

The Effects of Instructional Techniques Promoting an Increased Level of Foreign Language
Vocabulary Retention for High School Students

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Abstract

The purpose of this study was to determine the impact of the implementation of instructional techniques using visuals on a selected class of high school Spanish level three students. The null hypothesis is that there will be no statistically significant difference between the vocabulary retention score of the Spanish III students who follow the traditional teaching vocabulary model (i.e. the control group) and students who follow new instructional techniques using visuals to help increase knowledge of vocabulary (i.e. the treatment group). The two groups were comprised of twenty-eight students, nine boys and nineteen girls, in high school Spanish III classes. The measurement tool utilized throughout the study was the Baltimore County Spanish Test, the speaking and writing rubrics for Spanish III. This study involved the use of a pretest/posttest design to compare data from March of 2014 to data from May of 2014. There were no significant gains in the retention of vocabulary scores, thus the null hypothesis failed to be rejected. Teachers must anticipate the reality that they cannot stop adolescent bodily changes nor the cognitive developmental stages that are happening simultaneously to the adolescence, but teachers can be proactive with mental stimulation and purposeful movement activities to keep students stimulated and engaged. In order to achieve a significant change in the retention of vocabulary for high school students there should be further research on this topic.

CHAPTER I

INTRODUCTION

Overview

All over the nation there are visible signs of the importance for acquiring a second language as evident in various aspects of daily life: signs, instructions, airplane procedures, ingredients, etc. The need for effective instruction to increase the retention of second language acquisition for the currently enrolled students is critical, if the United States is to remain globally competitive. This importance of second language acquisition has come to the forefront of the Public school systems in Maryland and all over the nation. The United States as a whole is encouraging its students to take as many years of a world language as possible before entering the college level. High schools are mandating two sequential years of a world language as a graduating requirement. The newly placed emphasis on second language acquisition is wonderful, but to merely pass the world language course means nothing if the student has not retained the ability to carry out a conversation. To ensure that passing with minimum retention does not happen, the world languages offices in Maryland and in many others throughout the nation have decided to change from the traditional teaching techniques to a new methodology requiring much more retention of vocabulary and spontaneity. In addition, the focus of the overall curriculums has shifted from writing to speaking in the second language to show that the students have acquired a mastery level of the second language.

This study addresses the concern that for students currently enrolled in Spanish level three, it is imperative for them to have a decent vocabulary background, so that the students can link new learning to the pre-existing vocabulary from the past years. The current study will build off the research of Farley, Ramonda, and Liu (2012), Ebres, Folkerts, Gergis, Pederson,

and Stivers (2010), and Erlam (2005) that demonstrates that, with the use of visuals as a specific strategy, students retain more vocabulary and increase their working memory capacity to hold on to more abstract vocabulary terms.

The researcher of this study, a high school Spanish teacher, has consistently witnessed students moving from one level to the next with little to no vocabulary retention. This process makes the first few months of each school year, a review of what the students should have retained from the prior level. After five years of witnessing this process repeat itself, the researcher was eager to try out new techniques to increase vocabulary retention, helping the students acquire the second language through deepening their retention and allotting for a few months more of acquisition rather than review.

Statement of Problem

The purpose of this study was to determine that there will be no impact of the implementation of instructional techniques using visuals on a selected class of high school Spanish level three students. This study will show no significant difference between the class experiencing the new instructional technique and the class learning under the traditional vocabulary teaching model.

Hypothesis

The null hypothesis is that there will be no statistically significant difference between the vocabulary retention score of the Spanish III students who follow the traditional teaching vocabulary model (i.e. the control group) and students who follow new instructional techniques using visuals to help increase knowledge of vocabulary (i.e. the treatment group).

Operational Definitions

Native Spanish speakers are those who were raised with Spanish as the primary method of communication in their homes from birth, that is to say, those who learned Spanish as their first language. **Second-language acquisition**, also known as the **L2 acquisition**, refers to any language learned in addition to the mastery of the person's first language. The **taxon long term memory-system** allows the student to organize the new learning into categorical parts (traditional technique). On the other hand, the **locale long term memory system** registers the new learning contextually and will indefinitely allow the students to connect and apply their recent experience in new and different situations. The **vocabulary retention score** is based off of performances in the categories of vocabulary and content/context score rubric found in the Baltimore County Spanish Test (BCST) for students in level 3 Spanish. Both the vocabulary and content/context scores are worth a total of 5 points, so the total points available for the vocabulary retention score is 10.

CHAPTER II

REVIEW OF THE LITERATURE

“Language and communication are at the heart of human experience” (Maine Department of Education, 1997). Vocabulary is the key component in obtaining success and carrying on a well versed conversation. In recent years, students are now mandated and encouraged by colleges to take as much foreign language as they can before graduating from high school. When learning a foreign language, also referred to as the second language (L2), opportunities unfold continuously, as a student learns more about their own native tongue and develops newfound skills which lead to new experiences and approaches to the world around them (Kleinert, Cloyd, Rego, & Gibson, 2007).

