

THE EFFECTS OF VISUAL THINKING STRATEGIES ON READING ACHIEVEMENT  
OF STUDENTS WITH VARYING LEVELS OF MOTIVATION

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## Abstract

This study examined the effects of the Visual Thinking Strategies (VTS) curriculum on reading achievement of students with various motivational levels. A 2X2 factorial design was used. The sample population consisted of 104 fourth grade students from an upper middle class school system in Connecticut. All students were administered a *Motivation to Read Profile* to measure their levels of motivation. Form S of the *Gates-MacGinitie Reading Test* served as a pretest to measure reading achievement prior to treatment. The pretest score was used as a covariate to control for initial reading levels. Both the experimental and the control groups received traditional reading instruction, but the experimental group's instruction was supplemented with nine weeks of the Visual Thinking Strategies curriculum. A posttest using Form T of the *Gates-MacGinitie Reading Test* was administered to both groups after the instruction to measure reading achievement.

A two-way Analysis of Covariance was used to analyze the data. Results indicated that students who were instructed with Visual Thinking Strategies did not perform better than students instructed without it. Although students with low motivation did not perform significantly better when VTS was used as the instructional method, there was a significant main effect of motivation on the comprehension subtest for highly motivated students. The educational implications of these results are discussed.



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Doctor of Education Dissertation

*The Effects of Visual Thinking Strategies on Reading Achievement of  
Students with Varying Levels of Motivation*

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## CHAPTER ONE: INTRODUCTION TO THE STUDY

A number of theorists have suggested that integrating the arts into literacy instruction improves reading achievement (Deasy, 2002; Eisner, 1981; Gardner, 1983; Greene, 2001). Two mechanisms, one cognitive and one motivational, have been proposed to explain how visual arts instruction can enhance reading achievement (Burger & Winner, 2000a). A cognitive mechanism might involve the transfer of perceptual skills known to be associated with reading, such as attention to detail and visual imaging, from the visual arts experiences to reading (Eisner). Burger and Winner suggested that a motivational mechanism might involve using the arts as an entry point to reading, thereby providing engaging opportunities that would make less motivated students want to read.

During the 1970s, enthusiasm for the idea of integrating the arts into reading instruction gave rise to several programs that combined training in the visual arts with reading instruction. Among the most frequently mentioned in the literature are Children's Art Carnival (Taylor, 1979), Learning to Read Through the Arts (O'Brien, 1977), and Reading Improvement Through the Arts (Lidstone, 1979). Proponents of these programs reported gains in reading achievement for students who participated in the programs; however, none of these studies included a control group in which students received the same amount of reading instruction with no extra art (Burger & Winner, 2000a). Thus, it is not known whether reading improvement was due to the integration of visual arts with reading instruction or whether improvement was simply due to extra reading instruction for remedial readers.

Research efforts that included control groups were conducted to investigate the effectiveness of a newer program, Visual Thinking Strategies (VTS), which was developed in 1995 by Abigail Housen and Philip Yenawine. This program was designed to support visual literacy, as well as thinking and communication skills (DeSantis & Housen, 2001). The curriculum invites students to interact and collaborate while trying to construct meaning from a visual art print. Participation in VTS programs has been associated with better scores on tests of aesthetic development and critical thinking and with increased passing rates on state reading tests (Housen, 2001).

### Rationale and Related Literature

Many of the skills and strategies used to experience, examine, and discuss artworks mirror those that we seek in developing good readers. These skills and strategies include vocabulary acquisition, imaging, building and activating schema, identifying main idea and detail, questioning, inferring, and communicating through oral language (Mantione & Smead, 2003).

Rudolf Arnheim (1969) suggested that behind every word is some type of visual image. As readers begin to incorporate more words into their vocabulary, they can bring the vocabulary to larger text and gain meaning from a book. As students discuss concrete and abstract ideas from art prints in VTS, their knowledge of vocabulary may increase.

The role of imagery in making sense of text has its theoretical roots in the work of Allan Paivio and his colleagues (Paivio, 1971, 1990), who advanced the Dual-Coding Theory. From this theoretical perspective, knowledge is stored in memory, including both verbal and nonverbal representations of knowledge. Verbal representations are composed of words for objects, events, and ideas. The imagery, or nonverbal system, represents

knowledge that shares features with the actual perception or experience. Thus, when words and images are connected during instruction, comprehension is enhanced. Sensory imaging can be brought to a book and is one key component of the Visual Thinking Strategies curriculum, as students respond to art prints using all of their senses to gain meaning from the painting.

The process of building schema for a new text means that readers must focus on paying attention to connections between their lives and text, so that they can create deeper meanings from text (Wilhelm, 2003). Anderson (1984) viewed structured knowledge and mental models as vehicles that can be used to interpret events and solve problems. This process of building schemata is another component of VTS, as students may use a range of observations to draw conclusions and make inferences based on associations, memories, facts, and emotions.

To discern main ideas, readers must first identify the topic and then the key details. This requires readers to understand the relationship between the details, and through this understanding, comprehend the main ideas about the topic (Wilhelm, 2003). In VTS, students may be asked to provide one word to describe a painting (main idea) and an explanation of what is in the painting to support it (details).

Questioning is the act of asking, probing, and wondering. By asking questions, readers pursue the unknowns of their story (Mantione & Smead, 2003). Research has shown that in order for students to comprehend text, questions need to leave room for students to struggle with meaning, rather than just point to answers (McKeown & Beck, 2001). In VTS, group discussions have a purpose of building meaning from a visual art print, and students' thinking is clarified through questioning.

Furthermore, inferring is critical to a reader's ability to comprehend text. It requires readers to make and revise predictions and use their own perspectives of the world to clarify and gain meaning from text. Competent readers need to "read between the lines," moving beyond the obvious, but still staying focused on the text (Mantione & Smead, 2003). Art may have the potential to invite viewers in, as they try to interpret meaning by connecting their own schema with the artist.

A tenet of Vygotsky's (1962) theory is that what is learned must be taught. Groups of people create knowledge, invent terminology, and devise procedures as they practice activities. Visual tools are a way of doing this, since they make sophisticated and abstract strategies and content visible and available to learners (Wilhelm, 2003). VTS puts Vygotsky's theory of the language and thinking connection into practice with student discussions about what they see in works of art. VTS requires students to share responses to visual images and respond to the ideas of others, making language a key component of the curriculum. These responses to visual images parallel shared responses to text. From a social constructivist perspective, the potential result of participating in a social situation involving reading and thinking about texts is that individual students can draw upon the teacher and other students to help them construct an understanding of text ideas and what it means to read and think about texts (Kucan & Beck, 1997).

The skills and strategies described above, including vocabulary acquisition, imaging, building and activating schema, identifying main idea and detail, questioning, inferring, and communication through oral language are all essential components of good reading. The components of VTS include the same skills and strategies. Therefore, this present study

examined the program as a supplemental method of teaching reading to improve achievement.

Along with the cognitive and social learning theories that might underlie and support integrating visual arts and reading instruction, research also supports the notion that literacy learning is influenced by motivational factors. For example, Eccles (1983) advanced an “expectancy-value” theory of motivation, which states that motivation is strongly influenced by one’s expectation of success or failure at a task, as well as the “value” or attractiveness the individual places on the task. The expectancy component of the theory is supported by studies that suggest that students who believe they are capable and competent readers are more likely to outperform those who do not hold those beliefs (Schunk, 1985). The value component of the theory is supported by studies that suggest that students who perceive reading as valuable and important and who have relevant reasons for reading will engage in reading in a more planned and effortful manner (Dweck & Elliot, 1983).

Wigfield and Guthrie (1997) have identified a variety of motivations for reading. These motivations include curiosity, aesthetic involvement, social interaction, challenge, and self-efficacy. The researchers explain that in order for students to engage in reading, they need to learn strategies, such as those previously described, and that learning these strategies requires motivation and its attributes of attention, effort, and desire to read.

Curiosity, according to Wigfield and Guthrie (1997), is the desire to learn about one’s world through reading. They add that this learning through curiosity can also take place through discussing and viewing, two components of VTS. Aesthetic involvement is the goal of experiencing beauty through language or art. This aesthetic involvement can be experienced by readers with text or by viewers with art images. Social interaction is the

relationship with other individuals on a personal level as well as an academic level. Social interaction is also a key feature of VTS, as it invites students to interact and collaborate to develop meaning from art images. Challenging activities are those that are at an optimal level of difficulty. In VTS, students are presented with the challenge of gaining meaning from a print with the teacher acting only as a facilitator for discussion. Self-efficacy is defined as self-perception of competence and capability. VTS training encourages teachers to accept all suggestions provided by students in discussion as appropriate, making all meaning derived from the prints a valuable contribution to the work. This way all students are viewed as competent, possibly resulting in motivation to learn.

The motivating factors described above, including curiosity, aesthetic involvement, social interaction, challenge, and self-efficacy may all contribute to reading engagement. Because the components of VTS potentially include the same factors, this present study examined the program as a supplemental method of motivating students to read, especially those students with low motivation.

### Statement of the Problem

A great deal has been written about ways in which integrating arts instruction with reading instruction might enhance reading ability, and a number of schools have adopted programs that combine art and reading instruction. However, Burger and Winner (2000a), who conducted a meta-analysis of research in this area, found few well designed empirical studies testing the hypothesis that visual arts instruction improves reading achievement and concluded that further research is needed to test this hypothesis. This present study was designed to address this need by comparing the reading achievement of students who participate in a reading program that includes VTS with the achievement of students who

participate in a reading program that has no VTS. In addition, the present study looked at reading motivation in an attempt to see how it affects reading achievement and whether or not it interacts with instructional method to influence achievement. It has been found that when reading is taught in an engaging way, children become motivated to read, which may improve their reading (Cole, 2003; Edmunds & Bauserman, 2006). It has been reported that motivational activities related to reading comprehension instruction are needed more often for unmotivated students than for students who would be motivated regardless of the type of instruction (Sweet et al., 1998). Based on these findings, this researcher suspected that VTS instruction may be especially effective for readers whose levels of reading motivation, reading self-concept and value of reading are lower. Factors identified by Wigfield and Guthrie (1997) that motivate readers, such as curiosity and social interaction, are also aspects of the Visual Thinking Strategies curriculum.

### Significance

This present study was designed to address the need for further research in this field by comparing the reading achievement of students who participate in a reading program that includes VTS with the achievement of students who participate in a reading program that has no VTS. In addition, this present study looked at reading motivation in an attempt to see how it affects reading achievement and whether or not it interacts with instructional method to influence achievement. This research is needed, as there is much advocacy for the arts being integrated into school curriculums, yet there are few empirical studies to support the claim that the arts increase student achievement and can result in higher levels of motivation in reading.



## Definition of Terms

The following terms are relevant to this study. The definitions that follow each term apply to the use of the term within this particular study.

1. *Aesthetic involvement* is the goal of experiencing beauty through language or art (Wigfield & Guthrie, 1997).
2. *Challenging activities* are those activities that are at an optimal level of difficulty (Wigfield & Guthrie, 1997).
3. *Curiosity* is the desire to learn about one's world through reading (Wigfield & Guthrie, 1997).
4. *Inferring* is the weaving together of the reader's prior knowledge, text connections, questions, and predictions with the author's information to develop personal meaning (Mantione & Smead, 2003).
5. *Main idea* is the central focus, thematic statement, or authorial generalization of a text; it is supported by details from the story (Wilhelm, 2003).
6. *Questioning* is the act of asking, probing, and wondering when reading (Mantione & Smead, 2003).
7. *Reading achievement* is a measure of a student's reading vocabulary and his or her ability to read and understand different types of passages (MacGinitie, MacGinitie, Maria, & Dreyer, 2000).
8. *Reading comprehension* is the interactive thinking process in which a reader engages while reading text that enables his or her understanding to develop (Mantione & Smead, 2003).

9. *Reading motivation* is a measure of a student's self-concept as a reader and his or her value of reading (Gambrell, Palmer, Codling, & Mazzoni, 1996).
10. *Self-efficacy* is defined as self-perception of competence and capability (Wigfield & Guthrie, 1997).
11. *Sensory imaging* is the use of all senses (smell, taste, touch, sound, and visualization), emotional responses to a piece of writing, and prior knowledge about a topic to create complex, multidimensional scenes to gain lasting meaning from a story (Mantione & Smead, 2003).
12. *Schema* refers to a student's understanding of text shaped by his or her personal experiences and background knowledge (Wilhelm, 2003).
13. *Social interaction* is the relationship to other individuals on a personal level as well as an academic level (Wigfield & Guthrie, 1997).
14. *Traditional reading instruction* is an approach to teaching reading that includes the use of basal anthologies, teacher's manuals, workbooks, and program assessments (Shannon, 1982); this approach may be supplemented with literature selections.
15. *Visual arts* are a class of artforms, including painting, sculpture, photography, and others, that focus on the creation of artworks which are primarily visual in nature ("Visual Arts").
16. *Visual literacy* is the capacity to find meaning in a wide range of visual material (DeSantis & Housen, 2001).
17. *Visual Thinking Strategies (VTS)* is an elementary school curriculum in which the methodology places teachers in the role of facilitators as they share with

their students an image of a selected work of art and pose the following three questions: (a) *What's going on in this picture?* (b) *What do you see that makes you say that?* and (c) *What else can you find?* These questions are posed to stimulate dialogue (see Appendix A for Basic VTS at a Glance). This way of reading a painting has some parallels with reading a book, as students try to comprehend images and text. In visual arts, prints convey a meaning, whereas in written text, words, sentences, and phrases convey a meaning (Housen & Yenawine, 2000).

18. *Vocabulary* is word knowledge, not the ability to derive meaning from context (MacGinitie et al., 2000).

#### Research Question and Hypothesis

1. Is there a significant interaction between instructional method (VTS or no VTS) and student level of motivation (high or low) with respect to reading achievement after controlling for reading level?

The dependent variable for this research was reading achievement, and the two independent variables included instructional method and motivation to read. The directional hypothesis for this study was that students who were instructed with VTS would perform better than students who were not instructed with VTS. Students with low motivation would perform significantly better when VTS was used as the instructional method.

## Methodology

### *Setting and Sample*

The population of interest for this study was students enrolled in an upper middle class school system in Connecticut with an enrollment of approximately 4,500 students. About half of these students are enrolled in elementary classrooms. Over the past several years, the percent of minority students attending the school system has remained at under 10%. Classroom sizes at the elementary level are approximately 20 students.

The participants in this study included approximately 104 fourth-grade students enrolled at two of the four elementary schools in the district. The teachers of the students in the experimental group were trained with VTS, and integrating visual arts and literacy instruction is currently a school goal. Both of the schools use a guided reading and basal approach to teach reading, but the control group was not exposed to the VTS curriculum.

### *Instrumentation*

This study utilized two instruments: the *Motivation to Read Profile: Reading Survey* (MRP, Gambrell et al., 1996) and the *Gates-MacGinitie Reading Test* (GMRT, MacGinitie et al., 2000). The MRP was used as a valid and reliable assessment of students' reading self-concept and value of reading (see Appendix B) at the beginning of the study. The GMRT was utilized as a valid and reliable assessment of students' reading achievement (see Appendix C for sample items). It was used to assess students' initial reading achievement and acted as a covariate to statistically produce adjusted means for equal groups. It was administered again as a post test to assess students' general level of reading achievement.

### *Research Design, Procedures, and Data Analysis*

A quantitative analysis, using a quasi-experimental approach, was conducted. During a nine-week period (for a total of nine lessons), students in the experimental group, whose teachers had received training using the VTS model, had their reading lessons supplemented with this approach. The students in the control group, whose teachers were not trained, continued to follow the traditional reading curriculum. Basal anthology materials were the same for both schools, and although the two schools used many of the same guided reading titles, there were some variations of chosen text.

All participants in the study completed a *Motivation to Read Profile*. This provided the researcher with information on each student's self-concept as a reader and his or her value of reading. All participants in the study also completed the *Gates-MacGinitie Reading Test* (Form S) to provide the researcher with a general assessment of each student's reading achievement.

Throughout a nine-week period, teachers of the experimental group supplemented their reading instruction with VTS. The images used represented various time periods, styles, media, and cultures. Teachers of the control group instructed their students with only the traditional reading program. At the end of the nine-week period, all participants in the study completed the *Gates-MacGinitie Reading Test* (Form T) again to provide the researcher with a general assessment of each student's reading achievement.

Descriptive and inferential statistics were utilized to answer the main research question. *The Statistical Package for the Social Sciences (SPSS)* was the primary statistical program for this research project. The dependent variable in this experiment was reading achievement. The independent variables were instruction (VTS or traditional) and motivation

(high motivation or low motivation). Differences between the experimental and control groups were analyzed using a two-way ANCOVA, Analysis of Covariance ( $p \leq .05$ ). This statistic was used to control for initial differences between groups before a comparison of the within-groups variance and between-groups variance was made. The effect of the ANCOVA made the two groups equal with respect to pretreatment reading level.

### Limitations of the Study

The internal validity of an experiment is the extent to which extraneous variables have been controlled by the researcher, so that any observed effect can be attributed solely to the treatment variable (Gall et al., 2003). In this experiment, reading level was controlled for statistically using ANCOVA, with the pretest serving as the covariate. However, the fact that the pretest was similar to the posttest raised the possibility of a threat to internal validity. Although the forms were different, students in both groups had experience with the GMRT after the treatment period. Statistical regression may also have caused students' scoring at extremes on a measure to score nearer the mean the second time. The school that implemented VTS was chosen as the experimental group because its teachers had been trained with this curriculum. Random assignment, therefore, could not be used. Further, only nine lessons were taught using VTS, with lessons lasting approximately 45 minutes. The short length of treatment may have been a limitation to the study. Other variables that may have interfered with the results of this experiment include teachers' and students' attitudes towards art, the experiences they have had with it, and other factors, such as tutoring, that may have improved student scores.

