

VOCABULARY DEVELOPMENT FOR ACADEMIC SUCCESS IN
KINDERGARTEN ENGLISH LANGUAGE LEARNERS

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VOCABULARY DEVELOPMENT FOR ACADEMIC SUCCESS IN
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DEDICATION

This thesis is dedicated to my family for all their love and support. To my parents Adan and Oralia Gutierrez for being my first educators, teaching me the importance of an education and their constant push to succeed. These are not only my accomplishments, but ours.

To Marky, Maddy, and Dante, the world is in your hands. Believe in yourselves and you can achieve anything!

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ABSTRACT

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Based on research of the literature on first- and second-language acquisition and learning, an experimental study was conducted with kindergarten English Language Learners for a period of four months. The purpose of this investigation was to find whether the teaching method of *preview-view-review* is effective for teaching mathematics. The findings showed subjects in the experimental group performed higher than those in the control group in some portions of the mathematics content assessment. In the areas that subjects did not perform higher, it appeared to be because the students did not have the vocabulary in their native or primary language.

CHAPTER I

INTRODUCTION TO THE STUDY

There is a large body of literature on first and second language acquisition and learning. However, there is limited literature that supports the methodology of *preview-view-review*. Freeman and Freeman (1998) were the first theorists who began to utilize and report on this methodology, and even though it is widely used in bilingual classrooms, only few researchers have actually investigated its effectiveness. Students for whom English is not the first language have limitations in the development of academics, as clearly shown by the body of research on bilingual education. These students are referred to as “limited English proficient” (LEP), “non-English proficient,” “English for speakers of other languages” (ESOL), or simply “bilingual students,” and from the latter part of the 20th century, the term “English Language Learners” (ELLs) became widely used (Crawford & Krashen, 2007). The ongoing rising numbers of ELLs is reported as 138% population increase of ELLs in the U.S. It is estimated that there are approximately five million ELLs enrolled in U.S schools, of which 80% are Spanish-speaking (Fishkin, 2010; Harper & de Jong, 2004). However, to better understand how bilingual education is implemented for ELLs, it is necessary to first understand its history, approaches, methodologies, and practices.

Historical Overview

Across the history of bilingual education, there have been times when it is either supported or weakened. In 1923, a bill was proposed to pass *American* as the official language at the federal level. It was not passed by Congress, but it was adopted by Illinois the same year (Crawford & Krashen, 2007). Furthermore, in 1964, Title VI of the Civil Rights Act ensured that federally funded programs were prohibited from discrimination on the basis of “race, color, or national origin” (Crawford & Krashen, 2007), some school districts interpreted this Act as providing English Language Learners (ELLs) the same, all-English education as provided to other students (Crawford & Krashen, 2007). In 1968 the Bilingual Education Act affirmed the right of ELLs to receive education in the language they best understood, and through this Act, school districts were encouraged to apply for federal grants for bilingual education (Crawford, 2004). In 1969, Illinois replaced *American* with *English* as the official language (Crawford & Krashen, 2007). A turning point in the history of bilingual education came with the 1974, *Lau v. Nichols* Supreme Court Decision, which determined that school districts had to take “affirmative steps” to overcome language barriers for these students by providing them teachers and curriculum in their native language; that is, ELLs had to have education that was similar as that of native English students (Crawford & Krashen, 2007). Under *Lau v. Nichols* schools districts had to provide effective language assistance to students. In 1981, Senator S.I. Hayakawa (R) proposed to declare English as the official language (Crawford & Krashen, 2007), and in the same year *Castaneda v. Pickard* set forth the “three-prong” test for school districts to meet obligations for English Language Learners. This three-prong approach required that programs had to be: (a)

based on “sound educational theory,” (b) “implemented effectively” with adequate resources and personnel, and (c) evaluated as effective in overcoming language handicaps (Crawford, 2004). In 1982, *Plyler v. Doe* determined that public schools should not discriminate on the basis of immigration status (Crawford & Krashen, 2007). Most states were forbidden to inquire about students’ immigration status, or require their parents to provide proof of legal residency (Crawford & Krashen, 2007). In 1996, the House approved the English Empowerment Act, designating English as the language of most federal documents, communications, and services, which the Senate later declined (Crawford & Krashen, 2007). In 1998, Proposition 227 in California mandated a single all-English program for English Language Learners (Crawford, 2004). In 2006, Senator James Inhofe, Oklahoma Republican, sponsored an amendment that would have declared English the “national language” (Crawford & Krashen, 2007), and it was passed by the Senate, but stopped when Congress failed to agree on the Immigration portion of the Bill (Crawford & Krashen, 2007).

Shift in Education in the United States

Education is a human right in the United States. All people have the right to seek a free and appropriate education. In theory, education must be made accessible to everyone, but in practice, is that true? According to Crawford (2004), the founding fathers of the United States did not adopt a primary language; in fact, many people spoke their mother tongue. Not much has changed in America’s modern thought. The American education system has been viewed through a Western European lens for centuries. And, more often than not, the education system is tailored for middle-class English-speaking populations. However, in the last few decades there has been an

increase in the population of students who speak a primary language other than English. According to the U.S. Department of Education, between 1979 and 2008, the number of school-age children (ages 5-17) who spoke a language other than English at home increased from 3.8 to 10.9 million, or from 9 to 21% of the population in this age range. Spanish has become one of the most widely spoken languages in the world, with an estimated 400 million first- and second-language speakers in 44 countries, and the number of Spanish speakers in the United States has been steadily increasing over the last few decades. It is expected that Spanish will soon become the second largest language group in the nation. A press release of the U.S. Census Bureau dated August 14, 2008, estimated that the Hispanic population will nearly triple, from 46.7 million to 132.8 million during the 2008-2050 period, and its share of the nation's total population is projected to double, from 15% to 30%. Thus, nearly one in three U.S. residents would be Hispanic (Fairclough, 2011). This implies that ELLs are becoming the norm, rather than the exception. Some of the challenges of this shift in population are the way the current education system is being run and how to change it to meet the needs of this large Spanish-speaking community. Bilingual education has become an issue of great debate and banter amongst politicians, administrators, educators, and parents for years (Cummins, 2001; Palmer, 2007; Ray, 2009; Varghese & Park, 2010). The fact is that one of the groups is still being left behind in our current school system, and this group is composed of students for whom English is not their first language. As Ortiz and Sumaryono (2010) state, "The unfortunate irony of the current education reform is that English Language Learners are disproportionately being left behind" (p. 93).

One of the main catalysts for bilingual education in the United States was the enactment of the federal legislation of No Child Left Behind (NCLB) (Ray, 2009). The NCLB act played a major role in decisions that the states were going to come up with in regards to bilingual education. The NCLB act requires each state to adequately identify English Language Learners, measure their English proficiency, and include them in all state-mandated tests to identify their academic success (Palmer & Rangel, 2010; Ray, 2009). One of the main roles of NCLB is to make sure that everyone is being held accountable and all students are given a “level playing field.” Now, has this come to realization over the past decade? Many critics and educators would say, NO! In fact, many critics would argue that since the inception of NCLB the education system has gone down the tubes, and many of those would say especially in bilingual education (Palmer & Rangel, 2010).

Bilingual Programs

Large numbers of English Language Learners have been identified in the United States education system over the past few decades. With these numbers projected to grow even more, it is important to understand, not only the needs of the students, but the need for education reform. According to Olivos and Sarmiento (2006), the need to effectively educate ethnically and linguistically diverse students is apparent. English Language Learners need bilingual education to be successful in the American school system. It should be a priority of each state and the voters of the state to implement the appropriate programs for these students. Richard Ruiz identifies three basic types of orientations in language policy: (a) language-as-problem, (b) language-as-right, and (c) language-as-resource (as cited in Crawford, 2004, p. 72). The language policy adopted

by the state and district will determine the type of language program implemented. Many language programs are in place throughout the nation's schools. Some of the most common practices stated by Crawford in the book *Educating English Learners:*

Language Diversity in the Classroom (2004) are the following:

- **Immersion** was designed to assimilate minority language speakers into a monolingual English environment, which later became known as “structured immersions.”
- **Submersion** is also known as the sink-or-swim model. This way of learning does not offer assistance or modifications to limited English speakers; learners are expected to learn the new language on their own. This approach reached its peak during World War II and was later disbanded in 1974 due to the *Lau v. Nichols* Supreme Court decision.
- **ESL Pull-Out** is one of the most common but least effective means of learning English. The Pull-Out practice actually takes students out of the “mainstream” classroom for small group tutoring in their second language. The students that participate in the Pull-Out model are often labeled as low performing and slow learners.
- **Structured Immersion** is often referred to as “sheltered English immersion,” created by the government to assimilate minority language speakers into English. Government funding and support were through the Reagan administration of the 1980s. This program attempted to make content instruction accessible for ELLs until they had enough English to be placed in a mainstream classroom (Crawford & Krashen, 2007).

- **Transitional bilingual education**, also known as the “early-exit” bilingual education program. Students are taught in their native language, but a large focus is placed on the target language, such as English. Students are encouraged to be proficient in two languages. The goal of the program is to have students exit within two to four years. Students are commonly proficient in oral language rather than academic language. This program uses the native language as a temporary support (Crawford & Krashen, 2007).
- **Newcomer Programs** are more commonly seen at the secondary level with the purpose of helping newly arrived immigrants or refugees. These programs provide a sheltered and supportive environment to help students’ transition to their new life in the United States. The focus is placed not only on academics, but it is also placed on the American education system and survival skills.
- **Developmental Bilingual Education:** A popular form of Developmental Bilingual Education is found in the elementary level, also known as “late-exit” or “gradual-exit bilingual education.” English instruction typically begins with 10% in kindergarten and 1st grade and gradually increases throughout grade levels. Students have opportunities to practice their English language in subjects that are not linguistically challenging, such as physical education, art, and music.
- **Dual-Language:** Provides an additive approach to instruction, building on native language for all students and seek to add a second language (Ray, 2009). The four goals for Dual Language Programs are: (a) bilingualism with

biliteracy, (b) cross-cultural understanding, (c) high academic achievement for all, and (d) high levels of self-efficacy (Palmer, 2007; Ray, 2009).

- **Two-Way Dual Language:** Also referred to as “dual immersion” and “Two-Way Immersion,” Two-Way Dual Language program focus on the students’ learning from their peers (Palmer, 2007). Native speakers of different languages are placed in the same learning environment to help acquire the language (Palmer, 2007). In a Two-Way Dual Language program, language-majority and language-minority students are taught both languages (Varghese & Park, 2010). Students maintain the primary language while developing language and literacy in a second language (Ray, 2009). There are several ways of dividing the two languages of instruction. Typically, classes divide their days or weeks between the two languages to teach languages through content (Palmer, 2007). Several program models are implemented throughout school districts. Another model is the “balanced” or 50:50 model in which languages are balanced equally throughout the grade levels (Palmer, 2007). The “minority language dominant” or 90:10 model focuses on language instruction beginning in kindergarten with 90% of instruction in the minority language and 10% in English daily, and gradually increases each year until the percentages are equal by 4th and 5th grades (Palmer, 2007).

National Overview of English Language Learners

No Child Left Behind (NCLB) has had great influence on the policies and actions pertaining to English Language Learner students in each of the 50 states. NCLB requires all states to identify English Language Learners, measure their English proficiency, and

include them in state testing programs that assess academic skills. States are also required to establish statewide English proficiency standards and assess each ELL with a statewide English proficiency assessment that reflects these standards. There are several factors that school districts face with the implementation of a program. According to the Center for Research on Education, Diversity and Excellence, districts should take into consideration goals, resources, and the needs and characteristics of the students (as cited in Crawford, 2004, p. 50). Several states fail to provide a detailed definition of limited English proficiency, leaving school districts with open interpretation (Crawford, 2004).

According to the National Center for Education Statistics, the number of school-age children (ages 5-17) who spoke a language other than English at home rose from 4.7 to 11.2 million between 1980 and 2009, or from 10 percent to 21 percent of the population in this age range. And of the 5.1 million, 79% of the ELLs are from a Spanish-speaking background. Nationally ELL numbers have steadily increased.

Even though the entire country has seen a large influx of English Language Learners, states such as Arizona, California, Texas, Florida, Illinois, and New York have seen the largest growth over the past few decades, making up a large percentage of the overall Limited English Proficient numbers (Bresser, Melanese, & Sphar, 2009; Crawford & Krashen, 2007).

English Language Learners in Texas

During the academic year 2010-2011, Texas reported a total of 4,933,617 students enrolled in the Public Education School System (Texas Education Agency, 2011a). Of the more than 4 million students, 2,480,000 were reported to be Hispanic (Texas Education Agency, 2011b). Also, 831,812 students or 16.9% of the total school

population were labeled as limited English proficient. The largest percentage of students enrolled was Hispanics, accounting for 50.3% of the population (Texas Education Agency, 2011b). Of the total school population in Texas in 2010-2011, 59.1% were identified as economically disadvantaged. Hispanics were the largest racial group identified as economically disadvantaged (77.4%), followed by African Americans at 71.6% (Texas Education Agency, 2011c).

The state of Texas is divided into 20 Educational Service Center (ESC) regions. Five ESC regions account for more than 60% of the State's total Hispanic population is shown in Table 1. All five of these identified regions sit along the Mexico-United States border, with the exception of Region 2-Corpus Christi.

Table 1

ESC regions with 60% of Hispanic populations

Region	Geographical Area	Hispanic Population Percentage
Region 1	Edinburg	97.4%
Region 2	Corpus Christi	73.8%
Region 18	Midland	64.0%
Region 19	El Paso	90.0%
Region 20	San Antonio	70.9%

Note. Adapted from "Enrollment in Texas public schools 2010-2011: Statewide enrollment, Texas public schools, 1987-88 through 2010-11" by Texas Education Agency, 2011g, Table 18, p. 37

Between 2000-2001 and 2010-2011 there was a large increase of students identified as Limited English Proficient (LEP). This number grew by 45.8%, an alarmingly high rate. In Texas most students identified as Limited English Proficient (LEP) speak Spanish, come from low socio-economic-status (SES) homes, are retained at grade level more often than their White or Asian counterparts, and are frequently overage in their classrooms (Gates & Lichtenberg, 2005). Along with this increase in identified population came an increase of a quarter of a million students receiving bilingual or English as a Second Language (ESL) services within the Texas Public Education System. The number of students receiving bilingual education or ESL instructional services increased by 56.4% (Texas Education Agency, 2011d). In 2010-2011, there were 797,683 (16.2%) students enrolled in Bilingual or ESL classes throughout Texas. Table 2 identifies the percentage of groups receiving Bilingual or ESL services.

Table 2

Percentages of groups receiving bilingual or ESL services

Ethnic Distribution	Percent of Population Receiving Bilingual or ESL Services
African American	1.1%
American Indian	0.4%
Asian	5.2%
Hispanic	90.7%
Pacific Islander	0.1%
White	2.3%
Multiracial	0.2%

Note. Adapted from “Enrollment in Texas public schools 2010-2011: Statewide enrollment, Texas public schools, 1987-88 through 2010-11” by Texas Education Agency, 2011e, Table 14, p. 26.

Language Acquisition

Students enter the educational system with different skills and needs. English Language Learners are faced with acquiring both, basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP), which are linguistic skills required in different situations (Crawford, 2004). BICS is sometimes referred to as “playground English” and often takes 2-3 years to acquire. CALP is sometimes referred to as “classroom English” or academic language and often takes 5-7 years to acquire.

Students learn a second language at different rates, and educators must know the stage at which their students are in to better help them transition to the English language. According to Krashen and Terrell’s hypothesis of second-language acquisition “the natural approach” can be used to determine the language stage the student is in (as cited in Facella, Rampino, & Shea, 2005). The natural approach is divided into four stages of acquisition: (a) preproduction takes 10 hours to 6 months of exposure to English; (b) early production takes 3 to 6 months to 1 year; (c) speech emergence takes 1 to 3 years, and (d) intermediate fluency takes 3 to 4 years (Facella, Rampino, & Shea, 2005). During each stage teachers speak for a certain amount of time. The higher the level of English language acquired, the less the teacher needs to talk (Facella, Rampino, & Shea, 2005). In the preproduction stage, students respond nonverbally and listen the majority of the time; teachers speak for 90% of the time (Facella, Rampino, & Shea, 2005). Strategies such as modeling, total physical response (TPR), yes/no questions, pictures, and hands-on activities can help students during this time (Facella, Rampino, & Shea, 2005). Typically, educators believe the strategies used in the preproduction stage are

only for primary grades, but they are beneficial for all students, especially ELLs who need the extra support to comprehend the material.

In the early production stage, students respond in one to two words. Teachers talk for 60% of the time. Strategies educators can use are answering the 5 Ws: who, what, when, where, why; role-playing, completing sentence stems, labeling, and TPR.

During the speech emergence stage, students typically speak in phrases and sentences, and teachers speak 40% of the time. Strategies teachers can implement for students at this stage are scaffolding, use songs, group discussions, and social interactions.

In the last stage of the natural approach, teachers speak for 10% of the time. Students with intermediate fluency can write an essay, problem-solve, analyze literature, do pre-writing activities, and critically analysis. Teachers need to remember what is helpful for ELLs can also benefit native-language speakers.

Strategies for English Language Learners

Most ELLs have limited vocabulary and background knowledge, and lack experiences (Fishkin, 2010). Several different strategies to help English Language Learners have been researched and published. This research paper does not mention all strategies and should be used as a starting point for readers, not a composite of all strategies. The study was with 20 teachers from two different schools in Massachusetts who utilized the strategies most commonly implemented in their classrooms (Facella, Rampino, & Shea, 2005). The strategies provided by the teachers were divided into three main categories: engaging learners emotionally (four strategies stated), teaching language specifically (five strategies stated), and teaching in general (19 strategies stated). The

majority of the teachers found repetition, using objects, props, and hands-on materials, as well as multisensory approaches, are beneficial strategies for teaching ELLs (Facella, Rampino, & Shea, 2005). Teachers need to support a child's emergent language by choosing a strategy that is developmentally appropriate for the child's language acquisition stage (Facella, Rampino, & Shea, 2005).

Fishkin (2010) mentioned five strategies that can help English Language Learners: (a) building vocabulary, (b) visual aids, (c) hands-on learning, (d) modeling, and (e) student-to-student interaction. Building vocabulary and background knowledge are key components in comprehending a task or literature. Vocabulary needs to be explained, and teachers need to remember to never make assumptions of their students. When material is being taught, we must always provide background knowledge and the given vocabulary. Visual aids are an important strategy for students. They provide students with something concrete when learning. Visual aids are items such as pictures, graphic organizers, computers, and videos, as well as role-playing, modeling, and gestures. Hands-on learning is where students can use new skills and work cooperatively with other students. Students are able to manipulate and make sense of the content. Student-to-student interaction activities are think-pair-share, buddy reading, and role-playing, which create a stress-free environment, which leads to students being more willing to take risks.

Four broad types of learning strategies are: metacognitive, cognitive, social, and compensation (Reiss, 2008). Metacognitive strategies involve thinking about learning, which can be broken up into two subgroups: (a) organizing and planning, and (b) self-monitoring and self-evaluating (Reiss, 2008). Cognitive strategies involve practice

activity (Reiss, 2008). They promote deeper understanding, better retention, and/or increased ability to apply new knowledge (Reiss, 2008).

Herrell and Jordan (2008) elaborated on strategies that enhance instruction through planning, support student involvement, build vocabulary and fluency, and build comprehension.

According to Herrell and Jordan (2008), effective instruction for students has several components.

Strategies for enhancing instruction through planning:

- Predictable routines and signals reduce anxiety.
- Visual scaffolding provides language support through images.
- Realia (artifacts) that connects the lexicon to the real world.
- Interactive read-aloud is designed to support understanding.
- Organizers get the mind in gear for instruction.
- Preview/review builds vocabulary and concepts to support understanding.
- Language lessons support the acquisition of English vocabulary structures.
- Academic language scaffolding supports student use of language in academic settings.
- Language framework planning creates an environment for language success.
- *Skills-grouping* enhances individualized instruction.

Strategies for supporting student involvement:

- Total physical response (TPR) integrates movement into language acquisition.
- Shared reading demonstrates how reading works.
- Leveled questions adjust to the language levels of students.

- Manipulative strategies use objects to connect concepts.
- Partner work practices verbal interaction.
- Communication games create opportunities for verbal interaction.
- Bilingual books and labels support biliteracy awareness.
- Cooperative learning uses group interactions to accomplish goals.
- Culture studies teach research skills and valuing of home cultures.
- Learning centers extend learning through hands-on practice.
- Imagining creates visual pictures to support understanding.
- Integrated curriculum projects use authentic projects to bring knowledge together.
- Sorting activities helps organize information into categories.
- Collaborative reading helps students know what to do when they can't read the textbook.
- Multimedia presentations allow the students to use other forms of technology to create oral reports.
- Reciprocal teaching is group work with an interactive structure, or having two students working on specific language or literacy development.