The Importance of Understanding How a Brain Functions

On a daily basis teachers must encounter the numerous dynamic functions and applications of the human brain (Erbes et al., 2010). The human brain was such a popular research topic in the 1990s that researchers called it the “Decade of the Brain.” Throughout this period, researchers discovered thousands of pieces of new information on the daily functions of the human brain. As a result, many researchers have now emphasized how important the intertwining of brain research with classroom teaching really is (Kennedy, 2006). Educators engage with students who are continuously receiving, processing, storing and retrieving information. Meanwhile a student’s stage of cognitive development is still continuing to mature (Erbes et al., 2010).

Depending at what point an individual acquires the learned information of the L2, the brain separates the L2 into different areas of the brain (Kennedy, 2006). The stage in life is extremely important to note according to Lauría de Gentile and Leiguarda de Orué (2012)

because the brain may be undergoing cognitive changes of expansion and connection or “pruning” (the stage at which the brain cuts out the excess connections that are not being used). This phase is often known as “the ‘use it or lose it’ phrase.

In addition to the cognitive changes, the students are also undergoing physical and emotional changes during the high school years (Lauría de Gentile & Leiguarda de Orué, 2012). Once the students have processed information for the learning to begin, the new material must pass through the thalamus in addition to the amygdala which controls the emotional response to learning the L2. Therefore, the more stimulating and engaging the vocabulary lesson the result will be more retention and greater learning for the student (Kennedy, 2006).

The Importance of Memory in Language Learning

As students proceed through their L2 experience they will continue to build their retention level of vocabulary. Vocabulary is the building block to an aptitude with communication. To strengthen student’s conversations in the L2, the more frequent words should be taught first, so their overall performance will be more successful in comprehension of spoken discourse and the reading of text. To aid this process along, the L2 learner is expected to master at least 2,000 words in order to understand 90% to 94% of spoken discourse range (Gallego & Pilar Agustín Llach, 2009). According to Farley et al., L2 learners are also expected to master 7,000-9,000 word families in order to read authentic texts or understand spoken discourse (2012).

In the past, educators used models of teaching vocabulary that have been proven ineffective such as having the students memorize a vocabulary list and assessing the knowledge of that list a few days later. The students may or may not do well, but most often the information from that list will be forgotten after assessment because the students made no true connection to

the material. They were not able to create something with those words that would strengthen and deepen their retention (Smith, 2008). This traditional method of teaching vocabulary reduced the opportunities for the students to explore and use the new material. As a result, the students only used their taxon memory system to memorize vocabulary lists and categories. In recent years there is interest in how the brain works and how those functions apply to teaching, using the locale memory system in addition to the taxon (Erbes et al., 2010). Each of these two systems of long term memory storage should be emphasized throughout every lesson because the taxon system allows the student to organize the new learning into categorical parts, where the locale system registers the new learning contextually and will indefinitely allow the students to connect and apply their recent experience in new and different situations. The educators of today, once acquainted with the importance of using both taxon memory and locale memory, will have more students retaining new material and vocabulary each day.

Need for intervention

Memory, as an essential component of aptitude, has gained in popularity over the last 30 years (Erlam, 2005). The role of working memory depends on the age of the L2 learner (Juffs & Harrington, 2011). Age is so important because the brain develops during the adolescent years of high school, with both the brain and body going through many rapid changes. To reach students at the high school level is difficult for a variety of reasons including the brain's third pruning stage of connections, specific student needs, and lack of motivation (Lauría de Gentile & Leiguarda de Orué, 2012).

Educators of foreign language must take into account all of the special needs and levels of cognitive maturity in their students, so that they as teachers can address the challenges within the classroom. A portion of the students (ages fourteen to fifteen) are going through a "pruning"

stage, as mentioned above, so that the brain can concentrate on body growth and emotional development (Kennedy, 2006). The students during this time are yearning for social interaction and meaningful environments. The problem is that not every lesson has a peer interaction activity, or an outlet for collaborative interactive group work. The students also need purposeful movement such as activities at the front or back of the classroom, changing seats, mixing partners or groups, etc. (Lauría de Gentile & Leiguarda de Orué, 2012). These activities would greatly increase engagement and connections to the new learning and thus lead to a stronger retention of material (Farley et al., 2012). Although an educator must also understand that the need for social interaction increases the possibility of peer pressure within the classmates. Additionally, stress is a dangerous component during the high school years and can be brought on by peer pressure. The troublesome part of puberty comes with the brain's stage of development consisting of more plasticity and thus more stress can cause the *cortisol* (the stress hormone) to harm and eliminate brain cells. To avoid this, educators must remember the saying; "everything in moderation." Studying a foreign language takes confidence, willingness, and persistence which may be hindered by peer pressure and stress (Lauría de Gentile & Leiguarda de Orué, 2012).

Most educators at the high school level struggle with students sleeping in class. This action sends a variety of messages to the teacher; the student is either sick, tired, or bored. According to Lauría de Gentile and Leiguarda de Orué (2012), students at the high school level need nine hours of rest a night, and they seldom get that amount. Therefore, the teacher must anticipate this reality and be proactive with mental stimulation and purposeful movement activities to keep students stimulated and engaged. This issue becomes a burden and a vital tool for the educators who must teach eighty-five minute block periods of instruction.

