Capitalizing on Multiple Intelligences
to Enhance Vocabulary Development
in a Sixth Grade Classroom

Thesis

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ABSTRACT

This study was designed to determine if Multiple Intelligence Theory is a more effective approach to vocabulary development than direct instruction. Eighty Sixth Grade students from a suburban school district in Western New York were the subjects for this study. In order to determine the students' prior knowledge of the 60 words to be used in the study, the students were given a pretest. The study was conducted over six weeks with the students receiving a new vocabulary list consisting of ten words from the pretest each week. During three of the weeks the students were taught via direct instruction. During the remaining three weeks a multiple intelligence approach was employed. The amount of time during the school day devoted to vocabulary instruction was the same regardless of instructional approach. Specific instructional activities and lessons for each approach are outlined in the thesis. At the end of each week a posttest was given to the students. The researcher evaluated the growth made during each week and searched for a statistically significant difference between the means of the two approaches. The results forded that both methods were indeed effective in enhancing vocabulary growth in sixth grade students. However, when comparing the means of the two approaches, there was a statistically significant difference in favor of Multiple Intelligence Theory.

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CHAPTER I

INTRODUCTION

Purpose

This study investigated whether teaching with a multiple

intelligences perspective was more effective in enhancing sixth grade

vocabularies than a direct instruction approach.

Need for the Study

Numerous studies have determined that vocabulary knowledge

has a significant impact on later academic achievement (Anderson &

Freebody, 1981; Becker, 1977; Stanovich, 1992). In light of this

research various strategies and theories have been proposed to help

students develop their vocabularies. Such direct instruction practices

as semantic mapping, morphemic analysis, and dictionary use have

been strategies employed in the past. Built on the premise that the

learning of language and its respective features is a highly

linguistic/verbal skill that requires a great deal of memorization,

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these strategies have been readily accepted. However, all students do not learn the same way. For those students whose strengths lie in areas other than the verbal or linguistic realms, vocabulary learning through these direct instruction approaches may be extremely challenging. Indeed, vocabulary learning is an individual occurrence, with each student having a different word bank, reading level, and vocabulary strategy skills (Loucky, 1995). Thus, when considering the variety of learning styles, ability levels, and individual skills, the teacher's challenge to foster vocabulary development in the classroom is boundless.

Although research has shown that there is no best way for an instructor to approach vocabulary learning, a variety of methodologies should be considered. The teacher's positive approaches to vocabulary learning are also likely factors in student mastery of the required vocabulary lists. Gardner (1983) comments, "Only if we expand and reformulate our view of what counts as human intellect will we be able to devise more appropriate ways of assessing it and more effective ways of educating it" (p. 4).

In 1983 the view of intellect was redefined in Howard Gardner's *Frames of Mind*, and the Theory of Multiple Intelligences (hereafter MI theory) was born. MI theory proports that the traditional

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concept of intelligence based on ones' linguistic and analytical abilities is too limited and that people can be "smart" in many different ways. MI theory enables the teacher to employ a broader range of activities to reach each student's manner of understanding.

It was found in a 1997 study by Coleman, Perry, Pawlicki, Murray, and Wemple that teaching vocabulary to the multiple intelligences made foreign language classes more interesting for teacher and students alike. The subjects, from various cultural and socioeconomic backgrounds ranging from lower to upper-middle class lived in and around Chicago, Illinois. They were students from city and suburban public and Catholic schools. The action research project evaluated a program for decreasing the gap in achievement levels among primary and secondary level students. The subjects worked in groups, sang or listened to songs, made structures, and expressed themselves artistically. Even more importantly, the students thoroughly enjoyed what could have been tedious and difficult tasks (1997). Based on teacher interviews, paper and pencil tests, and standardized tests, the subjects showed an overall improvement in their academic achievement. At the semester's end, less than 6% were below average in their curriculum work.

