The Effects of Learning Styles on Learning Reading Vocabulary Words in Context

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Abstract
This study examined the impact of learning styles on the performance of students taught 100 vocabulary words in context. The students were placed in the learning styles group and was known as the Learning Styles Preference (LSP) Group. The members of the LSP group were tested for their learning styles through the Carbo Reading Styles Inventory. The students in the other group, the Control Group, were taught through the traditional methods. Both groups took a 100 word vocabulary pre-test and post-test developed by the researcher.

At the end, the researcher discovered that the students in both groups made gains with some words, no gains with other words, and made equal gains with other words. This is attributed to the fact that some of the students involved in the study lacked the prior knowledge or did not have the experiences to help them understand the meaning of the words being tested.

Introduction
Reading continues to be one of the skills that is causing problems for the majority of the students in the American Public School Systems. Since the days of “Why Johnny Can’t Read and What You Can Do About It” (Flesch, 1955), teachers have been concerned with the problems that the students encounter in reading. Teachers try new methods and strategies hoping that their students reading problems will be solved.

The U. S. Department of Education reports that 30 million or 14 percent of the American population have been categorized as “Below Basic” meaning that this particular group of people has “no more than the most simple and concrete literacy skills” (p. 2) Their prevalence has hindered the American work force. Therefore, our country has taken measures to solve this problem by providing $155 million dollars to combat the illiteracy problem among the adult population (Irwin, 1988). Still, with all the monies being set aside to solve the illiteracy problem, the status quo has not shown any major improvement. To prove this, the 1994 findings of the NAEP (National Assessment of Educational Progress) also known as the “Nation’s Report Card” found that after 20 years of education, “reading performance was as good, if not slightly better than in 1968” (p. 254).

The findings of the NAEP indicate that literacy is not any better today than it was back then. Although minority students, in this case the African-Americans, have made substantial progress since 1970 in narrowing the gaps between their performance and that of their white counterparts, especially in the area of reading, The differences in performance are still not acceptable. Standardized tests such as the Texas Assessment of Knowledge and Skills (TAKS) indicate that some students throughout Texas cannot read. In 1996, the scores indicated that 60 percent of the sixth graders passed the reading portion of the TAKS test (TEA, 1996).

One of the reading areas in which Texas students scored low was in the area of vocabulary. Only 15 percent were able to master successfully all of the objectives tested in the TAKS test (TEA, 1996). This means that 85 percent of the students didn’t master all of the objectives while 40 percent were not even able to pass the TAKS reading test at the minimum expectation level.
Vocabulary proves to be challenging to our students because they encounter themselves with different types of literature to read; however, not all of the literature that students encounter brings pleasure to them. Teachers are starting to take notice that one of the reasons why students encounter difficulty in reading vocabulary comprehension is related to the type of text that they encounter as they begin to read. There are two types of reading that students encounter. Narrative reading allows the students to get the information from a story that entertains the reader. On the other extreme, expository reading is not as entertaining and requires the student to read a selection that is difficult because it involves technical reading thereby posing a problem in the area of vocabulary comprehension.

Aside from lack of prior knowledge and the comprehension of vocabulary words, students at times have problems with comprehending vocabulary because the students do not possess the two types of knowledge about words which is definitional information and contextual information (Stahl, 1985). Studies indicate that vocabulary comprehension does aid in the improving of reading comprehension, but that not all methods reach all children (Stahl, 1985). In order to reach all children, the classroom teacher must use different methods of instruction to help children be successful. A possible solution to this problem is the utilization of “Learning Styles.” Dunn and Dunn state that “if children can’t learn the way we teach, we must teach them the way they learn” (p. 1). They claim that there are two types of learners who process information differently: analytic children-left brain processors and global children-right brain processors. An analytic processor makes decisions based on something logical, or something that makes sense to him/her. This type of learner plans and organizes things in a fashion that is comfortable to him/her. A global processor, on the other hand, makes decisions based on his/her emotions rather, than on logic.

A student who has a strong auditory modality is able to recall what he/she has heard. It is a strong indication that the student has auditory modality when he/she is able to follow oral directions. Therefore, the student will learn by listening and by speaking. Poor readers who have a strong auditory modality are able to answer orally because they are unable to decipher what is written on paper.