Vocabulary Retention Intervention

According to Kennedy (2006), “The natural approach... beginning language learners should be taught a new language in the same manner that they acquired their first, encouraging observation, listening, and understanding before developing skills in speaking, reading, and writing”(p.478). The goal of vocabulary intervention is to encourage the retention of vocabulary by using a wide variety of techniques and strategies to attach the vocabulary to the brain of a student in high school. The best way to do this intervention is to start with a strong understanding of the cognitive development of the adolescent brain and applying teaching strategies to address those cognitive demands. In addition, the educator should keep in mind the goal of the L2 learner, making sure the class tasks and objectives demand real-world target tasks and that the sequence increases in rigor as the students progress (Robinson, 2005).

Bridging the fields of cognitive psychology and education will create a more effective development and delivery of a lesson by targeting the processes of the brain by deepening the relationship between the student and L2. Elaborative rehearsal would ensure that this intervention reaches its goal of strengthening retention by asking the students to deduct meaning from the pre-existing knowledge in their memory and linking it to the new material. This would embed the meaning and create a personal connection to the newer material of the L2 (Erbes et al., 2010). To ensure a connection and an effective vocabulary lesson, there must be three components accounted for: integration, meaningful use and repetition (Smith, 2008). By teaching words multiple times, the students will hear them, use them, and finally learn them (Smith, 2008).

The more ways new vocabulary is manipulated, the deeper it is processed and leads to a greater level of retention (Farley et al., 2012). Some successful strategies would include Total

Physical Response (TPR), reviewing already learned material, use of role-play, authentic assessments and the use of mnemonic, color-phonics systems (flashcards with color coded vowels). The TPR is a great way to make learning more fun, meaningful, and interactive. This technique will lead to more connections between the student and new material (Kleinert et al., 2007).

Learners of L2 must learn a massive amount of vocabulary just as they had to master in their native language (L1). Not all words are easy to explain or visualize, thus abstract words are more difficult to learn. By using richer visual representation and linkage to pre-existing knowledge of concrete words acquisition will more likely prevail. The concrete words are linked with visual imagery much easier than abstract words. According to Farley (2012), this fact stems from the ‘dual-coding theory’ postulated by Allan Paivio that discovered through symbolism and imagery recall and retrieval of abstract words would improve. The reasoning is generated from the concreteness effect which states, “tangible objects are recalled and recognized better than abstract words” (p.451). The imagery system allows mnemonic superiority which makes it easier to remember pictures (Farley et al., 2012). This system emphasizes the importance of visuals to represent vocabulary in order to ensure the students retain the vocabulary for a longer period of time.

There are many studies that have examined the effects of visual and pictorial stimuli and all have found advantages to using this method. According to Farley et al. (2012), one study showed that the L2 learner “will readily utilize visual stimuli even without explicitly being told to do so when attempting to remember new lexical items.” In addition, there was a study that compared verbal encoding with verbal encoding plus imagery on vocabulary learning in Chinese. The study concluded that there is no difference in either of the two groups learning concrete

words. However, the group with added imagery learned the meaning of abstract words better than the group without imagery (Farley et al., 2012).

Based on the research, the best intervention for students in high school needing to retain the most vocabulary of the L2 as possible would be to use visual imagery throughout engaging lessons with purposeful movement and strategically planned activities. According to Juffs and Harrington (2011), “Moreover while research on working memory and phonological memory will continue to be important, we can expect more work on how visual information is processed as part of language comprehension and written output” (p.160). As concluded by Erlam (2005) in an experimental study, learners scored higher on L2 assessments in reading when having a greater working memory capacity.

Summary

When teaching students at the high school level, the educator must have an adequate knowledge of how the cognitive development functions and how to apply effective teaching strategies to encourage persistence. Simply using imagery to increase retention of vocabulary will reduce stress and make it easier to acquire the necessary amount of L2 vocabulary needed to comprehend and develop spontaneous interactions with their new language.

CHAPTER III

METHODS

This study was conducted to determine whether the implementation of instructional techniques using visuals would lead a selected class of high school Spanish level three students to have better vocabulary knowledge than students learning under a traditional vocabulary teaching model.

Design

This study was a quasi-experimental design study using convenience samples. There were two groups –a treatment group and a control group—that were provided vocabulary instruction through two different methods. The independent variable in this study is the type of instruction that the participant receives in class: (1) traditional only or (2) new instructional techniques with visuals. The dependent variable in this study is the vocabulary retention score that is derived from the vocabulary and content/context scores on the Baltimore County Spanish Test (BCST).

This study took place over a two month time period and a pre-test/post-test model was used to determine the effectiveness of the use of visual representation. The researcher administered a pre-test to all participants to determine their level of retention at the beginning of the study to ensure that there was no significant differences between the groups prior to the intervention. The effectiveness of the intervention was assessed by a comparison of post-test scores.