The external validity of an experiment is the extent to which the findings of an experiment can be applied to individuals and settings beyond those that were studied (Gall et

al., 2003). The results of this study are most generalizable to populations similar to the sample. Further studies using random selection and random assignment to groups must be done. This research might be replicated using participants from different grade levels and who come from communities with varying demographic profiles.

## CHAPTER TWO: REVIEW OF LITERATURE

### Overview

*A Nation at Risk* (1983) marked the beginning of national studies and reports on American education. National attention was focused on the quality of primary education and the ability of educators to provide students with the tools they needed to compete successfully in American society. As a result, researchers moved away from studying learning domains in isolation (e.g., beginning reading) and began to investigate how achievement could be increased by examining relationships among subject areas.

Through the years, theories related to literacy, social learning, and motivation have all advanced the idea that the integration of the arts during instruction in a number of academic areas can play a powerful role in enhancing achievement. Some theorists believe that skills and attitudes learned by studying the arts can help children achieve in non-arts areas, such as reading and writing. This review of the literature first describes commonalities between the arts and language arts and then presents a review of the research that has been conducted on the integration of the two. Research related to the arts and achievement includes studies conducted on programs such as the Getty Institute, the Chicago Arts Partnership, SPECTRA+, Different Ways of Knowing, Learning in and Through the Arts, and Learning Through the Arts, all of which demonstrate transfer of learning from the arts to other content areas.

This research study examined a visual arts program and its effect on achievement. Therefore, this review of the literature becomes specific to the visual arts and reading by reporting contributions to the field from two meta-analyses, which examined programs including Learning to Read Through the Arts, Children's Art Carnival, and Reading



Improvement Through the Arts. The review of the literature then focuses on Visual Thinking Strategies (VTS), the program of interest in this study, which examined the impact of students finding meaning in imagery as a way to improve reading comprehension. VTS's roots, stages, curriculum, and studies conducted with this program are explained. Finally, this review of the literature explores theories of reading motivation and factors that influence student motivation, such as classroom environment and reading experiences in the home. Empirical research that studies the link between motivation and achievement is also presented.

#### Theoretical Bases Supporting Advocacy for Integrating the Arts and Academics

Recently, research has focused on the relationships among the language arts, such as examining the interplay between language and thought, and the relationships among reading, writing, listening, speaking, and integration among the language arts (Flood, Heath, & Lapp, 1997). Studies on transfer have supported the view that deep understanding from one learning situation aids in the successful understanding of another learning situation (Catterall, 1999). For example, deep understanding of a work of art may transfer to deeper understanding of a text. Just as the prior knowledge needed for reading comprehension is unique to individuals, so too are the connections that a student makes to a work of art. Effland (1990) also suggested that deeper understandings occur when concepts are integrated. He pointed out that in arts education, students are often asked to recall vocabulary, definitions, and facts. He theorized that focusing on these tasks is not sufficient for deep understanding. However, when students explore art for deeper understanding, they engage in different knowledge-seeking strategies. Examples of such strategies, parallel to

strategies used in reading, include analyzing, comparing, questioning, judging, interpreting, explaining, and challenging ideas.

The exploration of art and reading, as those described above, involves both verbal and visual processes of the brain. Knowledge of the workings of the left and right brain hemispheres present a reasonable case for the relationship between art and reading (Flynn, 2004). The left hemisphere of the brain is used for functions that are verbal, linear, and analytic, and is where many reading and language processes take place. The right hemisphere of the brain processes information that is visual-spatial, kinesthetic, and synthetic. Art learning derives from this area of the brain. Flynn explained that the application of art in the reading process gives students the opportunity to develop strengths in both hemispheres of the brain. Kiefer (1997), Piro (2002), and Wolf (2006) have all examined the integration of art and literacy and its potential to impact children's social and cognitive development to improve their ability to construct meaning.

#### *Visual Arts and Picture Books*

Kiefer (1997) examined the integration of art and literacy in relation to picture books. She argued that picture books rely as much on visual meaning as they do on verbal meaning. When a student is aesthetically engaged with a visual art form in a picture book, the child is called upon to engage in interchange of intellect and emotion that requires a response, either individual or communal. A picture book calls upon the reader to make meaning from emotional, intellectual, and critical reactions. Kiefer encouraged educators to take into consideration the meaning-making potential of visual art. Elements of the visual arts that have the ability to evoke meaning include color, line, shape, value, and texture. To complement the theme, mood, characters, setting, and events that are part of the verbal text,

illustrations have the ability to add to or detract from the book, making it different from an entirely textual story. Kiefer did not believe that children need to be taught formal methods of art or literary criticism during encounters with picture books. Instead, she encouraged educators to use picture books to talk, write, and create art. Further, she thought that teachers should encourage children to share reactions and consider how these reactions affect their understanding of the story. Finally, she suggested that teachers should help children consider how a work of art has changed the way they look at the world. Given these experiences, students may become more visually literate. A picture book may be a connection to experiences with all of the arts.

### *Reader-Response Theory*

Piro (2002) examined the integration of art and literacy in relation to reader-response theory. He explained that in reader-response theory (RRT), a transactional process occurs between the text and the reader. The text points the readers in certain directions and enables them to make use of previous experiences to interpret an author's ideas. This interaction leads to new ideas and a response by the reader. RRT has four basic stages: engaging the reader; entering the story; exploring the story; and evaluating the story. In developing strategies for reading a painting, Piro used the steps in RRT. First, students were asked to take a visual inventory of the painting by simply telling what they saw. When entering the work, students had a discussion about the painting, and exploring the story was accomplished by asking the students to interpret the details of the work. In order to sharpen the skill of detailed observation, students were asked to write the next chapter of the painting by "unfreezing" it (Piro, p. 133). Piro concluded that a well-balanced print-rich and image-rich

environment leads to symbol and imagination working interdependently to improve thought and comprehension.

### *Seeing Symbolically*

Wolf (2006) examined the integration of art and literacy in relation to students' perception skills. Wolf argued that children's ability to see becomes more refined when they are engaged in artistic activity; perception is heightened as students engage in artistic experiences. Serious seeing, the researcher explained, is linked to seeing symbolically, which enables the mind to see details and to make emotional connections, images, and metaphors. The focus of Wolf's research was with art and poetry and the integration of words, images, and emotions that lead to meaning making. In the small seaside town of Hythe, bordered by the English Channel, the researcher studied students' interactions with a resident artist. Students between the ages of 4 and 7 learned to view the work of professional artists. In the first year, the resident artist worked with small groups of children, featuring a visual arts piece, and then had the students create their own drawings, emphasizing the importance of detail. Students began by drawing for less than 10 minutes, but after a few months, they attended to the details of their drawings for over an hour. In the second year of the study, the students were invited to put up an exhibition of their work, combined with poetry. At this point the resident artist changed his focus to photography. The visual art of photography initiated the poetry, and the poetry enhanced the art. The students used audio to record their poems, heightening the experience. Siegal (1995) stressed that moving among sign systems, as was done in the project explained here, encourages the learner to see the commonalities in different expressive modes. Moving from one sign system to another requires the students to look and look again to see if the meaning created in one system explains and enhances the

meaning in the second system. Wolf argued that the arts provide powerful opportunities for cognitive work as well as imagination. When children are engaged in “seeing,” they learn to hold sustained attention, to see details, and to view alternative perspectives.

### *Summary*

There is much advocacy literature related to the arts and achievement. Researchers have made claims that integrating reading, writing, and talking with the visual and performing arts improves student achievement, but there are few empirical research studies to support the claims. What follows are the studies that do exist which support the view that integrating the arts into content areas aids students’ understanding of the subject matter.

#### Studies on Integrating the Arts With Literacy and Its Effect on Achievement

### *Drawing and Reading*

Fast (2000) prepared a report on research conducted over a course of 6 years based on the relationship between children’s art and reading levels. An initial strategy was tested in a local urban primary classroom in Grenada, with the purpose of measuring the relationship of art ranking and reading ranking. Art scores, reading scores, art ranks, reading ranks, and standardized test scores were correlated using a one-tailed test of significance. There was a positive correlation coefficient of art ranks and reading ranks, and the correlation between rankings by the teacher and rankings based on formal reading scores was also positive.

Fast (2000) reported on a second investigation in Ontario which was more drawing centered. A pre and post picture design was used in examining the artwork done in three schools with children who were four to eight years old. A multivariate analysis of variance was used to learn if there were significant effects of age and gender with the pre and post pictures. There was evidence of effect in the second set of pictures of hands-on experience

and in both sets of age and gender differences. The stage of artistic development apparent in the pictures was similar to that seen in local schools where materials are used regularly. The researchers concluded that either art programming in Ontario does not generally effect change in artistic behavior or picture-making in primary grades is determined more by matters of mind, personality, and work habits than by technical skill and experience with media.

The ongoing investigation by the researchers in Fast's (2000) report required addressing in more detail the art-mind connection, reviewing references of art and reading commonalities, and field testing observation criteria. They collected information for diagnosis in reading using a classification system for children's pictures. Through using an observation guideline for pictures, teachers were also required to interview the children as they worked on pictures. Children's pictures were kept in portfolios, and comparisons were made to reading scores. Children's pictures from a first grade class in rural Ontario ( $n=21$ ) were evaluated, and art ranks and reading ranks were correlated using a two-tailed test of significance. In regression analysis, after controlling for age and gender, art level was significantly related to reading performance.

### *Drawing and Writing*

DeJarnette (1997) conducted an experimental study of the potential of the visual arts for assessing academic learning by language minority students. Students used three types of responses in a writing/drawing assessment. Some students wrote their responses and then illustrated them; some first drew and then added words, and some only drew. Students achieved higher scores for content knowledge about Mesopotamia and Egypt when they both wrote and drew than when they only wrote. Interdisciplinary scores were also higher when

they both wrote and drew. Limited English-ability students also scored higher on a writing/drawing assessment than a writing alone assessment. This study shows that drawing may be one way to reveal what students know but cannot put into words.

### *Performing Arts and Reading*

There is a growing sentiment among educators for the integration of literacy and the performing and visual arts, but few empirical studies have been conducted on this topic. Research conducted on classroom drama and the reading-writing process has shown that there is a significant and positive relationship between them (Gray, 1987). Students' participation in dramatic activities based on the text following reading improved their comprehension of text. The results of Kardash and Wright's (1987) meta-analysis of 16 studies involving the use of drama with students in kindergarten through grade 7 indicated that drama had a moderately positive effect on their achievement in reading and on their oral language and written communication.

### *Art/Reading Lessons*

Catchings (1981) investigated the effect of an art education program on reading for fifth grade students in the Detroit School System. There were 444 students in the experimental group and 408 students in the control group. Children in the experimental group were involved in a program integrating reading and art once a week using 50 art/reading lessons. During the 5-year project, the experimental group made more gains in reading than the control group, based on the *Iowa Test of Basic Skills* and the *California Achievement Test*, and performance of girls was better than the performance of boys. Students who entered the project more than 2 years below grade level averaged more than 1 year of reading growth during the course of the project.

### *Reading a Painting*

Wilhelm (1995) conducted research to answer the question of whether or not the visual arts could be used to help reluctant learning-disabled readers begin to enjoy reading. This case study used methods in the visual arts to engage two reluctant seventh grade boys in reading. The students became more sophisticated readers throughout the course of 9 weeks of visualization training. They took a more active role and interpreted text rather than passively reading it. The researcher suggested that visual art provides a concrete metacognitive marking point that allowed the readers to see what they understood.

### *Visual Thinking Curriculum*

Tishman, MacGillivray, and Palmer (1999) investigated the educational impact and potential of the Museum of Modern Art's Visual Thinking Curriculum (VTC). The goal of the study was to determine whether the skills learned in looking at and reasoning about art would transfer to the similar task of looking at and reasoning about non-art images from the discipline of science. On the art assessment, children in the control group performed equivalently to the children in the VTC for the pretest, but after a year of the VTC, the VTC group achieved higher reasoning scores than the control group. The students in the VTC group appeared to have looking and reasoning skills acquired from looking at works of art that they then deployed when given a scientific image.

### *Summary*

Advocacy literature is supported by research related to the arts and achievement. Studies have also been conducted on programs developed for the purpose of integrating the arts with content areas. What follows are studies of programs that have been examined



through empirical research, supporting the view that deep understanding of material from one learning situation aids the understanding of another.

### Programs Integrating the Arts and Their Effect on Achievement

#### *The Getty Institute*

Early in the 1980s, the Getty Institute set out to establish a comprehensive, discipline-based, art education (DBAE) program in 21 school districts in Los Angeles County. The goal was for every student to receive regular and systematic instruction in visual arts from a trained teacher. The rationale was that art is a necessary part of general education, and subject areas such as language arts, mathematics, and social studies could be taught through the visual arts in substantive and rigorous lessons. The training of staff members focused on the content, knowledge, and skills necessary for teaching art criticism, art history, art making, and philosophical aesthetics. Additional foci were the pedagogy of teaching subject areas through the visual arts disciplines, such as using the study of art to structure lessons for language acquisition, science, math, and social studies. Training also included inquiry-based teaching, active learning, and metacognition as tools for both learning and teaching art as it became part of content area instruction.

Throughout a 7-year implementation (1982-1989), an evaluation documented some support for the program, but challenges included turnover among teachers, budgetary cutbacks, and little commitment by some teachers, administrators, and board members (Greer, 1993). Although lasting changes were not achieved, the Getty Institute provided opportunities for teachers to come together in small groups to advance thinking about their own goals and strategies for classroom teaching.

### *The Chicago Arts Partnership*

The Chicago Arts Partnership (CAPE) was founded in 1992 and contracted with the North Central Regional Laboratory (NCREL) in 1998 to evaluate a program that would bring local artists and arts agencies into partnerships with teachers at all grade levels in 37 schools (Catterall & Waldorf, 1999). The artists and teachers would work together to co-plan and co-teach learning units. The time devoted to visual arts in the program was 41%, and estimates of which subjects teachers chose to focus on proved reading to be the most popular (3.6 on a scale of 1 through 4). Observations included positive changes in school climate, support from principals, collaboration between teachers and artists, and teacher beliefs that an arts integrated curriculum has learning, attitudinal, and social benefits.

Fifty-two test score analyses of CAPE and comparison schools were conducted. Findings were that prior to CAPE, other Chicago schools averaged about 28% at or above grade level in sixth grade math, whereas CAPE schools averaged about 40%. A second example showed similar findings for sixth grade reading. About 30% of non-CAPE students scored at or above grade level, whereas CAPE schools averaged about 38% and grew to about 14 percentage points of a difference by 1998. Strong and significant achievement effects of CAPE were found at the elementary level, especially by sixth grade. Growth in student motivation, according to teachers and principals, was reported as high. The program has survived, even after original sponsor funding has ceased (Catterall & Waldorf, 1999).

### *SPECTRA+*

Schools, Parents, Educators, Children, Teachers Rediscover the Arts (SPECTRA+) was a program started in 1992. At SPECTRA+ elementary schools, students learned from artists in residence and from grade level teachers connecting subject areas such as astronomy

to art. In conjunction with traditional elementary-level education, students were exposed on a weekly basis to visual arts, music, dance, drama, media arts, and creative writing. The main goals of SPECTRA+ were to increase student achievement and to raise thinking by developing creative thinking and problem-solving skills. To enable districts to evaluate if the program goals were met, students were administered the Torrance Test of Creative Thinking, as well as reading, math, and arts appreciation assessments. Luftig (1994) evaluated the effects of this arts-integrated program on 615 students at grades 2, 4, and 5 in two school districts. He used a simple control school (a school with no special programs), a modified control school (a school using another supplemental teaching program), and a SPECTRA+ school. Results of the data analyses indicated third through sixth grade students performed better than the control group and fourth and sixth grade students performed significantly better in the areas of math and reading.

### *Different Ways of Knowing*

A national longitudinal study, led by UCLA's James Catterall (1995), followed 1,000 children in four school districts in Los Angeles and Boston over 3 years between 1991 and 1994. The purpose of this study was to evaluate Different Ways of Knowing (DWoK), a multi-year professional development program for teachers, administrators, and other stakeholders that provided an integrated approach to curriculum, instruction, assessment, and reporting. The program included year-long curriculum modules that integrated social studies and history with language arts, mathematics, science, and the visual, performing, and media arts. The modules provided a foundation for teachers to use while developing their own year-round, inquiry-based instructional strategies linked to standards and goals for assessment. DWoK focused on the students' multiple intelligences through hands-on, collaborative

activities. The visual, performing, and media arts served to develop students' literacy by tapping into their prior knowledge, deepening understandings through metaphor and analogy, enlarging opportunities for communication, and making connections to culture and lifelong learning. Catterall found that students with 1 year in the DWoK program experienced approximately eight percentile point gains on standardized language arts tests. Two-year participants gained approximately 16 percentile points. On average, students in non-DWoK schools showed no changes in test scores. Students also scored higher on writing and drawing tests of social studies content knowledge. Moreover, teacher interviews and student surveys also showed increased levels of motivation for students participating in the program.

Catterall's second study of DWoK involved three separate research projects led by researchers at the University of Louisville and the University of Kentucky. One of the projects compared 24 test scores at DWoK schools in Kentucky to non-DWoK schools statewide from 1993 to 1995. The 24 schools represented all populations and regions. On the *Kentucky Instructional Results Information System (KIRIS)* statewide assessment, fourth grade students in DWoK schools demonstrated greater gains in all subjects (reading, writing, mathematics, science, social studies, arts and humanities, and practical living) than students in schools statewide over the two-year period (Petrosko, 1997). These studies also documented positive changes in teachers' beliefs, knowledge, and practice and in students' motivation as a result of DWoK implementation.