Students who have a visual modality can recall what they see. They are able to follow written or drawn directions from the paper. Therefore, they learn by observing people, objects, pictures and other graphic aids.

Students who learn by touching and feeling the objects that they are studying are said to have a strong tactile modality preference. These types of students recall what they touch. They remember instructions better if they write them down. Therefore, they learn better by touching or manipulating objects.

Students who learn kinesthetically recall information when there is some sort of motion involved in their learning. Kinesthetic learners recall what they experience. They are able to remember directions by performing or by rehearsing them.

**Statement of the Problem**

Reading is a skill of vital importance to the student. One area of concern is the comprehension of vocabulary words. Results of tests such as the Texas Assessment of Knowledge and Skills (TAKS) indicate that the students need to improve in the area of vocabulary comprehension. A critical factor that is hindering the students’ performance in vocabulary comprehension is the lack of prior knowledge. Prior knowledge is that information that the student has stored in his/her schemata. Knowledge of this nature enables the student to comprehend what he/she is reading
with more facility. Unfortunately for the Limited Bilingual Proficient Student (LEP), at times, the culture does not offer the experiences that can provide this child with the knowledge needed to grasp what is being read.

Another factor that plays an important role is learning styles. All students have different learning styles and process information in a different style. Left-brained (analytic) learners learn differently from right-brained (global) learners. The teacher who teaches through a traditional approach does not accommodate the different learning styles of his/her students. Therefore, the teacher must break away from traditional teaching by providing activities for these two different types of learners so that they can improve their vocabulary comprehension. If students cannot improve their vocabulary comprehension; they will not experience success.

**Purpose of the Study**

The purpose of this study was to determine whether students acquired vocabulary comprehension when they were taught through their learning styles. The researcher’s experience in teaching reading helped him observe that some students showed no comprehension of the vocabulary words that had been taught to them daily for a whole week when the vocabulary test was administered to the students. Therefore, the purpose of this experimental study is to explore the effectiveness of instructional strategies, based on the students’ learning styles, in increasing vocabulary meaning for better comprehension.

**Significance of the Study**

Students learn new and difficult information in different styles. At times, teachers are unable to help students because traditional teaching is not as beneficial as the teacher would like for it to be. The area of reading vocabulary is an area where students need help. Therefore, it is of significant importance to identify students learning styles so that the teacher can empower the students to learn new information. In doing this, students will be able to succeed in our educational institutions. This study will also be to help their students’ achievement improve through learning styles.

**Review of Literature**

The educational system has been in the midst of crisis for a long time. The illiteracy rate rises every year, and educators continue in their efforts to find the method or strategy that will close the gap. Research indicates that academic achievement improves when students are heterogeneously grouped as compared to when they are homogeneously grouped. This improvement is due to the wide range of maturity levels which foster intellectual abilities among the students. Academic achievement improves because the teacher must use different teaching strategies, instructional materials and classroom management techniques (TEA, 1995).

Research also indicates that the instructional practices used in this type of settings resemble those practices that are common in high ability groups. The end result is that students develop social skills and higher levels of self-esteem, and are less likely to be dropouts as would be the case if they would be grouped by ability levels. The teachers can accommodate the strengths of the individual student by addressing the learning styles that best meet his/her needs. The literature reviewed in this study concerns both leaning styles and the traditional methods of teaching. In dealing with leaning styles, the following will be addressed:
(1) Individual learning styles; definition and measurement; (2) Learning styles instruments; (3) Learning styles and how it applies to reading; (4) Learning styles and their effect on comprehension; (5) Assessment of learning styles and (6) Learning reading vocabulary words; and (7) Summary.

**Learning Styles: Definition and Measurement**

The brain plays an important role in student learning. Numerous theories have tried to link the brain and how it enables students to acquire and internalize information. In the 1700’s, Franz Gall, a German scientist felt that the bumps on the head equaled particular talents and characteristics. Paul Broca in the mid-1800’s proposed the classic hemispheric dominance theory. Broca proposed that the left side of the brain was more dominant and had higher faculties than the right side of the brain.