Participants

The study took place in the classroom of the researcher at a public high school in a suburban area of the mid-Atlantic region. This high school has a student enrollment of 1,523

spread out through grades 9-12. The school has a 44% African American, 37% White, and a Hispanic population of 7%, along with a fairly high mobility rate of 12% throughout the school year 2012-2013. In addition, 47 percent of the enrolled students fall into the free and reduced lunch subgroup indicating that the student population includes many students of low socioeconomic status.

For this study, the participation was limited to the fourth period class of Spanish three. Each class is eighty-five minutes long. The students have an alternating A/B schedule with four classes per day. Therefore the students have Spanish every other day for eighty-five minutes. The sample was convenient in that they were students of the researcher. However, those two sections of Spanish III were purposely selected because they shared the same make-up of twenty-eight students 14 to 17 years of age; and both had great class attendance. The first class chosen was period four, the treatment group, and the next chosen was period two, the control group. Period four, the treatment group, was made up of twenty-eight students, nine boys and nineteen girls. There were two, one boy and one girl, whom were native speakers of Spanish within this class. Period two, the control group, was made up of twenty-eight students, nine boys and nineteen girls, the exact same make-up as period four. There were however four boys and two girls whom were native speakers in this class. All students in the two classes were included in the study, even if they were native Spanish speakers. The students were assigned to either period two or four based on their schedule availability. The guidance counselors, who had no knowledge of this study prior to scheduling, assigned each student to a class using the standard scheduling process. Therefore, the researcher had no hand in selecting class placements. She randomly decided which class was the treatment group and which class was the control group.

Instrument

The Baltimore County Spanish Test (BCST) measures each student's achievement in listening, speaking, reading, and writing at the end of each unit throughout the entire school year of Spanish level three instruction. This test was designed by a team of members in the World Languages Office in Baltimore County. The test is easily accessible and is provided for all schools on a shared drive; in addition, at the beginning of each school year a personal hard copy of the curriculum disc is given out to each World languages teacher. According to test reviews made within the Buro's Mental Measurement Yearbook, this test has two reviewers: Alan Garfinkel (YR. book 8) and Mariette Schwarz (YR. book 6) that support this as a both reliable and valid test.

Each unit test requires the students to indicate their level of mastery in vocabulary and content/context in two ways, orally and written. The first focuses on spontaneous response, with questions pertaining to the unit's theme, asked of the students individually, by the teacher. The Unit 2 BCST test, which was completed prior to the initiation of the study, was used for the vocabulary retention pre-test score. The vocabulary retention score for the post-test was combined from the Unit 3 and Unit 4 BCST tests.

The oral portion of the test used for this study had four questions and required the students to respond with as many details as possible, while taking risks and expanding their responses with prior knowledge showing their level of L2 acquisition. All questions asked in this portion provide an opportunity for the students to elaborate. Throughout an entire school year of Spanish III, all six units use this same format for the oral portion but discuss different topics. For instance, unit 2 is about creating recommendations to help solve problems and describing your ideal mate, but unit 3 focuses on difficulties and achievements the students have faced

throughout their lives along with recommendations and unit 4 the students discuss their impressions of art and music.

On average each student responds to all four oral questions of the speaking part in two minutes or less. For the researcher it was a feasible conversation length to hold in one class period when there are twenty-eight students. The students were then asked to read a brief statement in the L2 (typically in the form of an email aligned to the particular unit's theme and write a one-page synopsis back to the person who wrote the statement including as much prior knowledge as possible. The instructions for both indicators of L2 acquisition are provided in the student's first acquired language, minimizing any confusion for what they are expected to have retained.

The tests are scored by a rubric that is designed to provide a general summative assessment of student achievement. The rubric for each unit test has an available twenty five points. The rubric contains five categories of five points for the following categories: pronunciation, fluency/organization, accuracy, vocabulary, and content/context. This research focuses on two of those five categories: vocabulary and content/context. The vocabulary retention score was based off the combined performance on the vocabulary and content/context categories (see Appendix A). Since the pre-test score was based on only one unit and the post-test score was based on two units, the number of available points differed on the pre-test (10 possible points) and the post-test (20 possible points). The researcher was the only individual to score the tests, so there is no inter-rater reliability data.

The rubric utilized for the pre-test was from the BCST Spanish level three, scoring unit two and the same rubric was utilized for the post-test but was based on the information for unit

three. Each unit test requires the students to indicate their level of mastery in vocabulary and content/context in two ways, orally and written.

Procedure

The participants were students of the researcher in two different Spanish III classes, each class representing the control or treatment group. During one class session of 85-minutes on the same day, all twenty-eight students in each group, were administered the BCST aligned with unit two's theme. They had just completed unit 2 over a four week period, the high school has a rotating every other day schedule. The results of the unit 2 test were compared by an independent samples t-test. There was no statistically significant difference between the mean vocabulary retention scores of the treatment group (Mean = 7.93, SD = 1.68) and the control group (Mean = 7.93, SD = 1.63) [$t(54) = 1.00, p \geq .05$]. Consequently, it was not necessary to control for pre-existing group differences when analyzing post-test scores.