Strategies for building vocabulary and fluency:

- Modeled talk demonstrates proper language while the teacher talks.
- Reporting back gives verbal practice in curricular connections.
- Vocabulary role-playing builds vocabulary through dramatization.
- Vocabulary processing, a multi-strategy approach, builds language.
- Word walls display and organize words for easy access.

- Story reenactment makes stories come to life.
- Scripting practices verbal interactions.
- “Talk show” uses verbal communication to build confidence, vocabulary and comprehension.
- Writing workshops support the acquisition of English writing competence.

Strategies for building comprehension:

- Read-aloud supports understanding while teaching comprehension strategies.
- Language experience approach builds on an experience to create a written account.
- Interactive writing develops writing skills through active scaffolding.
- Guided reading provides individual support within a group.
- Interactive comprehension building strategies with the use of technology to build background knowledge.
- “Cloze” uses context to create meaning but restricts the vocabulary.
- Attribute charting organizes information to support understanding.
- Cohesion is the “glue” that holds paragraphs together, aiding understanding.
- Learning strategy instruction helps students acquire self-help skills.
- “Dictoglos” is a strategy for improving listening and oral communication skills.
- Repetition and innovation achieve deep comprehension through multiple interactions with a book.
- GIST (generating interaction between schema and text) explores language through text.

- Syntax surgery visually manipulates English grammar.
- Multiple intelligences strategies teach and test to student-preferred learning modes.

Supporting English Language Learners in Mathematics

U.S. students have performed below the international average on geometry, measurements, and proportionality (Chamot, 2009). The nation is in desperate need to help not only ELL students, but also native English speakers and students from other language groups. Research shows that African Americans, Hispanics, and ELLs are performing below their native English-speaking counterparts (Bresser, Melanese, & Sphar, 2009; Chamot, 2009). Supporting ELLs in mathematics can help bridge this gap.

The following are strategies that can help students understand concepts in mathematics: (a) activate prior knowledge, (b) reduce stress levels in the room, (c) use sentence stems, (d) create vocabulary banks, (e) practice wait time, (f) use native language as a resource, (g) make manipulative materials available, (h) ask questions that elicit explanations, (i) design questions for different proficiency levels, (j) use prompts to support student responses, (k) provide visuals, (l) pose problems in familiar contexts, (m) elicit nonverbal responses, (n) demonstrate and model, (o) use dramatization and gestures, (p) modify teacher talk, (q) recast math ideas and terms, (r) consider language and math skills when grouping students, (s) facilitate whole-group discussions, (t) utilize partner talk, (u) ask for choral responses from students, (v) rephrase strategies and ideas, and (w) connect symbols with words (Bresser, Melanese, & Sphar, 2009).

Preview-view-review

One way teachers can use students' strengths is using their first language (Freeman, Freeman, & Ramirez, 2008). *Preview-view-review* allows teachers to draw on students' linguistic backgrounds (Young & Hadaway, 2006). Students are given a *preview* of the lesson in their native/first language (Freeman & Freeman, 1998; Herrell & Jordan, 2008; Young & Hadaway, 2006). During *preview*, students are introduced to the important vocabulary, definitions, and key concepts using realia, visuals, and hands-on activities as an extra aid to understanding (Herrell & Jordan, 2008; Reiss 2008; Young & Hadaway 2006). Previews create a framework for understanding of the content to be learned, and they build on the student's background knowledge (Reiss, 2008). This enables students to understand what is to be taught and focused on during the lesson.

In *view*, the lesson is then taught in the second language (English), where students use the support of the materials and vocabulary provided in the *preview* portion, whenever necessary (Freeman & Freeman, 1998; Herrell & Jordan, 2008). During *view*, the teacher uses strategies to make input comprehensible to students (Freeman & Freeman, 2001; Freeman, Freeman & Ramirez, 2008; Young & Hadaway 2006).

Then teachers *review* the concepts, main idea, and questions, clarifying understanding and key vocabulary in the students' home language to check for understanding in their native/first language. Then the students get together and share in English (Freeman & Freeman, 1998; Freeman & Freeman, 2001; Freeman, Freeman & Ramirez, 2008; Herrell & Jordan, 2008; Young & Hadaway, 2006). Repetition and *review* offer extra opportunities for language input that reinforce and enhance conceptual understanding (Reiss, 2008).

Preview-view-review is associated with bilingual classrooms but can also be adapted to an English-only classroom (Herrell & Jordan, 2008). It is effective in facilitating students' comprehension and content knowledge acquisition (Herrell & Jordan, 2008; Reiss, 2008). It not only prepares students for what is to come but also creates interest in the topic, builds self-confidence, and allows students to make connections (Freeman & Freeman, 2001; Herrell & Jordan, 2008; Reiss, 2008). *Preview-view-review* helps students use their first language and better acquire both English and academic content (Freeman & Freeman, 2001; Freeman, Freeman & Ramirez, 2008).

The technique provides a structured way to alternate between English and native language instruction (Freeman, Freeman & Ramirez, 2008). It allows teachers to draw on students' first language, avoiding concurrent translation (Freeman & Freeman, 2001; Freeman, Freeman & Ramirez, 2008).

Providing students with primary language instruction gives students two things: knowledge, and literacy (Freeman & Freeman, 2001). Students are able to transfer their knowledge and literacy to their second language (Freeman & Freeman, 2001).

CHAPTER II

METHODOLOGY

Subjects

The subjects in this study included 37 bilingual kindergarten students in a school district in Central Texas. The research study included a control group (19 subjects), as well as an experimental group (18 subjects), and focused on the teaching strategy of *preview-view-review* in the content area of mathematics. Subjects were predominantly 4- to 6-year-olds of Hispanic origin and spoke Spanish as their native/primary language. The dominant language was verified through a Home Language Survey filled out upon registration to the campus, as well as an Oral Language Proficiency Test “IDEA proficiency test” exam conducted by district. Subjects were placed in a Bilingual One-Way Dual Language Program offered by the district.

Procedures

The duration of the research study was four months. During these four months, students were exposed to mathematics in both English and Spanish as determined by the district curriculum, which includes: (a) the days of the week, (b) months of the year, (c) numbers 1-20, (d) quantities, (e) 2D shapes, (f) size, (g) colors, (h) measurement, (i) length, and (j) relative and ordinal positions. An English kindergarten math content

exam and a Spanish kindergarten math content exam were conducted individually at the beginning of the school year. The pre-assessment was administered to both the experimental and control groups to determine what knowledge the subjects had prior to entering the research study. The exam was conducted on a one-to-one basis while the remaining participants were in learning stations. Subjects were placed in learning stations to avoid their listening to others' responses. The English kindergarten math content exam was administered first, and the Spanish kindergarten math content exam was administered the next day to avoid any language transference that would impede the results.

The pre- and post- exams assessed the subjects' verbal language and knowledge of the material presented. Subjects were asked to orally state the days of the week, the months of the year, and recognize numbers 1-20. In the remaining portions of the assessment, manipulatives were placed in front of the participant. Subjects physically pointed, touched, or moved the manipulative that corresponded to the question being asked (see Appendix A for a copy of the assessment). Participant responses were documented in their individual assessment. The same format was followed to administer the Spanish kindergarten math content exam.

Thereafter, in the experimental group, lessons were provided in a *preview-view-review* format. In the *preview* format of the lesson, subjects were introduced to the vocabulary necessary in Spanish. The *view* sections of the lessons were then carried out in English. During the lessons students were exposed to the vocabulary and mathematic content in English. Participant exposure consisted of (a) utilizing manipulatives, (b) math journals, (c) games when the teacher created and/or bought, (d) sentence stems, (e)

visuals, (f) movement, (g) songs, (h) environment, (i) cognates, and (j) literature. At the end of the lessons, a *review* was conducted in Spanish, which consisted of informal question and answers. The *review* was necessary to find out if the students grasped the concepts taught.

The same exams were conducted at the end of the four months. The same procedures were taken during the post– assessment. The exam was conducted on a one-to-one basis for both the experimental and control groups, while the remaining subjects were in learning stations. Subjects were placed in learning stations to avoid their listening to others’ responses. The English kindergarten math content exam was administered first, and the Spanish kindergarten math content exam was administered the next day to avoid any language transference that would impede the results.

CHAPTER III

RESULTS

The data were analyzed using a t-test to compare (a) experimental and control groups, (b) experimental group pre- and post- assessment, and (c) experimental group post- assessment in English and Spanish. A null hypothesis and research hypothesis were created for data comparison for each portion of the assessment and group. After the analysis of the t-test, the null hypothesis was either rejected or failed to be rejected. The level of significance is set $\alpha=.01$, meaning the probability is 1 out of 100 that results are by chance.

English kindergarten post- mathematics content exam

Means and standard deviations between the control and experimental groups post- assessment of the 10 sections of the exam are included in Table 3.

Table 3

Post- Assessment of English kindergarten math content exam

Variables	Control Group (n=19)				Experimental Group (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Days of the week	1.29	0.76	1	7	13.57	2.44	1	7
Months of the year	6.42	0.51	1	12	13.33	0.65	1	12
Numbers 1-20	5.85	4.59	1	20	8.50	4.07	1	20

Table 3

Post– Assessment of English kindergarten math content exam (continued)

Variables	Control Group (n=19)				Experimental Group (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Quantities	9.00	1.73	1	3	14.33	0.58	1	3
2D shapes	9.83	2.64	1	6	15.67	1.63	1	6
Size	9.67	3.21	1	3	15.67	0.58	1	3
Colors	7.18	2.52	1	11	13.27	2.49	1	11
Relative positions	7.14	4.26	1	7	10.14	4.53	1	7
Ordinal positions	5.00	7.00	1	3	7.67	8.14	1	3
Measurement	9.50	0.71	1	2	17.00	0.00	1	2

Days of the week. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing the days of the week.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing the days of the week.

Because the observed value of $t = 12.72$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing the days of the week. Therefore, the null hypothesis was rejected.

Months of the year. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing the months of the year.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing the months of the year.

Because the observed value of $t = 28.85$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing the months of the year. Therefore, the null hypothesis was rejected.

Numbers 1-20. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing numbers 1-20.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing numbers 1-20.

Because the observed value of $t = 1.93$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing numbers 1-20. Therefore, the null hypothesis was rejected.

Quantities. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing qualitative amounts.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing qualitative amounts.

Because the observed value of $t = 5.05$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing qualitative amounts. Therefore, the null hypothesis was rejected.

2D shapes. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing 2D shapes.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing 2D shapes.

Because the observed value of $t = 4.60$ was greater than the .01 level of probability, it was concluded there was statistically significant difference between the means of the control and experimental groups' knowing 2D shapes. Therefore, the null hypothesis was rejected.

Size. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing sizes.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing sizes.

Because the observed value of $t = 3.18$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the

means of the control and experimental groups' knowing sizes. Therefore, the null hypothesis was rejected.

Colors. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing the colors.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing the colors.

Because the observed value of $t = 5.69$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing their colors. Therefore, the null hypothesis was rejected.

Relative positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing relative positions.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing relative positions.

Because the observed value of $t = 1.27$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing relative positions. Therefore, the null hypothesis was rejected.

Ordinal positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing ordinal positions.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing ordinal positions.

Because the observed value of $t = 0.43$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing ordinal positions. Therefore, the null hypothesis was rejected.

Measurement. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing relative measurements.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing measurements.

Because the observed value of $t = 15.00$ was greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing measurements. Therefore, the null hypothesis was rejected.

Spanish kindergarten post– mathematics content exam

Means and standard deviations between the control and experimental groups post– assessment of the 10 sections of the exams are included in Table 4.

Table 4

Post– Assessment of Spanish kindergarten math content exam

Variables	Control Group (n=19)				Experimental Group (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Días de la semana <i>Days of the week</i>	3.29	0.95	1	7	16.29	0.95	1	7
Meses del año <i>Months of the year</i>	12.58	0.67	1	12	13.33	0.65	1	12
Números 1-20 <i>Numbers 1-20</i>	11.65	3.54	1	20	10.55	4.15	1	20
Cantidad <i>Quantities</i>	17.00	1.73	1	3	17.00	0.00	1	3
Figuras 2D <i>2D shapes</i>	15.00	3.03	1	6	15.50	1.05	1	6
Tamaño <i>Size</i>	13.67	3.21	1	3	16.67	0.58	1	3
Colores <i>Colors</i>	17.00	1.10	1	11	16.64	0.50	1	11
Posiciones relativas <i>Relative positions</i>	13.29	5.91	1	7	13.57	5.86	1	7
Posiciones ordinales <i>Ordinal positions</i>	10.33	8.08	1	3	8.33	7.51	1	3
Medidas <i>Measurement</i>	16.50	2.12	1	2	17.00	0.00	1	2

Days of the week. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing the days of the week.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing the days of the week.

Because the observed value of $t = 25.56$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing the days of the week. Therefore, the null hypothesis was rejected.

Months of the year. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing the months of the year.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing the months of the year.

Because the observed value of $t = 2.78$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing the months of the year. Therefore, the null hypothesis was rejected.

Numbers 1-20. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing numbers 1-20.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing numbers 1-20.

Because the observed value of $t = 0.90$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the

means of the control and experimental groups' knowing numbers 1-20. Therefore, the null hypothesis was rejected.

Quantities. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing qualitative amounts.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing qualitative amounts

The observed value of $t = 0.00$ and is greater than the .01 level of probability, it was concluded there was not a statistically significant difference between the means of the control and experimental groups' knowing qualitative amounts. Therefore, the null hypothesis failed to be rejected.

2D Shapes. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing 2D shapes.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing 2D shapes.

Because the observed value of $t = 0.38$ and is greater than the .01 level of probability, it was concluded there was a statistically significant different between the means of the control and experimental groups' knowing 2D shapes. Therefore, the null hypothesis was rejected.

Size. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing sizes.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing sizes.

Because the observed value of $t = 1.59$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing sizes. Therefore, the null hypothesis was rejected.

Colors. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing the colors.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups’ knowing the colors.

Because the observed value of $t = 1.00$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups’ knowing their colors. Therefore, the null hypothesis was rejected.

Relative positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups’ knowing relative positions.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing relative positions.

Because the observed value of $t = 0.09$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing relative positions. Therefore, the null hypothesis was rejected.

Ordinal positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing ordinal positions.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing ordinal positions.

Because the observed value of $t = 0.31$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing ordinal positions. Therefore, the null hypothesis was rejected.

Measurement. Research Hypothesis – It was hypothesized that there would be a statistically significant difference on post– test scores between the control and experimental groups' knowing relative measurements.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference on post– test scores between the control and experimental groups' knowing measurements.

Because the observed value of $t = 0.33$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the control and experimental groups' knowing measurements. Therefore, the null hypothesis was rejected.

Experimental group pre– and post– assessment

Means and standard deviations between the pre– and post– assessments of the experimental groups of the 10 sections assessed in English are included in Table 5.

Table 5

Experimental group pre– and post– assessment English section

Variables	Experimental Group- Pre– (n=17)				Experimental Group- Post– (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Days of the week	0.00	0.00	1	7	13.57	2.44	1	7
Months of the year	0.00	0.00	1	12	13.33	0.65	1	12
Numbers 1-20	1.50	2.50	1	20	8.50	4.07	1	20
Quantities	2.33	1.15	1	3	14.33	0.58	1	3
2D shapes	3.17	2.71	1	6	15.67	1.63	1	6
Size	3.33	2.52	1	3	15.67	0.58	1	3
Colors	5.73	2.37	1	11	13.27	2.49	1	11
Relative positions	2.57	1.99	1	7	10.14	4.53	1	7
Ordinal positions	0.67	1.15	1	3	7.67	8.14	1	3
Measurement	1.50	0.71	1	2	17.00	0.00	1	2

Days of the week. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the days of the week.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the days of the week.

Because the observed value of $t = 14.71$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing the days of the week. Therefore, the null hypothesis was rejected.

Months of the year. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the months of the year.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the months of the year.

Because the observed value of $t = 70.91$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing the months of the year. Therefore, the null hypothesis was rejected.

Numbers 1-20. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing numbers 1-20.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing numbers 1-20.

Because the observed value of $t = 6.55$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre- and post- assessments of the experimental group knowing numbers 1-20. Therefore, the null hypothesis was rejected.

Quantities. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre- and post- assessment scores of the experimental group knowing qualitative amounts.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre- and post- assessment scores of the experimental group knowing qualitative amounts.

Because the observed value of $t = 16.09$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre- and post- assessments of the experimental group knowing qualitative amounts. Therefore, the null hypothesis was rejected.

2D Shapes. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre- and post- assessment scores of the experimental group knowing 2D shapes.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre- and post- assessment scores of the experimental group knowing 2D shapes.

Because the observed value of $t = 9.66$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the

means of the pre– and post– assessments of the experimental group knowing 2D shapes. Therefore, the null hypothesis was rejected.

Size. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing sizes.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing sizes.

Because the observed value of $t = 8.27$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing sizes. Therefore, the null hypothesis was rejected.

Colors. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the colors.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the colors.

Because the observed value of $t = 7.27$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing colors. Therefore, the null hypothesis was rejected.

Relative positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing relative positions.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing relative positions.

Because the observed value of $t = 4.05$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing relative positions. Therefore, the null hypothesis was rejected.

Ordinal positions. Research Hypothesis- It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing ordinal positions.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing ordinal positions.

Because the observed value of $t = 1.47$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments scores of the experimental group knowing ordinal positions. Therefore, the null hypothesis was rejected.

Measurement. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing measurements.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing measurements.

Because the observed value of $t = 31.00$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing measurements. Therefore, the null hypothesis was rejected.

Experimental group pre– and post– assessment

Means and standard deviations between the pre– and post– assessments of the experimental groups of the 10 sections assessed in Spanish are included in Table 6.

Table 6

Experimental group pre– and post– assessment Spanish Section

Variables	Experimental Group- Pre– (n=17)				Experimental Group- Post– (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Days of the week	0.00	0.00	1	7	16.29	0.95	1	7
Months of the year	0.00	0.00	1	12	13.33	0.65	1	12
Numbers 1-20	5.45	3.75	1	20	10.55	4.15	1	20
Quantities	6.67	1.15	1	3	17.00	0.00	1	3
2D shapes	6.17	3.54	1	6	15.50	1.05	1	6
Size	9.67	4.16	1	3	16.67	0.58	1	3
Colors	11.27	1.79	1	11	16.64	0.50	1	11
Relative positions	8.43	5.09	1	7	13.57	5.86	1	7
Ordinal positions	2.33	4.04	1	3	8.33	7.51	1	3
Measurement	6.50	2.12	1	2	17.00	0.00	1	2

Days of the week. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the days of the week.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the days of the week.

Because the observed value of $t = 45.29$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing the days of the week. Therefore, the null hypothesis was rejected.

Months of the year. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the months of the year.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the months of the year.

Because the observed value of $t = 70.91$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing the months of the year. Therefore, the null hypothesis was rejected.

Numbers 1-20. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing numbers 1-20.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing numbers 1-20.

Because he observed value of $t = 4.07$ and is greater than the .01 level of probability, it was concluded there was an statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing numbers 1-20. Therefore, the null hypothesis was rejected.

Quantities. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing qualitative amounts.

Null Hypothesis – It was hypothesized that there would be no statistically significant difference between the pre– and post– assessment scores of the experimental group knowing qualitative amounts.

Because the observed value of $t = 15.50$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing qualitative amounts. Therefore, the null hypothesis was rejected.

2D Shapes. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing 2D shapes.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing 2D shapes.

Because the observed value of $t = 6.18$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing 2D shapes. Therefore, the null hypothesis was rejected.

Size. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing sizes.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing sizes.

Because the observed value of $t = 2.88$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing sizes. Therefore, the null hypothesis was rejected.

Colors. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the colors.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing the colors.

Because the observed value of $t = 9.54$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the

means of the pre– and post– assessments of the experimental group knowing colors.

Therefore, the null hypothesis was rejected.

Relative positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing relative positions.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing relative positions.

Because the observed value of $t = 1.75$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing relative positions. Therefore, the null hypothesis was rejected.

Ordinal positions. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing ordinal positions.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing ordinal positions.

Because the observed value of $t = 1.21$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments scores of the experimental group knowing ordinal positions. Therefore, the null hypothesis was rejected.

Measurement. Research Hypothesis – It was hypothesized that there would be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing measurements.

Null Hypothesis – It was hypothesized that there would not be a statistically significant difference between the pre– and post– assessment scores of the experimental group knowing measurements.

The observed value of $t = 7.00$ and is greater than the .01 level of probability, it was concluded there was a statistically significant difference between the means of the pre– and post– assessments of the experimental group knowing measurements. Therefore, the null hypothesis was rejected.

Experimental group post assessments in Spanish and English

Means and standard deviations between the post– assessments in Spanish and English of the experimental group of the 10 sections assessed are included in Table 7.