Rita Dunn and Kenneth Dunn define learning styles thus: “the way in which each learner begins to concentrate on, process, and retain new and difficult information” (Dunn & Dunn, 1992, p. 2). Students do not learn in the same fashion. Traditional educators have a difficult time accepting this reality, calling it a myth. These educators need to recognize that reading and learning styles are neuroanatomical and cannot be changed (Grager, 1990). They need to be made aware that what can be changed are the different types of instructional activities. These activities should address the four different types of modalities (audio, visual, tactile, and kinesthetic). In doing this, one makes it easier for individual students to process and retain new and difficult information that is being presented to them. Traditional educators need to be made aware that those students who are left-brain dominant (analytic) will learn difficult information in a much different fashion as students who are right-brain dominant (global).

John Jackson in the 1800’s questioned the left brain dominant theory. During the early 1900’s Wilder Penfield worked with direct electrical stimulation on certain areas of the brain during surgery. Jun Wada further supported the theory that brain functions could be localized across hemispheric by anesthetizing one hemisphere at a time (Restak, 1988).

Gregorc elaborated on how the human mind perceives and understands information. According to Gregorc, there are two ways in which students perceive information. One was is through concrete abilities. Concrete processing involves using the five senses: sight, smell, touch, taste, and hearing. Using concrete abilities involves what is here and now - the tangible, the obvious (Tobias, 1994, pp. 14-15).

The mind can also process information by using what Gregorc called abstract ability. The mind is able to picture thoughts, come up with ideas or even understand and believe what can’t actually be physically grasped. When we are using this abstract ability, we are using our intuition, our intellect, our imagination: We are looking beyond what is, to the more subtle implications (Tobias, 1994, p. 15). Gregorc also observed how the mind ordered information as it was being processed. Students who organize information in a linear, step-by-step process are said to be sequential processors. Sequential processors find it very comfortable to do their assignments or other activities following a set plan. This type of learner does not like to deviate from the course that he/she is following.

On the other end are students who are not bothered at all if not following a set plan. This type of organizer does not require a step by step plan telling him/her what to do. This type of learner can start at any place with a given assignment. This type of learner may start at the beginning, then go to the back and back to the middle, and so forth, deviating from the step by step process (Tobias, 1994).
The Dominant Abstract Sequential student usually requires some sort of systematic approach in handling a certain situation. This type of learner requires more time to complete his/her assignments. If an assignment is not done to the student’s satisfaction, it will result in the student not turning it in. This type of student is very analytical and tries to evaluate his/her assignments.

The Dominant Abstract Random student cares about pleasing people. For the Abstract Random student, “all of life and learning is intensely personal experience” (Tobias, 1994, p. 55). The teacher’s instruction should have some sort of meaning to this type of student in order for him/her to process the information. Conflict and tension distract this type of learner. Their concern for others is a common characteristic.

The Dominant Concrete Random student likes to be told what assignment needs to be done, but not how to do the assignment. Learners who fall under this category like to be very independent. Therefore, rules do not go over very well with this type of processor. Instead, this type of processor feels more comfortable with general guidelines.

Ramirez, Herold and Castañeda (1975), took these two modes of perception and referred to them as “a person’s cognitive style” (p. 39) in the educational sector to describe the way that students learn best. The authors took the two terms field dependent and field independent and describe the differences of these two terms; however, they substituted use the term “field sensitive” for “field dependence” stating that the word dependence is “negative in connotation” and that the word sensitive “captures the essential nature” of this cognitive style.

Barbe, Milone, & Swassing (1979) tried to capitalize on the ways students learn. They believed that students learned best when they were taught through their modality strengths. The authors clarify the difference between modality strength and modality preference. Barbe & Milone (1980) refer to a modality strengths as the channels most efficient for processing information; they imply superior functioning in one or more perceptual channels. Therefore, they may occur in a single channel, or be mixed. They are assessed through a task. A Modality preference, on the other hand, is just that: a preference and is usually measured by self-reports (p. 382).

Dunn & Carbo (1980) argued that students should be taught through their primary preference, followed by an activity reinforcing the modality strengths or modality preferences that were vital to student learning were identified as (a) auditory, (b) visual, (c) tactile, and (d) kinesthetic. Auditory learners are those learners that learn best by listening (Dunn, Carbo, Tobias, 1994). This does not mean that these types of learners learn the subject matter only by listening. On the contrary, a strong auditory learner usually has to form the sounds of the information aloud in order to get the meaning of the message. Auditory learners do this in order to effectively commit the message that is being taught to memory (Tobias, 1994).