Sixth grade is a highly transitional year for language learners. It is allegedly a "make or break" year, one in which students can make leaps and bounds or fall through the cracks. Since vocabulary knowledge is such a crucial element of their language acquisition, teachers should be sure to help these fledgling language users build their vocabularies as effectively and accurately as possible. The need for the study was to investigate whether using MI theory in a sixth grade language arts classroom was more effective in teaching new vocabulary than the direct teaching approach.

CHAPTER II

REVIEW OF LITERATURE

Purpose

This study investigated whether teaching with a multiple intelligences perspective was more effective in enhancing sixth grade vocabularies than a direct instruction approach.

Review of Literature

The Theory of Multiple Intelligences

Education today is very concerned about intelligence. Indeed, many public school districts and universities rely on the information gleaned from standardized IQ tests and entrance exams to predict how an individual will perform. However, many of these tests were found to be invalid and unreliable in determining a student's potential, primarily due to the misconception of what "intelligence" truly is. Most definitions of intelligence focus on the capacities that are important for success in school. The standing Piagetian view of

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intelligence is that intellectual development involves a single

genetically determined capacity (Gardner & Hatch, 1989). This

capacity maintains a highly verbal and linguistic basis. However, in

1975 psychologist Howard Gardner concluded that perhaps there was

a divergence of intellectual capacities. Through studies of his own,

Gardner discovered that the brain is, in fact, multidimensional, and

that "the human species has evolved to be able to analyze at least

seven types of information in the world, ranging from language to

music to data about other persons and the self." (Gardner, 1995,

p.17). Recent studies conducted by Gardner have revealed yet two

other intelligences, naturalistic and existential (Kurtzman, 1999).

Thus was born the Theory of Multiple Intelligences. It

maintains that we all possess several different and independent

capacities for solving problems and creating products (Gursky, 1991).

Gardner's 1983 *Frames of Mind* outlines each of the intelligences:

> Verbal/Linguistic - ability to use written or oral language, sensitive to order and nuances of words

> Musical/Rhythmic - ability to create musical and rhythmic patterns, sensitive to pitch, rhythm, and timbre of sounds

> Visual/Spatial - ability to comprehend and interpret the visual world through pictures or sculptures

> Logical/ Mathematical - ability to reason deductively or inductively and recognize abstract relationships

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Bodily/Kinesthetic - ability and talent to use one's body to solve problems, make things, and convey ideas or emotions

Interpersonal - ability to reach out and work with others, sensitive to other's goals and intentions

Intrapersonal - reflecting on one's own goals, emotions, and intentions

*Naturalistic - ability to recognize flora/fauna and make distinctions in the natural world

*Existential - capacity to think in terms of large issues (i.e. religious or spiritual matters)

The development of each intelligence depends on how an individual is nurtured. Indeed, recent research has disproved the misconception that all intelligence is fixed, and has determined that these intelligences can be nurtured and developed (Chapman, 1993). Gardner claims that "all of us possess each of the intelligences, but no two individuals exhibit exactly the same profile of intellectual strengths and weaknesses." (1995). At present Gardner has pinpointed nine intelligences, and believes that there may be more intelligences to explore. He claims that the number, however, isn't crucial to the basis of MI theory; it is the acknowledgment that no two people think in exactly the same way, and everyone has a different blend of intelligences in their mind (Kurtzman, 1999).

MI theory in the Classroom

Research indicates that changes need to be made in present day teaching methods (Gardner, 1993). Many lessons today are conducted in the same manner as those near the dawning of the American school system in the late 1800's. It appears that tradition has taken hold of our teaching methods, and has limited our ability to effectively enrich our student's lives with what is relevant today. Armstrong claims that, "In traditional education, we try to remake children to get them to learn in our way. In fact, we need to remake the way we teach so that it fits the kids." (Kennedy, 1994, p. 59).

Teachers who are using traditional methods often find their students bored, inattentive, and lacking in motivation as a result of minimal stimuli and/or few participation opportunities for students. In order to remedy these detrimental classroom behaviors, many teachers are attempting to seek out methods to engage children in active learning strategies that will enhance their retention of material presented.