Table 7

Experimental group post– assessments in Spanish and English

Variables	Experimental Group Spanish (n=17)				Experimental Group English (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Days of the week	16.29	0.95	1	7	13.57	2.44	1	7
Months of the year	13.33	0.65	1	12	13.33	0.65	1	12
Numbers 1-20	10.55	4.15	1	20	8.50	4.07	1	20
Quantities	17.00	0.00	1	3	14.33	0.58	1	3
2D shapes	15.50	1.05	1	6	15.67	1.63	1	6
Size	16.67	0.58	1	3	15.67	0.58	1	3
Colors	16.64	0.50	1	11	13.27	2.49	1	11
Relative positions	13.57	5.86	1	7	10.14	4.53	1	7

Table 7

Experimental group post– assessments in Spanish and English (continued)

Variables	Experimental Group Spanish (n=17)				Experimental Group English (n=17)			
	Mean	SD	Min.	Max	Mean	SD	Min	Max
Ordinal positions	8.33	7.51	1	3	7.67	8.14	1	3
Measurement	17.00	0.00	1	3	17.00	0.00	1	3

CHAPTER IV

DISCUSSION

The purpose of this investigation was to find whether the teaching strategy of *preview-view-review* is effective for teaching mathematics to kindergarten English Language Learners. The results show there was a statistically significant difference between the means of the control and experimental groups' knowing the days of the week, months of the year, qualitative amounts, 2D shapes, sizes, colors, and measurements, but there was no statistically significant difference knowing numbers 1-20, relative positions, and ordinal positions in the English kindergarten math content exam. Subjects in the experimental group appeared to have a greater concept of math vocabulary at the end of the study than the control group. Providing students with the vocabulary in their native language seemed to have a positive effect on their acquisition of the target language, English. Students' confidence levels increased and they were able to communicate in English more so than the subjects in the control group. There was a statistically significant difference between the means of the control and experimental groups' knowing the days of the week, months of the year, but no statistically significant difference knowing numbers 1-20, qualitative amounts, 2D shapes, sizes, colors, relative positions, ordinal positions, and measurements in the Spanish kindergarten math content

exam. A difference may not have appeared since Spanish was the subjects' native or primary language. This research study primarily focused on the English language acquisition of the kindergarten subjects.

There was a statistically significant difference between the pre- and post- test scores of the experimental group's knowing the days of the week, months of the year, numbers 1-20, qualitative amounts, 2D shapes, sizes, colors, relative positions, ordinal positions, and measurements in the English kindergarten math content exam. There was a statistically significant difference between the pre- and post- test scores of the experimental group's knowing the days of the week, months of the year, numbers 1-20, qualitative amounts, 2D shapes, sizes, colors, and measurements, but no statistically significant difference knowing relative positions and ordinal positions in the Spanish kindergarten math content exam. An increase in the students' post- assessment in all areas of the assessments shows the strategy *preview-view-review* is an effective strategy in mathematics for kindergarten English Language Learners.

Limitations

Limitations of the research study include that the researcher was the teacher of record for the experimental group. Removing the researcher as the teacher of record would remove any potential biases that may exist. The research was accomplished within the short time span of four months. A study during an entire academic school year could yield higher scores.

Another limitation includes the small sample size, which consisted of only 37 subjects. Of the 37, 18 were in the experimental group and 19 were in the control group. Increasing the sample size of the population would give a greater effect size.

In addition, numerous individual variables such as socio-economic status (SES), parental education levels, the education levels of their siblings, pre-kindergarten experience, and bilingual programs previously attended may have had an impact the research study as these are external variables not under the control of the design of the study.

Students entered the school year with different levels of academic language, and for many students, this was the first time they were attending the school system. Some students did not have a strong primary language (Spanish) development, which could have impacted the results.

Conclusions

In conclusion, having a strong primary language is important in the transferring of the second language. In this investigation, *preview-view-review* demonstrated to be an effective strategy for teaching mathematics to English Language Learners. Subjects having the native language foundation seemed to be able to transfer the vocabulary to the second language; in this case, English. Subjects in the experimental group had a statistically significant difference in the means compared to the control group. However, it is important to note that more research is needed in the teaching strategy *preview-view-review*.

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Appendix A

English kindergarten math content exam: Pre– Post–

Name: _____

Date: _____

Start and End Time: _____

Total: _____/84

Directions: This test will be given in two parts in two days, the English portion first and the Spanish test the following day. Directions are in italics. The student will be asked to name the days of the week, months of the year, numbers, quantities, 2D shapes, sizes, colors, measurements, and relative and ordinal positions.

1. Days of the week.

_____/ 7

The teacher will ask student to say the days of the week.

Tell me the days of the week.

- ☐ Sunday
- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday

2. Months of the year.

_____/ 12

The teacher will ask student to say the months of the year.

Tell me the months of the year.

- ☐ January
- ☐ February

- ☐ March
- ☐ April
- ☐ May
- ☐ June
- ☐ July
- ☐ August
- ☐ September
- ☐ October
- ☐ November
- ☐ December

1. Numbers

____/ 20

The teacher will randomly show the student numbered flash cards. The student will have to identify the number.

I'm going to show you numbers at random. Tell me, what number is this?

- | | | | | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| ☐ 1 | ☐ 2 | ☐ 3 | ☐ 4 | ☐ 5 | ☐ 6 | ☐ 7 |
| ☐ 8 | ☐ 9 | ☐ 10 | ☐ 11 | ☐ 12 | ☐ 13 | ☐ 14 |
| ☐ 15 | ☐ 16 | ☐ 17 | ☐ 18 | ☐ 19 | ☐ 20 | |

2. Quantity

____/ 3

The teacher will use objects. The teacher will create a group of three objects, a group of five objects, and a group of 10 objects. The student will be asked to identify which group of teddy bears has more, less, or are equal to.

- ☐ Which group has more than five teddy bears?
- ☐ Which group has less than five teddy bears?
- ☐ Which group is equal to five teddy bears?

3. 2D shapes

____/ 8

The teacher will use attribute blocks and place them in the center of the table. The teacher will ask the student to identify the shape, its sides and its corners.

- ☐ Show me the rectangle!

☐ Point to the sides of the rectangle, how many sides are there?

☐ How many corners?

☐ Show me the triangle!

☐ Point to the sides of the triangle, how many sides are there?

☐ How many corners?

☐ Show me the square!

☐ Show me a circle!

4. Sizes

____/ 3

The teacher will show students three different objects of different sizes. The student will be asked to identify which is bigger, medium, or small.

☐ Now let's see which one _____ (object) is bigger! Show me the biggest one!

☐ Which one is medium?

☐ Which one is small?

5. Colors

____/ 11

The teacher will show the student a box of colors or markers. The student will have to identify the colors.

Tell me the colors.

☐ black ☐ grey ☐ white ☐ brown ☐ red ☐ blue
☐ green ☐ yellow ☐ pink ☐ orange ☐ purple

6. Relative Positions

____/ 7

The teacher will use objects, the student's body, a box, a house, or a table. The student will have to place the object in the corresponding place.

Can you put the teddy bear _____ of the _____ (student's body/box/house/table)?

☐ in front ☐ inside ☐ outside ☐ above ☐ under

☐ left ☐ right

7. Ordinal Positions

____/ 3

The teacher will form a line using 10 objects. The student has to identify the ordinal positions.

Which one is _____?

☐ 1st

☐ 3rd

☐ 5th

8. Measurement

_____/2

The teacher will use cubes to make lines of different lengths. For example: a line of three cubes, a different line of five cubes, and a different line of 10 cubes.

☐ Which line is longer than?

☐ Which line shorter than?

~~~~~THE END!!!!!! ☺ Thank you~~~~~

How was the student behavior while taking the exam? Ex: bored, excited, lost... Please give specific examples.

## Appendix B

### Spanish kindergarten math content exam: Pre– Post–

Nombre: \_\_\_\_\_

Fecha: \_\_\_\_\_

Tiempo: \_\_\_\_\_

Total: \_\_\_\_\_/84

*Direcciones: La prueba será administrada en dos partes en dos días. Primero, la prueba de inglés y la porción de español será administrada otro día. Las instrucciones están en itálicas. Los estudiantes tendrán que contestar preguntas sobre los días de la semana, los meses del año, números, cantidad, 2D figures, tamaño, colores, medidas, positions relativas y ordinales.*

-----

#### 1. Días de la semana.

*La maestra le pedirá al estudiante que diga los días de la semana.*

Dime los días de la semana.

\_\_\_\_/ 7

☐ domingo

☐ lunes

☐ martes

☐ miércoles

☐ jueves

☐ viernes

☐ sábado

#### 2. Meses del año.

*La maestra le pedirá al estudiante que diga los meses del año.*

Dime los meses del año.

\_\_\_\_/ 12

☐ enero

☐ febrero

- ☐ marzo
- ☐ abril
- ☐ mayo
- ☐ junio
- ☐ julio
- ☐ agosto
- ☐ septiembre
- ☐ octubre
- ☐ noviembre
- ☐ diciembre

### 1. Números

\_\_\_\_/ 20

*La maestra le enseñará al estudiante unas tarjetas con números. El estudiante tendrá que identificar el número.*

Te voy enseñar unos números. ¿Dime, qué número es este?

- |                             |                             |                             |                             |                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <input type="checkbox"/> 1  | <input type="checkbox"/> 2  | <input type="checkbox"/> 3  | <input type="checkbox"/> 4  | <input type="checkbox"/> 5  | <input type="checkbox"/> 6  | <input type="checkbox"/> 7  |
| <input type="checkbox"/> 8  | <input type="checkbox"/> 9  | <input type="checkbox"/> 10 | <input type="checkbox"/> 11 | <input type="checkbox"/> 12 | <input type="checkbox"/> 13 | <input type="checkbox"/> 14 |
| <input type="checkbox"/> 15 | <input type="checkbox"/> 16 | <input type="checkbox"/> 17 | <input type="checkbox"/> 18 | <input type="checkbox"/> 19 | <input type="checkbox"/> 20 |                             |

### 2. Cantidad

\_\_\_\_/ 3

*La maestra usará objetos. La maestra crea un grupo con 3 objetos, un grupo con 5 objetos, y un grupo con 10 objetos. El estudiante tendrá que identificar cual es el grupo de osos tiene más, menos y igual.*

- ☐ ¿Qué grupo tiene más que 5?
- ☐ ¿Qué grupo tiene menos que 5?
- ☐ ¿Qué grupo tiene igual que 5?

### 3. 2D Figuras

\_\_\_\_/ 8

*La maestra usará bloques de formas geométricas y los pondrá en el centro de la mesa. Le preguntará al estudiante que identifique la figura, los lados, y las esquinas.*

- ☐ ¡Enséñame el rectángulo!

☐ Toca los lados. ¿Cuántos lados tiene?

☐ ¿Cuántas esquinas?

---

☐ ¡Enséñame el triángulo!

☐ Toca los lados. ¿Cuántos lados tiene?

☐ ¿Cuántas esquinas?

---

☐ ¡Enséñame el círculo!

☐ ¡Enséñame el cuadrado!

---

#### 4. Tamaño

\_\_\_\_/ 3

*La maestra le enseñará al estudiante 3 objetos de diferentes tamaños. El estudiante tendrá que identificar cual es grande, mediano, o pequeño.*

☐ ¡Vamos a ver cual es más grande! ¡Enséñame el más grande!

☐ ¿Cuál es mediano?

☐ ¿Cuál es pequeño?

#### 5. Colores

\_\_\_\_/ 11

*La maestra le enseñará al estudiante una caja de crayones o marcadores. El estudiante tendrá que identificar los colores.*

Dime los colores.

☐ negro      ☐ gris ☐ blanco      ☐ café(\*marrón)      ☐ rojo(\*colorado/pinto)  
☐ azul      ☐ verde      ☐ amarillo ☐ rosado      ☐ anaranjado ☐ morado

#### 6. Posiciones Relativas

\_\_\_\_/ 7

*La maestra usará un objeto el cuerpo del estudiante, una caja, una casa, o una mesa. El estudiante tendrá que poner el objeto en el lugar que corresponde.*

¿Puedes poner el oso \_\_\_\_\_ de \_\_\_\_\_ (el cuerpo del estudiante/caja/casa/mesa).

☐ enfrente      ☐ adentro      ☐ afuera      ☐ arriba      ☐ abajo

☐ izquierda      ☐ derecha

**7. Posiciones Ordinales**

\_\_\_\_/3

*La maestra forma una línea de 10 objetos. El estudiante tiene que identificar las posiciones ordinales.*

¿Cuál es \_\_\_\_\_?

☐ primero

☐ tercero

☐ quinto
**8. Medidas lineares**

\_\_\_\_/2

*La maestra usará cubos para hacer líneas de diferentes tamaños. Por ejemplo: una línea de 3 cubos, una línea diferente de 5 cubos, y una línea diferente de 10 cubos.*

☐ ¿Qué línea es la más larga?

☐ ¿Qué línea es la más corta?

~~~~~ ¡EL FIN! ☺ ¡Gracias! ~~~~~

Notas: ¿Cómo se comportó el estudiante durante la prueba? Dar respuestas completas y específicas.

Appendix C

Texas Essential of Knowledge and Skills: Mathematics

According to the Texas Essential of Knowledge and Skills (TEKS), the focal points for kindergarteners in Texas are (1) use numbers to name quantities, (2) describe order of events or objects, (3) recognize that there are quantities less than a whole, (4) model addition (joining) and subtraction (separating), (5) identify, extend, and create patterns, (6) use patterns to make predictions, (7) describe the relative positions of objects, (8) use attributes to determine how objects are alike and different, (9) recognize attributes of two- and three-dimensional geometric figures, (10) directly compare the attributes of length, area, weight/mass, capacity, and/or relative temperature, (11) use time to describe, compare, and order events and situations, (12) construct and use graphs of real objects or pictures to answer questions, (13) apply kindergarten mathematics to solve problems connected to everyday experiences and activities in and outside of school, (14) communicate about kindergarten mathematics using informal language, and (15) use logical reasoning. developing whole-number concepts and using patterns and sorting to explore number, data, and shape (Texas Education Agency, 2010).