Catterall's third study was conducted by the Program Evaluation and Research Office of the San Francisco Unified School District and involved all DWoK students in the district (3,036 students in 11 schools). Eighty-seven percent of the students were of minority background, and 34% were Limited English Proficient. The data indicated that during the

1997-98 school year, these students showed more than a year's growth in reading as measured by the *Comprehensive Test of Basic Skills (CTBS)*. The gain in Normal Curve Equivalent (NCE) scores of over three points was statistically significant.

### *Learning In and Through the Arts*

The Learning in and Through the Arts study was undertaken by the Center of Arts Education Research at Teachers College at Columbia University (Burton, Horowitz, & Abeles, 1999). It examined the artistic experiences of over 2000 pupils in public elementary and middle schools. The goals were to determine what cognitive, social, and personal skills are developed through arts learning, if these competencies have a more general effect on learning, and what conditions in schools support this learning.

The researchers combined several standardized measures with paper and pencil inventories to elicit responses from teachers and students. These instruments included the *Torrance Test of Creative Thinking*, the *Self-Description Questionnaire*, and the *School-Level Environment Questionnaire*. The research team also developed a *Teacher Perception Scale*, the *Classroom Teacher Arts Inventory*, and the *Student Arts Background Questionnaire*. Finally, the researchers interviewed administrators, teachers, and students, and examined field notes, artwork, writing, and photo-documentation of in-school activities. Each school in the study was rated on three 7-point scales, depending on the degree to which arts was integrated. Eighteen schools were invited to participate in the study from New York, Connecticut, Virginia, and South Carolina.

As the researchers compared the experiences of the pupils, students in high-arts groups consistently outscored students in the low-arts groups on measures of creative thinking and teachers' perceptions of artistic capacities. High-arts students also scored more

strongly in teachers' perceptions of their general competencies. Further, these students also thought of themselves as competent in academics. They believed they did particularly well in language and mathematics. These assessment results were validated with observations and conversations. Schools with strong arts programs also had supportive administrators, interested and competent teachers, good student and teacher rapport, and a flexible curriculum. The researchers concluded that the arts should be curriculum partners with other subject disciplines in ways that allow them to contribute to the learning process as a whole.

### *Learning Through the Arts*

In Canada, several models have been developed to increase arts literacy in public schools. However, there is little empirical research assessing the effects of these programs. Smithrim and Upitis (2005) did examine one program, Learning Through the Arts (LTTA). In this elementary education model, professional artists work directly with students after developing a curriculum with teachers. Research objectives were to determine if students benefited from the program as evidenced by attitude and achievement in mathematics and language and to link students' school achievement with views and experiences of school subjects and out-of-school activities.

The sample included over 6000 students and their parents, teachers, and principals from six sites in the Vancouver area, Calgary, Regina, Windsor, Cape Breton, and Western Newfoundland, with multiple schools at each site. Control schools were also selected, almost half of which had a school-wide initiative in place that was not related to the arts. There were 15 special initiative and 20 regular schools involved in the study.

Both quantitative and qualitative instruments were used to gather data, including standardized achievement tests, holistically scored writing samples, surveys regarding

attitudes and practices, and one-on-one and focus group interviews. Statistical analyses and descriptions were conducted, and where significant group differences were found, regression analyses were completed to determine effect sizes. Achievement test scores were analyzed for mathematics, language, and writing samples. Results included a higher performance for LTTA students only on a test of computation and estimation.

The researchers' analysis of interviews and surveys provided indication that involvement with the arts went hand in hand with engagement in learning in school. The researchers stated that replication of this study is desirable, which provides both correlational and causal evidence of the association between arts and achievement in other subjects. The issue of engagement also requires further elaboration.

### *Summary*

The programs reviewed support claims that the arts and language arts systems reinforce one another, but the number of research studies and reports relating literacy and art are sparse. The effect of arts education and reading integration is an area clearly in need of more research, but what follows are examples of programs integrating visual arts and reading that support improved reading achievement as a result of visual arts instruction.

## Visual Arts and Reading Achievement

### *Meta-analyses Studies*

Burger and Winner (2000a) conducted two meta-analyses of studies to test the hypothesis that instruction in the visual arts improves reading. They selected only 10 studies that met their standard of being empirical studies with control groups that tested the basic hypothesis that some form of visual arts instruction improves some aspect of reading. They

calculated 13 effect sizes from these 10 studies. Meta-analysis 1 focused on nine studies examining the cognitive relationships between arts instruction and reading achievement. Meta-analysis 2 included four studies of motivational connections. Eight of the nine studies focused on elementary school students, and seven studies included average SES students. Duration ranged from 10 days to one full academic year. The four studies in the second meta-analysis compared art and reading integrated instruction with reading instruction alone. Three were elementary school studies, and one was pre-elementary.

The first meta-analysis by Burger and Winner (2000b), demonstrated a small effect of arts instruction on reading skills, but the effect was carried entirely by studies whose outcomes were reading readiness scores. The second meta-analysis by Burger and Winner (2000c), revealed a positive, moderately-sized relationship between reading improvement and an integrated art-reading form of instruction due to visual arts instruction being motivating. These conclusions, however, were based on only four studies.

An important contribution of Burger and Winner's (2000a) research is that only a small number of studies met the researchers' standards for acceptable scientific rigor. This present study is a response to the need for more research in this field. Another important contribution of Burger and Winner's work is the finding that art-based reading instruction promotes better reading, largely through the added motivation that art offers for learning. Programs reviewed by Burger and Winner included Learning to Read Through the Arts (LTRTA), Children's Art Carnival (CAC), and Reading Improvement Through the Arts (RITA).



### *Learning to Read Through the Arts*

Learning to Read Through the Arts (LTRTA) began in New York City Public Schools in 1971. It was designed to integrate the visual and performing arts with other areas of study for the explicit purpose of improving reading performance in low-achieving students. O'Brien (1982) explained that, in LTRTA, reading proficiency is developed through the language experience approach in the need for following directions, drawing inferences, thinking sequentially, and using specialized vocabulary. Class journals, logs, and diaries are kept in which information acquired from workshops and reactions to field trips are recorded on a regular basis. Children apply reading skills through activities like writing movie scripts and poetry, reading dramatic skits, and writing autobiographies to accompany self-portraits. A variety of literature about the arts is read in both the reading and art workshops. Arts teachers collaborate with reading teachers to determine vocabulary required to complete projects, and words are posted around classrooms and used in student writing. Words are repeated verbally and visually. Remediation and enrichment approaches are used as needed.

Program evaluations since the 1970s have shown consistent academic improvements for students participating in the program. Survey data have revealed positive teacher and student attitudes towards the program, and *Degrees of Reading Power* tests compared from 1992 to 1993 found that every grade in four of eight schools evaluated made gains in average scores except third grade (Zambder, 1994).

### *Children's Art Carnival*

From interactions with classes from the public schools, The Carnival, begun in 1969 as an initiative by the Museum of Modern Art in New York City to share art with

underprivileged children, became aware of the difficulties that children were having in the area of reading. Teachers were bringing their “difficult classes” to The Carnival and noted the positive impact on the children. In 1972, The Carnival submitted a proposal to the Board of Education for Creative Reading Through the Arts. It received funding in the following year and was later rated as an exemplary program. The Carnival’s artists/instructors utilized the school district's curriculum guidelines and the New York State Learning Standards to develop project themes, which were carried over into the classroom through artist residencies and Teacher Training workshops ([childrensartcarnival.org](http://childrensartcarnival.org)).

Operating at sites in Manhattan, Queens, and the Bronx, the 1988-89 program served 334 students in second through fifth grades. Each student was involved in three types of sessions—an art workshop, a plan and review session, and a story room (small group) session. The impact of the program on student achievement in reading and writing was determined by evaluating students' performance on standardized and norm-referenced reading tests and holistically scored writing tests against the program objectives. Second-grade students exceeded the program's criteria for success in reading: 97% of the students mastered three or more skills, 83% mastered four or more skills, and 69% mastered five or more skills. Third-grade students did not meet the program's criterion for success. All mean differences for the fourth and fifth-grade students were statistically significant and educationally meaningful. Students in grades 2, 3, and 4 achieved statistically significant mean gains on holistically scored writing tests. Overall, 52% of the students improved in writing, thereby meeting the program's criterion for success (Guerrero, 1998).

### *Reading Improvement Through the Arts*

Corwin (1980) evaluated the program Reading Improvement Through the Arts (RITA), in which vocabulary and reading were integrated in arts classes and art concepts were used instructionally in reading classes. The program was designed for children reading below grade level to help students contextualize reading and work from concrete to abstract language skills. The program was also designed to help motivate students to read. From participation in RITA, 10<sup>th</sup>-grade students achieved more improvement in one semester than what was anticipated would occur in an entire year. Corwin's findings had limitations because no control groups were used, but rationales supporting art instruction did result in positive outcomes.

### *Summary*

The studies reviewed the hypothesis that training in the visual arts improves reading achievement, but clearly more research is needed. This present study is a response to Burger and Winner's (2000a) report that more studies need to be done in this field. Because both training (art instruction) and outcome (readiness tests) are visual in nature, this research on the impact of VTS may support this type of instruction as an effective means to improve reading comprehension in older grades.

## Visual Thinking Strategies

### *Roots of Visual Thinking Strategies*

Visual Thinking Strategies (VTS) has its roots with theorist Rudolf Arnheim. In a discussion of visual analogies, Arnheim (1969) referred to a class exercise requiring students to draw abstract pictures of a good marriage and a bad marriage. The students' drawings

were based on implicit analogies between the properties of visual shapes, for example, smoothness versus roughness. Arnheim suggested that such connections are the process by which visual designs are able to evoke meaning. He argued that similar connections account for the meaning of representational art as well. This example of visual analogy was used by Flood, Heath, and Lapp (1997) as a source on which educators could draw in designing a visual curriculum. Students could be taught to recognize meaning in artworks and incorporate this recognition into their critical thinking. Beyond encouraging students to become visual thinkers, educators could also assess aptitudes and achievements in this area.

VTS also takes into account the developmental stages documented by Jean Piaget (Housen & Yenawine, 2000). One key principle is that people accommodate to only what is in their capacity to grasp. Learning occurs in developing interests and capacities of the learner. Housen and Yenawine explain that Piaget and Vygotsky suggested that learning occurs with interaction from the environment, especially the social environment, which produces growth. These developmental issues are tenets of VTS, as is encouraging students to talk, therefore using discussion as a thinking tool.

To a greater extent, VTS builds on the work of Abigail Housen, a cognitive psychologist whose focus is on “aesthetic thought” (Housen & Yenawine, 2000). In studying the way people think and respond to art, she discovered that even beginners use a range of observations that are full of associations, memories, facts, and emotions. She claimed to see a deep correspondence between aesthetic thought and skills that educators sought. During 20 years of data collection and analysis, she concluded that a stage theory could be applied to aesthetic change. She identified five patterns of thinking that occur when looking at art, which she described as aesthetic stages.

### *Stages of Visual Thinking Strategies*

Housen (1987, 1992) referred to cognitive development as a process involving time and exposure. She explained that individuals at each of the five stages make connections to art similarly to how individuals make connections to literature.

At Stage I, viewers' strengths can be characterized as storytelling. Students see things through their own life experiences. With VTS, students should be asked to look at an image and think about what they see, then look again, and share and compare their thinking with others. This capacity leads to movement to the next stage.

At Stage II, viewers begin to make judgments about works of art. At this point, strategies added to looking at art include comparing and contrasting and breaking down what they see to make meaning. At this stage, viewers are equipped to pursue further study of art if they wish, selecting pieces that interest them, interest beyond merely "functioning"; in reading terms, this may be called *functional literacy*. During Stages III, IV, and V, visual literacy is in place. In Stage III, appropriate instruction includes the teaching of art history and criticism and teaching studio practices. During the final stages, one has made art his or her major focus in life, likely a profession, and no intervention by educators is necessary. Learning is ongoing and self-guided.

Yenawine (1997) explained that visual literacy is the ability to find meaning in imagery. It involves skills ranging from simply identifying objects in a painting to more complex interpretations of art. Aspects included in "reading a painting" that parallel "reading a book" include making personal associations, questioning, speculating, analyzing, fact-finding, and categorizing. Yenawine explained that there are degrees of visual literacy. A young person may construct meaning from images, but an adult, having more experiences

and better thinking skills, may glean more possibilities from the same images with different implications. To increase the capacity for thinking, students require both time and exposure, as well as educational interventions. Yenawine explains that learning to look, like reading, is a process of stages. He refers to reading to explain what is missing from visual arts instruction by comparing reading readiness to visual literacy. Like reading, visual literacy is a slow-developing set of skills and understandings, each step building on earlier ones, each dependent on exposure and instruction. To advance in visual literacy, viewers need long term, graduated support, like that provided to readers. His belief is that it is likely that developing visual literacy can enhance the development of other meaning-making systems, and he encourages more research in this area.

### *The Basics of VTS*

VTS uses art to teach thinking, communication skills, and visual literacy to young people (Housen & Yenawine, 2000). Growth is stimulated by looking at art of increasing complexity, responding to developmentally based questions, and participating in group discussions that are facilitated by teachers. During VTS lessons, all students have an opportunity to point out what they see in the art they examine, express their opinions about it, and provide evidence to explain their interpretive comments. Teacher facilitation occurs with three questions:

- *What's going on in this picture?* This question opens the discussion. It suggests that the image is “about” something. It encourages finding of stories or activity and allows comments addressing colors, feelings, information, personal associations, etc. Students are asked to think and speak for themselves.

- *What do you see that makes you say that?* This question asks students to gather more evidence to support their opinions. Their points are grounded in concrete visual data.
- *What else can you find?* This question has the effect of making the conversation more complete. Details that may have been missed can be found when students are asked to look for more.

Housen and Yenawine recommend that during VTS, teachers should apply the VTS method to other subjects, such as reading and writing, for transfer of skills to occur.

### *The Byron Study*

The most direct documentation of VTS assisting with test preparation and raising test scores in reading comes from a longitudinal research project in rural Minnesota, the Byron Study (Housen, 2001). The multiyear program began in September of 1993 and grew to include all students in grades 2 through 5, including special needs students. Data were collected from 25 experimental and 25 control groups in two age groups (second and fourth grades), from 1993 to 1998. Measures were administered every 6 months for 5 years to both a randomly selected experimental group and control group at each level. Comparable information was collected for matching every 6 months.

Research instruments included the *Aesthetic Development Interview (ADI)*, the *Material Object Interview (MOI)*, a demographic questionnaire, art and museum biographies, open-ended questions, writing samples, teacher logs, trainer and coordinator notes, parent comments, administrator comments, videotapes, and student debriefing. The core set of hypotheses in this study were that VTS would elicit or improve critical thinking. Over the years, levels of critical thinking increased and transferred across social contexts and content, and the VTS caused increase in Housen's five aesthetic stages described above.

New forms of standardized exams for reading were introduced in 1996 for eighth grade students in Byron, Minnesota. During the first two years, the students had no VTS, and only half passed the reading exam. During the third year, which included the first class with VTS since fourth grade, the number passing increased to 77%, surpassing the state average by 10 points. The Byron study convinced Housen (2001) that reasoning about art may be one of the best ways to pursue the development of critical thinking.

### *2003 Visual Understanding in Education Report*

In 1996, the Boston Museum of Fine Arts (BMFA) and Boston Public Schools (BPS) began the program Thinking Through Art (TTA). It used the same strategies as VTS, but it was limited to five classroom lessons and was followed by a museum visit. The teachers who participated received three 2-hour professional development sessions, and the gallery instructors were trained to support the teachers. The study sample included students from four schools. The experimental group was composed of 35 fifth graders, whereas the control group consisted of 15 fifth graders from different schools. Pre- and post-art viewing assessments (*Aesthetic Development Interviews*) were collected and demonstrated positive changes in students' thinking about art and understanding of art. Visual Understanding in Education (VUE) researchers followed up with teachers who had indicated that students transferred skills from TTA to other subject areas. *Material Object Interviews (MOIs)* were conducted, and students demonstrated a trend toward the development of critical thinking skills, such as increase in the number of observations with support from the picture and interpretations of the work (VUE, 2003).

Intrigued by the teacher reports of transfer, the VUE researchers conducted a case study in the 1997-1998 school year to see if Year Two teachers could learn to document



evidence of critical thinking and transfer. The teachers collected student writing samples and videotaped lessons. Six teachers, whose classroom experiences ranged from 5 to 40 years of teaching, described their students as culturally and academically diverse. The documentation supported their observations of transfer from art to writing.

A 1999-2000 case study by VUE examined the effects of TTA on student performance and teachers' teaching style. Five 5<sup>th</sup>-grade teachers participated in two interviews, representing ranges of specializations and teacher experience. The teachers commented on three of their TTA students and their own teaching practice. The researchers found that the teachers who participated were able to document and reflect on the changes in their students' thinking and gained a better understanding of the program and their own teaching practice. Their understanding of learning and personal teaching styles deepened.

Throughout the 5-year collaboration between the Boston Public Schools, the Boston Museum of Fine Arts, and Visual Understanding in Education, teachers reported that Thinking Through Art supported a broad range of educational goals related to state standards and tests. By 2003, there were evident connections between TTA and the Massachusetts and Citywide Learning Standards and Curriculum Frameworks. TTA directly supported almost half of the 27 English Language Arts standards and less directly another 5 standards. These standards included informal and formal discussion in small and large groups, questioning and listening to others, oral presentations, describing, analyzing, and using formal and informal English, and various writing, visual arts, and math standards.