Gardner's new conceptualization of intelligence converged with the need for varied teaching strategies. Gardner's *Frames of Mind*

was not intended to be a book about education. However, teachers of young children and special educators have capitalized on the numerous implications that the use of MI theory will help activate better student engagement (Naffziger, Steele, & Varner, 1998) and have begun to engage in activities that draw on their students' strengths and interests.

Sixteen years after the unmasking of his theory, Gardner's *The Disciplined Mind* (1999) articulates the applicable nature of MI theory in the classroom. He proposes that effective education should be constructed upon two foundations: 1) educators need to recognize the difficulties that students face in attainting a genuine understanding of important topics and concepts, and 2) teachers need to take into account the differences among minds, and as far as possible, fashion an education that can reach the infinite variety of students. Such an undertaking can be assisted by "MI perspective" in that it can provide powerful points of entry, offer apt analogies, and provide multiple representations of the central or core ideas of a topic (Gardner, 1999).

Jordan's study (as cited in Naffziger, Steele, & Varner, 1998) found that MI theory emphasizes students' abilities rather than disabilities; MI theory entails not only what a student knows but also what a student can do. In addition, Naffziger and associates (1998) found that the use of MI approach allows students to master and use their intelligence in the way they are most comfortable. It provides students with choice, a sense of ownership, and multiple paths to use their strengths to accomplish a goal. Not all students learn in the same way, thus supporting the case for plurality in intellect (Gardner, 1993).

Traditionally, most diagnostic tests of "Intelligence" utilize only linguistic and logical skills, and are placed on a pedagogical pedestal in our schools. However, an "exclusive focus on linguistic and logical skills in formal schooling can short-change individuals with skills in other intelligences." (Walters & Gardner, 1984). The importance of the MI theory to curriculum, instruction, and assessment is that it provides opportunities for all students to learn to achieve in their own special ways (Teele, 1996).

Not all individuals in the field of education are sold on

Gardner's proposed MI theory. In her 1999 article of *Policy Review,*

"The Schools They Deserve: Howard Gardner and the Remaking of

Elite Education," Eberstadt proposes that Gardner's theory may be

just one more educational experiment that school boards across the

country are seizing in hopes of improving student achievement. She

also propounds that the theory is just that--theory. In fact,

psychologist Jerome Bruner, in the *New York Review of Books* (cited

in Eberstadt, 1999) concluded that Gardner's "intelligences" were "at

best useful fictions" (p. 5). This opinion was echoed by Robert J.

Sternberg of Yale who observed that "there is not even one empirical

test of the theory" (p. 5).

A broadening of the school curriculum will need to occur if

students are to develop their full potential. They will need to be

introduced to a wide variety or activities and materials. However, this

does not mean that the traditional goals will be dismissed. It is

simply a matter of changing the manner in which they are achieved.

MI theory does suggest that there may be more than one way to

achieve those goals (White, Blythe, & Gardner, 1992).

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As a result of each student having different strengths for experiencing the world, a presentation of the curriculum which emphasizes language and logic will not be equally successful for all students. Each student will thrive depending on how he or she experiences the new materials. Some students need visual and physical representations of new concepts. Some prefer abstract mind-work, and others need ideas explained verbally in a variety of ways. Other students work best when they have a chance to talk their ideas over with another person (White, Blythe, & Gardner, 1992). Efforts to match standard curriculum and each student's predilections are often difficult, but progress can be achieved with the efforts of teachers and students. The bottom line is teachers need to take an active role by altering their presentations of the curriculum to fit the needs of a wider range of students.

Vocabulary Development

One of the best established relationships in the field of literacy is that between students' vocabulary knowledge and their reading comprehension (Anderson & Freebody, 1981; Stanovich, 1992). A 1977 study conducted by Becker development (cited in Carnine, Silbert, & Kameenui, 1997) found that vocabulary size was directly

linked to the academic achievement of disadvantaged students, and thus was among the first to highlight the significance of vocabulary. He contended that the primary cause of academic failure of disadvantaged students between grades 3 and 12 was a deficiency in their vocabularies. Since this discovery, many studies have been conducted concerning vocabulary development, yet, a single best teaching method has yet to be identified (Beck & McKeown, 1991).