Appendix D

Results Graphs

Experimental and control groups' post- assessments

Figure 1.1. Experimental and control group English: Days of the week

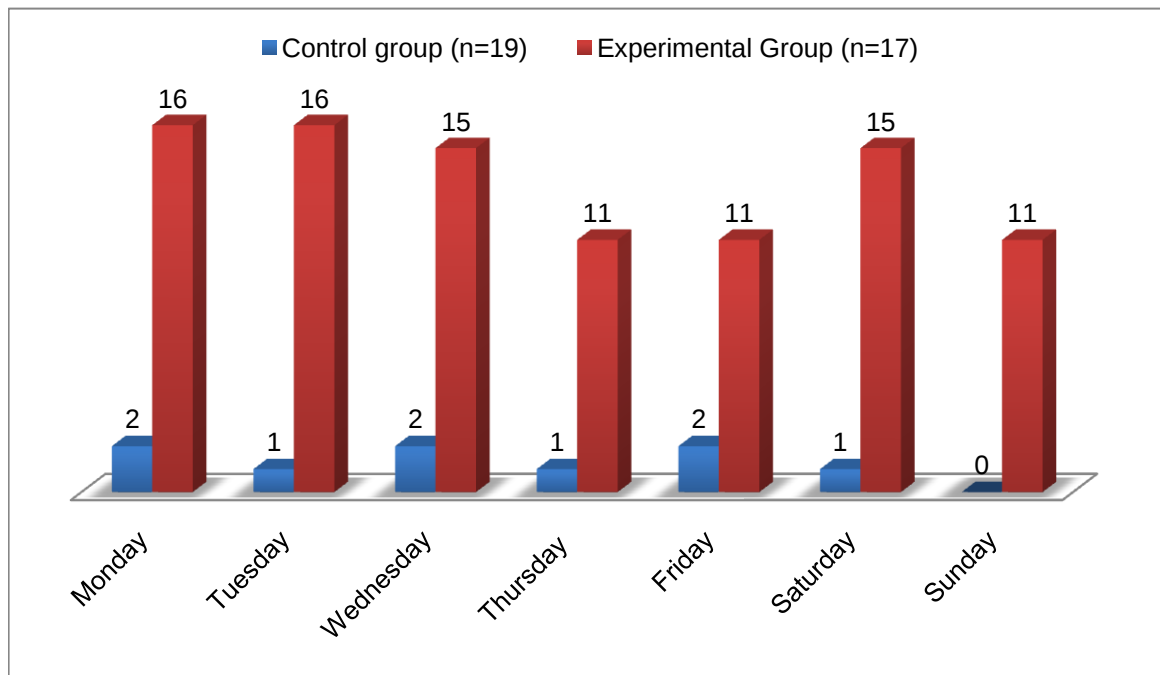


Figure 1.2. Experimental and control group English: Months of the year

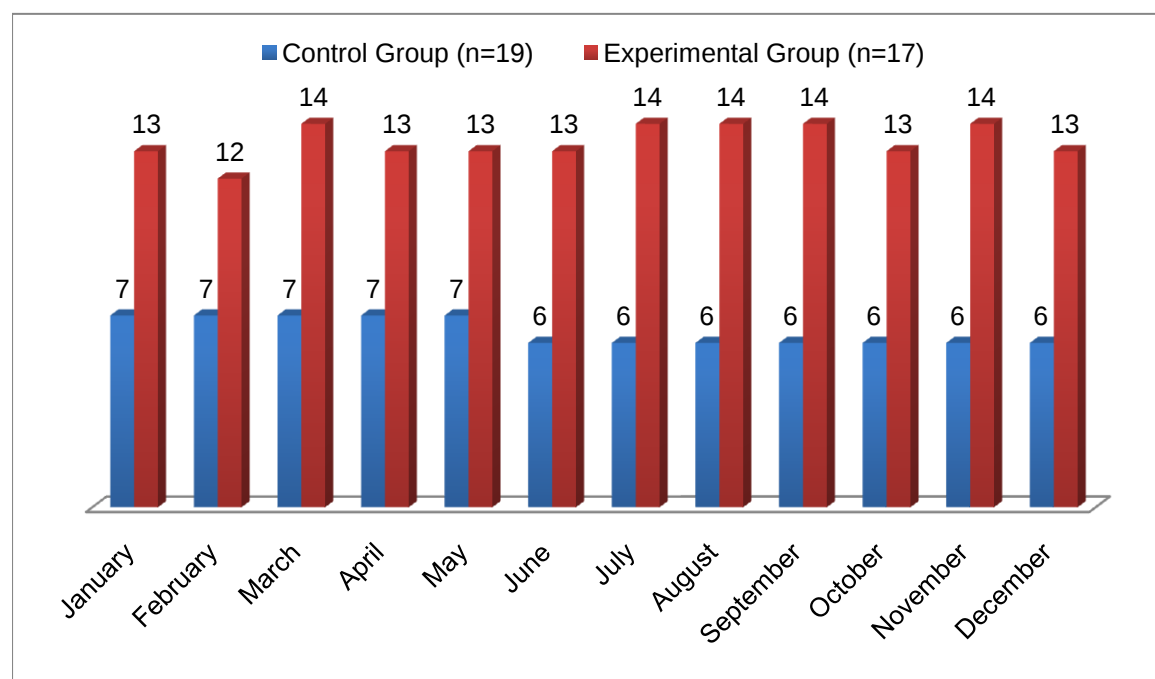


Figure 1.3. Experimental and control group English: Numbers 1-20

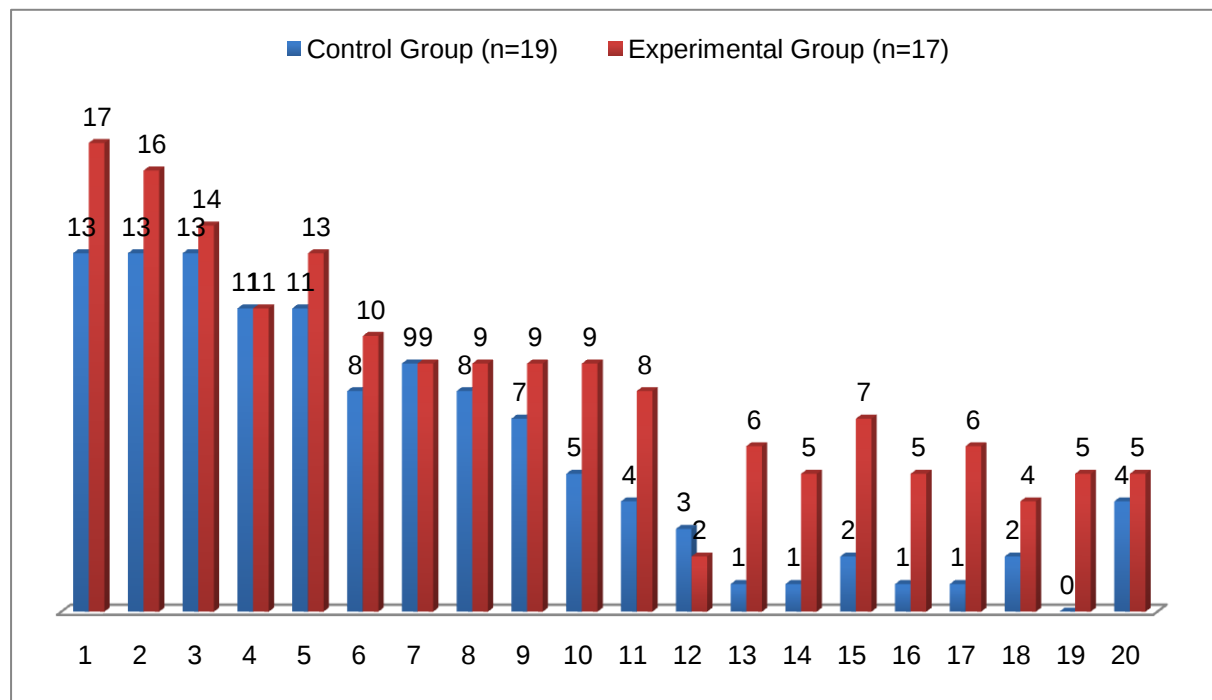


Figure 1.4. Experimental and control group English: Quantitative amounts

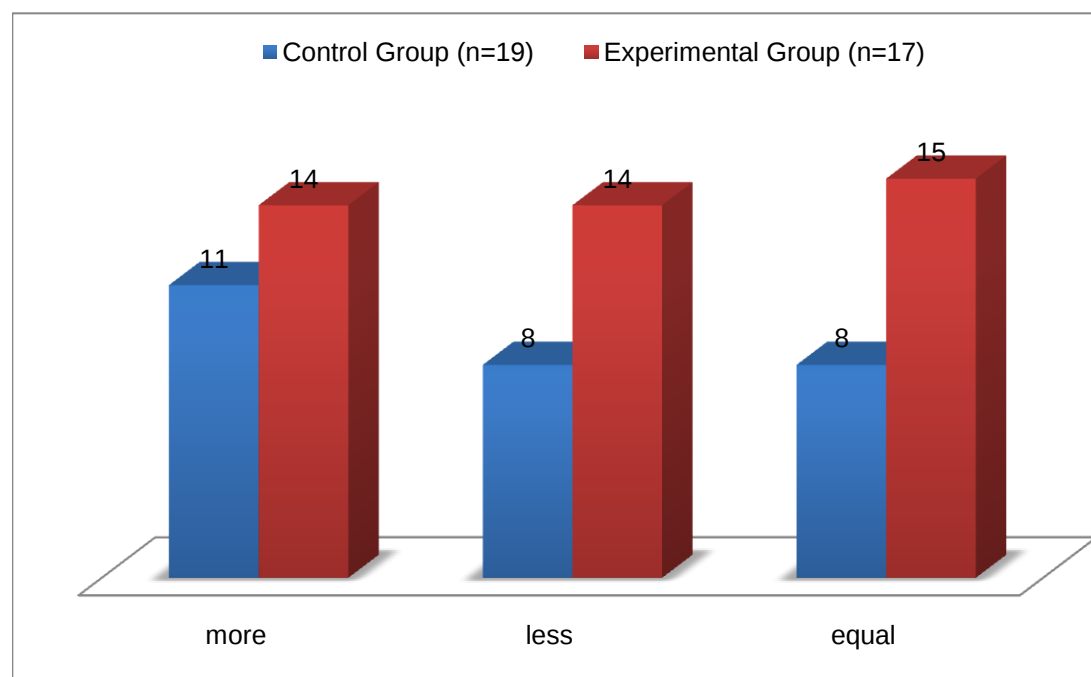


Figure 1.5. Experimental and control group English: 2D shapes

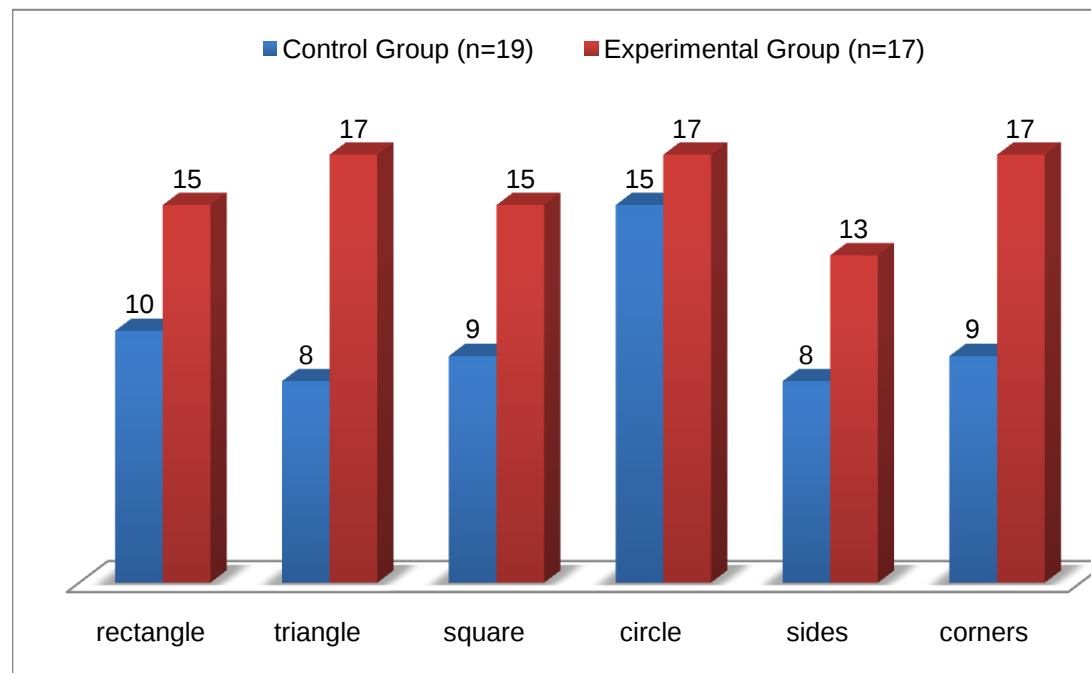


Figure 1.6. Experimental and control group English: Sizes

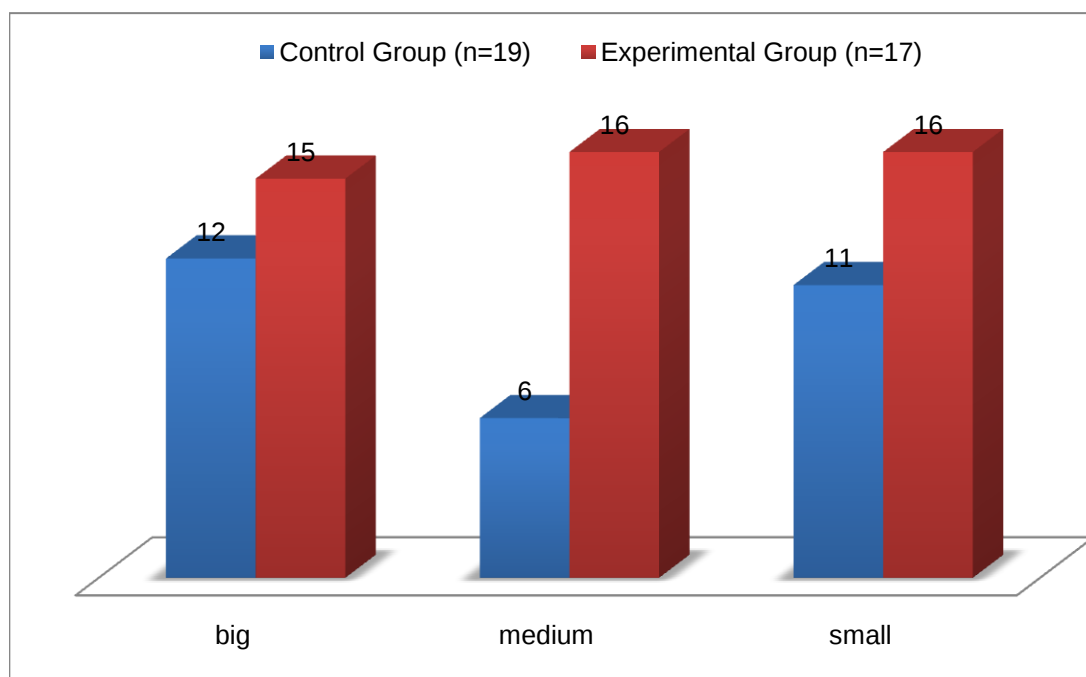


Figure 1.7. Experimental and control group English: Colors

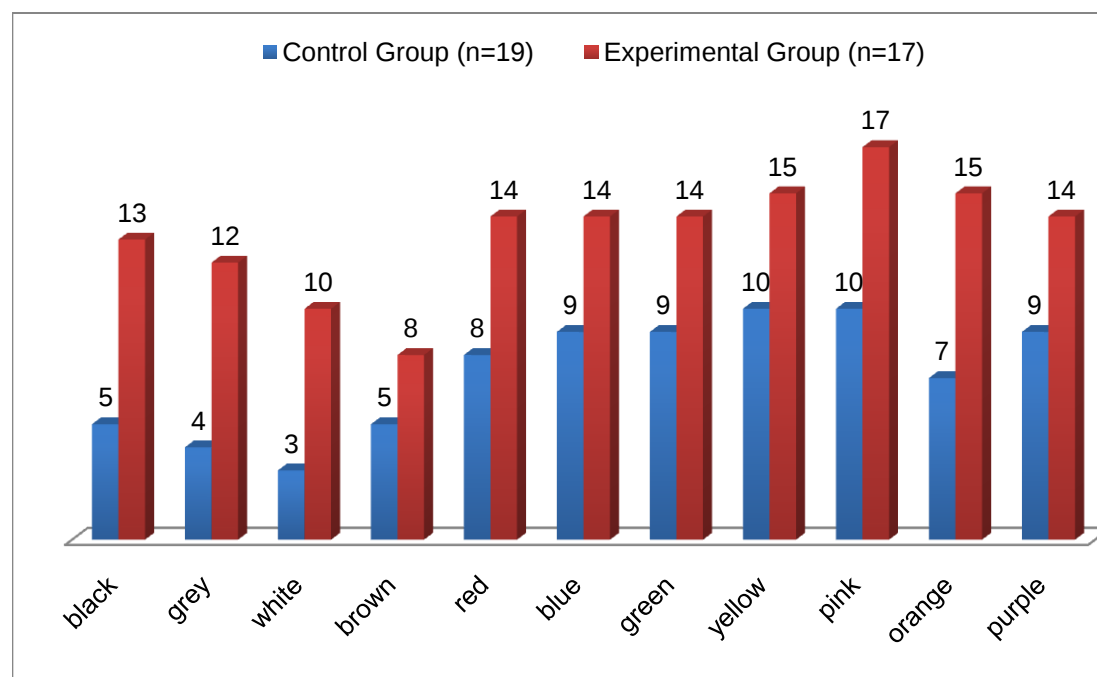


Figure 1.8. Experimental and control group English: Relative positions

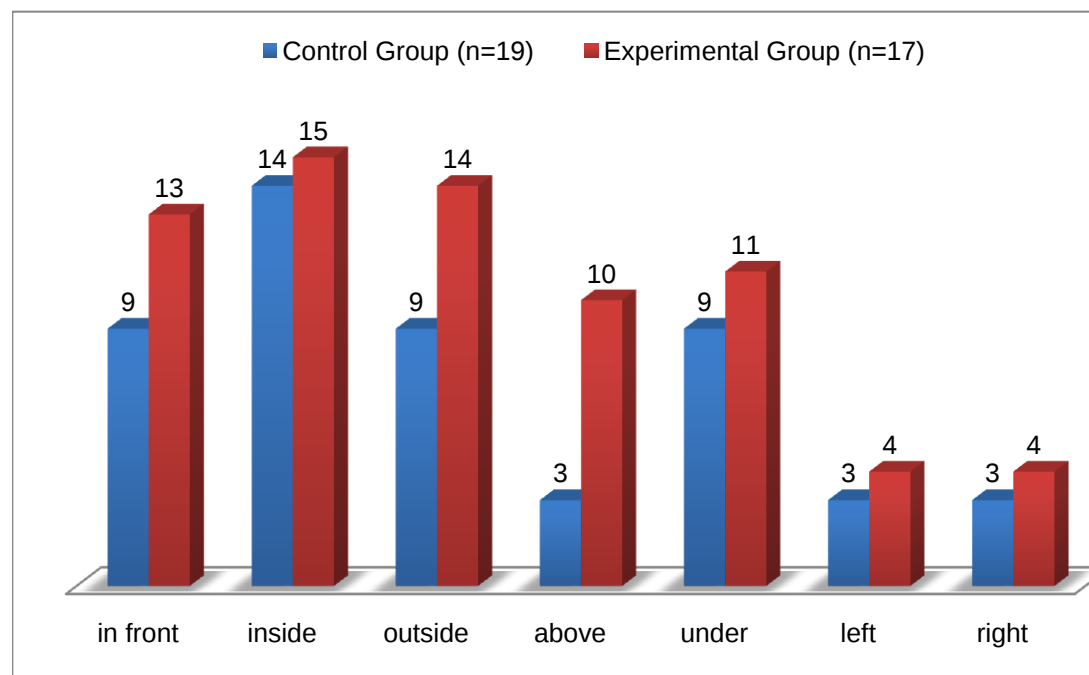


Figure 1.9. Experimental and control group English: Ordinal positions

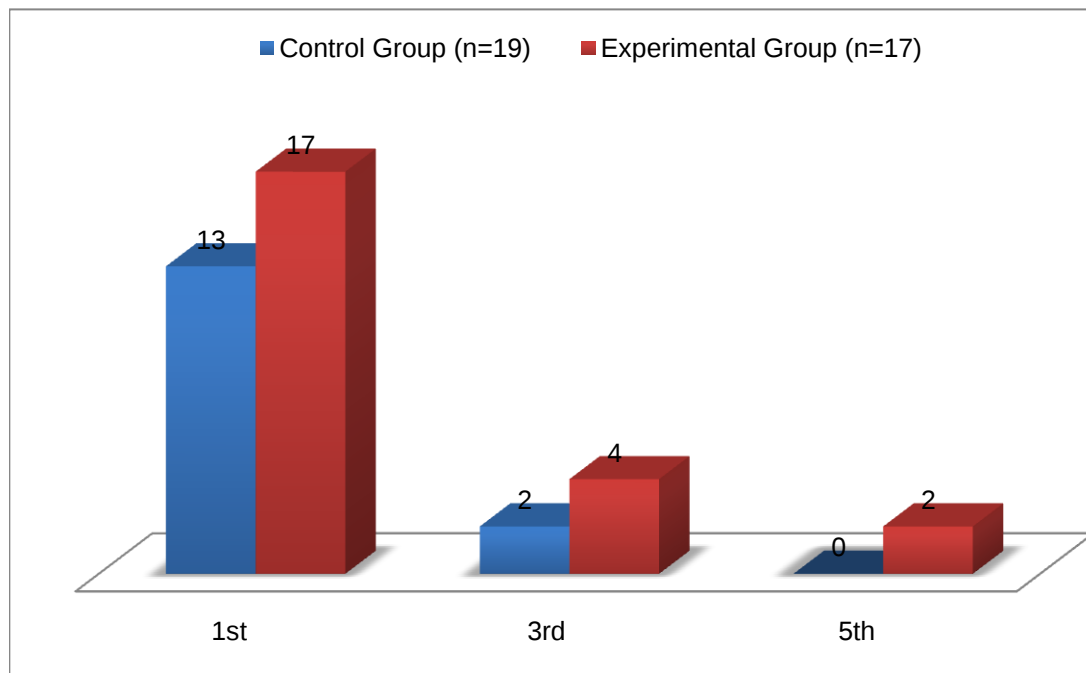


Figure 1.10. Experimental and control group English: Lengths