The Dunns discovered that environmental stimuli played a very important. Analytic learners preferred no sound when they were busy doing an assignment, whereas global learners required sound. The solution to this problem was to provide the global learners with some type of noise that would help them feel comfortable. Baroque music, which has no words, was found to appease this type of learner. A recommendation made when using music is that the teacher provide those students who do not require music with a set of headphones.

Analytic and global students are unique in their physiological preferences (Dunn & Dunn, 1992). Both learners have the same type of preferences. These preferences enable individuals to process and retain certain information due to certain strengths that they possess. Auditory learners remember 75 percent of what they hear in a normal 40 or 50 minute lecture, but only 30 percent of the school-aged population appears to be auditory. Visual learners remember 40
percent of what they see. Tactile learners remember what they write (if analytic) or draw or doodle (if global). Kinesthetic learners remember best the things they experience. Kinesthetic must be actively involved in going, doing, traveling, acting, and on-the-job training.

Students learn in different ways. The different types of learning styles mentioned here are just some that have had an impact on the educational sector of our country. Gregorc's model (1978) describes how students process information. Barbe, Milone, & Swassing's model (1979) describes the different modality preferences that students can utilize to learn and acquire information. The Dunn, Dunn & Price learning style inventory places strong emphasis on the environmental and physiological preferences. Learning styles models attempt to explain the many ways students can learn. As time progresses, other researchers will find or investigate other ways in which student learn. No matter how similar or different these models may be, their contribution will provide educators a better understanding of how students learn the information that is being taught to them (Dunn, DeBello, Brennan, Krimsky & Murrain, 1981). This will be conducive to better understanding how students can improve their academic achievement.

Learning Styles and How They Apply to Reading

Research indicates that our students are not doing well in the area of reading. The NAEP reports that a large amount of our population is illiterate. The NAAL (2003) carried out a different survey than the one done in previous years by Irvin (1988) where they tested members of the American population to determine the types of literacy skills that they possessed and used. This particular study compared the population in 1992 and in 2003 the following categories: (a) below basic meant that the test takers could do "no more than the most simple and concrete literacy skills; (b) those members of the American society who were able "to perform simple and everyday literacy activities were places in the basic category; (c) while those who qualified for the intermediate category "could perform moderately challenging literacy activities and (d) those categorized as proficient "could perform complex and challenging literacy activities (p. 2, 2003). As compared in 1988 when approximately 17-21 million people are considered to be illiterate. In a most recent survey completed, one way to help our students in the area of reading is by applying the concept of learning styles.

One way in which students can improve their academic achievement is in the area of reading. Since the publication "Why Johnny Can’t Read and What You Can do About It (Flesche, 1955),” educators have been concerned with the reading problems that their students encounter. A response to this concern was to try new and innovative methods

After years of working with the kindergarten population, Carbo discovered that students were not being taught in a fashion that was best suited to them. Carbo provided remediation for students who had severe deficits in visual and auditory perception. She provided students with high interest materials and instructional resources which accommodated the students with their perceptual strengths. She discovered that these students had a need for activities that would address their tactile/kinesthetic perceptual strength, only moderately visual, and were low auditory. She applied her Dunn & Dunn’s concept of learning styles to teaching reading.

What can be done about pedagogical methods or strategies that are not suitable for the individual student? Is there a method or learning style that can resolve the educational crises for the American public school system? Teachers are searching for that method that will help their students retain the information that is being taught to the student. Numerous studies have been conducted throughout our nation over a period of time on the impact of reading learning styles on
educational programs. Holt and O’Tuel conducted a year long study in Florence, South Carolina school district in 1990. They examined the progress of 847 fourth-and fifty-graders. Results of the comprehension and vocabulary subtests of the Comprehensive Test of Basic Skills and the Estes Attitude for Reading proved that the group receiving the reading learning styles treatment achieved higher gains as compared to the control group.

LaShell (1986) did a study with 90 learning-disabled students in two resource programs at Yellow Springs, Ohio. LaShell’s study proved that in a year, the treatment group receiving reading learning styles gained 15 months in reading comprehension, while the control group made a 4 month gain.

