.6	11.4	13.2	44.6
ENG1D1-02	1.1	-1.2		12.1	15.2	13.2	14.0	41.9
ENG-1D1-03	1.1	1.4	101.7	17.0	17.1	18.1	18.6	66.2
ENG-1LK	14.0	10.2	97.0	2.4	6.8	16.7	17.3	47.2
ENG-1LK-02			101.4	4.5	6.0			38.8
ENG-1P1	1.4	0.6	95.2	12.7	12.3	14.6	15.0	41.2
ENG-1P1-01	12.8	12.1	88.4	4.4	5.3	17.5	17.6	30.2
ENG-1P1-02	8.3	10.9	94.2	8.6	7.0	17.8	18.6	35.9
ENG-1P1-03	8.5	7.8	91.9	10.3	9.2	19.2	19.3	43.0
FSF-1D1-02	7.7	7.7	100.1	11.1	11.3	18.2	18.3	
MAT-1LK-02	-0.3	0.0	96.0	7.0	5.6	6.9	5.5	38.3
MFM-1P1-01	13.1	12.8	93.6	7.0	6.8	19.3	19.3	30.8
PPL-10FG-C2	7.6	8.6	95.2	12.0	11.3	19.8	19.8	57.4
PPL-10MB-C2	-1.2	0.8	97.0	13.3	11.1	12.8	12.9	49.5
TIJ-101-02	-1.3	0.8	95.3	8.9	8.0	9.1	10.3	47.8
COURSES								
Academic - all	2.7	2.3	100.5	14.2	15.0	16.8	17.3	53.8
Academic - Non-ESL	3.2	2.8	100.6	14.5	14.9	17.6	17.6	55.6
Academic - ESL	-0.4	-0.6	100.3	12.1	16.0	11.7	15.4	45.4
Applied - all	7.9	8.1	93.0	9.5	9.2	16.8	17.3	37.8
Applied - Non-ESL	9.5	9.3	93.4	8.9	8.5	17.6	17.9	36.2
Applied -ESL	4.5	5.6	92.2	10.9	10.7	14.9	15.9	42.2
Open - all	0.8	1.0	94.6	11.8	12.9	10.7	12.3	28.3
Open - Non-ESL	0.8	-1.0	94.0	14.7	17.5	14.3	15.3	27.4
Open - ESL	0.8	2.0	94.8	10.0	10.2	9.1	11.0	28.8
SSTW - all	6.6	7.1	98.1	9.4	9.0	16.3	16.4	44.5
SSTW - Non-ESL	6.9	7.5	98.2	9.5	9.2	16.7	16.8	44.2
SSTW - ESL	0.8	0.2	92.7	7.3	6.9	9.7	8.7	43.1

Appendix H (Part B)