Standards specific to reading were also supported by VTS lessons. Students were able to identify facts and main ideas in text and use them as the basis for interpretation. Sense of story conveyed in VTS lessons carried over to books students were reading. Teachers

interviewed explained that the implementation of Readers' Workshop fit in perfectly with the philosophy of VTS. Students became more focused when observing pictures, and therefore noticed more detail and asked questions about the pictures. Students were also able to identify, analyze, and apply knowledge of theme and provide evidence from the text to support their understanding. Teachers commented that students' analyses were more detailed than in the past and that students were able to adjust and confirm their thinking. One teacher explained that when she was introducing a new book to her students, she asked them what they could say about the cover of the book. The students immediately began a conversation about what was happening, including predictions and inferences without prompting from the teacher. Students were able to deduce themes through the use of visual details and to back up their ideas through evidence in the pictures (VUE, 2003).

### *Summary*

Burger and Winner (2000a) concluded that if transfer from the visual arts improves reading achievement it is likely due to one of two mechanisms. Aspects of VTS are directly related to the cognitive mechanism, as students attempt to make meaning of art in ways that they attempt to make meaning from text. Studies described above support the program. Aspects of VTS are also related to the second mechanism discussed by Burger and Winner. They believe motivation can increase achievement, because art may be used as an entry point to reading. The next section in this review of the literature will focus on this mechanism.

## Reading and Motivation

### *Literacy Motivation*

Literacy educators share the common goal of having students become life-long readers. Although comprehension has been the primary goal of reading instruction, this goal is not sufficient (Pearson & Fielding, 1991). Motivation is also important, but it is related to context. When students do not perform well, they may not actually lack motivation. Students have different motives under different circumstances (Sternberg & Williams, 2002).

Guthrie, McCann, Hynd, and Stahl (1997) stated that we cannot assume that just because students comprehend texts they will choose to do so. Even if students' basic skills are developed, this does not assure motivation. A motivated reader chooses to read for a variety of reasons and comprehends appropriately. The researchers argued that comprehending text requires background knowledge and strategies, but intrinsic motivation is required to develop and extend the strategies to a higher level. Studies show that intrinsic motivation tends to decrease during elementary school years (Harter, Whitesell, & Kowalski, 1992), and efforts need to be made to foster literacy motivation in students.

### *Motivation and Achievement*

Research supports that there is a positive link between academic motivation and student achievement (Elley, 1992; Guthrie, Schafer, Wang, & Afflerbach, 1993). It has been shown that motivation for reading, especially for students in grades 3-5, predicts reading achievement on standardized tests (Gottfried, 1985) and school grades (Sweet, Guthrie, & Ng, 1998). Furthermore, teachers polled in a national study rated "creating interest in reading" as the most important area for research (O'Flahavan, Gambrell, Guthrie, Stahl, & Alvermann, 1992).

A number of studies have investigated the relationship between motivation and reading achievement. Wigfield and Guthrie (1997) evaluated self-efficacy beliefs, goals for learning, and social aspects related to motivation and reading. Their sample included 105 fourth and fifth graders in a mid-Atlantic state who were administered the *Motivation for Reading Questionnaire (MRQ)* and the *Reading Activity Inventory (RAI)*. The researchers also obtained an out of school reading amount for each student. The first research question considered the aspects of reading motivation. The second focused on reading motivation and its relationship to the amount and breadth of reading. They also examined the questions of which aspects of motivation students hold most strongly and if there are grade, time, and gender differences in motivation.

Results indicated that aspects of motivation can be grouped with empirical support from factor analyses. Efficacy and challenge aspects reflect self-efficacy and competence, strong predictors of achievement. Involvement is another aspect of the motivation construct found in this study. The researchers explain that this aspect may be unique to areas like reading or art, depending on the way the work is presented and on the individual.

The results also indicated that amount and breadth of reading correlate to motivation and can predict reading achievement. Students rated highest on motivation aspects of grades, indicating that they liked getting good grades in reading, and it made them proud; they also rated higher on importance, indicating that they felt it was important to be a good reader, even in comparison to other activities. They rated lowest on the aspects of motivation of competition, indicating that reading was not competitive; social, indicating that interaction with family and friends when reading was not frequent; and work avoidance, indicating that they did not have a dislike for reading. Overall, there were few grade or time-related

differences in children's reading motivation, but girls showed a more positive motivation for reading than boys.

## Factors Influencing Motivation

### *Gardner's Theory of Multiple Intelligences*

Gardner's (1983) theory of multiple intelligences, which encompasses seven distinct intelligences, including linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal, points out that limiting forms of representation to number and word has a handicapping effect on children who have aptitudes in other areas. The education provided by schools has opportunities for students to strengthen intelligences and deepen meaning of learning. Different meanings can be distinguished from one another through different distinctive features. For example, the unique qualities of text can be combined with the unique qualities of an image to yield meaning beyond that which can be created by solely one. With regard to visualization instruction that integrates the arts with literacy, it has been shown that encouraging visualization with children not only helps with the understanding of reading but helps them to enjoy reading more (Long, Winograd, & Bridge, 1989). Gardner's (1990) ARTS PROPEL project used photography, journal writing, and dialogue to encourage literacy and positive work habits. Schwartz (1988) asserted that this form of learning caused students to be more self-motivated to learn to read, write, and communicate with others.

### *Classroom Environment*

A study by Morrow (1990) described a classroom environment in which children are motivated to read and write. In the study, the teacher and students together created the

learning environment. Then the teacher shifted her role to that of facilitator. Students demonstrated learning by working in a social collaborative setting, engaging in role playing, and participating in real-life situations. The teacher stated that the visual presentation of her room had a dramatic effect on motivating students to participate in communication and construct meaning in learning.

A study by Powell, McIntyre, and Rightmyer (2006) analyzed primary-grade literacy instruction with off-task behavior. They analyzed 73 activity settings in which students were off-task at least 25% of the time. Six variables were considered: choice, challenge, control, collaboration, constructing meaning, and consequences. Results indicated that the off-task behavior was most prevalent in classrooms when few of these variables were present. A high number of off-task behaviors were from classrooms that used scripted literacy programs.

### *Reading Experiences in the Home*

Sonnenschein and Munsterman (2002) examined the impact of home-based reading practices on literacy development. They considered comments made while reading and the affective quality of reading interaction. Five-year-olds were observed reading both familiar and unfamiliar books with members of their family, usually a parent or an older sibling. The African-American and European-American families consisted of children (about 83%) from low-income families. Comments and affective quality of interactions were coded by the researchers, and parents were interviewed. During the spring of kindergarten, the students were assessed on phonological awareness, orientation toward print, and story comprehension. During the start of first grade, students were assessed on motivation for reading. Reading interaction comments consisted mostly of story content. The only significant correlation of the students' literacy skills was with reading frequency. The affective quality of reading

interaction was the most powerful predictor of motivation for reading. These results indicate that affect is important in the fostering of interest in literacy.

Baker and Scher (2002) examined 65 first graders from different backgrounds and their mothers to study motivation for reading related to parent beliefs and home literacy experiences. Each student completed a *Motivation for Reading Scale*, which assessed enjoyment and interest in reading, perception of reading competence, and value of reading. Parents were interviewed regarding their beliefs about reasons for reading, beliefs about their child's interest in reading, and the frequency of their child's experiences with print. Results of the study indicated that the participants had generally positive views about reading, and differences in background were not associated with motivation. Parent identification of pleasure as a reason for reading and parent reports of interest in reading predicted motivation for reading. Motivation was not associated with frequency of storybook reading or library visits, but frequent use of basic skills books was negatively associated with motivation. The researchers encouraged looking beyond quantitative indices of home literacy experiences to account for development of motivation to read. Parents who view reading as pleasure transmit this notion to their children either through words or the literacy experiences that they provide in the home.

### *Concept-oriented Reading Instruction*

Guthrie, Anderson, Alao, and Rinehart (1999) examined the effects of Concept-Oriented Reading Instruction (CORI) on reading engagement, the joint operation of motivation, strategies for reading, and cognitive knowledge. CORI classrooms were organized around broad themes in science; sensory experiences such as hands-on activities to support the themes; student input into guided teaching; collaborative learning; strategies such

as using prior knowledge, interpreting text, and making connections; and student self-expression.

In this quasi-experiment, these classrooms were compared to classrooms traditionally organized around basal and science instruction in three schools in a large, mid-Atlantic state, with third and fifth graders. Measures of reading engagement included performance assessments, and pretests were standardized reading tests. Goals for English/language arts and science were the same for both programs. The first research question addressed the extent to which CORI increased learning in familiar and new knowledge domains. The second research question addressed the extent to which CORI increased motivated strategy use in familiar and new knowledge domains. Significant main effects and interactions suggested that the principles of CORI enabled students to increase reading engagement and conceptual learning within both a familiar and a new domain more so than students in traditional classrooms. The researchers stated that replication of the study is needed to verify the results due to the study's limitations, such as a possibility of a teacher effect rather than a program effect and demographics of the study.

Wigfield, Guthrie, Tonks, and Perencevich (2004) examined Concept Oriented Reading Instruction (CORI) and multiple Strategy Instruction (SI) and how they influenced third graders' motivation to read and reading self-efficacy. Each of the reading programs occurred during the fall of the school year and lasted 12 weeks. Approximately 150 third graders participated in CORI, while 200 third graders participated in *SI*. The students completed a reading motivation questionnaire, and the results of a pre- and posttest analysis showed that students' motivation to read only increased in the CORI group.



### *Stimulating Tasks and Reading Engagement*

John Guthrie and colleagues at the University of Maryland (2006) investigated whether classroom practices and education programs can influence reading motivation and thereby increase reading comprehension. The focus of the study was on the relationship of hands-on activities to reading engagement. The researchers tested whether motivation mediates the effect of stimulating tasks on reading comprehension.

They hypothesized that the third-grade students in an elementary school in a mid-Atlantic state who were given a higher number of stimulating tasks related to reading would have higher reading comprehension scores than students given a lower number of stimulating tasks, controlling for prior comprehension and quality of task performance. Their second hypothesis was that students who were given a high number of stimulating tasks related to reading would have higher reading motivation scores than would students who were given a lower number of stimulating tasks. Third, they hypothesized that the effect of reading-related stimulating tasks on reading comprehension would be mediated by reading motivation.

Two instruction groups were identified. Two teachers provided a high number of stimulating tasks related to reading, and two teachers presented a low number of stimulating tasks. All four classrooms participated in the CORI program previously described. For both groups, reading goals emphasized comprehension of information text and literary text. Students were provided fluency and vocabulary instruction daily. Teachers provided instruction in six comprehension strategies, including activating prior knowledge, questioning, searching for information, summarizing, organizing graphically, and structuring stories. Teachers provided some autonomy to students over the topics of study and supported collaborative activities. In addition, teachers provided hands-on activities of science

observations and experiments related to the concept of survival of life on land and water, which generated interest and curiosity for reading. The group with the high number of stimulating tasks performed more science observations, asked more questions, drew more representations of data, and more actively used their sensory systems of seeing, touching, and manipulating science objects or events during the course of a 12-week period.

The researchers used rubrics to analyze students' drawings, hypotheses, tables and graphs, and conclusions. To measure reading comprehension, they used a measure designed for the project, as well as the *Gates-MacGinitie Reading Comprehension Test*. Reading motivation was measured through self-reports and teachers' ratings of student motivation.

At the beginning of the year, the motivation variable predicted students' reading comprehension on the *Gates-MacGinitie Reading Comprehension Test*. Results showed that the number of stimulating tasks increased motivation for reading, which was associated with increased reading comprehension on the standardized test. The researchers concluded that to facilitate interest development in reading, stimulating tasks must be integrally connected to the context of texts and the students' activities to derive meaning from texts. Even for students with a low initial interest in reading, participating in a stimulating task fostered reading interest. They encourage researchers to continue exploring reading comprehension and reading interest to identify their reciprocal relationships.

### *Summary*

Research has shown that efforts need to be made to foster literacy motivation in students. The studies described above directly link motivation to achievement and identify aspects of programs that effect reading engagement, including stimulating tasks, hands-on

activities, and observations. Components of programs integrating visual arts and reading are similar to the components identified in research as those that foster motivation of students.

### Summary

The ways in which educators conceive learning and knowing are expanding our notions of what it means to be literate in today's society. An awareness of multiple paths to learning and knowledge construction has begun to emerge. Reading and writing are at the core of the traditional notions of literacy. Reading is comprehending and constructing meaning. Writing is also a process of making meaning. There are various pathways to acquiring literacy knowledge, including words, pictures, drama, music, mathematics, dance and the like (Flood et al., 1997). This review of the literature described theories related to the integration of literacy and the arts. It presented a review of the research that has been done in this area. This review of the literature also included studies of specific programs that demonstrate transfer of learning from the arts to other content areas, including Visual Thinking Strategies (VTS), the focus of this research study. Finally, theories of reading motivation and factors that influence motivation were explored.

The research and programs examining student intellectual and motivational development in the arts demonstrates the strength of the field, but also the need for future studies. Engaging theories and factors related to literacy, social learning, and motivation with visual arts and reading instruction will offer insights needed for learning, cognition, and motivation, as proposed by the literature review described here.

## CHAPTER THREE: METHODOLOGY

The purpose of this study was to examine the effects of the Visual Thinking Strategies curriculum on reading achievement of students with various motivational levels. This section describes the methods and procedures that were utilized to conduct this research. Chapter three includes the research question and hypothesis, a description of the setting and subjects, an explanation of the research design, the instrumentation, a description of the data collection and their analyses, and limitations to the study.

### Research Question and Hypothesis

1. Is there a significant interaction between instructional method (VTS or no VTS) and student level of motivation (high or low) with respect to reading achievement after controlling for reading level?  
H1. Students who are instructed with VTS will perform better than students who are not instructed with VTS. Students with low motivation will perform significantly better when VTS is used as the instructional method.

### Setting and Subjects

The population of interest for this study was fourth grade students enrolled in an upper middle class school system in New England with an enrollment of about 4,500 students. The public school enrollment PK-12 was about 18% of the town's population. The percentage of minority students attending the school system had remained under 10%, but was growing steadily. The percentage of students eligible for free/reduced-price meals was 1.8%. Eighty-nine percent of incoming kindergarteners attended preschool or nursery school. Classroom sizes at the elementary level were approximately 20 students.

The convenience sample for this study consisted of 104 fourth-grade students divided among eight classrooms from two of the four elementary schools in the district. They were chosen because they use a similar approach in the teaching of reading, including a basal anthology and guided reading experiences. School A teachers, however, had been trained in Visual Thinking Strategies (VTS), whereas School B was not exposed to the VTS curriculum. All students and teachers were requested to participate in the study, and the principals at the two schools expressed support for the research. Consent to participate in the study was obtained from the superintendent, guardians/parents of all students, and the teachers. The sample size of N=104 was obtained from the district population outlined in Table 1.

Table 1

*Population from Which Sample Was Obtained*

School and District Characteristics	School A	School B	District
Percent Bilingual and ESL Students	1.2	1.7	1.2
Percent Special Education Students	7.9	19.4	12.8
Percent White Students	89.7	98.1	94.8
Percent Minority Students	10.3	1.9	5.2
Number of Certified Staff	37.0	43.0	367.0
Teacher Experience (Mean Years)	14.8	12.8	13.4
Percent of Teachers with a Master's Degree	85.0	85.7	87.0
Percent of Fourth Graders at Goal in Reading	73.3	77.2	75.4

## Explanation of Research Design

This study was designed to investigate the effects of the VTS curriculum on reading achievement of students with various motivational levels. A quantitative analysis, using a quasi-experimental approach, was used. The dependent variable for this research was reading achievement, and the two independent variables included instructional method and motivation to read. All students were administered a *Motivation to Read Profile* to measure their levels of motivation. Form S of the *Gates-MacGinitie* reading test served as a pretest to measure reading achievement prior to treatment. The pretest score was used as a covariate to control for initial reading level. During a 9-week period, for a total of nine lessons, students in the experimental group had their reading lessons supplemented with VTS, whereas those in the control group followed the traditional reading curriculum. After the 9-week period, Form T of the *Gates-MacGinitie* was administered to both groups as a posttest. This design was selected because random assignment of students to a treatment group was not feasible. Table 2 delineates a figure of the quasi-experimental design.

Table 2

### *Delineation of the Quasi-experimental Design*

	Pretest	Treatment	Posttest
Experimental Group (School A)	O	X	O
Control Group (School B)	O		O

## Visual Thinking Strategies

During a 9-week period, for a total of nine lessons, students in the experimental group, whose teachers had received training in VTS, had their reading lessons supplemented with this approach. The students in the control group, whose teachers had not been trained, continued to follow the traditional reading curriculum. Basal anthology materials were the same for both schools, and many of the guided reading titles used for small group instruction were common.

Housen and Yenawine (2000) designed the VTS curriculum with the goal of teaching thinking, communication skills, and visual literacy through the discussion of art. Students in the experimental group were asked to articulate ideas drawn from examining art and respond to each other's comments. Cognitively, students were using language by forming ideas through words. Housen and Yenawine contended that verbalization is a key to learning. VTS is a method of open-ended discussion that allows for diverse opinion and debate. VTS is student-centered; the teacher asks only a few open-ended questions that are formulated to elicit thoughtful responses to art. The teacher paraphrases all of the answers with an attempt to involve all students.