In 1992-1993, Margil Elementary School implemented reading learning styles. The school, which had been ranked 61st out of 65 elementary schools received astounding results. Their high at-risk student population students declined by almost half, to 157, in 10 months of implementing reading learning styles program. After three years of implementing reading styles Margil surpassed the scores of all the schools in their school district in San Antonio, Texas.

As the above research indicates, reading learning styles has positive affects on comprehension. This is partially due to the fact that the goal of a reading learning styles program is to make the student feel comfortable in order to process and retain the information that is being taught to him/her. Also, students are more motivated to read and enjoy school more.

Many groups also required a high degree of structure as was observed in the Mexican American, Chinese American, and Afro-American cultures. Vasquez (1985) and Sims (1988) also noted that Puerto Ricans and whites needed more structure than blacks. Groups also differed in the variable of persistence. Vasquez (1985) observed that Puerto Ricans were both highly persistent and motivated and that Bahamians were strongly persistent when compared with the Jamaicans (Roberts, 1984). Dunn & Griggs (1993) also reported that the ethnic groups involved in the different research studies also varied in the sociological and physical stimulus categories.

**Learning Reading Vocabulary Words Through Context Clues**

Reading is a process of giving meanings to printed symbols and organizing these meanings in terms of the writer’s presentation (Carrillo, 1976). Unfortunately for the readers, intellectual limitations such as experiences with the word, applying the experiences to the word, applying the reader’s personal experience to the author’s system and using the new system of meanings make it difficult for the reader to have applicable schema in obligatory contexts of the vocabulary word. In other word, the dissonance between the readers’ schema and the writers’ schema is cause for miscomprehension.

Another factor that affects students’ comprehension is inference. Inferencing influences the reader’s selection. At times, readers are passive and do not rely on inferences to draw their own conclusions. Instead, the reader engages in what traditionally has been called bottom-up processing, outside-in processing, text-based processing, or data-driven processing (Taylor, Harris, & Pearson, 1988). In these types of modes the reader suspends judgment and waits for more information from the author. At times, this may cause a problem because reading is incidentally literal. Reading would not be found to be interesting if the author wrote word for word everything that is to happen in the story. The reader, through prior knowledge, manages to figure out the author’s message. Prior knowledge is that information that the student possesses in his/her schemata that facilitates reading comprehension.
Caring, Kameenui, & Coyle (1984) used experimental passages designed to present clues to selected words. The study indicated that the subjects, were presented the selected words in isolation. The best performance by the sixth graders yielded a 40 percent success rate.

Schatz & Baldwin (1986) used natural text to determine what effects it had derived for words meanings. The researchers did three separate experiments using a variety of text types, including passages from literature, newspaper articles, and content area subject matter such as science and history. The researchers found that context was not a factor for eleventh and twelfth graders. The researchers felt that the outcomes had to do with incidental reading.

**Methodology**

In order to get a better understanding as to how students learned vocabulary words in context, the following question was addressed: Is there a difference in student vocabulary comprehension gains as measured by pre and post test scores for students participating in a learning style group versus students participating in a traditional setting?

To answer this question, the mean of each pre-test and post-test reading comprehension test will be calculated. The statistical analysis that was used to calculate the score was percent correct for both the pre-test and the post-test. The analysis of the data was done for every individual word. The scores for males from the control group were compared against those of the LSP group. The female scores were also compared. Finally, the LSP group results as a whole were compared to the Control Group results to see what effect, if any, the learning styles treatment had on the experimental group. The results for those comparisons are described in detail in the chapter that follows.

**Participant Profile**

Four classrooms with 25 students each served as the experimental group pool. All four classrooms were talking reading for 90 minutes at different times of the school day depending on their schedule. All students were heterogeneously grouped with the exception of the gifted and talented students who were placed with high achieves in different classrooms.

**Treatment**

The treatment for this research study included ninety minutes of reading at different times during the school day depending on the schedule. The learning styles group was administered the Carbo Reading Styles Inventory. After the testing for learning styles, appropriate instructional learning activities were implemented for both groups. The vocabulary words came from the reading basal. The treatment was administered throughout the school year which consisted of 100 words taken from twelve stories from the reading basal.