Both classes began the curricular content from unit three. Although each class had different tasks or learned the material through varying techniques the curricular content was always identical. Both groups experienced a listening, speaking, reading and writing activity in every class session.

The control group was exposed to the new material of unit three through the use of traditional methods throughout the class period. Traditional methods include techniques such as copying the Spanish definition next to the English translation or creating questions and answers by reading the vocabulary term and using it correctly based from their note-sheet.

The treatment group was exposed to the same new content and received some traditional instruction. However, for the first thirty minutes of each class, they learned through the experimental method. During those thirty minutes they learned the vocabulary terms and key

expressions through visual representations. The new techniques ranged from role-play, quiz-quiz-trade with flash cards, t-chart exercises with the chart completely filled with visuals to be circled and free response requiring the class to create questions and answers using only visuals. Later in the class they received traditional instruction in which they were introduced to the written words for the visuals.

After completion of unit 3, the students in both the treatment and control group completed the BCST for that unit during the oral test, both groups were given a sheet of paper with retrieval cues with which the students were allotted 3 minutes to brainstorm prior to conversing one-on-one with the teacher. There was a difference in the format of the retrieval cues provided to the two groups of students. This was deemed necessary since from an instructional standpoint, it is important to provide retrieval cues consistent with the way the information was initially presented. The control group was given a piece of paper with a list of verbs and vocabulary terms in their first language to help jar their memory of various things to say in the L2 to possibly expand their four response. The native speakers were given a sheet as well but it was in their first language, Spanish. Meanwhile, the experimental group was given a piece of paper with many visual representations of vocabulary terms and verbs to help generate various things to say to expand their four responses in the L2. Although the format of the retrieval cues was different, the actual test questions and scoring rubrics were identical for the two classes.

After the unit 3 test was completed, the researcher scored it by the rubric. The rubrics were handed back to the students so the students could improve and track their progress. The two classes were then instructed on unit 4 over a four week period. The control group continued to receive traditional instruction through the entire class period while the experimental group

continued to spend 30 minutes of each class using the experimental rather than the traditional instruction. The students then completed the unit 4 test using the same procedures followed for the unit 3 test.

The scores from unit 3 and unit 4 were combined to produce the post-test vocabulary retention score. After the intervention, the vocabulary retention scores of the two groups were compared by an independent samples t-test.

CHAPTER IV

RESULTS

This study was conducted in two high school Spanish III classes. Both groups, the treatment and control, were made up of twenty-eight students. The purpose of the study was to gather data illustrating the impact of utilizing visual representations of vocabulary words rather than lists of vocabulary words. This was done to see that there would be no statistically significant difference between the students who utilize visuals to deepen their vocabulary retention of verbal pieces of language to students who use the traditional vocabulary list memorization method.

There was no statistically significant difference between the vocabulary retention scores of the treatment group (Mean = 16.75, SD = 2.72) and the control group (Mean = 15.93, SD = 3.32) [$t(54) = 0.32$, $p \geq .05$]. See Table 1.

The null hypothesis that there will be no statistically significant difference between the vocabulary retention score of the Spanish III students who follow the traditional teaching vocabulary model (i.e. the control group) and students who follow new instructional techniques using visuals to help increase knowledge of vocabulary (i.e. the treatment group) failed to be rejected.

Table 1

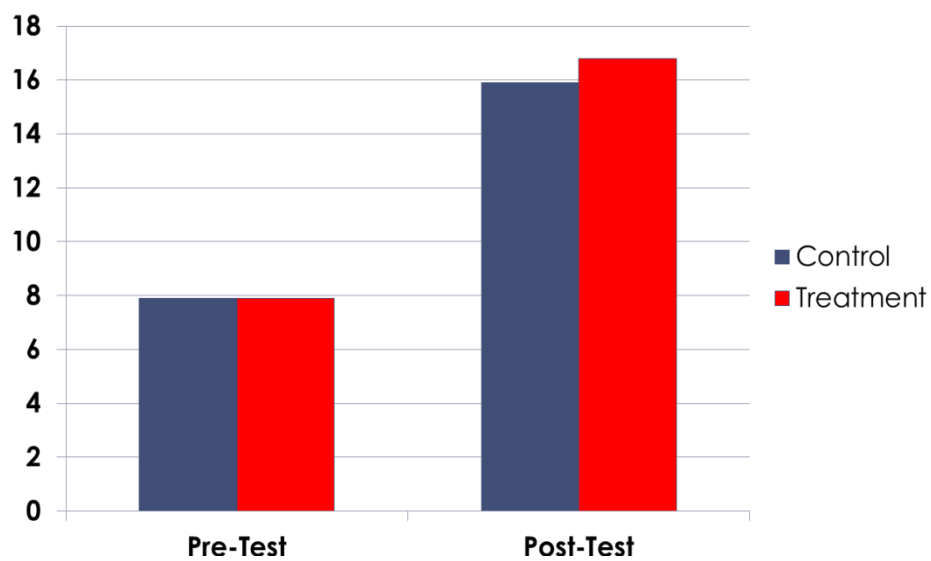
Means, Standard Deviations, and t-tests Results for the Vocabulary Retention Scores

Group	N	Mean	Standard Deviation	t- statistic
Treatment	28	16.75	2.72	0.32 (NS)*
Control	28	15.93	3.32	

*NS = non-significant a $p \leq .05$.