In this study, there were a total of nine lessons with three images being examined and discussed in each lesson lasting 40 to 50 minutes. There were three questions asked to stimulate discussion of the prints:

1. *What's going on in this picture?* This question opened the discussion, suggesting that the image was "about" something that could have been figured out. It encouraged the finding of stories or activity, playing into the natural tendency of beginning viewers to be storytellers. This question allowed comments of any sort,

addressing colors, feelings, information, and personal connections. In contrast to the question, “What do you see in this picture,” which may have resulted in students making lists, this initial question urged students to probe for meaning, parallel to the way they search for meaning when reading text.

2. *What do you see that makes you say that?* This question asked students to gather evidence to support their opinions. This position is useful in any critical inquiry. A reasonable alternative may have been, “Why do you say that,” but this question may have caused the student to lose anchor of the image. Parallel to reading, students needed to provide evidence to support what they said about the print.
3. *What else can you find?* This question had the effect of making the conversation more complete. Details that may have been missed were found when the students were asked to look for more. Making thorough examinations was encouraged, just as reading carefully is encouraged when students encounter text.

Housen and Yenawine (2000) believed that the observation, thinking, and communication skills that develop as a result of VTS classes will at some point be transferred to other subjects. Teachers in the experimental group were encouraged throughout the training to apply the questioning and response strategies to other situations such as reading and writing.

### Instrumentation

The proposed study utilized two instruments: *Motivation to Read Profile: Reading Survey* (MRP, Gambrell et al., 1996) and the *Gates-MacGinitie Reading Test* (GMRT, MacGinitie et al., 2000). The *MRP* was used as a valid and reliable assessment of students’ reading self-concept and value of reading (see public domain assessment in Appendix B).



The GMRT was utilized as a valid and reliable assessment of students' reading achievement (see sample questions in Appendix C).

The *MRP* reading survey is a self-report, group-administered instrument. The survey assesses two specific dimensions of reading motivation, self-concept as a reader and value of reading. It consists of 20 items and uses a 4-point response scale. There are 10 items for both the self-concept and value components. The items that focus on self-concept as a reader are designed to elicit information about the student's self-perceived competence in reading and self-perceived performance relative to peers. The value of reading items are designed to elicit information about the value students place on reading tasks and activities, particularly in terms of frequency of engagement and reading-related activities. To assess the internal consistency of the survey, Cronbach's alpha statistic was calculated, which revealed a moderately high reliability for both subscales (self-concept = .75; value = .82). In addition, reliability coefficients were calculated for the subscales (self-concept = .68; value = .70), which confirmed the reliability of the instrument as acceptable. A test of validity of the reading survey explored the relationship between level of motivation and reading achievement. Statistically significant differences were found among the mean scores on the self-concept measure for students categorized as high, middle, and low readers, revealing that scores were positively associated with reading achievement. Statistically significant differences were also found on the value measure, with younger students scoring more positively than older students, a finding in keeping with the work of other researchers (McKenna & Kear, 1990). There is also a *Conversational Interview* component to this instrument, which may be used to gather additional information beyond this study.

The GMRT is a norm-referenced, group-administered test designed to assess students' general level of reading achievement. Subtests included are Vocabulary (45 items) and Comprehension (48 items). The Vocabulary questions consist of a test word in a brief context followed by five other words or phrases. The student's task is to choose the one word or phrase that means most nearly the same as the test word. The test is a measure of word knowledge. The Comprehension test measures a student's ability to read and understand different types of prose. Some questions require constructing an understanding based on information explicitly stated in the passage, whereas others require constructing an understanding based on information that is only implicit in the passage.

The reliability estimates indicate strong total test and subtest internal consistency levels with coefficient values at or above .90. Alternate form correlations for the total test scores are at or above .90. Alternate form correlations for the subtests range from .74 to .92. Total test coefficient values are at or above .88. Content validity was documented through a process of test development to identify the scope of the subtests and to identify effective items within subtests. Problematic items were eliminated. Construct validity is supported by strong intercorrelations between subtests and total test scores.

#### Data Collection and Analysis

Before this study began, in the fall of 2006, teachers at School A participated in two professional development workshops, one at Yale University and one in-house, which provided training in integrating literacy and the visual arts using the VTS curriculum. Teachers in School B did not receive this training.

In January of 2007, the proposed research was approved by Western Connecticut State University's Institutional Review Board. By the spring of 2007, the researcher had distributed and collected consent forms for students to participate in the study.

In the fall of 2007, all participants in the study completed a *Motivation to Read Profile*. This instrument provided the researcher with information on each student's self-concept as a reader and his or her value of reading. In addition, each participant completed the *Gates-MacGinitie Reading Test* (Form S) to provide the researcher with a general assessment of each student's reading achievement. Pretest scores were used as a covariate to create equal treatment and control groups for the study.

After this information was collected, teachers of the experimental group supplemented their reading instruction with VTS for a 9-week period. Students in each experimental group were exposed to the same set of images per lesson. The images represented various time periods, styles, media, and cultures. Teachers of the control group continued to instruct their students with only the traditional reading program. All students were instructed at their instructional level through a guided reading approach, and both pull-out instruction and in-class tutorials were provided for students at both schools as necessary.

After the 9-week period, in December of 2007, all participants in the study completed the *Gates-MacGinitie Reading Test* (Form T). This provided the researcher with a general assessment of each student's reading achievement.

Descriptive and inferential statistics were utilized to answer the main research question. The *Statistical Package for the Social Sciences (SPSS)* was the primary statistical program for this project. The dependent variable was reading achievement. The independent variables were instruction (VTS or traditional) and motivation (high or low). Differences

between the experimental and control groups were analyzed using a two-way ANCOVA, Analysis of Covariance ( $p \leq .05$ ). This statistic was used to control for initial differences between the groups before a comparison of the within-groups variance was made. The effect of the ANCOVA made the two groups equal with respect to pretreatment reading level.

Table 3 outlines the various steps in the data collection phase of the study.

Table 3

*Various Steps of the Collection Phase*

Date	Activity
Fall, 2006	School A teachers trained in <i>Visual Thinking Strategies</i> curriculum
January, 2007	Research approved by IRB
Fall, 2007	Completion of <i>Motivation to Read Profile</i> and <i>Gates-MacGinitie Reading Test</i> (pretest) by participants
October-December, 2007	Research Study/Treatment
December, 2007	Completion of <i>Gates-MacGinitie Reading Test</i> (posttest) by participants

## Limitations of the Study

The internal validity of an experiment is the extent to which extraneous variables have been controlled by the researcher, so that any observed effect can be attributed solely to the treatment variable (Gall et al., 2003). In this experiment, reading level was controlled for statistically using ANCOVA, with the pretest serving as the covariate. However, the fact that the pretest was similar to the posttest raised the possibility of a testing threat to internal validity. Although the forms were different, students in both groups had experience with the GMRT both before and after the treatment period. Statistical regression may have also caused students' scoring at extremes on a measure to score nearer the mean the second time. The school that implemented VTS had been chosen as the experimental group because its teachers had been trained with this curriculum. Random assignment, therefore, could not be used. The length of treatment may also have been a limitation to this study. Nine lessons were taught using VTS of approximately 45 minutes each. Providing more time with VTS instruction may have suggested different data results. Other variables that may have interfered with the results of this experiment included teachers' and students' attitudes towards art, the experiences they had had with it, and other factors, such as tutoring, that may have improved student scores.

The external validity of an experiment is the extent to which the findings of an experiment can be applied to individuals and settings beyond those that were studied (Gall et al., 2003). The results of this study are most generalizable to populations that are similar to the sample. Further studies using random selection and random assignment to groups must be done. This research might be replicated using participants from different grade levels and who come from communities with varying demographic profiles.

## Statement of Ethics

Permission to participate in this research was sought from the district's superintendent, each school principal, and all parents of students. To assure confidentiality, each participant was assigned a confidential identification number. All data were stored in a locked filing cabinet in the researcher's home or office and were maintained there until the findings were published. Data will only be accessible to researchers for whom the data will prove useful in further comparative analyses and who are enrolled in Western Connecticut State University's Doctor of Education Instructional Leadership Program.

## Summary

A quantitative analysis, using a quasi-experimental approach, was used to implement this study. This chapter outlined the methods the researcher employed to investigate the effects of the VTS curriculum on reading achievement of students with various motivational levels. It began with an introduction followed by the research question and the researcher's hypothesis. The setting and subjects for the study were described. Next, a detailed description of the research designed was provided, including elements of the VTS curriculum. Then, the instrumentation and data collection and analysis were explained. Finally, limitations to the study were described. Chapter four will report the results of the study.

## CHAPTER FOUR: ANALYSIS OF THE DATA AND THE FINDINGS

This study was conducted for the purpose of examining the effects of the Visual Thinking Strategies curriculum on reading achievement of students with various motivational levels. This chapter includes a review of the research questions, the hypothesis, and a description of the analyses and findings of this study.

### Research Question and Hypothesis

1. Is there a significant interaction between instructional method (VTS or no VTS) and student level of motivation (high or low) with respect to reading achievement after controlling for reading level?
- H1. Students who are instructed with VTS will perform better than students who are not instructed with VTS. Students with low motivation will perform significantly better when VTS is used as the instructional method.

This research began with 104 participants. When median scores on the dependent variables (*Gates-MacGinitie Reading Tests* Forms S and T) were examined for outliers, two students from each group were removed, with 100 students remaining in the study. Figure 1 contains boxplots, with the lines in the middle of the boxes representing the mean scores for the dependent variables. The length of the boxes are interquartile ranges. The bottoms and tops of the boxes represent the 25<sup>th</sup> and 75<sup>th</sup> percentiles, and outliers fall outside of the boxes. The whiskers at the top and the bottom of the plots that originate from the box represent the smallest and largest values that are not outliers.

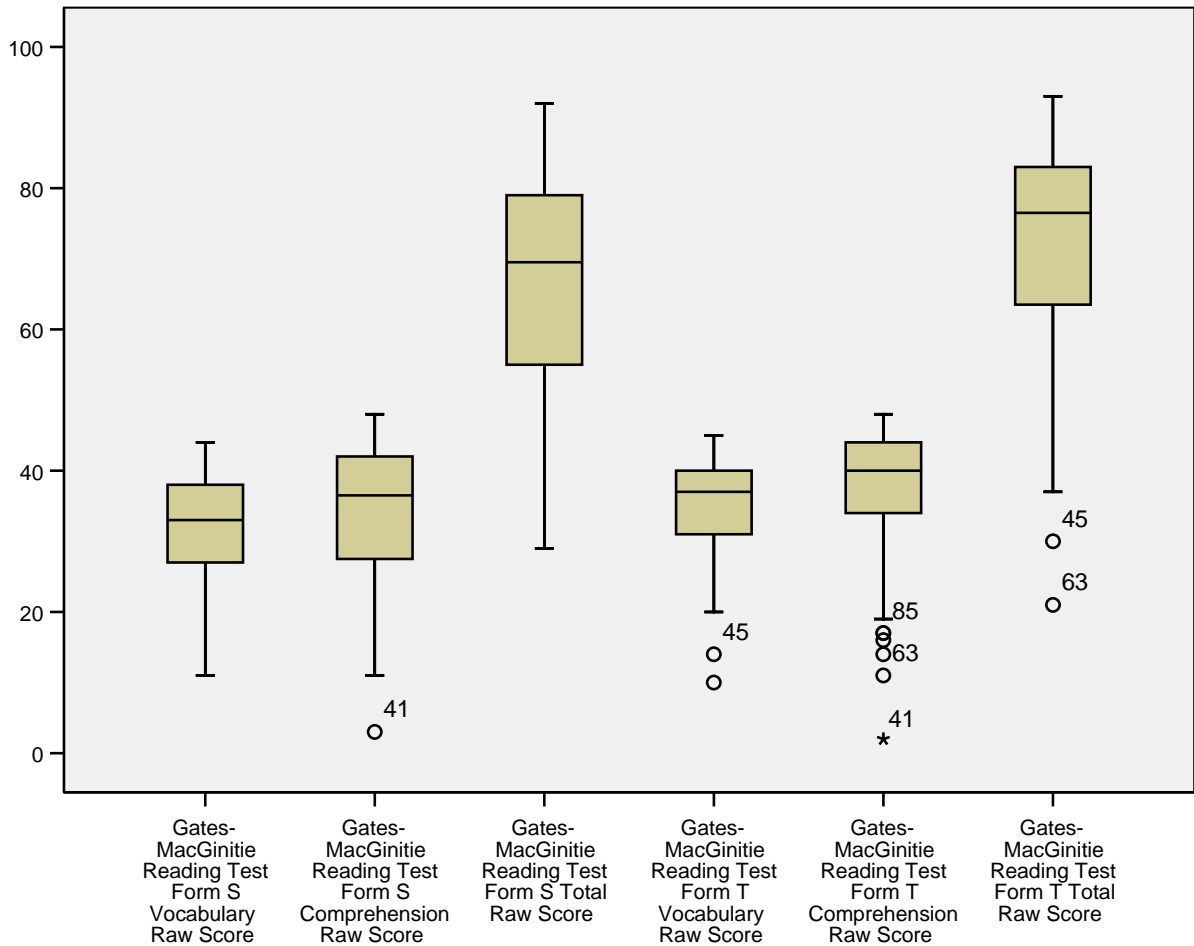


Figure 1. Box and whisker plot of *Gates-MacGinitie Reading Test* scores

Skewness reflects the degree to which a variable’s scores fall at one end or the other end of the variable’s scale, while the kurtosis of a variable reflects the thickness of the tail regions of a distribution (Green and Salkind, 2005). Skewness and kurtosis values were conducted for the total scores and vocabulary and comprehension subtest scores for both forms of the *Gates-MacGinitie Reading Test*. All but one of the six values met the criteria of being less than  $\pm 1$ . Table 4 displays these values.



Table 4

*Skewness and Kurtosis Values for GMRT-S and GMRT-T*

GMRT-S and Form T	Skewness	Kurtosis
GMRT-S Vocabulary Raw Score	.55	.07
GMRT-S Comprehension Raw Score	-.69	-.51
GMRT-S Total Raw Score	-.61	-.44
GMRT-T Vocabulary Raw Score	-.84	.32
GMRT-T Comprehension Raw Score	-1.09	.39
GMRT-Total Raw Score	-.99	.49

Figure 2 provides the means for the total reading scores on the *Gates-MacGinitie Reading Tests* (Forms S and T). School A represents the school that used the VTS curriculum to supplement its reading instruction, while School B used only the traditional method. Students in both schools were assigned a score of 1 for having low motivation and a score of 2 for having high motivation. These scores were determined by taking the mean score of the *Motivation to Read Profile* (77.88) and assigning a score of 1 for those students who fell below this mean and a score of 2 for those above the mean.

The homogeneity-of-slopes assumption was tested to evaluate the interaction between the covariate and the dependent variable. The interaction was not significant for the total test or the subtests. Results are displayed in Table 5.

Mean Scores for *Gates-MacGinitie Reading Tests* (Forms S and T)

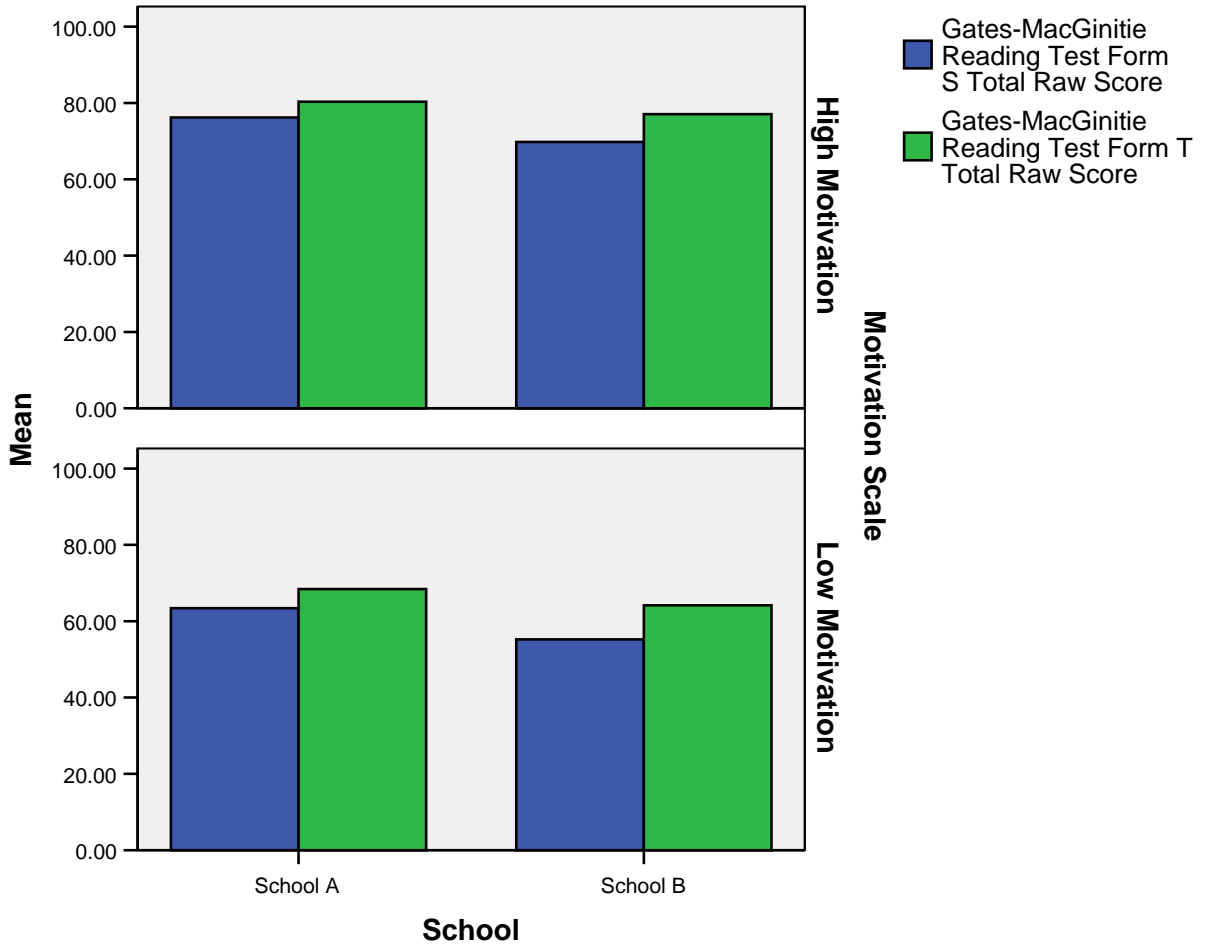


Figure 2. *Gates-MacGinitie* score distribution for pre and post test total scores

Table 5

*Interactions Between Reading Achievement and Covariates*

	Type III Sum		Mean		
	of Squares	df	Square	F	Sig.
Group*GMRT-S Total	57.96	1	57.96	1.12	.29
Group*GMRT-S Vocabulary	3.23	1	3.23	0.18	.67
Group*GMRT-S Comprehension	89.69	1	89.69	3.34	.07

Table 6 provides means and standard deviations for the dependent variable in this study, reading achievement, as measured by the *Gates-MacGinitie Reading Test* total score for Form T. Of the 44 students from School A, who participated in the study and received VTS instruction, 24 were classified as having low motivation, whereas 20 were classified as having high motivation. School B, whose students' instruction was not supplemented with VTS, had 56 students who participated in the study. Seventeen of these students displayed low motivation, whereas 39 displayed high motivation.