However, a 1999 research paper by Templeton and Pikulski has determined that effective vocabulary instruction includes three major components: 1) wide reading that is enhanced through teaching independent word learning strategies, morphology, and dictionary use, 2) direct instruction, and 3) building an interest in words. The authors state that "underlying these three components is a fundamental relationship between words and the concepts they represent" (p.2).

Expanding one's vocabulary and learning how to communicate effectively is integral to becoming a proficient language user. Learning language requires a great deal of practice and retention. Therefore, teachers must carefully consider how to represent best

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new vocabulary input so as to make it most easily remembered.

Loucky (1995) suggests presenting new terms by using visual

representation, both graphic and schematic arrangement, and also

auditory memory clues. Rupley, Logan, and Nichols (1999) advocate

writing word definitions and learning words solely through contextual

reading and experience as a balanced vocabulary approach.

McGavin's 1990 findings further advocate that vocabulary instruction

should take place in its natural contexts of speech, writing, and

literature, and that a lack of context clues is a major obstacle for

students (1990).

Recent studies have shown that techniques such as semantic

mapping/features analysis, keyword methods, and computer-assisted

methods are more effective in teaching individual word meanings

than traditional approaches (Carnine, Silbert, Kameenui,1997). Bos

and Anders (1990) compared the effects of three knowledge-based

interactive vocabulary instructional techniques with a traditional

definition approach to vocabulary instruction. The subjects were 61

LD students who were learning from science textbooks.

Semantic-mapping, semantic-feature analysis, and semantic/syntactic

feature analysis were the interactive techniques used. The

researchers found that on the comprehensive and vocabulary items on the post reading test the students in the three interactive interventions scored higher than students engaged in definition learning. Another study conducted by Fawcett and Nicolson (1991) taught five students with reading disabilities and rich vocabularies and eight students with reading disabilities and poor vocabularies, 24 vocabulary words and 24 matched untrained words. Conditions included an (a) enriched training condition which consisted of generating sentences and contexts, cross-linking words, and identifying affective reactions, stressing semantic links with related concepts; or a (b) traditional training condition which utilized worksheets, crosswords, word bingo, and missing letters in order to link words with definitions. Students were tested on word knowledge using a multiple-choice format. They were also tested on their lexical decision speed and accuracy, and had to decide if an item was a word or a non-word as quickly as possible. All students scored higher on word knowledge at posttest than pretest Neither enriched training nor greater amount of training (10 minutes per word vs. 3.3 minutes per word) led to significantly better word knowledge. This finding implies that if the goal of vocabulary instruction is word knowledge at a rudimentary level, then modest amounts of instruction is

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sufficient. Some evidence in this study indicated that the amount of

training, but not the type of training, may have influenced the level of

word understanding.

Regardless of the method used, overall vocabulary growth in

school-age children is phenomenal; Nagy and Anderson (1984)

estimate the rate at 3,000 words per year. Beck and McKeown

(1999) and Pikulski (1991) propose that this dramatic growth in

school-age students occurs as a result of both wide reading and direct

instruction. While wide reading is absolutely essential for vocabulary

growth and development, for most students it is not sufficient

(Chaffin, 1997). The meaning and understandings students take

away from their reading will not be long lasting unless they are taught

strategies needed for learning new words through independent

reading. Most students do not develop these on their own, and

therefore instruction in these independent learning strategies is

imperative (Templeton & Pikulski, 1999). The need for this

instruction is supported by the findings of Jenkins, Stein, and

Wysocki (cited in Beck and McKeown, 1991). This study focused on

the effects of learning words in context with fifth grade students. The

contexts were created so that a word's meaning was either strongly

implied or a synonym was provided. Jenkins et al. found that students learned the meaning of words that had been encountered six or ten times, unless exposure to meaning occurred prior to passage reading, in which case two encounters were sufficient to produce positive effects. Nagy, Herman, and Anderson (cited in Beck and McKeown, 1991) calculated that the probability of learning a word from a single contextual encounter was between .05 and .11, depending on the learning criterion used.