Graph 1

Pre-Test and Post-Test Bar-Graph Results for the Vocabulary Retention Scores



CHAPTER V

DISCUSSION

This study examined the effectiveness of teaching Spanish vocabulary with the use of visual representations. This study failed to reject the null hypothesis that there would be no significant difference between the vocabulary retention score of the Spanish III students who followed the traditional teaching vocabulary model (i.e. the control group) and students who followed new instructional techniques using visuals to help increase knowledge of vocabulary (i.e. the treatment group). The groups did not differ significantly in their vocabulary retention scores.

Implications of Results

The teacher played an intensive role throughout this study due to the amount of work needed behind the scenes. To implement the treatment method the teacher had to find adequate visuals to represent even the most abstract verbal representations. The internet made it easier to access those visuals but the amount of time sorting through the millions of visuals was taxing and tedious. A veteran teacher may have the time but must be prepared for the time commitment this treatment needs to be implemented effectively. A novice teacher should not try this methodology due to the time the teacher must already spend planning lessons, grading and adapting to the new career. Lastly, this treatment would be best used by a team from the World Languages Office over the summer, when school is out and the group's focus is on finding visual representations for each unit to share with the entire department, saving everyone precious time.

Although group differences were not found when comparing test scores, this researcher did observe differences among the groups in how they responded to instruction. The students in the treatment group thoroughly enjoyed the visual stimulation and built a connection to the visual

and themselves. It was observed by the researcher that the students were much more engaged and when asked about the upcoming school year many students were continuing with the language. These observations suggest that this strategy could potentially be helpful in increasing student interest and involvement in foreign language instruction.

Theoretical Consequences

The results do not support the theory behind visuals increasing the knowledge of vocabulary retained when pairing a visual with a verbal representation. The results showed no difference in outcome scores before and after the treatment was implemented.

Threats to Validity

Throughout this study, there were threats of both internal and external validity. These threats may have impacted the findings in the study.

Potential teacher bias could have affected the internal validity of this research study. Since the teacher was the one conducting the research and was also the one scoring the tests, she may have had unconscious bias that influenced the results, even though a standard rubric was used. Not only was there a potential risk for bias in scoring the tests, but it was also possible that the researcher could unconsciously teach and interact with the students differently in the two sections beyond the variation attributed to the intervention.

Differences in the time of instruction could have impacted internal validity. The students have an alternating A/B schedule with four classes per day of 85 minutes duration each. Therefore, the students have Spanish every other day for eighty-five minutes. The control group met together mid-morning with the researcher, but the treatment group came together at the end of the long school day. Consequently, the two groups may have differed in their engagement during instruction.

Another threat to internal validity was the amount and consistency of time spent using the intervention. The study took place over a two month time period which may have been an insufficient duration for a new strategy to be effective. Due to the A/B schedule, students have Spanish only every other day. Consistency in receiving instruction was further disrupted by multiple snow days spread out throughout the time the study was being conducted.

Lastly, the internal validity could have been affected due to the timing of the intervention in the course of the school year. The intervention was introduced four months before the school year ended and after routines had already been established. Consequently, the change in routine could have been a separate factor affecting performance.

Outside the experimental study, the external validity which refers to the ability to generalize the results of the study to students and to others was affected by a few different circumstances. The main area which affected the external validity was the independent variable of the research was the technique of the vocabulary instruction. The technique of vocabulary instruction involved the use of visual representations. There are various ways, however, in which visual representations could be integrated into foreign language instruction. The results of this study can be generalized only to the specific strategy used by this researcher and cannot be generalized to all types of visually based foreign language instruction strategies.

Another circumstance affecting the external validity might be the ability level and experience of the students in the study. In both groups, control and treatment, there were a total of eight native Spanish speakers. It was possible that the native speakers performing at an already high level could have reacted differently to the treatment due to their background of the language. The selection-treatment interaction among this unique group of students could have influenced the results. In addition, the study was conducted among Spanish III students. The

results cannot be generalized to students with different levels of experience such as individuals just starting Spanish I or to students in Advanced Placement Spanish since they differ not only in background skill levels but may also differ in foreign language abilities.

Connections to Previous Studies

This study addressed how two groups enrolled in Spanish III could gain knowledge of vocabulary through visuals and link the new learning to the pre-existing vocabulary from the past years. The study was built off the research of Farley et al. (2012), Ebres et al. (2010), and Erlam (2005) that demonstrated that, with the use of visuals as a specific strategy, students retained more vocabulary and increased their working memory capacity to understand more abstract vocabulary terms.