Table 6

*Descriptive Statistics of the Gates-MacGinitie Test (Form T) Total Scores*

	School A		School B	
	Low Motivation	High Motivation	Low Motivation	High Motivation
N	24	20	17	39
Mean	68.42	80.35	64.18	77.08
Adjusted Mean	71.11	73.63	72.89	75.07
Standard Deviation	14.22	9.13	15.01	11.57

Levene's Homogeneity of Variance tests that the error variance of the dependent variable (*Gates-MacGinitie Reading Test* Form T total scores) is equal across all groups (School A and School B). When  $p \geq .05$ , the data is homogeneous, suggesting that an ANCOVA is an appropriate test to conduct. In this case,  $p = .12$ , so the researcher proceeded with the ANCOVA. Table 7 displays the results for Levene's Homogeneity of Variance test.

Table 7

*Test of Homogeneity of Variances*

*Gates-MacGinitie Reading Test Form T (Total Scores)*

Levene Statistic	df1	df2	Significance
1.982	3	96	.122

Differences between the experimental and control groups were analyzed using a two-way ANCOVA, Analysis of Covariance ( $p \leq .05$ ). The results of the ANCOVA are displayed in Table 8. A different form of the *Gates-MacGinitie Reading Test* (Form S) was used to control for initial differences between groups before a comparison of their achievement on the posttest was made. The use of the ANCOVA made the two groups equal with respect to pretreatment reading level. If  $p \leq .05$ , then statistical differences exist. However, in this case,  $p \geq .05$ , which indicates that there was not a significant interaction between motivation and achievement and no statistical differences for main effects were found.

Table 8

*Two-way ANCOVA*


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*Gates-MacGinitie* Test of Between-Subjects Effects

	Sum of Squares	df	Mean Square	F	Sig.
Pre-Test Covariate	10012.78	1	10012.78	193.53	0.00
Group	55.55	1	55.55	1.07	0.30
Motivational Scale	101.87	1	101.87	1.97	0.16
Group*Motivational Scale	.66	1	.66	0.01	0.91
Error	4914.84	95	51.74		
Total	558100.00		100.00		
Corrected Total	18462.84		99.00		

---

Differences between School A, the experimental group, and School B, the control group were also analyzed by subtests. Table 9 provides the means and standard deviations for both the vocabulary and comprehension subtests for the *Gates-MacGinitie Reading Test (Form T)*. It is followed by Tables 10 and 11, which display the results of the Levene's Homogeneity of Variance tests.

Table 9

*Gates-MacGinitie (Form T) Vocabulary and Comprehension Subtest Scores*

	School A		School B	
	Low	High	Low	High
	Motivation	Motivation	Motivation	Motivation
N	24.00	20.00	17.00	39.00
Vocabulary Mean	33.88	38.30	30.89	36.49
Vocabulary Adjusted Mean	34.51	35.56	35.07	35.68
Vocabulary Standard Deviation	6.93	4.57	7.08	5.97
Comprehension Mean	34.54	42.05	33.29	40.59
Comprehension Adjusted Mean	36.13	39.01	36.73	39.68
Comprehension Standard Deviation	8.28	5.93	8.60	6.22

Table 10

*Test of Homogeneity of Variance**Gates-MacGinitie Reading Test Form T Vocabulary Scores*

Levene Statistic	df1	df2	Significance
.736	3	96	.533

Table 11

*Test of Homogeneity of Variances*

*Gates-MacGinitie Reading Test Form T Comprehension Scores*

Levene Statistic	df1	df2	Significance
1.058	3	96	.371

Two-way ANCOVAs were conducted using the vocabulary and comprehension subtests as dependent variables. Summaries are provided in Tables 12 and 13, respectively.

Table 12

*Gates-MacGinitie Test of Between-Subjects Effects (Vocabulary)*

	Sum of Squares	df	Mean Square	<i>F</i>	Sig.
Pre-test Covariate	1975.29	1	1975.29	111.50	0.00
Group	2.32	1	2.32	0.13	0.72
Motivation Scale	13.06	1	13.06	0.74	0.34
Group*Motivation Scale	1.10	1	1.10	0.06	0.80
Error	1683.04	95	17.72		
Total	128671.00	100			
Corrected Total	4273.71	99			

Table 13

*Gates-MacGinitie Test of Between-Subjects Effects (Comprehension)*

	Sum of Squares	df	Mean Square	F	Sig.
Pre-Test Covariate	2393.92	1	2393.92	90.75	0.00
Group	8.12	1	8.12	0.33	0.57
Motivation Scale	161.63	1	161.63	6.13	0.02
Group*Motivation Scale	0.03	1	0.03	0.00	0.97
Error	2505.95	95	26.38		
Total	151997.00	100			
Corrected Total	6149.39	99			

The two-way ANCOVA results require rejecting the hypotheses that students who are instructed with VTS will perform better than students who are not instructed with VTS and that students with low motivation will perform significantly better when VTS is used as the instructional method. No interaction between motivation and instructional method was found. No significant main effect was found on the vocabulary subtest. There was a significant main effect, however, of motivation on the comprehension subtest, indicating that students with high motivation performed better on the comprehension test than students with low motivation.

In order to determine whether the results of the two-way ANCOVA reported above would have been different if the motivation groups were more clearly defined, the middle 17% of the sample based on motivation scores was removed to create more distinct “low” and “high” groups. This procedure resulted in cell sizes provided in Table 14.



Table 14

<i>Sample With Middle Removed</i>		
	School A	School B
Low Motivation	25	14
High Motivation	18	26

The average total scores and subtest scores for the new groups are listed in Table 15.

Table 15

<i>Total and Subtest Scores With Middle Removed</i>						
	School A			School B		
	Total	Vocabulary	Comprehension	Total	Vocabulary	Comprehension
Low Motivation	66.1	34.2	31.9	60.9	29.7	31.3
High Motivation	81.2	38.7	42.5	77.1	36.1	41.0

A two-way ANCOVA was conducted to determine the difference in reading achievement (total score) for groups and levels of motivation using the *GMRT-S* as the covariate. The data passed the Levene's Homogeneity of Variance test ( $p > .05$ ). Results of all analyses performed on this data set were not significant ( $p > .05$ ). These results matched the results of the analyses that included all subjects. Similarly, two-way ANCOVAs were conducted on the *Gates-MacGinitie* subscores. Again, these analyses yielded similar results. Results of these analyses can be found in Appendix D.

The Pearson product-moment correlation coefficient ( $r$ ) assesses the degree that quantitative variables are linearly related in a sample (Green and Salkind, 2005). The significance test for  $r$  evaluates whether or not there is a relationship between variables in the sample. Table 16 contains a correlation matrix between all eight variables used in this study.

Correlation coefficients of .10, .30, and .50 are interpreted as small, medium, and large coefficients. All correlations in this study were significant at the .01 level.

Table 16

*Correlations Amongst All the Measures at Follow-up*

	1	2	3	4	5	6	7
1 Motivation		.35**	.37**	.39**	.34**	.44**	.42**
2 GMRT Vocabulary Score Form S			.74**	.92**	.78**	.75**	.81**
3 GMRT Comprehension Form S				.95**	.74**	.75**	.79**
4 GMRT Total Score Form S					.81**	.80**	.85**
5 GMRT Vocabulary Form T						.78**	.93**
6 GMRT Comprehension Score Form T							.95**
7 GMRT Total Score Form T							

\*\* significant at .01 level

## CHAPTER FIVE: SUMMARY AND CONCLUSIONS

The purpose of this study was to examine the effects of integrating the arts into literacy instruction using the VTS curriculum. Based on theorists' suggestions that integrating the arts with literacy instruction improves academic achievement (Catterall, 1999; Flood et al., 1997; Kiefer, 1997; Piro, 2002; Wolf, 2006), as well as the results of empirical studies that showed that students who participated in arts programs demonstrated increased academic performance (Catterall, 1995; Catterall & Waldorf, 1999; Luftig, 1994), the researcher hypothesized that, overall, students who were instructed with VTS would perform better than students who were not instructed with VTS. In addition, because the VTS program contains factors that have been associated with increased motivation, such as visualization (Long, Winograd, & Bridge, 1989), curiosity (Guthrie, Anderson et al., 1999), and collaboration and constructing meaning (Powell et al., 2006), it was hypothesized that there would be a significant interaction between instructional method (VTS or no VTS) and student level of motivation (high or low) with respect to reading achievement after controlling for pre-treatment reading level. In other words, students with lower levels of motivation were expected to perform significantly better when VTS was used as the instructional method to supplement reading than when instruction did not include VTS.

This chapter includes a review of the findings related to the research question and the hypothesis. This chapter also discusses how this study is related to other studies described in the review of the literature. Finally, limitations and implications of the study, and suggestions for additional research are presented.

## Review of the Findings

A two-way Analysis of Covariance, ANCOVA, was used to analyze differences between the experimental group (those whose reading instruction was supplemented with VTS) and the control group (those whose reading instruction was not supplemented with VTS). The dependent variable was reading achievement as measured by student performance on the GMRT-T. The independent variables were motivation as measured by the *MRP* and method of instruction. An alternate form of the GMRT-S was administered prior to treatment, and scores were used to control for initial differences between groups before a comparison of their achievement on the posttest was made. The data were analyzed using a two-way ANCOVA in order to equate the groups with respect to pretreatment reading level, as well as to investigate main effects of treatment and motivational level and the interaction between these two variables.

In this case,  $p \geq .05$ , indicating that no statistical differences existed. Results of the two-way ANCOVA required rejecting the hypothesis that students who were instructed with VTS would perform better than students who were not instructed with VTS. Students with low motivation did not perform significantly better when VTS was used as the instructional method. No interaction was found. These results, however, were based on total reading results of the GMRT-T as the dependent variable. The researcher then conducted two additional two-way ANCOVAs using the GMRT subtests (Vocabulary and Comprehension, respectively) as the dependent variables. No main effect or interaction effect on vocabulary was revealed. There was a significant main effect, however, of motivation on comprehension performance, indicating that highly motivated students performed better on reading comprehension than those with low motivation, regardless of instructional method.

## Relationship to Review of the Literature

Many claims have been made that integrating the arts with literacy improves student achievement (Catterall, 1999; Flood et al., 1997; Kiefer, 1997; Piro, 2002; Wolf, 2006), and a number of programs have been developed and adopted by school districts to increase student performance. However, few empirical studies have been conducted to investigate whether or not these programs actually increase achievement. Burger and Winner (2000) found only 10 studies that met the rigor of true empirical research. These researchers found that many studies that had been done did not include control groups. The present study addressed this problem by comparing the reading achievement of students who had been instructed in VTS with those who had not. In addition, the reading pre-assessment controlled for initial differences between the two groups.

Nine of these 10 studies in Burger and Winner's meta-analysis examined the cognitive relationships between arts instruction and reading achievement. Four studies included motivational connections. The results of the first meta-analysis demonstrated a small effect of arts instruction on reading skills, and the results of the second meta-analysis revealed a positive, moderately-sized relationship between reading improvement and motivation. Studies in the first meta-analysis included young readers, and used reading readiness scores as the dependent variable. The researchers suggested that these results were due to the fact that reading readiness tests have many pictorial components. This present study used a different population, fourth grade readers, and the instrument used to measure achievement was a vocabulary and comprehension assessment. This study found no significant cognitive difference between those students instructed in art and reading (VTS) and those instructed only in reading (no VTS).

Similarities existed between the programs examined by Burger and Winner (2000a) and the VTS curriculum. For example, Learning to Read Through the Arts (LRTA) began in New York City Public Schools in 1971. In LTRA, the language experience approach is used to develop reading proficiency. This is similar to VTS, in which language and conversation are used to develop vocabulary and construct meaning. Program evaluations showed consistent reading improvements for students participating in LRTA, but these gains were measured by the *Degrees of Reading Power* tests, different from the instrument used in this study, the *Gates-MacGinitie Reading Test*. However, no comparison was made between the students who made gains in LTRA and a control group, as was done in this study.

Another program examined in the review of the literature was Children's Art Carnival (CAC). It began in 1969 as an initiative by the Museum of Modern Art in New York City to share art with underprivileged children in grades 2 through 5. Each student was involved in three types of sessions--an art workshop, a plan and review session, and a story room (small group) session. The story-telling piece of this program contains similarities to VTS, in which students are asked to tell their own stories of paintings shared in the classroom. CAC's impact was measured by standardized and norm-referenced reading tests. Second grade students exceeded the program's criteria for success in reading, and fourth and fifth graders made significant gains. Third grade students did not meet the program's criterion for success. Over half the students in CAC improved in writing, another aspect of literacy that VTS was developed to enhance. Again, control groups were not used in the CAC study.

In Reading Improvement Through the Arts (RITA), vocabulary and reading were integrated in arts classes, and art concepts were used instructionally in reading classes. The program was designed for children reading below grade level to help students contextualize

reading and work from concrete to abstract language skills, which is a similarity to VTS. From participation in RITA, 10<sup>th</sup> grade students achieved more improvement in one semester than what was anticipated would occur in an entire year, but this research had limitations because no control group was used. This present study included both an experimental and control group.

The review of the literature provided to support this study included direct documentation of research conducted with VTS. The Byron study was a longitudinal research project in rural Minnesota, which included all students in grades 2 through 5, including special needs students. Data were collected from 25 experimental and 25 control groups in two age groups (2<sup>nd</sup> and 4<sup>th</sup> grades), from 1993 to 1998. Measures were administered every 6 months for 5 years to both a randomly selected experimental group and control group at each level.

New forms of standardized exams for reading were introduced in 1996 for eighth grade students. During the first 2 years, the students had no VTS, and only half passed the reading exam. During the third year, the first class with VTS since fourth grade, the number passing increased to 77%, surpassing the state average by 10 points. Although this present study did not demonstrate increased student achievement due to VTS, perhaps implementing the curriculum for more than a nine-week period would result in student gains.

In the examination of VTS and its relationship to learning standards and curriculum frameworks, a collaboration between Boston Public Schools, the Boston Museum of Fine Arts, and Visual Understanding in Education reviewed goals and found evident connections. Standards specific to reading were supported by VTS lessons. Students were able to identify facts and main ideas in text and use them as the basis for interpretation. Sense of story

conveyed in VTS lessons carried over to books students were reading. Teachers interviewed reported that students became more focused when observing pictures, noticing more detail and asking questions about the pictures. Students were also able to identify, analyze, and apply knowledge of theme and provide evidence from the text to support their understanding. Again, this report was made after a 5-year collaboration, whereas this present study lasted for only a 9-week period.

Researchers have concluded that transfer from the visual arts may be related to one of two mechanisms (Burger & Winner, 2000a). One of these mechanisms is cognitive, as was described in the above studies. Another possible mechanism is motivation, using art as an entry point to reading.

Research supports that there is a positive link between academic motivation and student achievement (Elley, 1992; Guthrie, Schafer et al., 1993). It has been shown that motivation for reading, especially for students in grades 3-5, predicts reading achievement on standardized tests (Gottfried, 1985). This present study contributes to this literature. Although there was no interaction between motivation and method of instruction, highly motivated readers in this study performed significantly better on a test of reading comprehension than those students with low motivation. Therefore, factors that influence motivation must be examined.

Guthrie, Anderson et al. (1999) examined the effects of Concept-Oriented Reading Instruction (CORI) on reading engagement, the joint operation of motivation, strategies for reading, and cognitive knowledge. The dependent variables in the study were reading achievement and motivation. CORI classrooms were organized around broad themes in science; sensory experiences such as hands-on activities to support the themes; student input



into guided teaching; collaborative learning; strategies such as using prior knowledge, interpreting text, and making connections; and student self-expression. Many aspects of the CORI program have similarities to VTS. For example, student input and collaborative learning are evident as students discuss paintings with an attempt to construct meaning. They use strategies that parallel reading strategies, such as using prior knowledge, interpreting text, and making connections. Significant main effects and interactions suggested that the principles of CORI enabled students to increase reading engagement and conceptual learning within both a familiar and a new domain more so than the traditional classrooms. Although principles of CORI are similar to those of the VTS curriculum, no main effects and interactions due to the program were found in this present study.