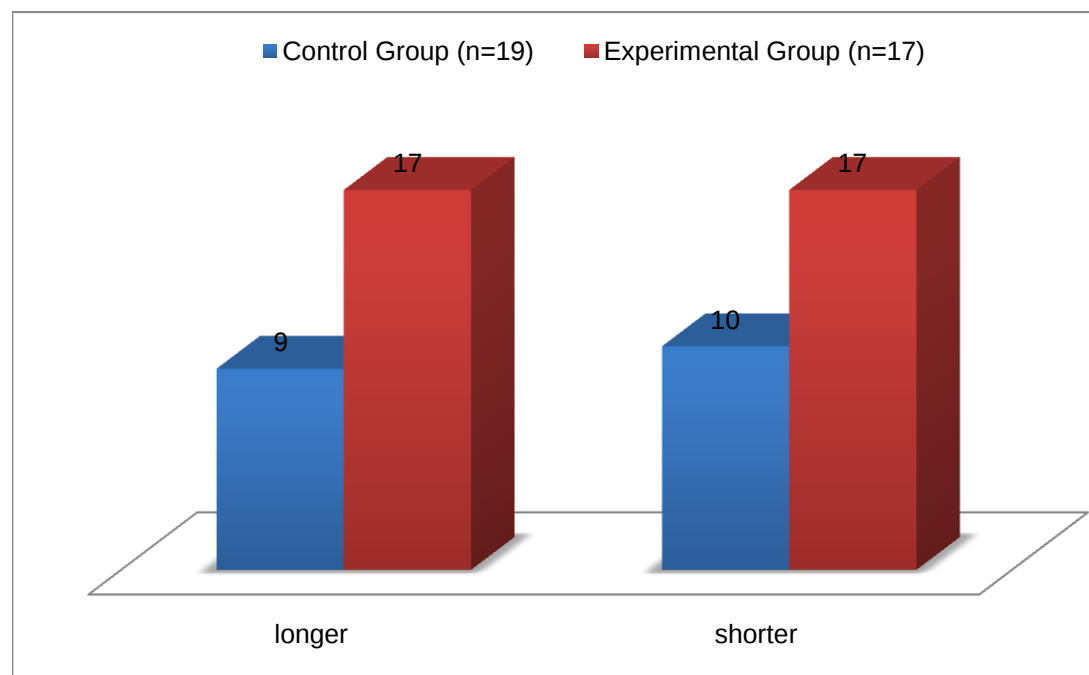


Figure 1.11. Experimental and control group Spanish: Days of the week

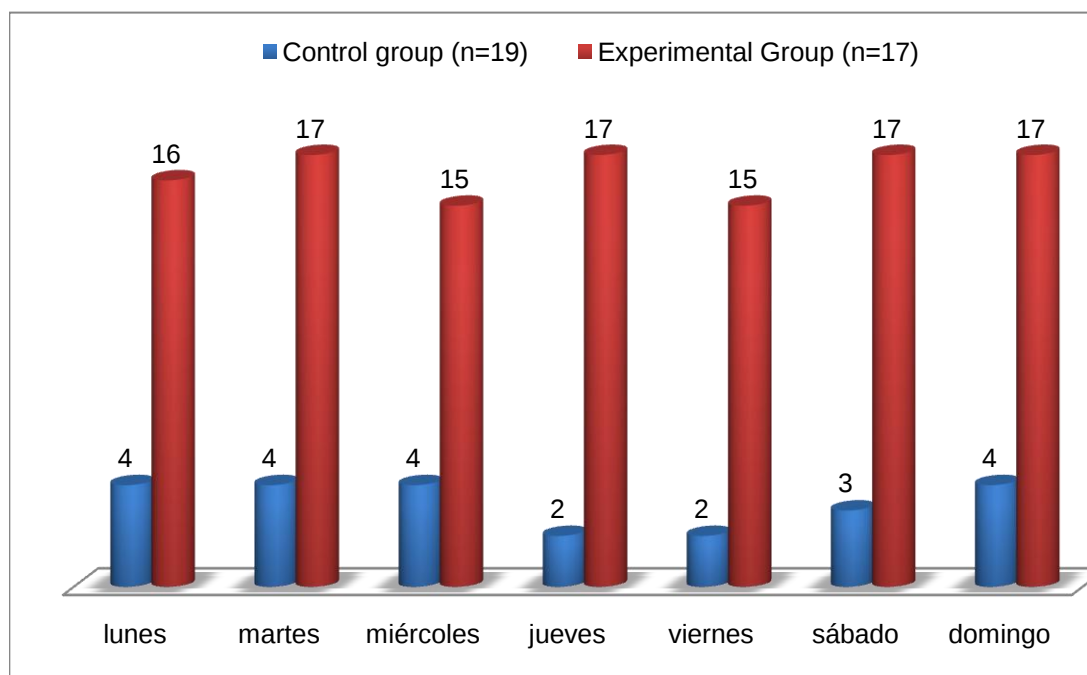


Figure 1.12. Experimental and control group Spanish: Months of the year

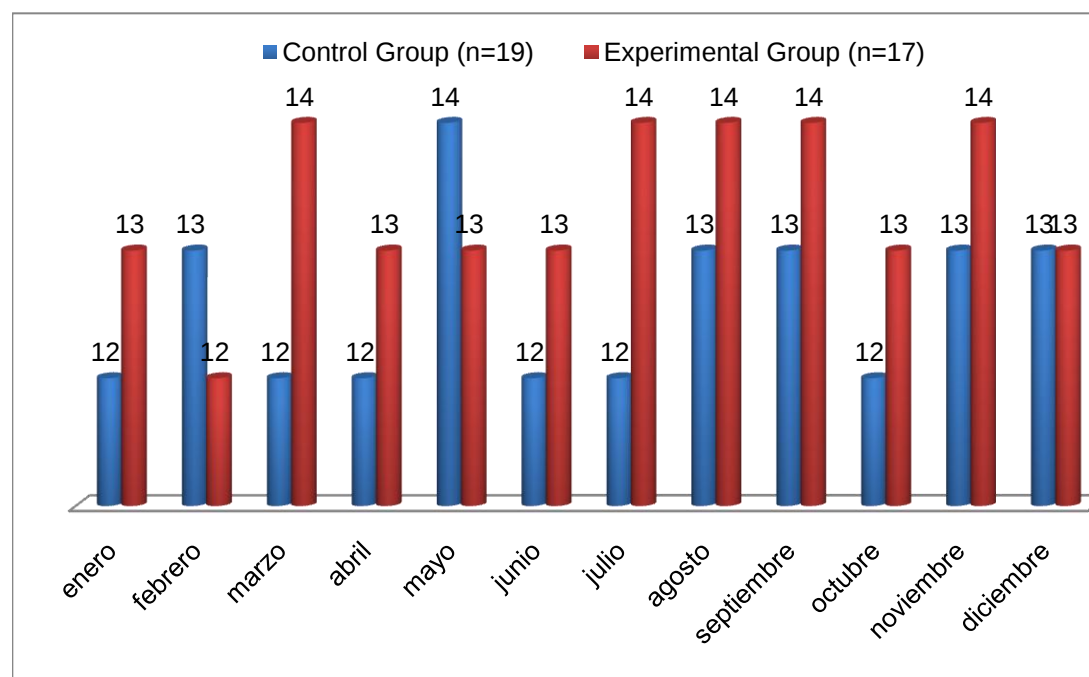


Figure 1.13. Experimental and control group Spanish: Number 1-20

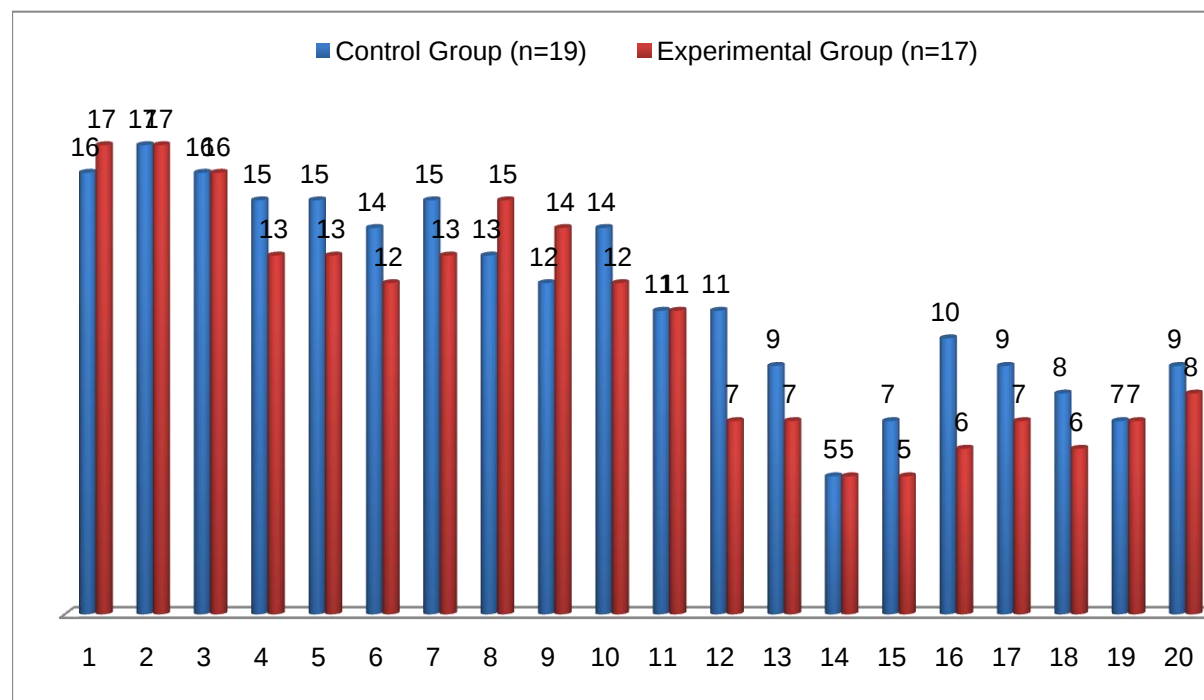


Figure 1.14. Experimental and control group Spanish: Quantitative amounts

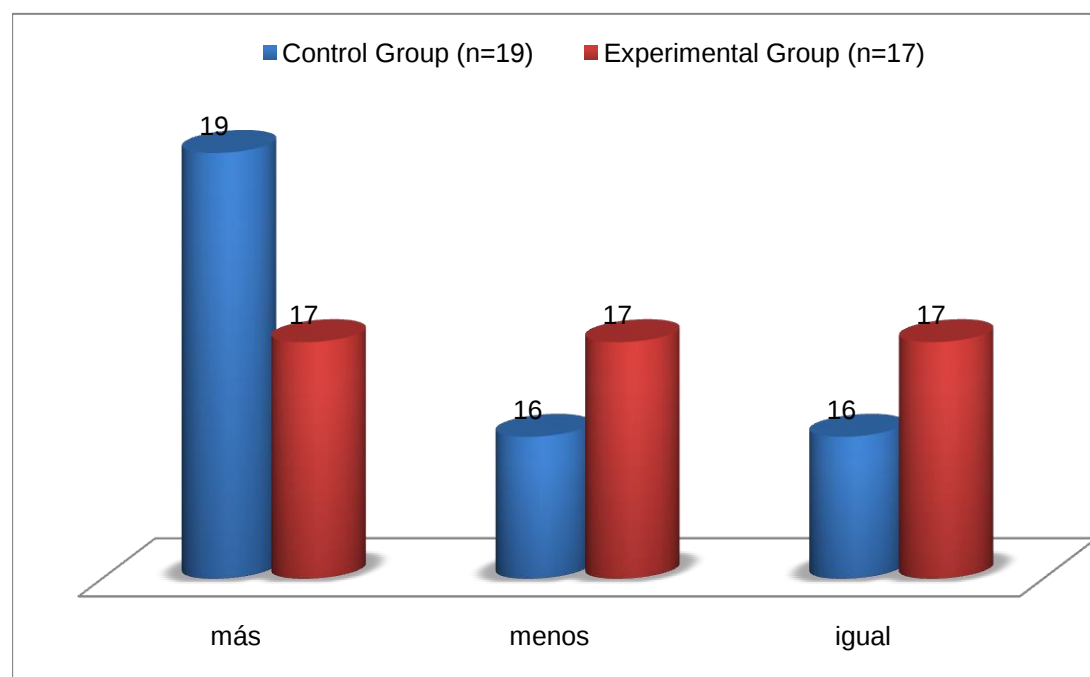


Figure 1.15. Experimental and control group Spanish: 2D shapes

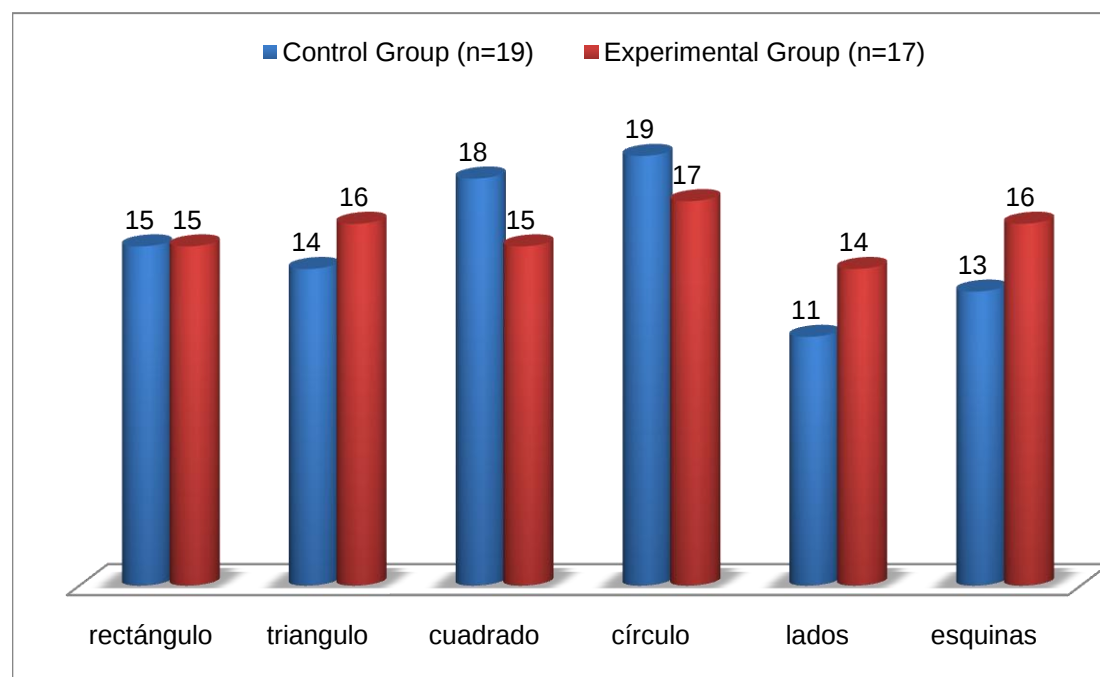


Figure 1.16. Experimental and control group Spanish: Sizes

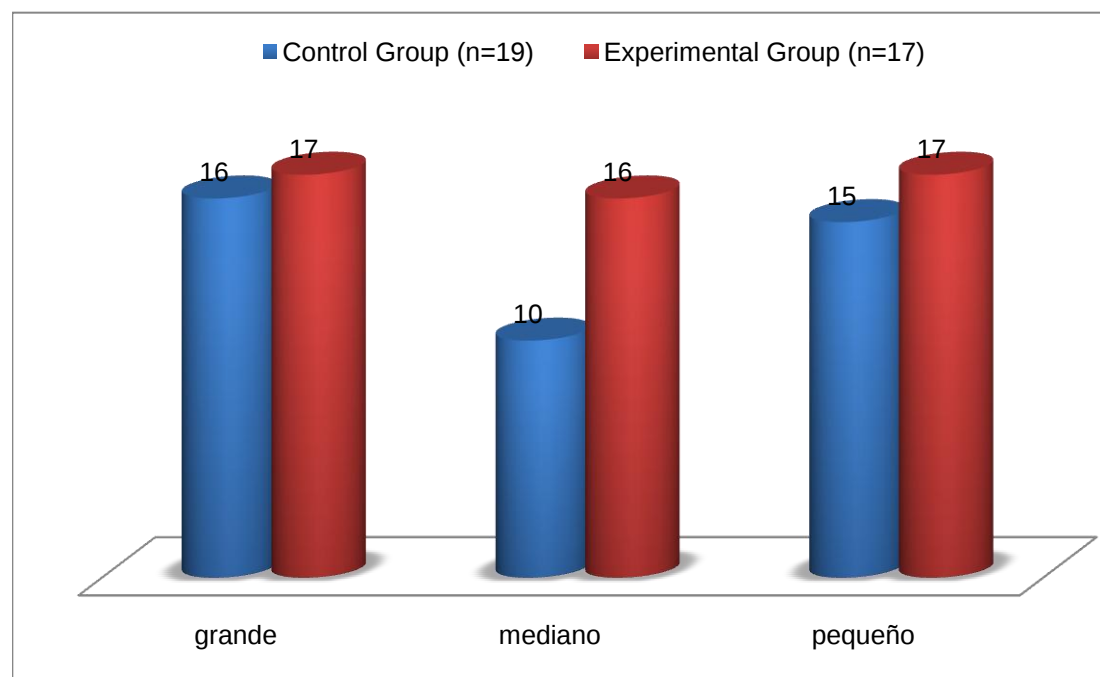


Figure 1.17. Experimental and control group Spanish: Colors

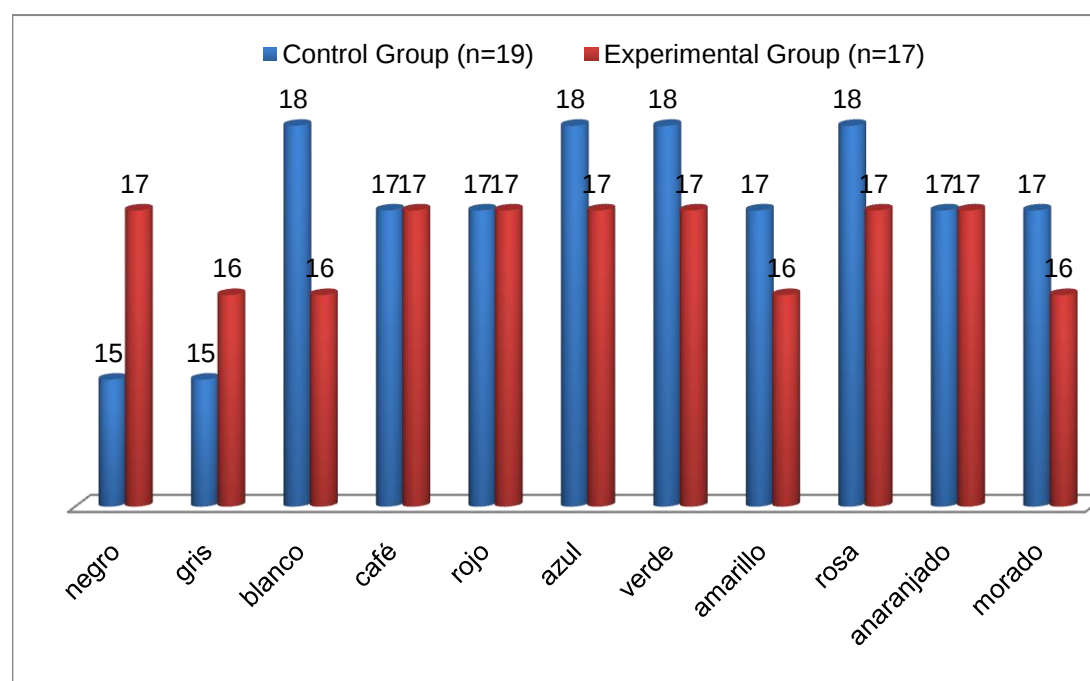


Figure 1.18. Experimental and control group Spanish: Relative positions

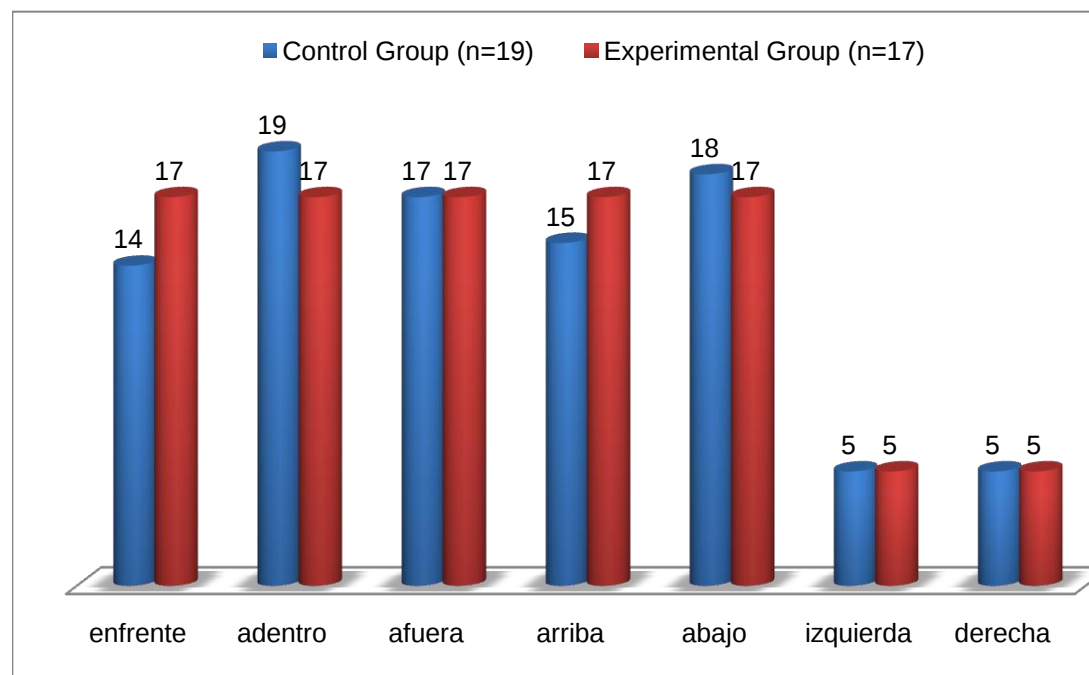


Figure 1.19. Experimental and control group Spanish: Ordinal positions

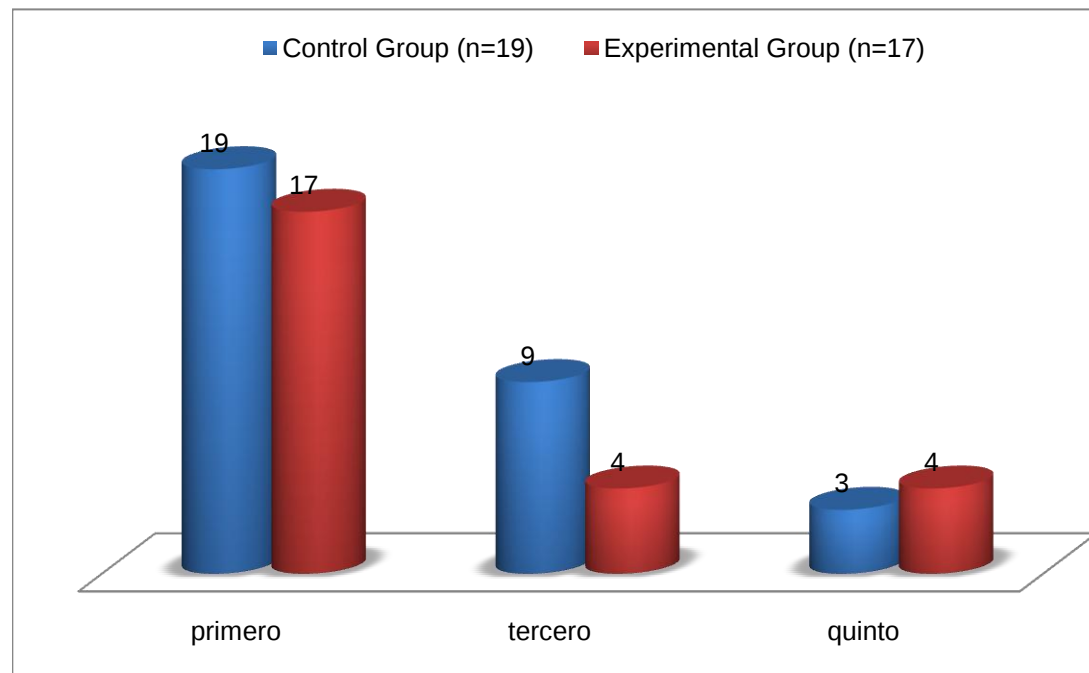
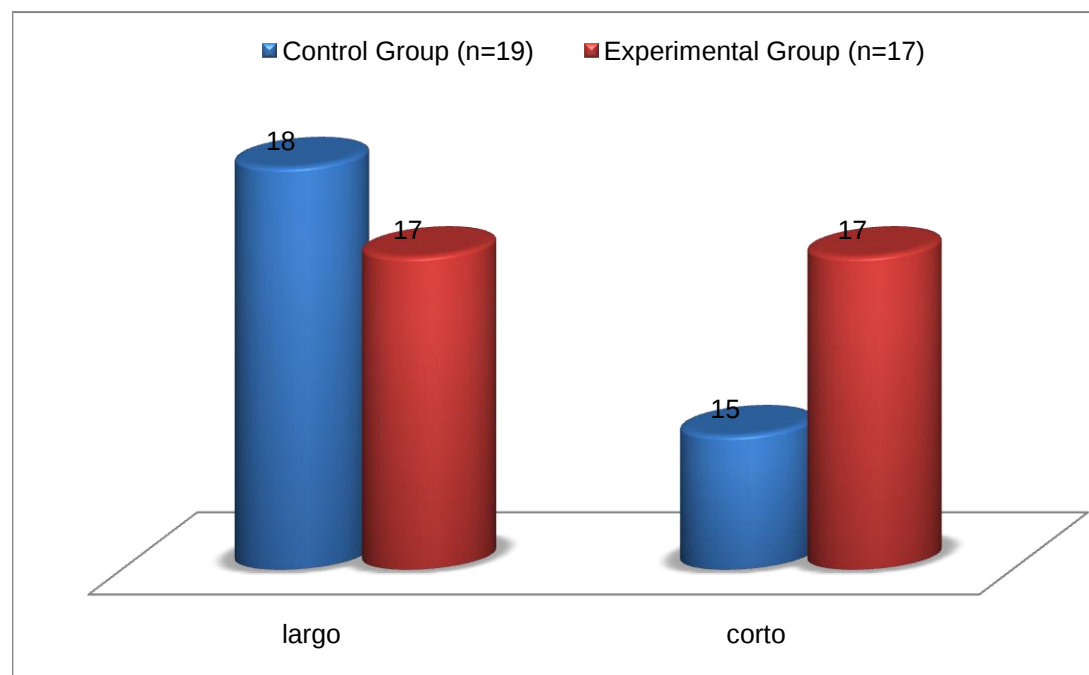