Even though independent reading may not be an efficient method of building vocabulary knowledge, it is indeed effective (Anderson and Nagy, 1991). Indeed vocabulary instruction and reading instruction are irrevocably intertwined. In returning to Becker's 1977 observation that vocabulary knowledge was the primary factor in limiting the reading and academic achievement of impoverished students beyond grade three, educators need to implement a comprehensive vocabulary program during the formative elementary years.

CHAPTER III

DESIGN OF THE STUDY

Purpose

This study investigated whether teaching with a multiple intelligences perspective was more effective in enhancing sixth grade vocabularies than a direct instruction approach.

Null Hypothesis

There will be no statistically significant difference between the mean posttest scores of those vocabulary words learned through MI approach or through direct instruction.

Definitions

Direct Instruction:

Method in which the teacher breaks complex tasks into their component skills, teaches these components, and demonstrates to students how these are combined.

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Flip Card:

A two-piece item that consists of a 7 x 8 piece of construction paper and a 3 x 8 piece of construction paper. The larger paper contains a picture that represents the word that is written on the smaller portion. The two parts are joined together by string, enabling the word to be tucked underneath the top portion and hidden from view.

A Mobility Board Approach:

This approach to teaching vocabulary reinforces vocabulary knowledge while keeping students focused and actively engaged in a learning activity. A "mobility board" is an 8 x 11 piece of tag board with nine differently colored rectangles covering its surface. In this study, one mobility board was given to a pair of students to share.

After the students had had an opportunity to generate synonyms/meanings of the targeted vocabulary terms they were given small white pieces of paper (referred to as "cards") with one vocabulary term on each. These cards were small enough to "fit" inside the colored rectangles on the mobility board. One by one, the teacher gave a synonym for a vocabulary word and asked the students to place the card on a designated color on the mobility board. After seven out of the nine available spaces on the board were covered with vocabulary words, the teacher said a synonym or definition of one of the words and told the students to move it to a new color. (For example: "Move the word that means a person, place, or thing to green.")

Once the teacher observed that the students were becoming more familiar with the words, she increased the speed at which she gave the directions. Upon monitoring the progress of these students, the roles of

each pair switched, the partner who was manipulating the board then monitored their partner's progress.

Methodology

Subjects:

The participants of this study were 80 sixth grade students from a suburban school district in Western New York. The students were from a wide range of socioeconomic and ethnic backgrounds. There was a mix of regular and special education students in this pool with reading levels ranging from third to above grade level.

The participants of this study were divided into four classes each consisting of 20 students. These classes were randomly selected at the beginning of the school year and were a heterogeneous mix of ability levels.

Materials:

Six pretests consisting of 10 different vocabulary words were used as a measure to determine the students' prior knowledge. The words were derived from future units of study in science, social studies, and language arts. The students were not exposed to these words at the time of the study.

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"Flip-cards" and mobility boards were used to engage the students in activities that appeal to various intelligences. Also, various stories and songs including each of the vocabulary words were created for the study.

Crossword puzzles, various work sheets, and flashcards were used as part of the direct instruction treatment.

Procedure:

Vocabulary words from six units: three Social Studies units; two language arts units; and one science unit were used in this study. The experiment was carried out for a total of six weeks. Ten words from each unit were introduced to the participants through either a direct instruction approach or a multiple intelligence approach. The schedule for the study is outlined below:

Week	Content Area	Approach Used
1	Social Studies	Multiple Intelligence
2	Social Studies	Direct Instruction
3	Language Arts	Multiple Intelligence
4	Language Arts	Direct Instruction
5	Social Studies	Multiple Intelligence
6	Language Arts	Direct Instruction

The students were not exposed to the words used in this study in their social studies or language arts classes prior to the experiment. However, to determine the students' prior knowledge of these words the students took a pretest before instruction of each unit begins. The ten words from each unit were selected because of one or more of the following reasons:

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1) The vocabulary terms were crucial to their understanding of a time period in history

2) The terms were crucial to their understanding of the elements of the world around them

3) The students encountered the terms in novels, short stories, and textbook passages that they read during the course of the study

4) The terms used in the study contained language parts (root words, suffixes, prefixes) that enabled them to take ownership of their own vocabulary development.