Raw Data

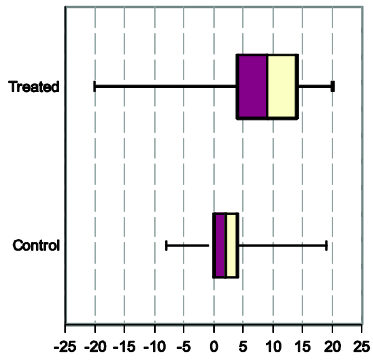
CATEGORY	STANDARD DEVIATION							
	Proverbs abstract difference	Proverbs concrete difference	Peabody-corrected	Proverbs Pre abstract	Proverbs Pre concrete	Proverbs post abstract	Proverbs post concrete	TOLD
CLASSES								
AMI-101-01	5.6	6.5	7.1	6.3	6.9	1.5	1.3	19.2
AVI-0K	6.0	6.0	8.1	5.6	5.5	0.6	0.5	19.8
AVI-101-03	4.6	4.3	6.2	4.6	3.9	1.5	1.7	19.3
BTT-101-02	3.0	3.9	5.8	5.3	5.7	6.5	5.6	9.7
CGC-1D1-03	2.7	3.5	4.2	3.0	3.5	2.1	1.0	14.1
CPC-1P1-03	2.7	3.3	8.4	5.6	5.4	5.1	4.4	17.2
ENG1D1-02	2.8	4.0		6.4	2.9	5.8	5.8	16.1
ENG-1D1-03	2.3	2.1	8.0	3.1	3.2	3.1	3.3	27.6
ENG-1LK	3.7	4.3	4.0	1.4	2.0	3.7	4.5	20.1
ENG-1LK-02			11.2	4.5	4.1			19.3
ENG-1P1	3.3	2.8	9.5	5.1	4.5	4.9	4.6	14.3
ENG-1P1-01	4.5	3.9	9.7	4.7	4.0	2.1	2.5	5.7
ENG-1P1-02	3.9	4.6	5.2	6.0	5.8	2.2	1.6	18.7
ENG-1P1-03	6.1	4.1	7.5	6.5	5.5	1.2	1.3	18.5
FSF-1D1-02	4.7	4.1	5.1	6.2	6.2	2.9	2.9	
MAT-1LK-02	-0.3	0.0	96.0	7.0	5.6	6.9	5.5	38.3
MFM-1P1-01	4.4	4.9	6.0	4.5	4.8	0.9	0.9	11.0
PPL-10FG-C2	6.1	6.8	6.6	6.0	6.4	0.5	0.4	24.4
PPL-10MB-C2	5.2	2.9	3.6	4.8	6.4	6.3	6.6	21.1
TIJ-101-02	4.0	2.8	4.8	4.1	4.1	6.0	5.3	27.0
COURSES								
Academic - all	4.3	4.7	6.5	5.6	4.7	4.3	4.2	23.5
Academic - Non-ESL	4.3	4.9	6.8	5.1	4.8	3.1	4.0	21.3
Academic - ESL	2.1	1.8	3.9	8.1	4.1	7.2	5.2	32.5
Applied - all	6.6	6.2	8.0	6.1	5.7	4.2	3.6	15.7
Applied - Non-ESL	6.5	6.1	7.9	6.1	5.5	3.4	3.1	14.5
Applied -ESL	5.6	5.8	8.4	6.1	6.1	5.1	4.3	18.3
Open - all	3.0	3.9	5.8	5.3	5.7	6.5	5.6	9.7
Open - Non-ESL	3.5	6.1	1.0	3.9	3.8	1.7	2.5	7.5
Open - ESL	2.9	2.1	6.7	5.5	4.9	7.3	6.2	11.0
SSTW - all	7.1	6.8	7.4	5.9	5.7	5.4	5.6	21.7
SSTW - Non-ESL	7.1	6.6	7.1	5.9	5.7	5.2	5.3	21.7
SSTW - ESL	3.3	6.3	7.7	5.8	5.6	5.4	6.0	18.7

Appendix I

Nonparametric Sign Tests: Summarized Data

Entire Population

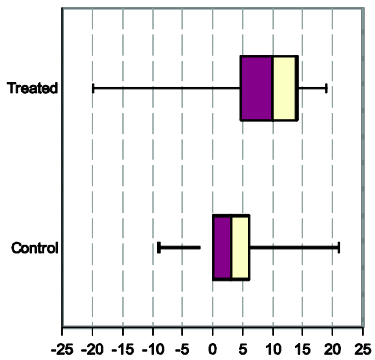
Abstract



	Control	Treated
Min	-8	-20
LQ	-1	4
Med	1	9
UQ	3	14
Max	18	20
Mean	1.86	8.86

-7	-24
-1	4
2	5
2	5
15	6

Concrete



	Control	Treated
Min	-9	-20
LQ	-2	4.75
Med	1	10
UQ	4	14
Max	19	19
Mean	2.00	9.00

-7	-24.75
-2	4.75
3	5.25
3	4
15	5

Sign Test: Testing the median of the sign difference in both the control & treatment group seperately to establish whether improvement in test score is significant

	Control	Treated
+Ve Change	77	120
-Ve Change	47	3
Total	124	123
P values	0.004467	0.000000

	Control	Treated
+Ve Change	81	
-Ve Change	45	
Total	126	
P values	0.000855	0

Sign Test: Testing the median of the sign difference for combination of paired changes in control & treatment group (t_r, c_r) to establish whether improvement in test score in treatment group is significant in comparison to the control group

	Paired
+Ve Change	14,646
-Ve Change	2,955
Total	17,601
P values	#VALUE

	Paired
+Ve Change	14,486
-Ve Change	3,133
Total	17,619
P values	#VALUE