Figure 1.20. Experimental and control group Spanish: Lengths



Experimental group pre- and post- assessments

Figure 1.21. Experimental group pre- and post- English: Days of the week

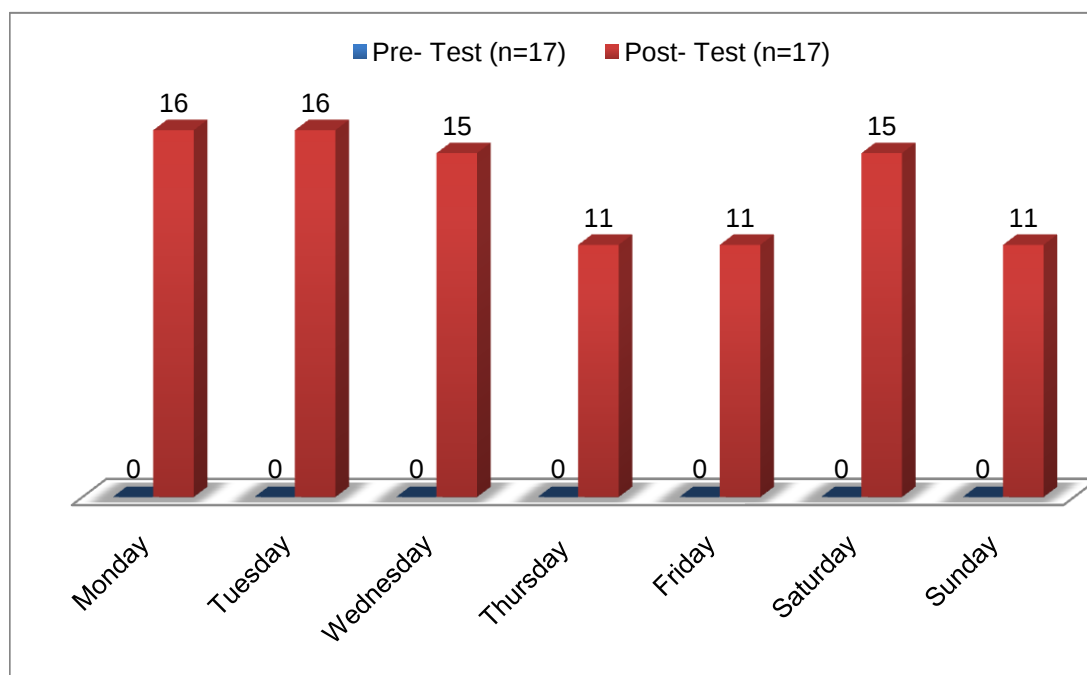


Figure 1.22. . Experimental group pre- and post- English: Months of the year

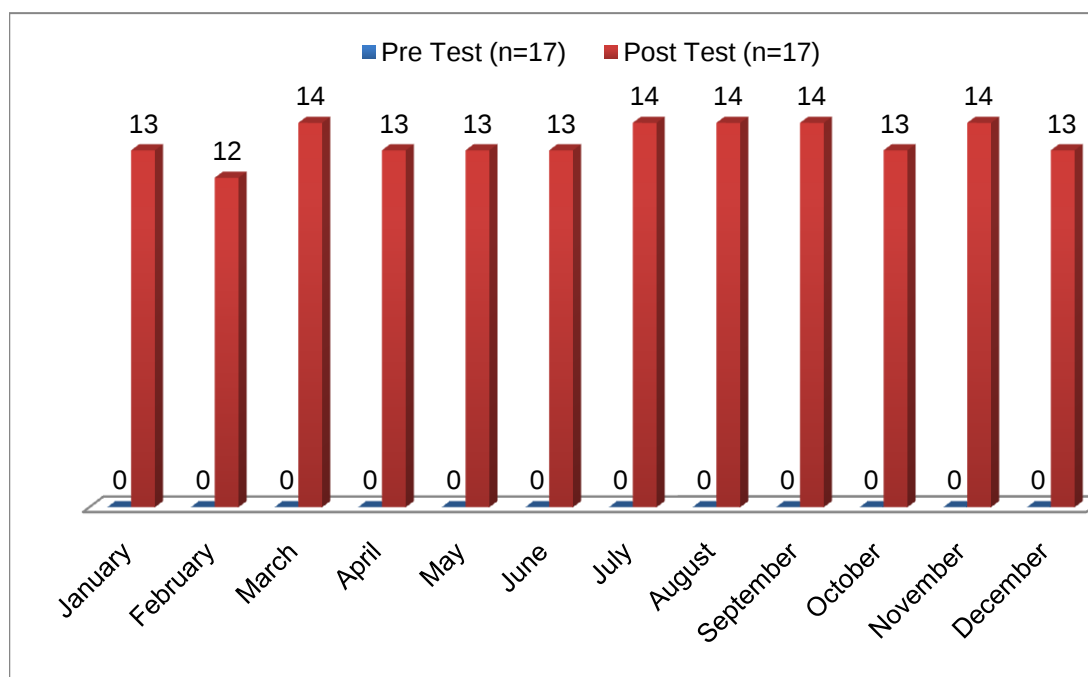


Figure 1.23. Experimental group pre- and post- English: Numbers 1-20

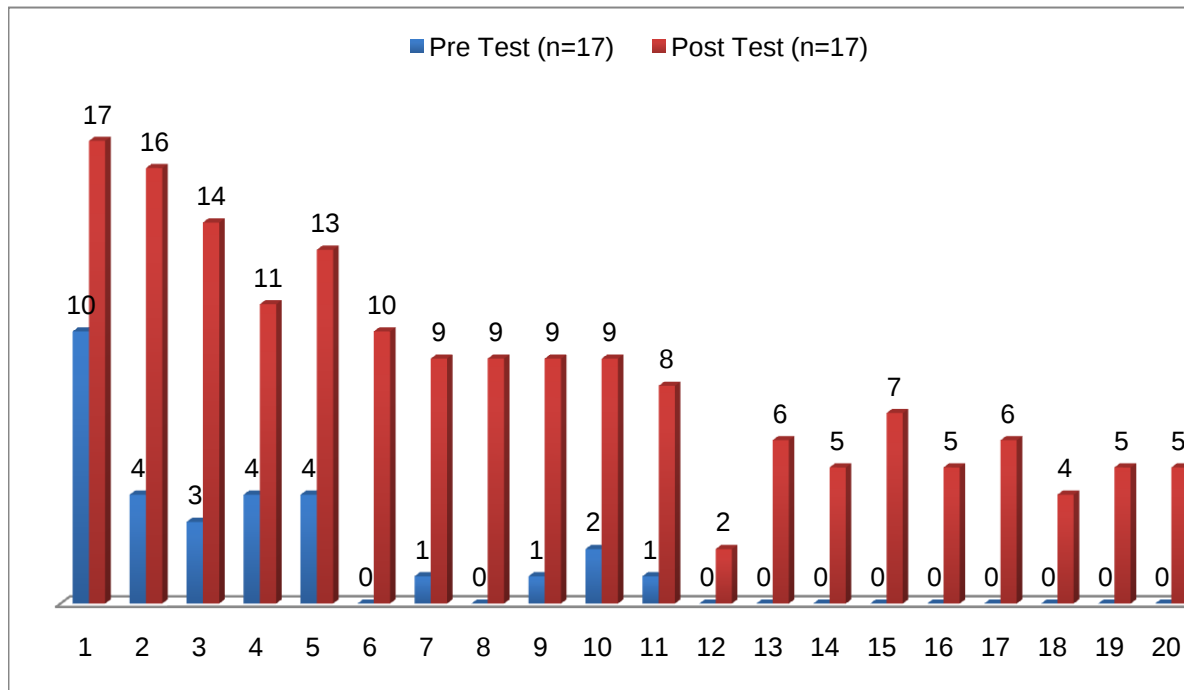


Figure 1.24. Experimental group pre- and post- English: Quantitative amounts

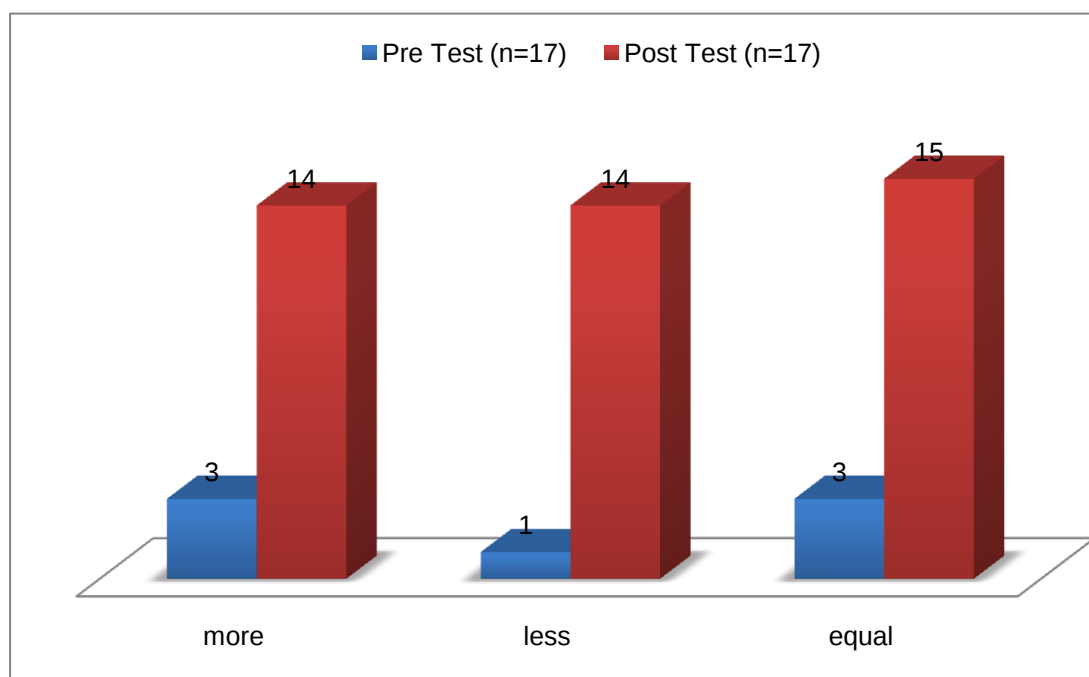


Figure 1.25. Experimental group pre- and post- English: 2D shapes

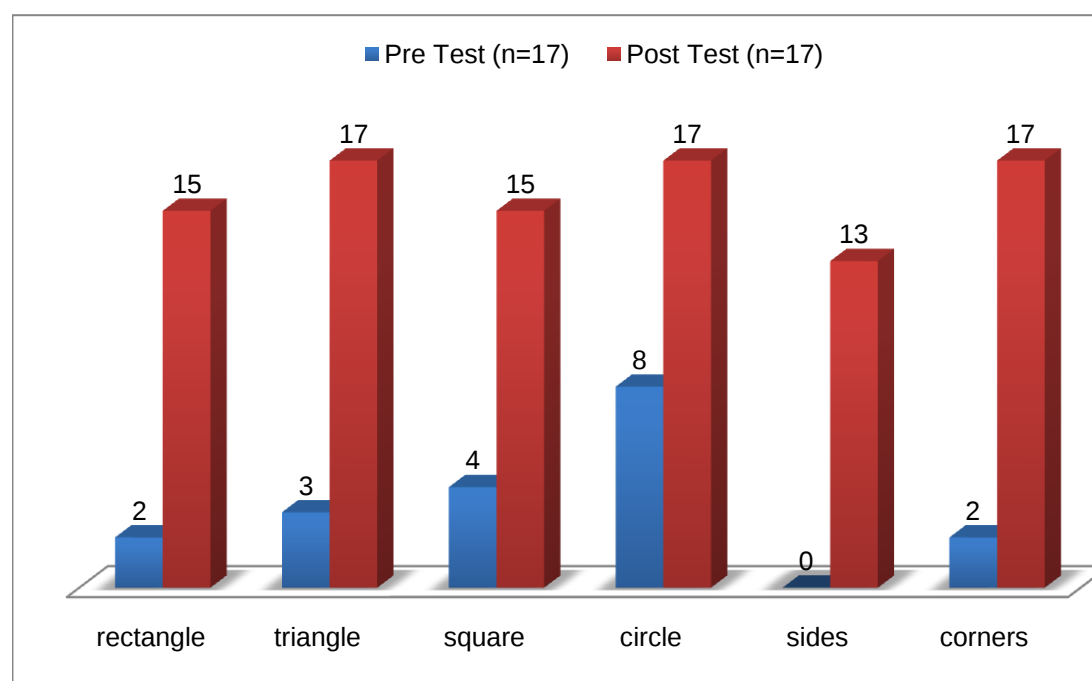


Figure 1.26. Experimental group pre- and post- English: Sizes

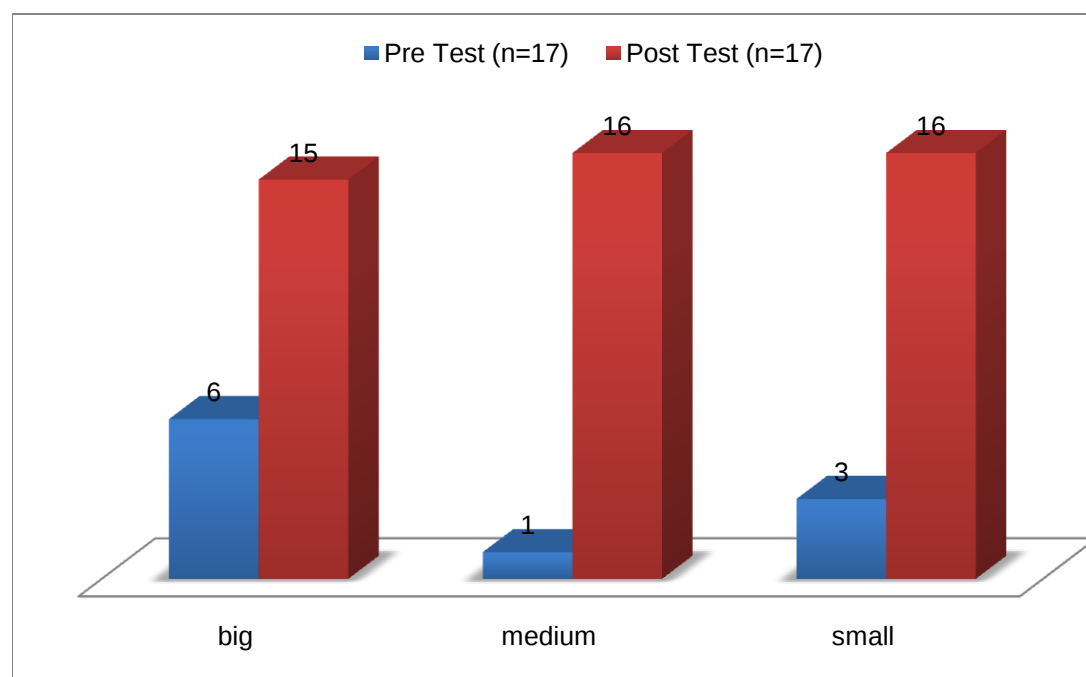


Figure 1.27. Experimental group pre- and post- English: Colors

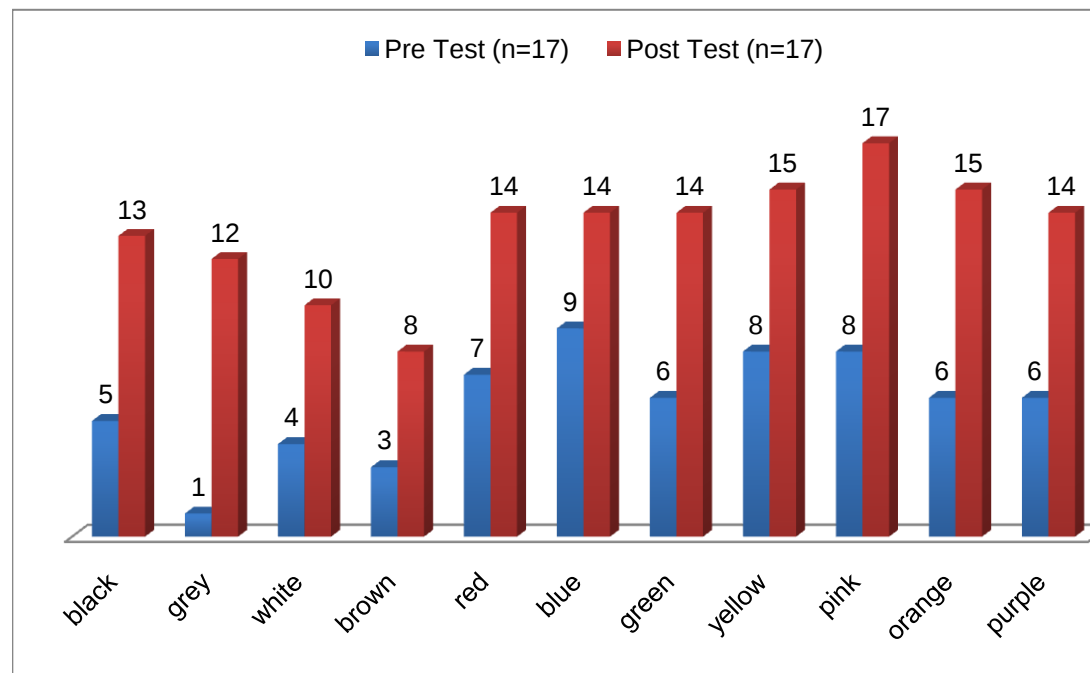


Figure 1.28. Experimental group pre- and post- English: Relative positions

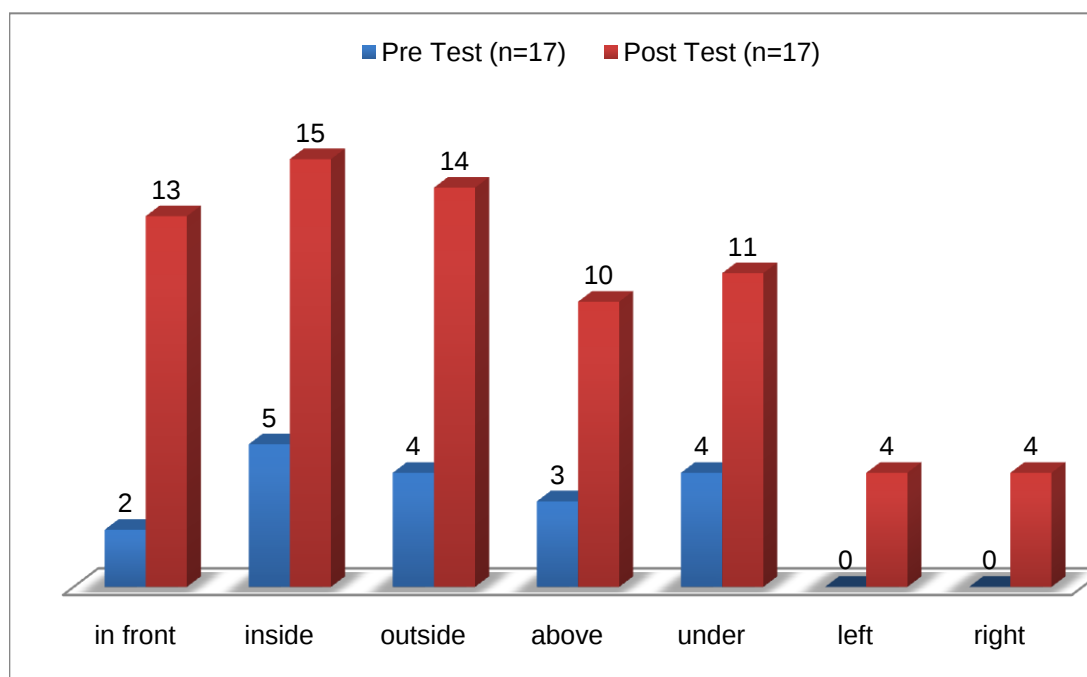