Eighty students participated in this study. They were divided into four classes of twenty students. Each class served as its own control group. The teacher met with the participants four times a week for one hour. Out of that four hours a total of one hour and ten minutes was dedicated to vocabulary development.

In the beginning of each week, the students were given a pretest to determine their prior knowledge of any of the ten words to be studied. If a student knew the definition of more than 60% of the 10 words then he or she was eliminated from the data analysis.

During weeks 1, 3, and 5 the teacher used instructional approaches that capitalized on multiple intelligences. The five intelligences in focus were kinesthetic, logical, interpersonal, visual/spatial, and musical. The activities for the week were as follows:

~Vocabulary Development through MI approach~

Day 1: (15 minutes)

The teacher handed the students a story that consisted of each of the vocabulary words to be studied that week. The ten vocabulary words were emboldened and were surrounded by text that enabled the students to use context clues to figure out their meanings. On the board were ten flip cards representing each of the vocabulary words. They were arranged in a straight line, and in the order that they appeared in the story. Only the picture portion of the card was showing, and the word itself was hidden behind it.

The teacher read the story aloud, pointing to each picture and revealing the written form of each word when it was read. Upon completing the story, the teacher discussed each picture and asked the students if they could determine the meaning of each word. After conveying the correct meaning of each word, the teacher then had the students repeat each word after her. Then, the teacher stated each word again and had the students clap the syllables of each. Finally, the students received a list of the ten vocabulary words and their definitions to be kept in the students' notebooks.

The homework assignment for this lesson was for the students to write a letter to "Cousin Corey", a fictional class character who they frequently correspond with. The students were expected to use correct letter-writing form and were to incorporate their ten new vocabulary words into a well written message.

Day 2: (30 minutes)

The students reviewed their vocabulary words by attempting to look at each picture and determined what the word is. Then, the students paired up and generated synonyms for each word. Each pair then received a mobility board and ten cards, each card printed with a vocabulary word. One student was in charge of manipulating the board while the other member of the pair monitored their partner's progress.

After each partner had an opportunity to manipulate the board, the teacher gave the students a list of the words and asked them to write an accurate definition for each of the words for homework.

Day 3: (15 minutes)

On the third day the students were asked to use each of the ten words in a sentence. They wrote their sentences on a piece of paper that was awaiting them on their desks. Then the students joined the teacher in a song that had each of the ten words in the lyrics. After the class was able to sing the song correctly, the students broke up into four groups of five and sang a "round" together. The students were expected to sing this song to one person outside of class. That person, preferably a parent or guardian, signed the song sheet, stating that their child has shared the song with them.

Day 4: (10 minutes)

The students took their posttest as soon as they entered the classroom on the fourth day. The test required the students to define each word and then use each in a sentence.

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During weeks 2, 4, and 6 the teacher provided the students with a new list of vocabulary words to be studied. The activities of this week did not capitalize on multiple intelligences, but were taught through direct instruction. The activities this week were as follows:

~Vocabulary Development through Direct Instruction~

Day 1: (15 minutes)

The teacher provided the students with a story consisting of ten vocabulary words. The words were emboldened and were surrounded by text that enabled the students to use context clues to determine their meanings. The teacher read the story aloud and then asked the students to provide their meanings. After doing so, the teacher gave the students a list of the words and asked the students to record their meanings. The students used dictionaries or the previous discussion to define each of the words. The students were asked to write the definition of each word two times, and use each word correctly in a sentence.