In another CORI study, John Guthrie and colleagues at University of Maryland (2006) investigated whether classroom practices and education programs can influence reading motivation and thereby increase reading comprehension. Two instruction groups were identified, in which two teachers provided a high number of stimulating tasks related to reading, and two teachers presented a low number of stimulating tasks. All four classrooms participated in the CORI program. For both groups, reading goals emphasized comprehension of information text and literary text. Teachers provided instruction in six comprehension strategies, including activating prior knowledge, questioning, searching for information, summarizing, organizing graphically, and structuring stories. In addition, teachers provided hands-on activities of science observations and experiments. For 12 weeks, the group with the high number of stimulating tasks performed more science observations, asked more questions, drew more representations of data, and more actively used their sensory systems of seeing, touching, and manipulating science objects or events. To measure

reading comprehension, they used a measure designed for the project, as well as the *Gates-MacGinitie Reading Comprehension Test*. Reading motivation was measured through self-reports and teachers' ratings of student motivation. At the beginning of the year, the motivation variable predicted students' reading comprehension on the *Gates-MacGinitie Reading Comprehension Test*. Results showed that the number of stimulating tasks increased motivation for reading, which was associated with increased reading comprehension on the standardized test. This present study, using the same instrument, supports that motivation impacts achievement.

Through the years, research has shown that efforts need to be made to foster literacy motivation in students, and this study contributes to that body of literature. The CORI studies described above, as well as this present study, directly link motivation to achievement. Components of programs integrating visual arts and reading, such as collaboration and making connections, are similar to the components identified in research as those that foster motivation of students.

#### Limitations to the Study

In this experiment, initial reading level was controlled by using an ANCOVA, with the pretest serving as the covariate. However, the fact that the pretest was similar to the posttest raised the possibility of a testing threat to internal validity. Although the forms were different, students in both groups had experience with the GMRT before and after the treatment period. Statistical regression may have also caused students' scoring at extremes on a measure to score nearer the mean the second time. Further, the total mean percentile rank for this study on the GMRT-S was 71.05, whereas the total mean percentile rank for Form T was 78.18, which indicated that this sample was already performing above average. A test

one level above the students' present grade may have been appropriate. A bigger sample size may have shown an effect on students who scored at extremes. The school that implemented VTS had been chosen as the experimental group because its teachers had been trained with this curriculum. Random assignment, therefore, could not be used.

Other variables that may have interfered with the results of this experiment included teachers' and students' attitudes towards art and the experiences they had with it. In addition, the researcher did not have knowledge of the demographics for the groups that participated in the study. All demographic information was general and came from each school's Strategic School Profile. Therefore, the presence of special populations, such as special education students and English Language Learners, may have affected the performance of the two groups. Furthermore, participants may have been involved in tutoring or other special programs that may have improved their scores. In regards to instrumentation, the GMRT is a general reading achievement test. The content of the GMRT may not have been related to the content taught in the VTS curriculum. Therefore, gains in reading performance may have occurred between the two groups that were not evidenced by the students' performance on the GMRT.

The results of this study are most generalizable to populations similar to the sample. Further studies using random selection and random assignment to groups must be done. This research might be replicated using participants from different grade levels and who come from communities with varying demographic profiles.

#### Implications of the Study and Suggestions for Additional Research

Research efforts have attempted to describe the effects of learning in the arts on academic achievement. Several arts programs have been shown to improve reading by

teaching reading skills with art projects. The purpose of this study was to contribute to this research base, as more empirical evidence is needed to support the claim of transfer. However, no statistical significance was found related to cognitive development when examining the reading achievement of students instructed with the VTS curriculum and those who were not. In regards to motivation, statistical significance supported that motivation impacted achievement positively, but there was no interaction between motivation (high or low) and instructional method (VTS or no VTS).

The research studies that have been conducted with integrating the visual arts with literacy are scarce, and they lack methodological rigor. For example, the meta-analyses described by Burger and Winner (2000a) contained few studies with control groups. This study included both an experimental and control group, and researchers examining transfer from art to reading should consider this to alleviate problems with methodology.

This study, which included an experimental group (students whose reading instruction was supplemented by VTS) and a control group (students whose reading instruction was not supplemented with an arts program), took place over the course of 9 weeks. Statistical significance may not have been found due to the complexity of visual arts training. Arts instruction may help students to focus their visual attention and notice form and detail, skills that take time to develop. Schools that participate in the VTS curriculum do so during a year-long basis, whereas this experiment lasted slightly over 2 months.

Research has also shown that when reading instruction is integrated with arts instruction, children can become more motivated to read. Although this research did not show that the VTS program is motivating, it did add to the body of research that shows that motivation affects achievement. Therefore, educators need to continue exploring ways to

motivate students for increased performance. Both measures of motivation and reading achievement are necessary to continue examining the interaction of the two. Conducting a motivation posttest may have also provided more information in this study, such as the possibility of students in the experimental group becoming more motivated to read after participating in the VTS curriculum. Further research should continue investigating art as a motivating entry point to reading, but other potential motivators should also be explored. Other interaction variables should also be examined. For example, there may be an interaction between instructional method and learning styles, as students may perform better when instructional method is related to their learning style preference.

VTS's effect might have been more powerful if the art prints studied were directly linked to content literature being read in class. For example, fourth graders reading literature on immigration may have understood this concept better if it had been explored through a visual print that depicted immigrants. In addition, the GMRT was a general test of reading ability. Future studies might use reading tests that more directly assess the content of lessons being presented. Further, this study was quantitative in nature. Qualitative studies in the field may also identify how integrating the arts with literacy may improve achievement and motivation.

## REFERENCES

- Anderson, R. C. (1984). Some reflections on the acquisition of knowledge. *Educational Researcher, 13*(9), 5-10.
- Arnheim, R. (1969). *Visual thinking*. Berkley, CA: University of California Press.
- Baker, L. & Scher, D. (2002). Beginning readers' motivation for reading in relation to parental beliefs and home reading experiences. *Reading psychology, 23*(4), pp. 239-269.
- Burger, K., & Winner, E. (2000). Instruction in visual art: Can it help children learn to read? *Journal of Aesthetic Education, 34*(3-4), 277-293.
- Burton, J., Horowitz, R., & Abeles, H. Learning in and through the arts: Curriculum implications. In E. B. Fiske (Ed.), *Champions of change: The impact of the arts on learning* (pp. 36-46). Washington, DC: Arts Education Partnership.
- Catchings, Y. P. (1981). A study of the effect of an integrated art and reading program on the reading performance of fifth grade children. Ph.D. dissertation., University of Michigan.
- Catterall, J. S., & Waldorf, L. (1999). Chicago arts partnerships in education: Summary evaluation. In E. B. Fiske (Ed.), *Champions of change: The impact of the arts on learning* (pp. 47-62). Washington, DC: Arts Education Partnership.
- Catterall, J. S. (1995). Different ways of knowing: 1991-1994 longitudinal study of program effects on students and teachers. Los Angeles: UCLA Graduate School of Education and Information Studies.
- “Children’s Art Carnival.” Retrieved December 3, 2006 from <http://childrensartcarnival.org>.

- Cole, J.E. (2003). What motivates students to read? Four literacy personalities. *The Reading Teacher*, 56(4), 326-336.
- Corwin, S. K. (1980). *Assumptions, implications, and consequences of New York State Education Department validation of "reading improvement through art"* (Report No. CS 005 342). Boston, MA: American Educational Research Association.
- Deasy, R. (Ed.). (2002). *Critical links: Learning in the arts and student academic and social development*. Washington, DC: Arts Education Partnership.
- DeJarnette, K. (1997). The arts, language, and knowing: An experimental study of the potential of the visual arts for assessing academic learning by language minority students. Unpublished dissertation. Los Angeles: University of California at Los Angeles.
- DeSantis, K., & Housen, A. (2001). *Teacher interview case study of the Thinking Through Art program*. Report presented to the Museum of Fine Arts, Boston.
- Dweck, C. S., & Elliott, E. (1983). Achievement motivation. In P. H. Mussen (Gen. Ed.) & E. M. Hetherington (Vol. Ed.), *Handbook of child psychology: Vol. IV: Social and personality development* (pp. 643-691). New York: Wiley.
- Eccles, J. (1983). Expectancies, values, and academic behaviors. In J.T. Spence (Ed.), *Achievement and achievement motives* (pp. 75-146). San Francisco: Freeman.
- Edmunds, K.M., & Bauserman, K.L. (2006). What teachers can learn about reading motivation through conversations with children. *The Reading Teacher*, 59(5), 414-424.
- Effland, A. (1990). *A history of art education: Intellectual and social currents in teaching the visual arts*. New York: Teachers College Press.

- Eisner, E. W. (1981). The role of the arts in cognition and curriculum. *Phi Delta Kappan*, 63(1), 48-52.
- Elley, W. B. (1992). *How in the world do students read?* Hamburg, Germany: International Association for the Evaluation of Educational Achievement.
- Fast, L. (2000). Investigating the use of children's artwork as an observation tool in early reading programs. *Visual Arts Research*. University of Illinois.
- Flood, J., Heath, S.B., & Lapp, D. (Eds.). (1997). *Handbook of research on teaching literacy through the communicative and visual arts*. New York: MacMillan.
- Flynn, P. (1979). *A plan for the improvement of reading skills and for the development of personal images through art*. Yale-New Haven Teachers Institute.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2005). *Educational research: An introduction* (7<sup>th</sup> edition). New York: Longman.
- Gambrell, L.B., Palmer, B.M., Codling, R.M., & Mazzoni, S.A. (1996). Assessing reading motivation. *The Reading Teacher*, 49(7), 518-533.
- Gardner, H. (1989). Zero-based arts education: An introduction to Arts PROPEL. *Studies in Art Education: A Journal of Issues and Research*, 30(2), 71-83.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology*, 77, 631-645.
- Gray, B. (1987). How 'natural' is natural language teaching: Employing holistic methodology in the classroom. *Australian Journal of Early Childhood* 12(4), 3-19.



- Green, S. B. & Salkind, N. J. (2005) *Using SPSS for Windows and Macintosh: Analyzing and understanding data*. New Jersey: Pearson Education, Inc.
- Greer, W. D. (1993). *Improving visual arts education*. Report presented on the Getty Center for Educators on the Visual Arts, Los Angeles.
- Greene, M. (2001). *Variations on a blue guitar: The Lincoln Center lectures on aesthetic education*. New York: Teachers College.
- Guerrero, F. (1990). Children's art carnival creative reading program, 1988-89. Brooklyn, NY: New York City Board of Education. ERIC Document # ED316839.
- Guthrie, J. T., Anderson, E., Alao, S., & Rinehart, J. (1999). Influences of concept-oriented reading instruction on strategy use and conceptual learning from text. *The Elementary School Journal*, 99(4), 343-366.
- Guthrie, J. T., McCann, A., Hynd, C., & Stahl, S. (1998). Classroom contexts promoting literacy engagement. In J. Flood, S. B. Heath, & D. Lapp (Eds.), *Handbook for literacy educators*. New York: MacMillen.
- Guthrie, J.T., van Meter, P.V., McCann, A.D., Wigfield, A., Bennett, L., Poundstone, D. et al (1996). Growth of literacy engagement: Changes in motivations and strategies during concept-oriented reading instruction. *Reading Research Quarterly*, 30, 306-332.
- Guthrie, J. T., Schafer, W., Wang, Y., & Afflerbach, P. (1993). *Influences of instruction on reading engagement: An empirical exploration of a social-cognitive framework of reading activity* (Research Report No. 3). Athens, GA: National Reading Research Center.

- Harter, S., Whitesell, N. R., Kowalski, P. (1992). Individual differences in the effects of educational transition on young adolescent's perceptions of competence and motivational orientation. *American Educational Research Journal*, 29, 777-807.
- Housen, A.(2001). *Methods for assessing transfer from an art-viewing program*. Paper presented at the Annual Meeting of the American Educational Research Association, Seattle, Washington.
- Housen, A., & Yenawine, P. (2000). *Visual thinking strategies: Learning to think and communicate through art*. New York, NY: Visual Understanding in Education.
- Housen, A.(1992). Validating a measure of aesthetic development for museums and schools. *ILVS Review*, 2 (2).
- Housen, A. (1987). Three methods for understanding museum audiences. *Museum studies Journal*, Spring-Summer.
- Kardash, C. A. M., & Wright, L. (1987). Does creative drama benefit elementary school students: A meta-analysis. *Youth Theatre Journal*, 1(3), 11-18.
- Kiefer, B. (1997). The visual arts made accessible through picture books. In Flood, Heath, & Lapp (Eds.), *Research on teaching literacy through the communicative and visual arts* (820-821). New York: Macmillan.
- Kucan, L., & Beck, I. L. (1997). Thinking aloud and reading comprehension research: Inquiry, instruction, and social interaction. *Review of Educational Research*, 67(3), 271-299.
- Lidstone, J. (1979). *Reading improvement through the arts*. New York: New York State Department of Education.

- Long, S.A., Winograd, P.N. & Bridge, C.A. (1989). The effects of reader and text characteristics on imaginary reported during and after reading. *Reading Research Quarterly, 14*, 353-372.
- Luftig, R. L. (1994). The schooled mind: Do the arts make a difference? An empirical evaluation of the Hamilton Fairfield SPECTRA+ program, 1992-1993. Oxford, OH: Center for Human Development, Learning, and Teaching.
- MacGinitie, W.H., MacGinitie, R.K., Maria, K., & Dreyer, L.G. (2000). *Gates-MacGinitie reading tests levels 4-6* (Forms S & T). Itasca, IL: The Riverside Publishing Company.
- Mantione, R. D., & Smead, S. (2003). *Weaving through words: Using the arts to teach reading comprehension strategies*. Newark, DE: International Reading Association.
- McKenna, M. C., & Kear, D. J. (1990). Measuring attitude toward reading: A new tool for teachers. *The Reading Teacher, 43*, 626-639.
- McKeown, M. G., & Beck, I. L. (2001). Designing questions toward thinking and understanding rather than answers. *Perspectives, 27*(2), 21-24.
- Morrow, L. M. (1990). Preparing the classroom environment to promote literacy during play. *Early Childhood Research Quarterly, 5*, 537-554.
- National Commission on Excellence in Education. (1983). *A nation at risk: An imperative for educational reform*.
- O'Brien, B. C. (1982). Integrating art and reading – Learning to read through the arts. In Zambder, M., *Learning to read through the arts: Its emergence and context* (pp. 31-33). ERIC Document # ED 378 103.

- O'Brien, B. C. (1977). *Learning to read through the arts and humanities: A reading and art program*. New York, NY: International Reading Association.
- O'Flahavan, J., Gambrell, L. B., Guthrie, J., Stahl, S., & Alvermann, D. (1992). Poll results guide activities of research center. *Reading Today, 10*,12.
- Paivio, A. (1971). *Imagery and verbal processes*. New York: Holt, Rinehart, & Winston.
- Paivio, A. (1990). *Mental representations: A dual coding approach*. New York: Oxford University Press.
- Pearson, P.D., & Fielding, F. (1991). Comprehension instruction. In R. Barr, M.L., Kanil, P. B., Mosenthal, & P. D. Pearson (Eds.) *Handbook of reading research, 2* (815-860). White Plains, NY: Longman.
- Petrosko, J. M. (1997). *Different ways of knowing study: Implementation of student-centered teaching and learning practices and student assessment results for research demonstration site (RDS) schools participating in different ways of knowing*. Kentucky: Galef Institute
- Piro, J.M. (2002). The picture of reading: Deriving meaning in literacy through image. *The Reading Teacher, 56*(2), 126-134.
- Powell, R., McIntyre, E., & Rightmyer, E. (2006). Johnny won't read and Susie won't either: Reading instruction and student resistance. *Journal of early childhood Literacy, 6*, 5-31.
- Schunk, D. (1985). Self-efficacy and school learning. *Psychology in the Schools, 22*, 208-223.
- Schwartz, S. (1988). A comparison of componential and traditional approaches to training reading skills. *Applied Cognitive Psychology, 2*(3), 189-201.

- Shannon, P. (1982). A retrospective look at teachers' reliance on commercial reading materials. *Language Arts*, 59, 844-853.
- Siegal, M. (1995). More than words: The generative power of transmediation for learning. *Canadian Journal of Education*, 20(4), 455-475.
- Smithrim, K., & Upitis, R. (2005) Learning through the arts: Lessons of engagement. *Canadian Journal of Education*, 28(1-2), 109-127.
- Sonnenschein, S. & Munsterman, K. (2002). The influence of home-based reading interactions on 5-year-olds' reading motivations and early literacy development. *Early Childhood Research Quarterly*, 17, 317-338.
- Sternberg, R. J., & Williams, W. M. (2002). *Educational psychology*. Boston, MA: Allyn & Bacon.
- Sweet, A. P., Guthrie, J. T., & Ng, M. (1998). Teacher perceptions and student reading motivation. *Journal of Educational Psychology*, 90, 210-224.
- Taylor, B. B. (1979). The Children's Art Carnival: A city resource. *School Arts*, 79(2), 52-54.
- Tishman, S., MacGillivray, D., & Palmer, P. (1999). Investigating the educational impact and the potential of the museum of modern art's visual thinking curriculum: Final report. New York: The Museum of Modern Art.
- "Visual Arts." Retrieved August 29, 2006 from <http://wikipedia.org>
- Visual Understanding in Education. (2003). Report to the Museum of Fine Arts, Boston on current Massachusetts learning standards and curriculum frameworks and the thinking through art program. New York: Author.