Figure 1.29. Experimental group pre- and post- English: Ordinal positions

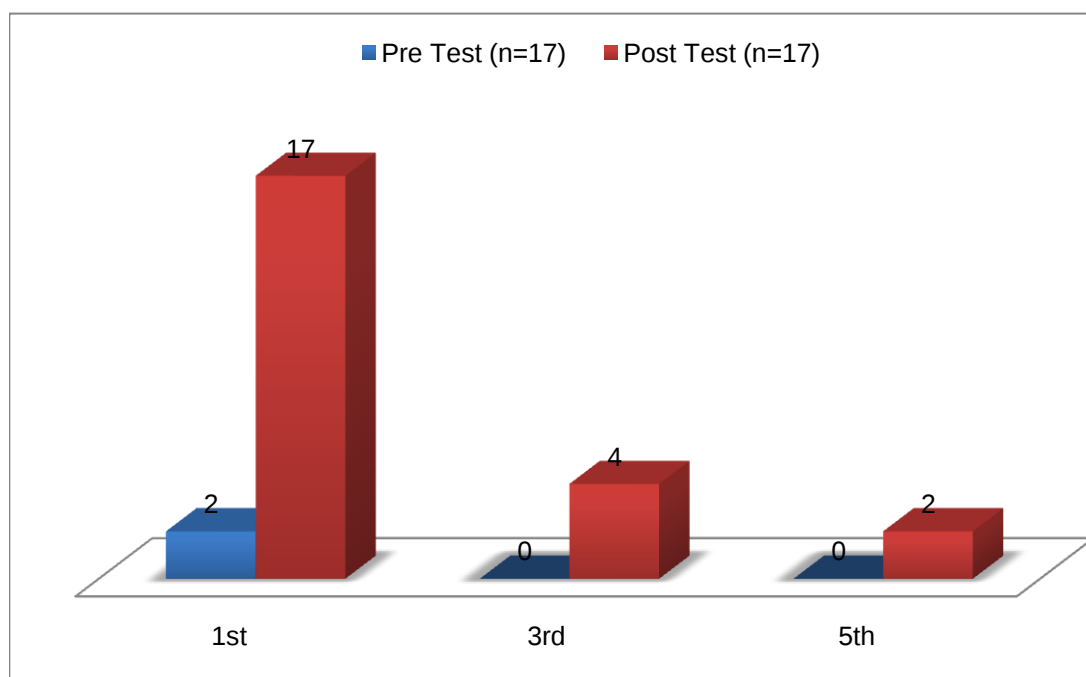


Figure 1.30. Experimental group pre- and post- English: Lengths

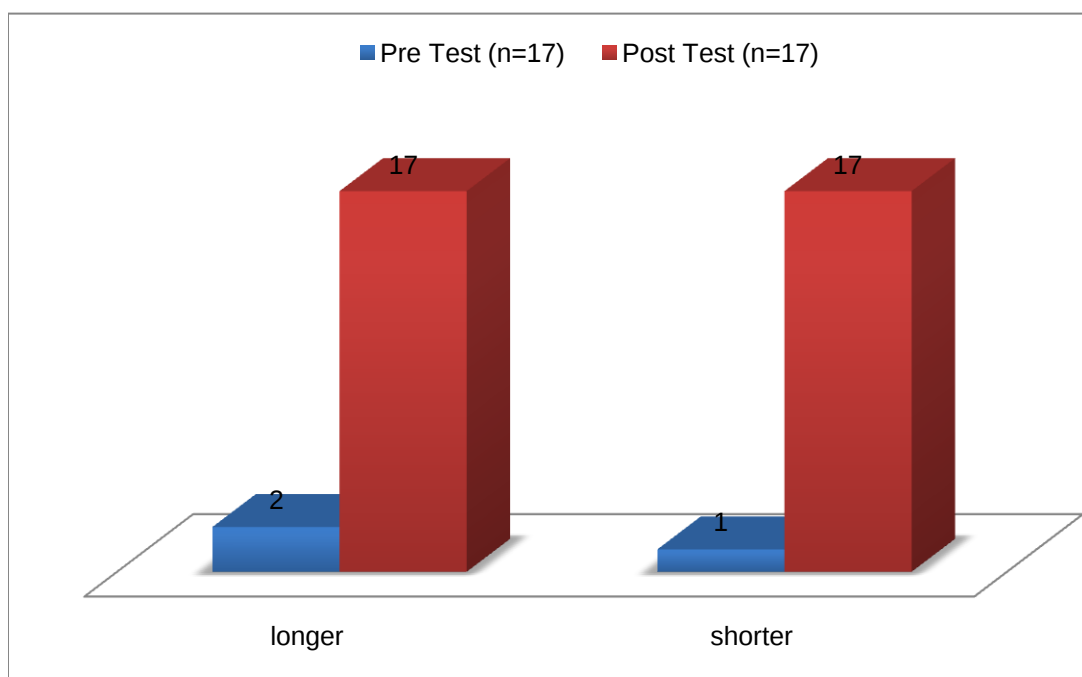


Figure 1.31. Experimental groups' pre- and post- Spanish: Days of the week

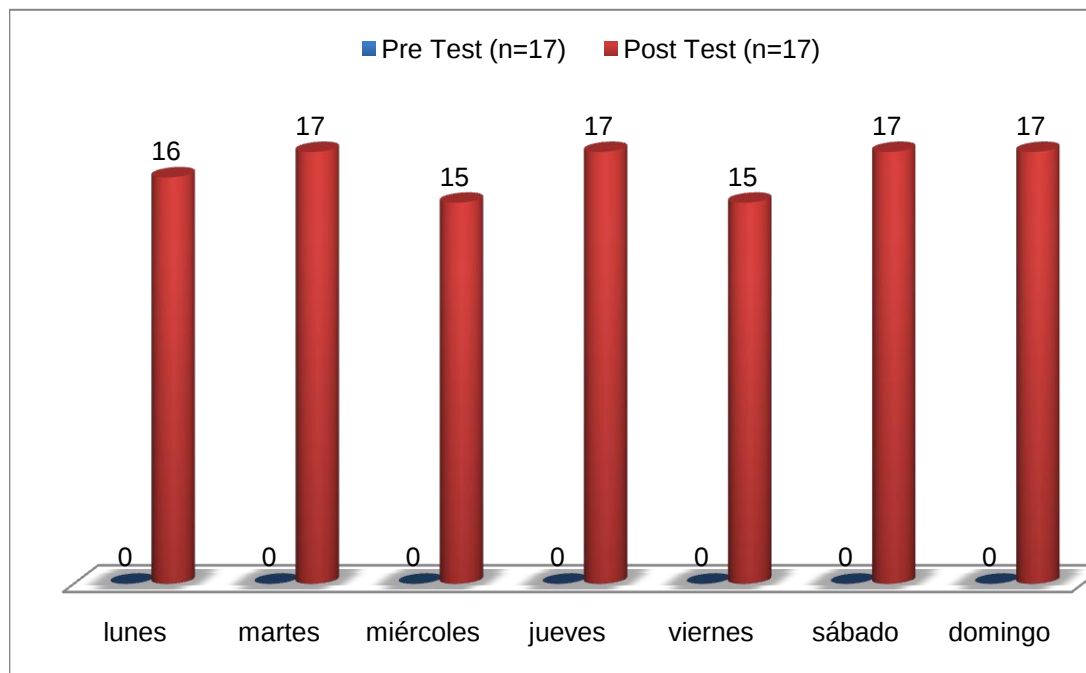


Figure 1.32 Experimental groups' pre- and post- Spanish: Months of the year

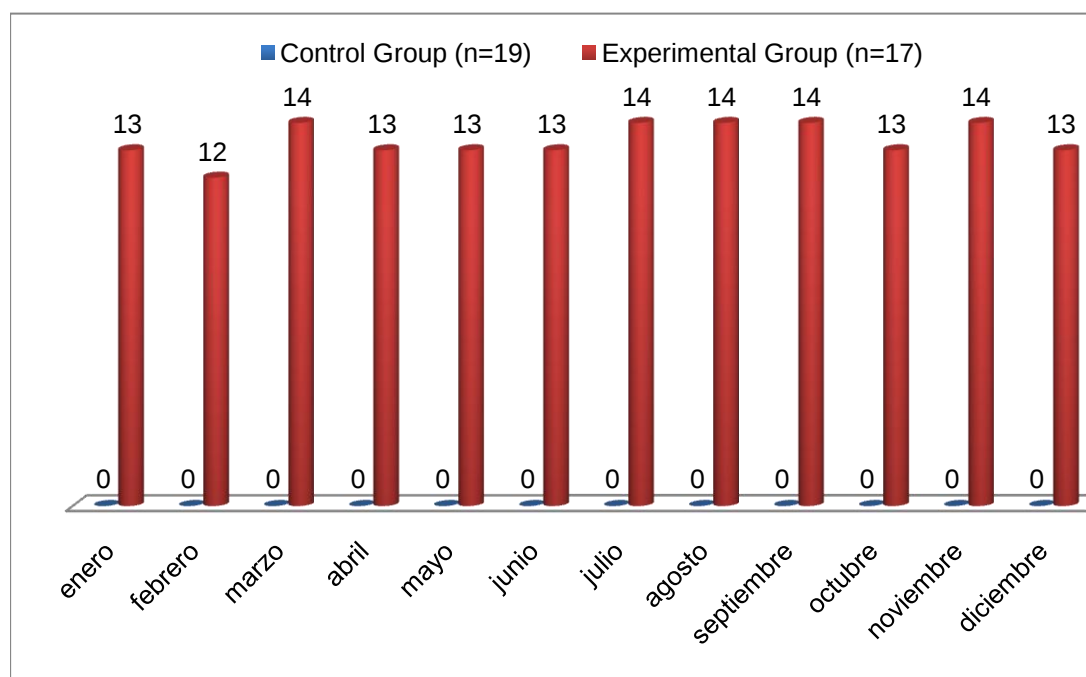


Figure 1.33. Experimental group pre- and post- Spanish: Number 1-20

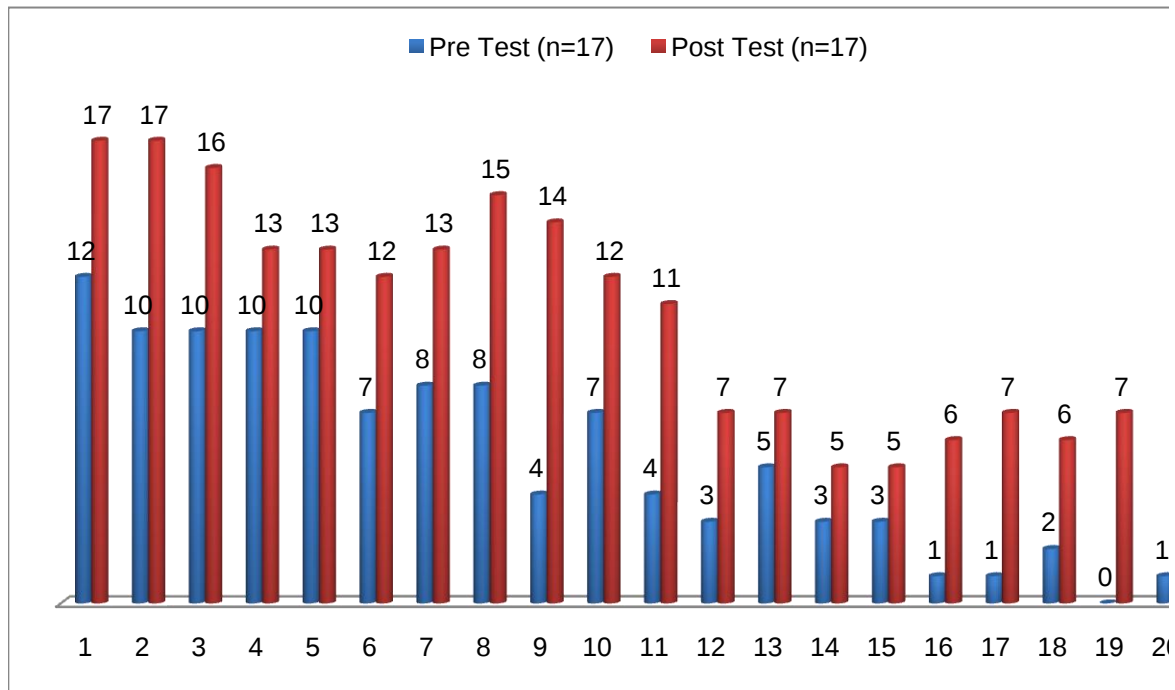


Figure 1.34. Experimental group pre- and post- Spanish: Quantitative amounts

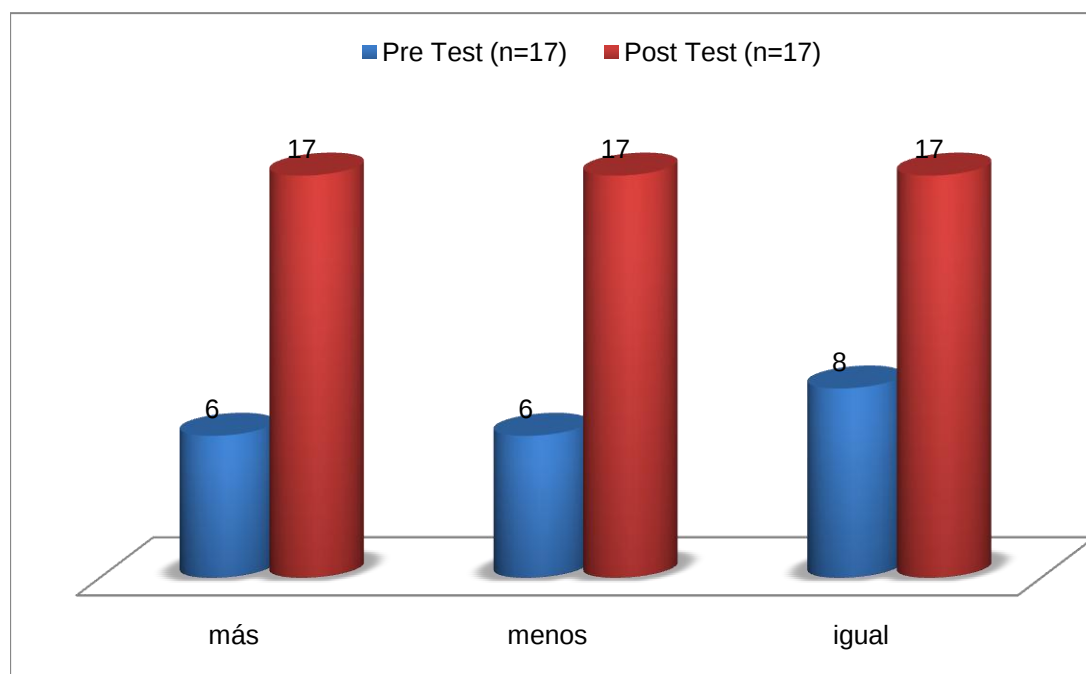


Figure 1.35. Experimental group pre- and post- Spanish: 2D shapes

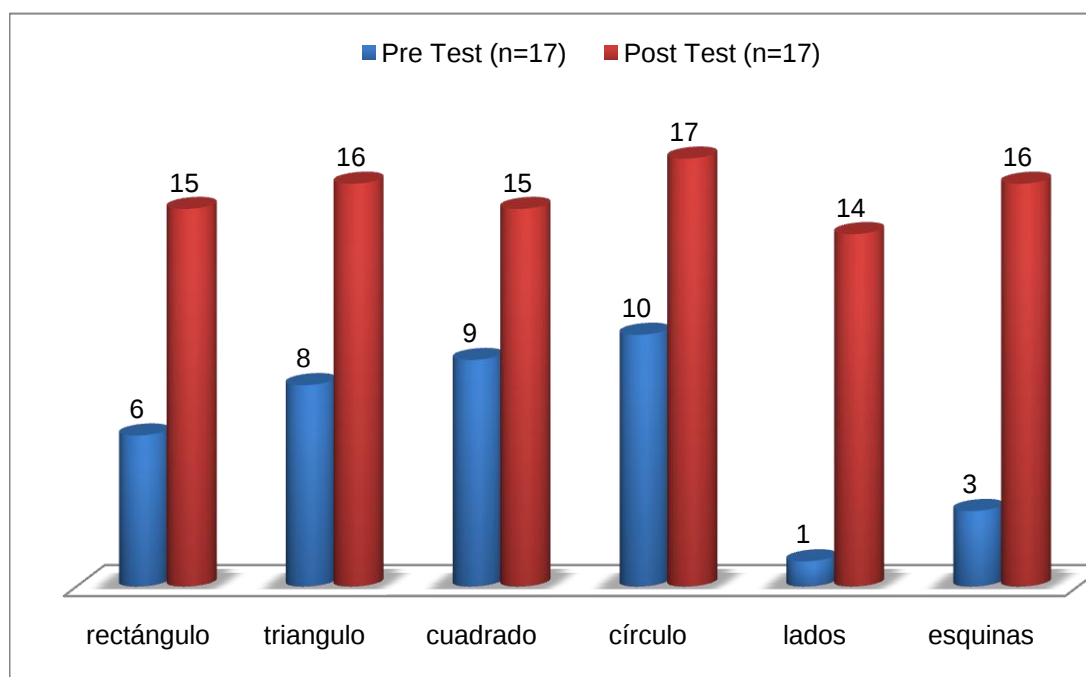


Figure 1.36. Experimental group pre- and post- Spanish: Sizes

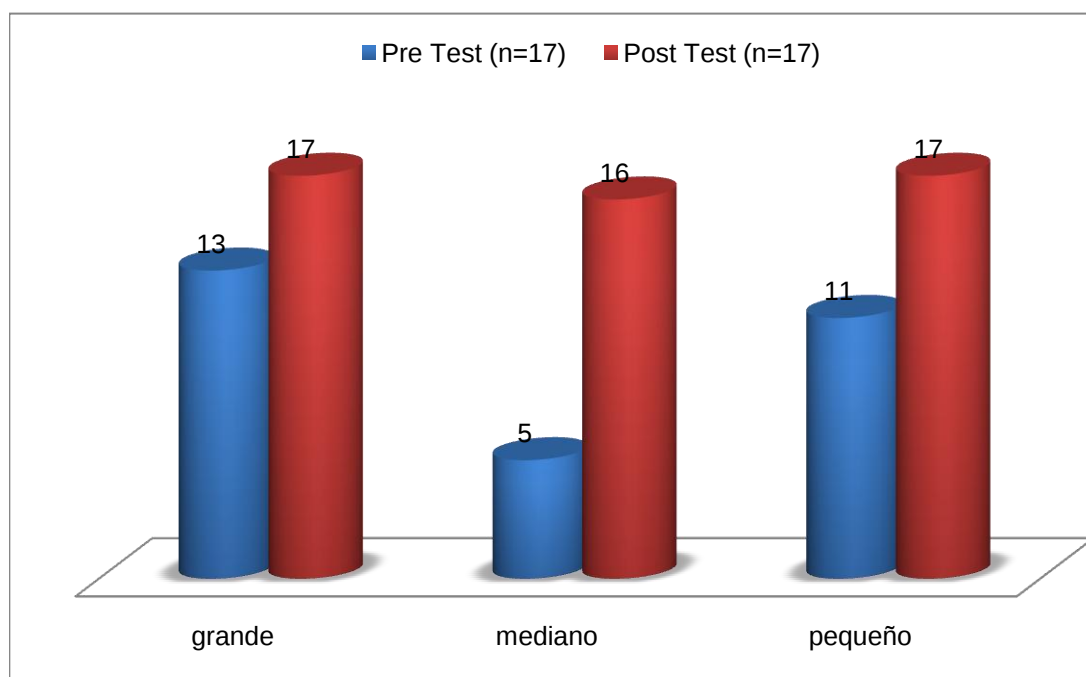


Figure 1.37. Experimental group pre- and post- Spanish: Colors

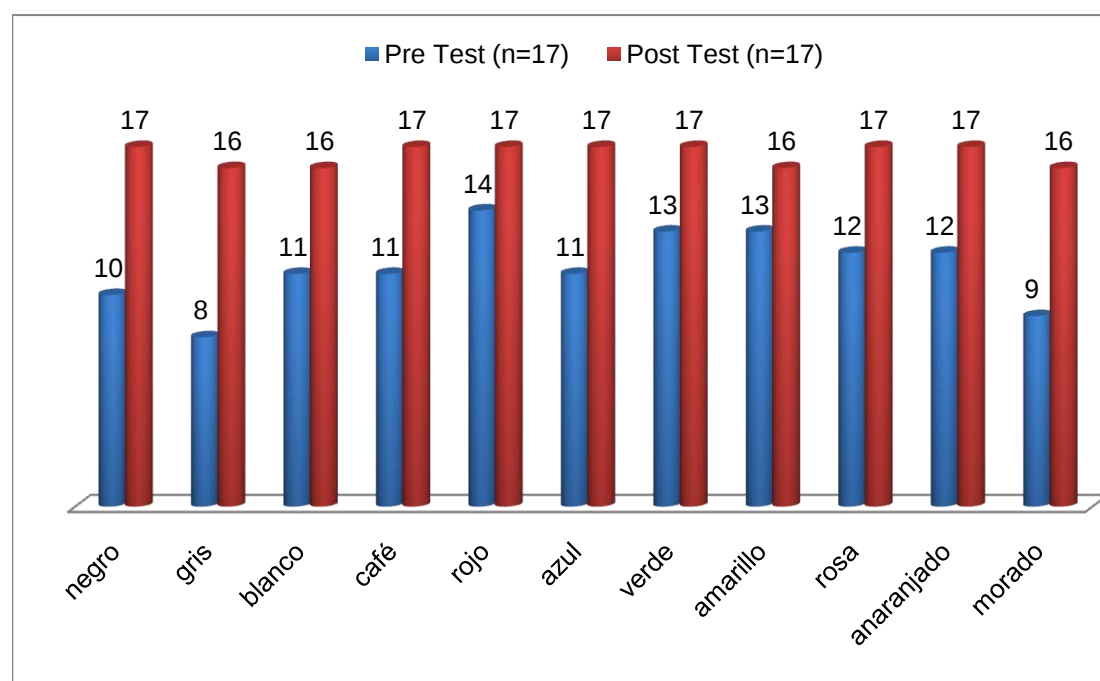


Figure 1.38. Experimental group pre- and post- Spanish: Relative positions