**Instrumentation**

The researcher developed a pre-test of 100 vocabulary words that were presented in context. The results from this test were compared with the results of a post-test of the same 100 items given at the end of the semester but not administered in the same order as in the pre-test. The test-retest reliability coefficients for the 13 RSI subscales ranged from .63 to .77 (Carbo, Dunn, & Dunn, 1986).

**Analysis and Interpretation of Data**

This study compared the amount of gains in a pre-test and a post-test made by students through the use of percentages. The students were part of the experimental (LSP) group or the
control group. The information was gathered by the researcher. The results from the data analysis follow.

Overall, the LSP group made a 42% on the pre-test and 72% on the post – test, yielding a 30% group gain. Their counterparts, the members of the Control Group, scored a 54% on the pre – test and an 83% on the post – test, for a group gain of 29 percentage points. The LSP group made a 1% greater gain. The Control Group, however, had a higher pre and post- test average (54% and 83%, respectively).

The LSP males scored an average of 40% on the pre – test and a 70% on the post – test, for a 30% gain. The Control Group males made a 54% on the pre-test and an 82% on the post – test, resulting in an overall 28% attainment. The LSP males made slightly greater gains (2%). Again, the Control Group had a higher pre-test and post – test average than the LSP group.

The LSP females earned an overall score of 44% on the pre – test and an 81% on the post – test, yielding a gain of 28 percentage points. The LSP females made a greater overall pre- test/ post – test gains (3%) than the CG females. The CG females, however, had a higher pre – and post – test average than the LSP females.

Summary of Findings

If students don’t learn the way we teach them, we must teach them the way they learn. Unfortunately for the school teacher, this premise is overbearing when one thinks of teaching each individual student through a fashion which is best suited just for him/her. The thought of this is overwhelming when one thinks of the amount of time that has to be put into such a project.

In 1967, Professor Rita Dunn upon the invitation of the New York State Department of Education was asked to come up with a program that would help “educationally Disadvantaged” children to increase their achievement in school academics (Dunn, p. 3). Dunn did indeed discover that each child could be taught to a fashion in which they best learned and acquired information. The end result was a trend that became known as “learning styles” (Dunn & Dunn, 1992, p.2). Rita Dunn, with the help of her husband, Kenneth Dunn and G. E. Price, identified, by 1979, 18 elements that affected students' learning achievement. These variables were later categorized into five different stimuli which the Dunns and Price identified as follows: (a) environmental, (b) emotional, (C) sociological, (d) physiological and (e) psychological. The Dunns and their doctoral students and other colleagues since then have researched the different elements that make up the learning styles model (Dunn & Dunn, 1992). Their collaboration has changed the way educators can teach their students.

This serves of interest to the classroom teacher when providing instruction to students that respond differently from the traditional norms that have been set by our educational system. In a diverse society, students differ in many ways and teachers have to find the best strategy or method that will help them reach their students.

One area of instruction where teachers have to reach their students is in the area of reading. Testing instruments, such as the TAKS, that determine how well a student comprehends, indicate that some students are having trouble in reading.

A specific area of concern is in the understanding of vocabulary comprehension. Researchers (Nagy, 1988; Schatz & Baldwin, 1986; and Carnine, Kameenui, & Coyle, 1984) take various sides in this controversial issue; however, it is agreed that students acquire vocabulary incidentally or deliberately. Incidental and deliberate learning is affected by the context determines the amount of prior knowledge or how much experience the child has with a certain word or topic. Prior knowledge plays a vital role in the acquisition of vocabulary words.
Conclusions

Based on the comparison of the pre-test and post-test findings of the 100 vocabulary words, the following conclusions were derived from this study: 1. The sixth grade students in the Learning Styles Preference Group made gains when instruction was given to them in their preferred learning style. 2. The males in the Learning Styles Preference Group outperformed the females. 3. The males in the Control Group scored fewer gains when compared to the females in their group. 4. The sixth grade students in the Learning Styles Preference Group did not achieve higher gains that the students in the control group. 5. The students in Control Group achieved greater gains when their pre-post test scores were compared to those of the Learning Styles Preference Group. 6. Exposure to learning styles strategies did not have an effect on the outcome of this study. 7. Students who were taught through their perceptual strengths did not have higher overall group gains when the scores are compared to the students who did not receive learning styles treatment.
References