Day 2: (30 minutes)

Awaiting for the students on their desks on the second day was be a slip of paper containing a list of the ten words. The students were asked to provide a synonym for each word on the paper. Then, the teacher implemented a variety of practices for the vocabulary

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words. The activities ranged from providing synonyms and antonyms to selecting passages that enabled the student to be exposed to the words in a variety of settings to studying roots, suffixes, and prefixes. Homework varied according to the focus of the lesson.

One such activity engaged the students in formulating sentences with their new vocabulary words. The students paired up and received ten index cards, each having one vocabulary word written on it. The students, sitting side by side, shuffled the cards and then placed nine of them face up in a 3x3 grid. One student selected any three words that formed a line (diagonally, vertically, or horizontally) and used them correctly in a sentence. The student read the sentence to the other student, who then had a chance to change, modify, or add to it in any way. The two students decided upon the most accurate and creative sentence and wrote it on a piece of paper provided by the teacher. The students' goal was to use all ten words at least once in a complete, creative sentence.

Day 3: (15 minutes)

The students engaged in similar activities as the previous day. However, this served as more as a review/closure session.

Day 4 (10 minutes)

The students took their posttest as soon as they entered the classroom on the fourth day. The test required the students to define each word and then use each in a sentence.

At the end of each week the students' posttests were graded and recorded. Then the results of the pretests and posttests were compared. The researcher looked for the degree of growth and accuracy with which the students defined the vocabulary terms on the posttests.

Analysis of Data

The posttests from the three Multiple Intelligence Treatments and the three Direct Instruction Treatments were compared. A correlated t-test was used. The researcher evaluated the growth made during each week and looked for a statistically significant difference between the means of the two approaches.

CHAPTER IV

FINDINGS AND INTERPRETATION OF DATA

Purpose

This study investigated whether teaching with a multiple intelligences perspective was more effective in enhancing sixth grade vocabularies than a direct instruction approach.

Analysis of Data

The subjects were given a pretest and a posttest for each week of the study (a total of 12 tests--6 pretests, 6 posttests). In order to analyze the data, the raw score from each subject's three pretests were added together for each treatment (each week's quiz consisted of ten points--one point for each term--thus creating a potential raw score of thirty). In addition, the raw score from each subject's three posttests were added together.

Three correlated t-tests were conducted to analyze the data. The first t-test evaluated the effectiveness of MI theory as an

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approach to teaching vocabulary. The mean raw pretest score during

the MI treatment was 6.97. In other words, before being taught the

terms, the subjects could accurately define an average of 6.97 terms

out of a total of thirty new words. This was compared to the mean

raw posttest score during the MI treatment, which was 27.66.

Consequently, after introducing thirty terms using a multiple

intelligences approach, the subjects were able to identify an average

of 27.66 words out of 30. The data are presented in the following

table.

Table 1: t-test results: pre vs. post test for MI treatment

	x	s.d.	t
pretest	6.97	6.47	
posttest	27.67	3.56	-66.07

critical t= 3.42; p < .001

The data indicate that there is a statistically significant

difference between the pretest and the posttest scores.

The second t-test evaluated the direct instruction as an

effective approach to teaching new terms. The mean raw pretest

score was 3.56, and the mean raw posttest score was 26.22. The

data are presented in the following table.

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Table 2: t-test results: pre vs. post test for DI treatment

	x	s.d.	t
pretest	4.23	5.45	
posttest	26.23	11.66	-56.8

critical t= 3.42; p < .001

The data indicate that there is a statistically significant

difference between the pretest and the posttest scores.

The final t-test compared posttests of the two treatments. The

mean raw posttest score of the MI treatment was 27.66, as compared

to the mean raw score of the DI treatment, 26.22.   The data are

presented in the following table.

Table 3: t-test results: post MI treatment vs.. post DI treatment

	x	s.d.	t
post MI treatment	27.67	3.56	5.08
post DI treatment	26.23	11.66	

critical t= 3.42; p < .001

The data indicate that there is a highly statistically significant

difference between the posttests of the two treatments.