Research has shown that consistency and building a connection to the vocabulary are key components to increasing the retention and deepening the understanding of vocabulary. The more stimulating the visuals are, the more engaging the vocabulary lesson, the greater learning and retention are for the student (Kennedy, 2006). When the visuals stimulate the student, they make a connection to the vocabulary, especially when they create something using the vocabulary. Creation and personal usage of the vocabulary strengthens and deepens retention and knowledge of the vocabulary (Smith, 2008). Techniques used throughout this study were also viewed in the research prior to the present study discussed. One technique was purposeful movement. According to prior research, purposeful movement and collaborative interactive group work keeps the students engaged and stimulated, thus deepening their retention and knowledge (Lauría de Gentile & Leiguarda de Orué, 2012). In addition to purposeful movement and collaborative interactive group work, the activity must demand a real-world task and an increase in rigor as the task unfolds, which strengthens the student connection to the vocabulary

(Robinson, 2005). The researcher conducted purposeful movement routinely and followed the suggested procedures. However, due to lack of significant group differences in the study, it is unclear whether or not that particular component of the intervention was effective.

A study comparing verbal encoding to verbal encoding plus imagery concluded images representing abstract ideas rather than simple words helped students retain more vocabulary (Farley et al., 2012). In the current study the researcher used minimal visuals to represent abstract ideas which pose the question. It is possible that one reason that the current intervention did not have significant group differences is that this researcher did not use many visuals for abstract information.

Implications for Future Research

Although the current study does not provide evidence the integration of visual images improves vocabulary retention over that of traditional instruction, there is a body of literature suggesting that the integration of visual images is a valuable technique. Consequently, future research should continue on the topic and could address some of the threats to validity in the current study.

There were threats of both internal and external validity, but there are solutions to avoid most of them in future research. First, a possible solution to the threat of internal validity in reference to teacher bias could be to ask another teacher of this same level of Spanish III class to score students from the two groups, control and treatment, using the same standard rubric and compare results with the researcher. Additionally, in order to avoid the effects caused by a change in routine. The research could be started at the beginning of the year, so the students are not readjusting to a new routine, feel more comfortable, and are more focused on the knowledge at hand.

To solve the main threat of external validity, the future researcher should begin with the independent variable of this study. One possible solution to strengthen this research study would be to try out the same technique, using visuals to represent verbal representation, but implemented in several different methods. The new methods might lead students to develop a deeper knowledge of vocabulary than students who learned through the one technique utilized in this study. The effectiveness of the various techniques could then be compared.

Future research could compare student satisfaction with the two different types of instruction. A researcher could compare responses on self-report questionnaires or compare enrollment numbers in the next year's classes. Based on researcher observations in the current study, if the outcome was focused on the level of enjoyment in the class, there most likely would have been significance between the control and treatment groups.

For future research, the researchers should consider adding more rigorous real-world tasks and visuals representing abstract ideas. These simple additions could provide significant difference between the control and treatment groups.

One validity concern was the potential impact of inconsistent exposure to the intervention. A study could examine whether consistency is an important factor. For example, a researcher could examine if the treatment is differentially effective if it is administered consistently every school day for 20 straight days versus being used intermittently for the number of the same number of days but spread out over time.

Future research could also address whether the intervention is differentially effective among students of different ability and experience levels. This could include specifically examining the efficacy of the intervention with native Spanish speakers. It could also include examining the efficacy of the intervention at different levels of Spanish classes.

Conclusion

The results of this study did not provide evidence that integrating visual images into Spanish instruction is better than traditional instruction for helping students perform well on end of unit tests. However, there were threats to validity in the study and previous research has supported the use of visuals. In addition, researcher observations suggest that using visuals makes the students more engaged and eager to participate in the language at hand. Consequently, further research investigating the use of visual strategies would be worthwhile. Hopefully, if the optimal visual based strategy is used, the connection made to the visual and its verbal representation will allow the learners to develop a deeper understanding of the language as a whole and a stronger personal connection to the knowledge.

References

- Ebres, S., Folkerts, M., Gergis, C. Pederson, S., & Stivers, H. (2010). Understanding how cognitive psychology can inform and improve Spanish vocabulary acquisition in high school classrooms. *Journal of Instructional Psychology*, 37(2), 120-132. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ952112&site=ehost-live>; http://www.projectinnovation.biz/jip_2006.html
- Erlam, R. (2005). Language aptitude and its relationship to instructional effectiveness in second language acquisition. *Language Teaching Research*, 9(2), 147-171. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ805484&site=ehost-live>; <http://dx.doi.org/10.1191/1362168805lr161oa>
- Farley, A.P., Ramonda, K., & Liu, X. (2012). The concreteness effect and the bilingual lexicon: The impact of visual stimuli attachment on meaning recall of abstract L2 words. *Language Teaching Research*, 16(4), 449-466. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ985443&site=ehost-live>; <http://dx.doi.org/10.1177/1362168812436910>
- Gallego, M.T. & Pilar Agustín Llach, M. (2009). Exploring the increase of receptive vocabulary knowledge in the foreign language: a longitudinal study. *International Journal of English Studies (IJES)*, 9(1), 113-133. Retrieved from <http://search.ebscohost.com> <http://www.jstor.org/stable/30047242>
- Juffs, A. & Harrington, M. (2011). Aspects of working memory in L2 learning. *Language Teaching*, 44(2), 137-166. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ916833&site=ehost-live>; <http://dx.doi.org/10.1017/S0261444810000509>