Visual Understanding in Education. (2005). Selected directory of studies. New York:

Author.

Vygotsky, L. (1962). *Thought and language*. Cambridge, MA: MIT Press.

Wigfield, A., Guthrie, J.T., Tonks, S. & Perencevich, K.C. (2004). Children's motivation for reading: Domain specificity and instructional influences. *Journal of Educational Research*, 97, 299-309.

Wigfield, A., & Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology*, 89(3), 420-432.

Wilhelm, J.D. (2003). *Reading is seeing*. New York: Scholastic Inc.

Wilhem, J. (1995). Reading is seeing: Using visual response to improve the literary reading of reluctant readers. *Journal of Reading Behavior*, 27(4) 467-503.

Wolf, S. A. (2006). The mermaid's purse: Looking closely at young children's art and poetry. *Language Arts*, 84(1), 10-20.

Yenawine, P. (1997). Thoughts on visual literacy. In Flood, Heath, & Lapp (Eds.), *Research on teaching literacy through the communicative and visual arts*. New York: Macmillan.

Zambder, M. (1994). Learning to read through the arts: Its emergence in context. Dissertation: New York University.

## Appendix A: Basic VTS at a Glance

# VUE

Visual Understandings in Education  
119 West 23<sup>rd</sup> Street, Suite 905  
New York, NY 10011  
212-253-9007, (f) 212-253-9139, [www.vue.org](http://www.vue.org)

## Basic VTS at a Glance

by Abigail Housen and Philip Yenawine

### Starting the Lesson

Introduce the VTS: it allows students to examine art, to think, to contribute observations and ideas, to listen, and to build understandings together. Ask students to recall these aspects of the process often.

Call students' attention to the first image. Always give students a moment to look in silence before you invite them to speak.

### Asking the Questions

After they have examined the image, ask the question, **What's going on in this picture?** Once students have learned this question, use variations.

Whenever students make a comment that involves an interpretation (a comment that goes beyond identification and literal description), respond first by paraphrasing, and then ask, **What do you see that makes you say that?** Once students understand the point of this question, begin to vary it.

In order to keep students searching for further observations, frequently ask them, **What else can you find?** Again, variations are useful once students are familiar with the point of the question.

### Responding to Students' Comments

**Listen** carefully to students, making sure that you hear all of what they say and that you understand it accurately.

**Point** to what they mention in the slide (print). Be precise, even when it is a comment that has been repeated.

Use encouraging body language and facial expressions to nurture participation.



**Paraphrase** each comment. Change the wording, but not the meaning of what is being said. In rephrasing, demonstrate the use of proper sentence construction and rich vocabulary to assist students with language.

**Accept each comment neutrally.** Remember that this process emphasizes a useful pattern of thinking, not right answers. Students are learning to make detailed observations, sorting out and applying what they know. Articulating their thoughts leads to growth even when they make mistakes.

**Link** answers that relate, even when there are disagreements. Show how the students' thinking evolves, how some observations and ideas stimulate others, how opinions change and build.

### **Concluding the Lesson**

Thank students for their participation. Tell them what you particularly enjoyed. Encourage them to think of viewing art as an ongoing, open-ended process. Avoid summaries; linking throughout is enough to show how conversations build.

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## Appendix B: Motivation to Read Profile: Reading Survey

## Motivation to Read Profile: Reading Survey

Name \_\_\_\_\_ Date \_\_\_\_\_

Sample 1: I am in \_\_\_\_\_.

\_\_\_\_\_ Second grade      \_\_\_\_\_ Fifth grade  
\_\_\_\_\_ Third grade      \_\_\_\_\_ Sixth grade  
\_\_\_\_\_ Fourth grade

Sample 2: I am a \_\_\_\_\_.

\_\_\_\_\_ boy  
\_\_\_\_\_ girl

1. My friends think I am \_\_\_\_\_.

\_\_\_\_\_ a very good reader  
\_\_\_\_\_ a good reader  
\_\_\_\_\_ an OK reader  
\_\_\_\_\_ a poor reader

2. Reading a book is something I like to do.

\_\_\_\_\_ Never  
\_\_\_\_\_ Not very often  
\_\_\_\_\_ Sometimes  
\_\_\_\_\_ Often

3. I read \_\_\_\_\_.

\_\_\_\_\_ not as well as my friends  
\_\_\_\_\_ about the same as my friends  
\_\_\_\_\_ about the same as my friends  
\_\_\_\_\_ a lot better than my friends

4. My best friends think reading is \_\_\_\_\_.

\_\_\_\_\_ really fun  
\_\_\_\_\_ fun  
\_\_\_\_\_ OK to do  
\_\_\_\_\_ no fun at all

5. When I come to a word I don't know, I can \_\_\_\_\_.

- almost always figure it out
- sometimes figure it out
- almost never figure it out
- never figure it out

6. I tell my friends about good books I read.

- I never do this.
- I almost never do this.
- I do this some of the time.
- I do this a lot.

7. When I am reading by myself, I understand \_\_\_\_\_.

- almost everything I read
- some of what I read
- almost none of what I read
- none of what I read

8. People who read a lot are \_\_\_\_\_.

- very interesting
- interesting
- not very interesting
- boring

9. I am \_\_\_\_\_.

- a poor reader
- an OK reader
- a good reader
- a very good reader

10. I think libraries are \_\_\_\_\_.

- a great place to spend time
- an interesting place to spend time
- an OK place to spend time
- a boring place to spend time

11. I worry about what the other kids think about my reading \_\_\_\_\_.

- every day
- almost every day
- once in a while
- never

12. Knowing how to read well is \_\_\_\_\_.

- not very important
- sort of important
- important
- very important

13. When my teacher asks me a question about what I have read, I \_\_\_\_\_.

- can never think of an answer
- have trouble thinking of an answer
- sometimes think of an answer
- always think of an answer

14. I think reading is \_\_\_\_\_.

- a boring way to spend time
- an OK way to spend time
- an interesting way to spend time
- a great way to spend time

15. Reading is \_\_\_\_\_.

- very easy for me
- kind of easy for me
- kind of hard for me
- very hard for me

16. When I grow up I will spend \_\_\_\_\_.

- none of my time reading
- very little of my time reading
- some of my time reading
- a lot of my time reading

17. When I am in a group talking about stories, I \_\_\_\_\_.

- almost never talk about my ideas
- sometimes talk about my ideas
- almost always talk about my ideas
- always talk about my ideas

18. I would like for my teacher to read books out loud to the class \_\_\_\_\_.

- every day
- almost every day
- once in a while
- never

19. When I read out loud I am a \_\_\_\_\_.

- poor reader
- OK reader
- good reader
- very good reader

20. When someone gives me a book for a present, I feel \_\_\_\_\_.

- very happy
- sort of happy
- sort of unhappy
- unhappy

Gambrell, L.B., Palmer, B.M., Codling, R.M., & Mazzoni, S.A. (1996). Assessing reading motivation. *The Reading Teacher*, 49(7), 518-533.

## Appendix C: Gates-MacGinitie Reading Tests

Sample Vocabulary (Forms S and T)

**V-1. a big garage**

- K place for cars
- L machine
- M sidewalk
- N covered porch
- O cloth sack

**V-2. They will close it.**

- P stay near
- Q begin
- R make
- S shut
- T go past

Sample Comprehension (Forms S and T)

Sometimes – not very often – we get two full moons in one month. That second full moon is called a “blue moon.” No one knows why. Now we say “once in a blue moon” to mean “once in a long time.”

**C-1. To be a “blue moon,” the moon must be**

- I dark.
- J long.
- K blue.
- L full.

**C-2. What is it that no one knows?**

- M What the name is.
- N Who uses the name.
- O Where the name came from.
- P What the name means.



## Appendix D: ANCOVA Results With Middle Removed

*Tests of Homogeneity of Variances*

*Gates-MacGinitie Reading Test Form T Total Scores*

Levene Statistic	df1	df2	Significance
1.887	3	81	.138

*Gates-MacGinitie Reading Test Form T Vocabulary Scores*

Levene Statistic	df1	df2	Significance
.572	3	81	.635

*Gates-MacGinitie Reading Test Form T Comprehension Scores*

Levene Statistic	df1	df2	Significance
1.259	3	81	.294

*Gates-MacGinitie Test of Between-Subjects Effects Total Scores*

	Sum of Squares	df	Mean Square	<i>F</i>	Sig.
Pre-test Covariate	10600.29	1	10600.29	173.79	0.00
Motivation Scale	140.69	1	140.69	2.31	.133
Group	71.83	1	71.83	1.18	.281
Group*Motivation Scale	7.64	1	7.64	.125	.724
Error	4879.56	80	60.99		
Total	450312.00	85			
Corrected Total	20548.05	84			

*Gates-MacGinitie Test of Between-Subjects Effects Vocabulary Scores*

	Sum of Squares	df	Mean Square	<i>F</i>	Sig.
Pre-test Covariate	2101.01	1	2101.01	119.46	0.00
Motivation Scale	0.83	1	0.83	0.05	0.83
Group	0.41	1	0.41	0.02	0.88
Group*Motivation Scale	1.51	1	1.51	0.09	0.77
Error	1407.06	80	17.59		
Total	105970.00	85			
Corrected Total	4280.59	84			

*Gates-MacGinitie Test of Between-Subjects Effects Comprehension Scores*

	Sum of Squares	df	Mean Square	<i>F</i>	Sig.
Pre-test Covariate	3065.99	1	3065.99	82.42	0.00
Motivation Scale	315.19	1	315.19	8.47	0.01
Group	35.42	1	35.42	0.95	0.33
Group*Motivation Scale	0.86	1	0.86	0.02	0.88
Error	2976.04	80	37.20		
Total	121520.00	85			
Corrected Total	8169.22	84			

## Appendix E: IRB and Consent Forms

WESTERN CONNECTICUT STATE UNIVERSITY  
**Human Subjects Research Review Form**

**Principal Investigator** Rima Zelvis

Department Doctoral Student – Instructional Leadership

Address signed form should be sent to 109 Stonybrook Road, Waterbury, CT 06705

E-mail rrzelvis@aol.com Phone number: (203) 757-3678

New research project  Continuation  Modification  Teaching

Exempt Review (attach a completed copy of the “Application for Exemption”)

Expedited/Full Review

To complete this form, please follow the instructions in sections A and B.

=====

**CHECKLIST FOR ATTACHMENTS:**

N/A Completed Application for Exemption (if claiming exemption)

Answers to A1 through A6

Survey or questionnaire

Informed consent form

Student’s current NIH training certificate

on file Instructor’s current NIH training certificate

on file Chair’s current NIH training certificate

=====

The **department chair** and the **principal investigator (PI)** must sign this form. If the PI is a student, his/her faculty supervisor must also sign.

**Assurance of continued compliance with regulations regarding the use of human subjects.** I certify that the information provided for this project is accurate. If procedures for obtaining consent of subjects change, or if the risk of physical, psychological, or social injury increases, or if there should arise unanticipated problems involving risk to subjects or others, I shall promptly report such changes to the Institutional Review Board. I shall report promptly unanticipated injury of a subject to my department chair and to the Institutional Review Board.

\_\_\_\_\_  
Principal Investigator’s Signature Date

\_\_\_\_\_  
Faculty Supervisor’s Signature (if PI is a student) Date

\_\_\_\_\_  
Department Chair’s signature Date

=====

**Committee Action:**

Approved through exempt review  Approved by full committee review

Approved through expedited review  Not approved; clarification  
modification required

\_\_\_\_\_  
IRB Chair’s Signature Date

**A. Instructions for completing the HUM-1 Form (attach answers):**

1. Describe the characteristics of the subject population (anticipated number, age ranges, gender, ethnic background, and health status.)

Subjects are approximately 160 fourth grade students in eight classrooms at two suburban elementary schools in an upper middle class school system in Connecticut. Students are relatively evenly mixed in terms of gender. The students are primarily white, with less than 10% of the district's population being minority. Approximately 3-5 students in each of the classrooms are identified as special education students. All students with informed consent will be included in the study. There will be approximately 80 students receiving the treatment, while another 80 students will be part of the control group.

2. Explain the rationale for use of special classes of subjects (children, mentally disabled, elderly, prisoners, or others).

The purpose of this study is to examine the Visual Thinking Strategies (VTS) curriculum and its effect on reading achievement of students with various motivational levels. Integrating the arts into reading instruction at the elementary level has given rise to several programs, but more literature is needed to investigate the effectiveness of these programs. The VTS program has been designed for grades K-5. While the subjects are children, there are no other special classes of subjects.

3. Identify the records or data to be obtained for individually identifiable living human subjects.

A public domain instrument, the Motivation to Read Profile, will be used to measure reading motivation, while the Gates-MacGinitie Reading Test, which will be purchased by the researcher's school, will be used to measure reading achievement. After each classroom teacher administers each instrument to participating students, an objective researcher, not working in either of the schools or involved with this study will record the scores on a data recording form and give this information to the researcher.

4. Describe plans for recruitment of subjects and the consent procedures to be followed, or explain why consent is not needed.

Subjects will be recruited from eight classrooms from two of the four elementary schools in the region. Consent forms will be sent home to parents and guardians. Random assignment to groups is not possible for this research study since school personnel are choosing to participate, in advance, in either the treatment or the control groups.

5. Describe safeguards to assure anonymity and voluntary participation of subjects. In the case of student subjects, indicate that failure to participate in or withdrawal from the project will not affect class grade.

Information provided by subjects will remain confidential. The researcher will only see the scores after a code is assigned to each subject, by an objective researcher. The classroom teacher will not know the scores of students during the study. Failure to participate in the study or withdrawal from the study will not impact the student's grade.

6. "Subject at risk" means any individual who may be exposed to the possibility of injury, including physical, psychological, or social injury, as a consequence of participation as a subject in any research, development, or related activity that departs from the application of those established and accepted methods. [45CFR 46.3(b)]

No subject will be at risk for any physical, psychological, or social injury. If the instructional curriculum researched is found to be effective, it will be shared with the participants in the control group.

**B. Answer the following (if you answer yes to either question, the protocol requires full review):**

- Does your project involve **risk of physical injury** to subjects?

Yes  No

(If yes, describe the nature of the risk, the justification for undertaking the risk, and the procedures used to obtain the subject's informed consent to take the risk.)

- Does your project involve **risk of psychological or social injury** to human subjects?

Yes  No

(If yes, describe the nature of the risk, the justification for undertaking the risk, and the procedures used to obtain the subject's informed consent to take the risk.)

**NOTE:** If participation in the research involves physical, psychological, and/or social risk to the subject, the informed consent form **must say so in bold type**.

**Please send the completed form (if the protocol requires full review, send 12 copies) to: Director of Grant Programs, 321 Warner Hall. If you have questions, call 7-8281.**

6/26/06

Consent to Participate in Doctoral Dissertation Research Study  
The Effects of Visual Thinking Strategies on Reading Achievement  
of Students with Varying Levels of Motivation

May 2007

Dear Parent or Guardian,

My name is Rima Zelvis, and I am the reading consultant at XXXXX School. I am also enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. A requirement of the program includes research study dissertation work. I have chosen to research the impact of visual arts instruction on reading comprehension. I will examine the Visual Thinking Strategies curriculum and its effect on reading achievement of students with varying levels of motivation.

I have chosen this research topic because of our region's dedication to and value of both reading and the arts. It is important for us to better understand how visual arts instruction may enhance reading comprehension and how motivation affects reading achievement.

My research will consist of administering a *Motivation to Read Profile* and the *Gates-MacGinitie Reading Test* to all fourth grade students at XXXXX and XXXXX. These two measures will be used to determine motivation and reading levels, but they will not affect your child's grades in any way. After a nine week period, during which fourth grade students at XXXXX will receive reading instruction supplemented by the Visual Thinking Strategies curriculum, all students will be assessed a second time with an alternate form of the *Gates-MacGinitie Reading Test*. Although students at XXXXX will not be using the curriculum, I will share findings that will benefit all students with classroom teachers at both schools. At no point of this research will reading instruction using XXXXX materials and guided reading resources be interrupted. No school data will be collected on your child during this project.

This project has been approved by XXXXX, including XXXXX, XXXXX, and XXXXX, and I will hold all information received in strict confidence. All data will be reported in group form. At no time will names be reported for the data I have collected. It is my hope that my research will be able to provide insight on instruction that benefits students and their learning, and upon request, I will share the results of the research. Your participation in the study is totally voluntary, and you are free to remove your child from the study at any time.

If you have any questions, or would like to speak with me further about the project, please contact me at XXXXX School XXXXX or via email at XXXXX. If you agree to have your child participate in the research, please complete the attached form, and return it to your child's teacher by May 30, 2007.

Thank you for your support.

Sincerely yours,

Rima Zelvis



Western Connecticut State University  
Institutional Review Board

Consent to Participate in Research Study

The Effects of Visual Thinking Strategies on Reading Achievement  
of Students with Varying Levels of Motivation

I, \_\_\_\_\_, the parent/legal guardian of the minor named below, acknowledge that the researcher has explained to me the purpose of this research, identified any risks involved and offered to answer any questions I may have about the nature of my child's participation. I freely and voluntarily consent to my child's participation. I understand all information gathered during this project will be completely confidential. I also understand that a copy of this consent form has been provided for my files.

Name of Minor: \_\_\_\_\_

School: \_\_\_\_\_

---

Signature of Parent/Legal Guardian

Date