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CHAPTER V

CONCLUSIONS AND IMPLICATIONS

Purpose

This study investigated whether teaching with a multiple intelligences perspective was more effective in enhancing sixth grade vocabularies than a direct instruction approach.

Conclusions

I originally began this study as an action research project. As a Sixth Grade language arts teacher I was teaching vocabulary and vocabulary skills on a regular basis. After attending a workshop on Multiple Intelligence Theory in the Classroom, I began implementing a variety of strategies into my lessons. I began to see some changes in student motivation and achievement and I was curious to discover if it was the approach I was using or that my students had suddenly become curiously enthusiastic about new words.

When I began this study I had no preconceived notions about the outcome. However, upon reviewing the results, it became readily

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apparent that a multiple intelligence approach was yielding

significantly higher test grades. More importantly, the standard

deviation during this treatment was 3.56, which clearly illustrated that

all students received between an 86% and a 100%. This consistency

of scores was encouraging contrary to the standard deviation during

the direct instruction treatment, 11.66, which represented a range of

scores between 63% - 100%.

What the statistical data do not convey, however, is the

enthusiasm and motivation that transpired throughout the classroom

during the multiple intelligence treatment. The students were excited

to get to language arts and were engaged in learning in new and "fun"

ways.

An interesting observation I made after the study was that

many students were indeed using their newly learned vocabulary

words in subsequent writing assignments. Most, if not all, of the

words I observed in their writing pieces were from the multiple

intelligence treatment and were being used purposefully and

accurately. This demonstrated two powerful elements of teaching to

me; 1) the students had retained the correct meanings of these

words, and 2) they had taken ownership of these terms and were

using them in authentic language experiences.   Consequently, my job as a language arts teacher is to do just those things; improve the students' use of language so they can accurately express their ideas and feelings in an articulate manner. Multiple intelligence theory certainly proved to be a stepping stone to that mountainous task.

Implications for the Classroom

Based on the results of the study it is clear that vocabulary development will occur despite the method used. Both the direct instruction and multiple intelligence approach are effective in enhancing vocabulary development. However, the t-test results clearly showed that a multiple intelligence approach is significantly more effective than a direct instruction method.

To best implement MI theory in the classroom, a survey should be administered to determine the "intelligence" of each student (See Appendix D). Once the teacher and students are aware of their strongest capacity to learn, instruction can be varied and strategies can be employed to help each individual capitalize on his/her natural method of absorbing information. Direct instruction strategies may

(33)

certainly be employed in addition to songs, diagrams, and mobile activities.

Further Research

In this study subjects were introduced to terms from the New York State Social Studies curriculum and from various units in the language arts program at the host school. A question that arises is, "Does MI theory work best when introducing terms from a content-based subject such as social studies or from general "word families" (all of the words have some phonic/morphemic element in common)? One would think that a direct instruction approach would lend itself to the teaching of the latter. Will it? It would be interesting to discover if the terms being introduced do indeed drive the type of instructional approach one should use.

The teaching of vocabulary is useless if the students do not retain the new terms and eventually use them in their everyday language experiences. Indeed the purpose of learning new vocabulary is to enhance our language skills in order to better communicate our ideas and feelings with others whether it be written or oral. Thus, a valuable amendment to this study would be to

monitor the writing of the subjects used in this project and record those terms used purposefully, meaningfully, and accurately in future writing pieces. The next logical step would be to tally those terms used most frequently in writing, and to research which instructional approach was used to introduce them. I observed many of the students using terms in their writing learned during the MI treatment, but some words being used in writing were learned during the DI treatment. Which words are being used more often? Which words will the students continue using during middle school? These questions would induce an interesting and informative study.

Numerous studies have addressed vocabulary development and its impact on later language achievement. Many methods have been suggested and researched, and still no one approach has been declared "the best". Two such approaches, multiple intelligence theory and direct instruction, were the focus of this study. After six weeks of testing, the results showed that multiple intelligence theory enabled students to learn more words that a direct instruction approach. These data, combined with my observations, have shown me that multiple intelligence theory does indeed enhance vocabulary development in sixth grade students.

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