- Kennedy, T. J. (2006). Language learning and its impact on the brain: connecting language learning with the mind through content-based instruction. *Foreign Language Annals*, 39(3), 471-486. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ766755&site=ehost-live>; <http://www.actfl.org/i4a/pages/index.cfm?pageid=3320>
- Kleinert, H.L., CLoyd, E., Rego, M., & Gibson, J. (2007). Students with disabilities: yes foreign language instruction is important. *Council of Exceptional Children*. Retrieved from: <http://search.ebscohost.com>
- Lauría de Gentile, P. & Leiguarda de Orué, A.M. (2012) Getting teens to really work in class. *English Teaching Forum*, NO. 4. Retrieved from <http://search.ebscohost.com>
- Maine Department of Education. (1997). *Modern and Classical Languages*. Retrieved from <http://www.state.me.us/education/lres/mcl.pdf>
- Robinson, P. (2005). Cognitive complexity and task sequencing: studies in a componential framework for second language task design. *International Review of Applied Linguistics Teaching* (IRAL), 43(1), 1-32. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ745627&site=ehost-live>; <http://dx.doi.org/10.1515/iral.2005.43.1.1>
- Smith, T. (2008). Teaching vocabulary expeditiously: three keys to improving vocabulary instruction. *The English Journal* (NCTE), 97(4), 20-25. Retrieved from <http://search.ebscohost.com>

APPENDIX A

Baltimore County Spanish Test (BCST)

Pre-test and Post-test Rubrics

Spanish III Speaking Performance Assessment SCORING RUBRIC – SPEAKING

	COMMUNICATION	VOCABULARY	ACCURACY	PRONUNCIATION	CONTEXT/CONTENT
5	Obvious ease of expression and clear communication despite occasional errors	Broad use of vocabulary with appropriate use of circumlocution	Correct use of a variety of syntactic structures and connections of ideas	Easily comprehensible, errors do not interfere with communication	Demonstrates willingness to take risks with much information conveyed in the appropriate register
4	Errors do not impede communication despite some interference from native language	Some range of vocabulary with appropriate use of circumlocution	Mostly correct use of syntactic structures and connections of ideas	Comprehensible with some errors that may interfere with communication	Demonstrates some risk-taking with much information conveyed in the appropriate register
3	Errors may interfere with communication with some interference from native language	Control of core vocabulary that may be repetitious with occasional use of circumlocution	Control of basic syntactic patterns with little connection of ideas	Somewhat comprehensible with some errors and interference from native language	Demonstrates some risk-taking with a moderate amount of information conveyed
2	Hesitant communication, fragmented sentences, communication is minimally effective	Limited control of core vocabulary	Limited control of basic syntactic patterns with occasional self-correction	Minimally comprehensible with many errors that may interfere with communication	Demonstrates little risk-taking with little information conveyed
1	Limited fluency and interference from native language, communication is not effective	Inadequate vocabulary forces interpretation	Little control of basic syntactic patterns with little self-correction	Minimally comprehensible with errors that interfere with communication	Demonstrates no risk-taking with a minimal amount of information conveyed
0	Response is off task, incomprehensible, or in English. Silence.				

Baltimore County Spanish Test (BCST)

Spanish III Writing Performance Assessment SCORING RUBRIC – WRITING

	COMPREHENSIBILITY	FLUENCY/ ORGANIZATION	VOCABULARY	ACCURACY/ SYNTAX	CONTEXT/ CONTENT
4	Response is easily comprehensible; errors do not interfere with communication.	Response is well - organized with complete sentences; communication is effective.	Response demonstrates thoughtful use of words; vocabulary is rich.	Response includes few errors in grammar; errors do not interfere with communication.	Response demonstrates willingness to take risks with much information conveyed.
3	Response is comprehensible with some errors that may interfere with communication.	Response is somewhat organized with simple sentences; communication is somewhat effective.	Response demonstrates appropriate use of words; vocabulary is adequate.	Response includes some errors in grammar; some errors may interfere with communication.	Response demonstrates some risk-taking with a moderate amount of information conveyed.
2	Response is minimally comprehensible with many errors that may interfere with communication.	Response is minimally organized with fragmented sentences; communication is minimally effective.	Response demonstrates limited use of basic words; vocabulary is minimally adequate.	Response includes many errors in basic grammar; errors may interfere with communication.	Response demonstrates little risk-taking with little information conveyed.
1	Response is minimally comprehensible with many errors that interfere with communication.	Response is poorly organized with sentence fragments or isolated words; communication is not effective.	Response demonstrates limited use of basic words; vocabulary is not adequate.	Response includes many errors in basic grammar that interfere with communication.	Response demonstrates no risk-taking with a minimal amount of information conveyed.
0	Response is incomprehensible or inappropriate or there is no response.				