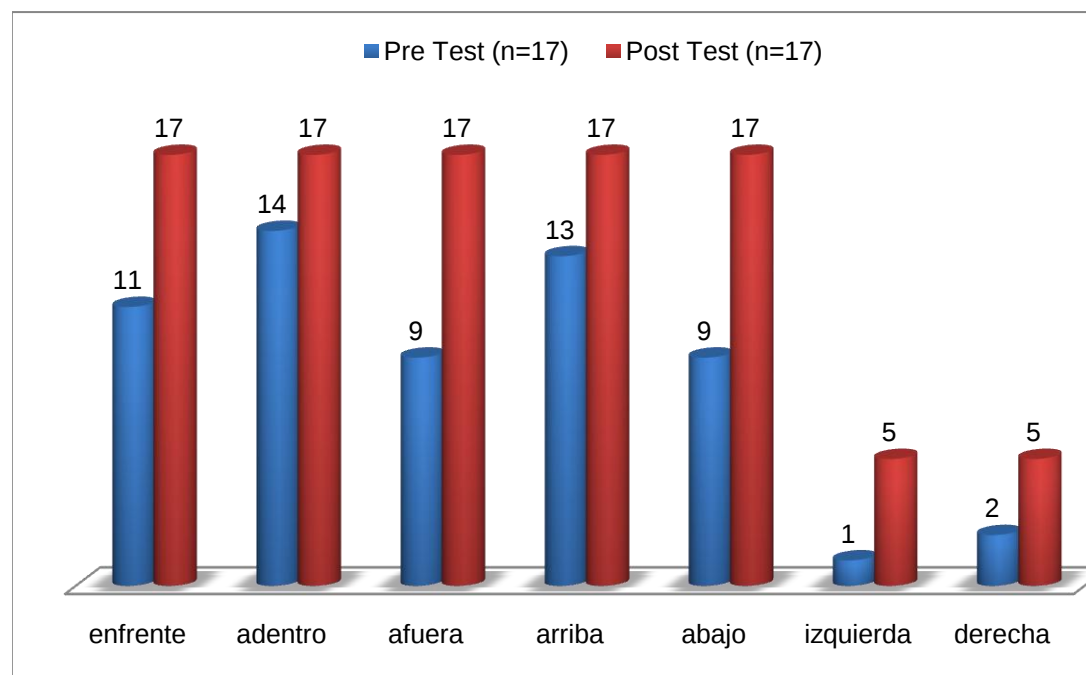


Figure 1.39. Experimental group pre- and post- Spanish: Ordinal positions

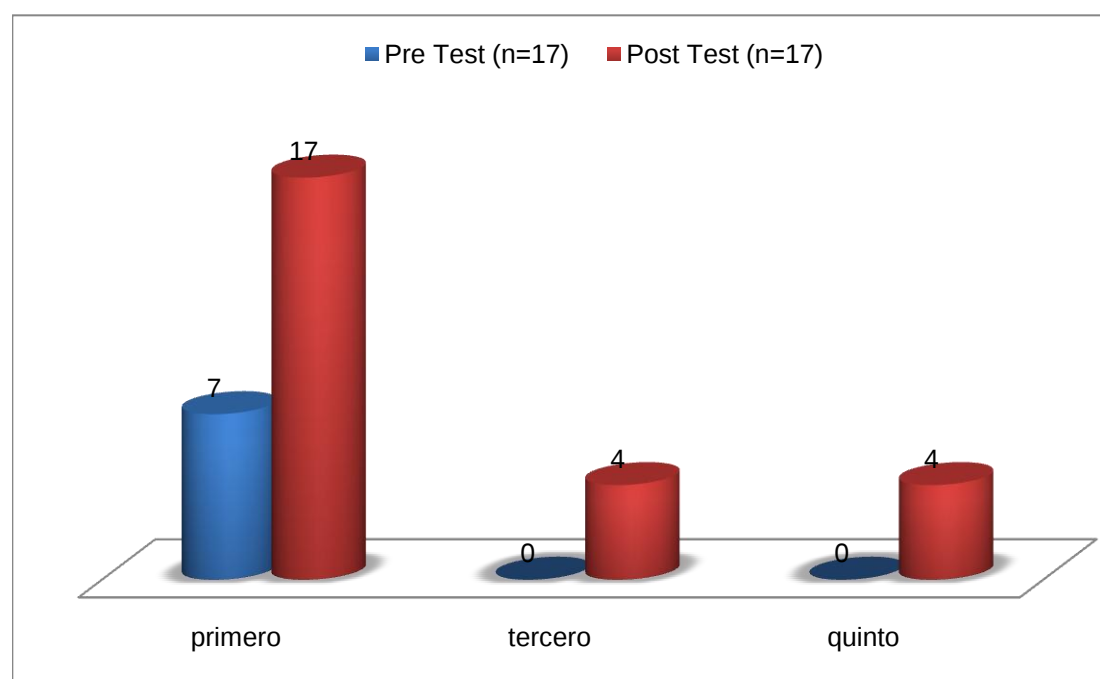
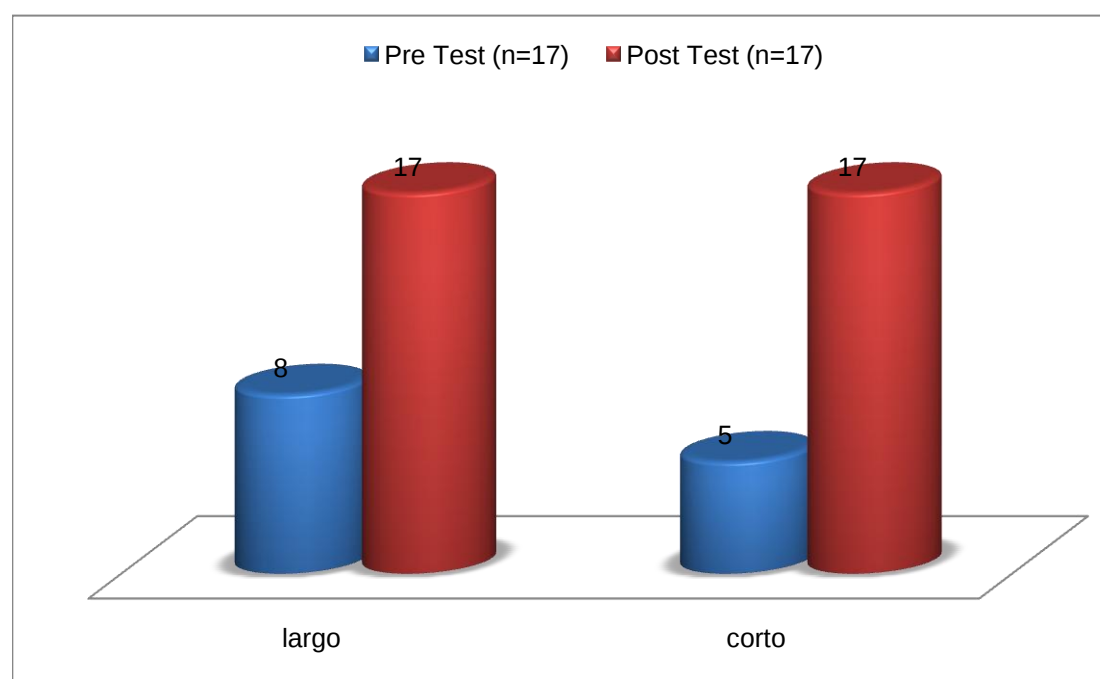


Figure 1.40. Experimental group pre- and post- Spanish: Lengths



Experimental group post- assessments in English and Spanish

Figure 1.41. Experimental group post- assessment English and Spanish: Days of the week

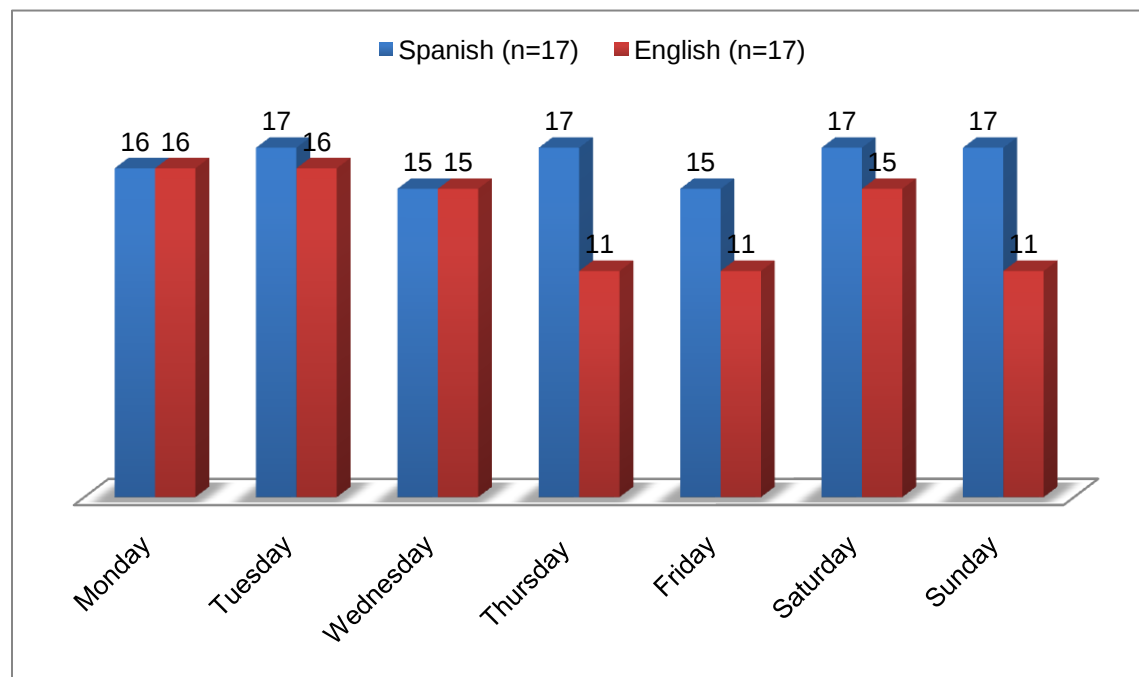


Figure 1.42. Experimental group post- assessment English and Spanish: Months of the year

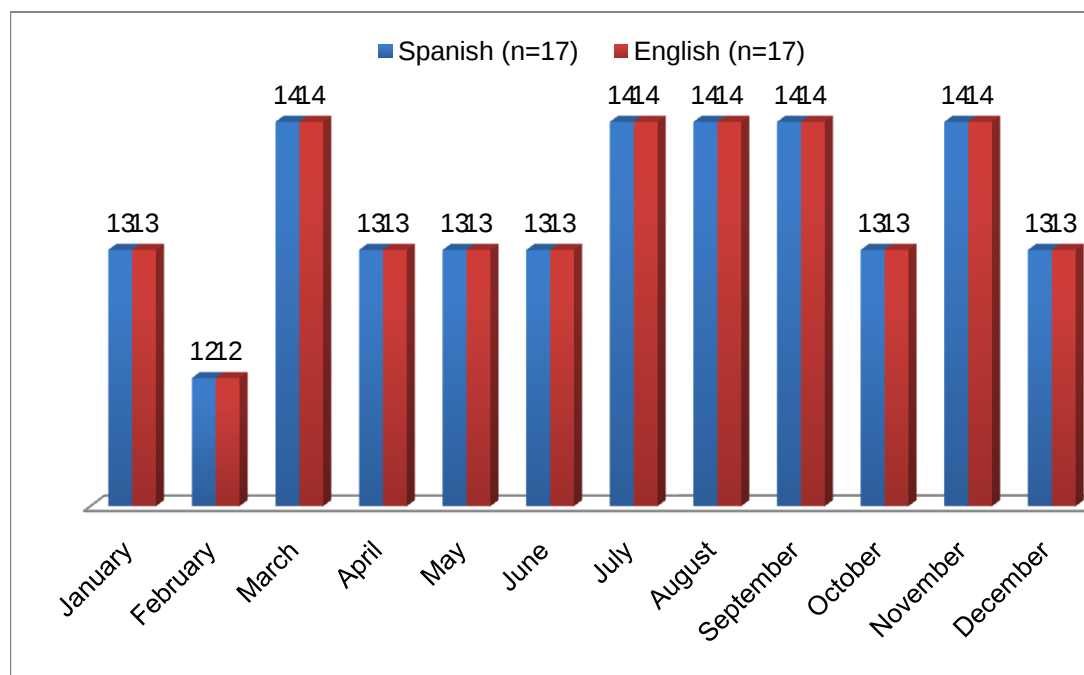


Figure 1.43. Experimental group post- assessment English and Spanish: Numbers 1-20

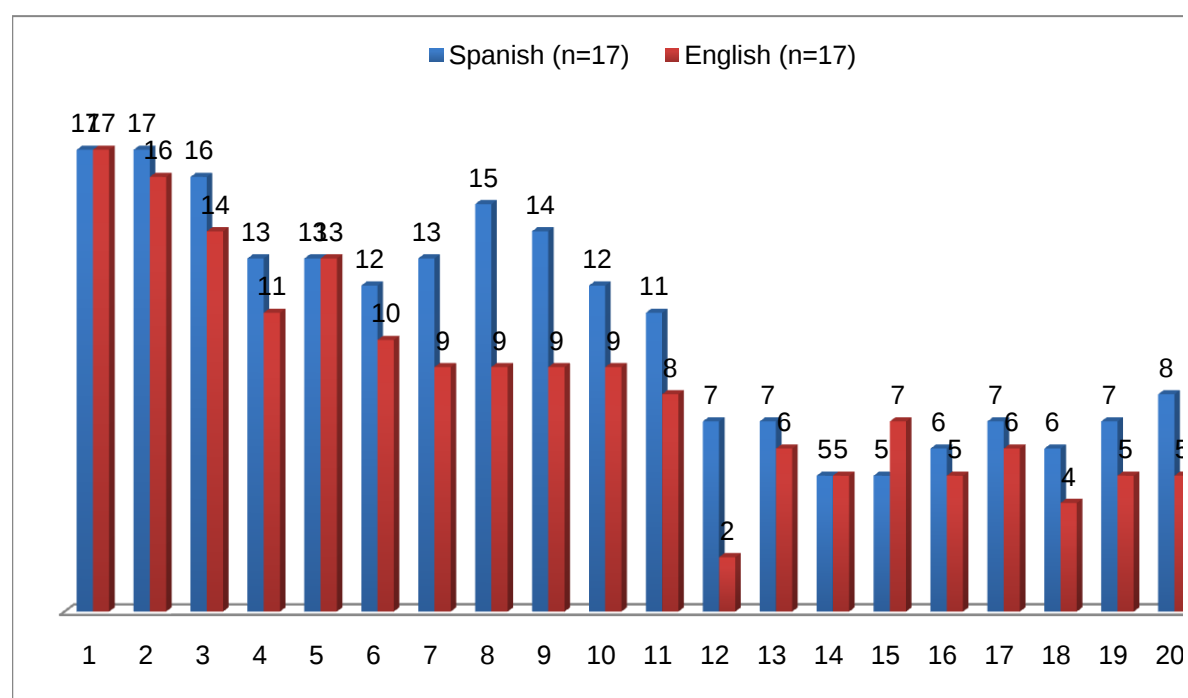


Figure 1.44. Experimental group post- assessment English and Spanish:
Quantitative amounts

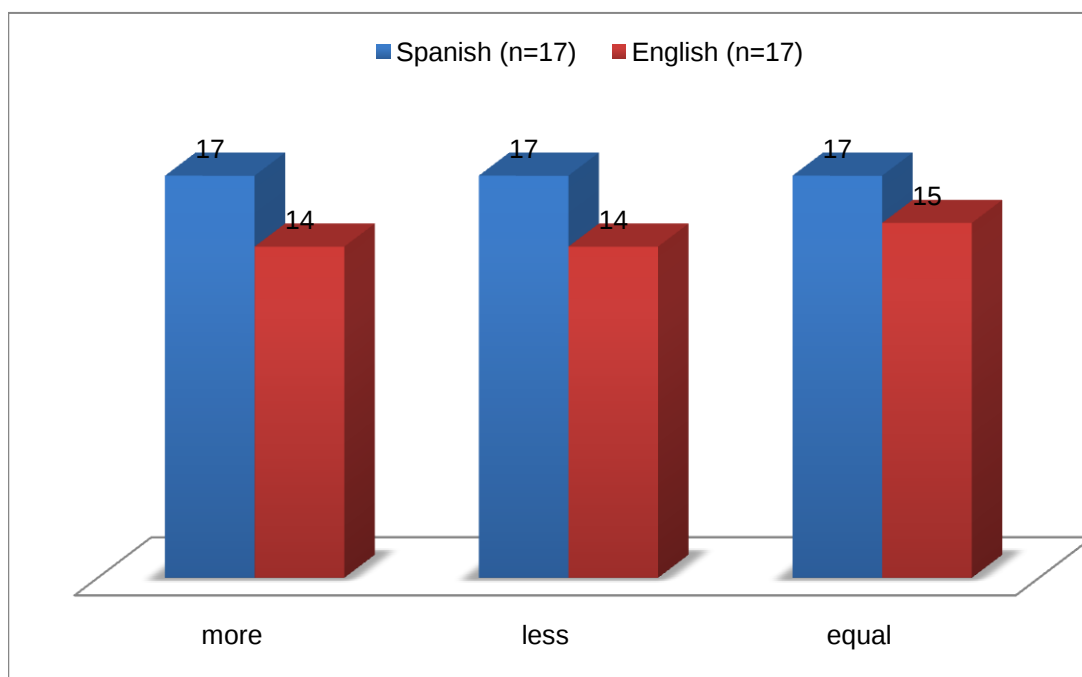


Figure 1.45. Experimental group post- assessment English and Spanish: 2D shapes

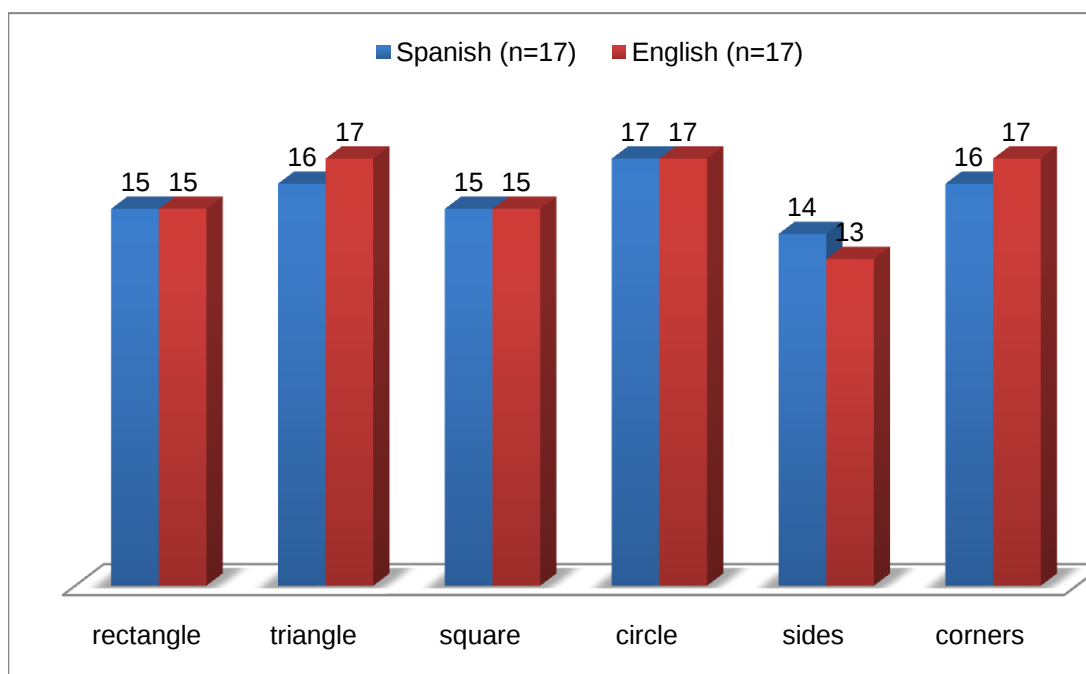


Figure 1.46. Experimental group post- assessment English and Spanish: Sizes

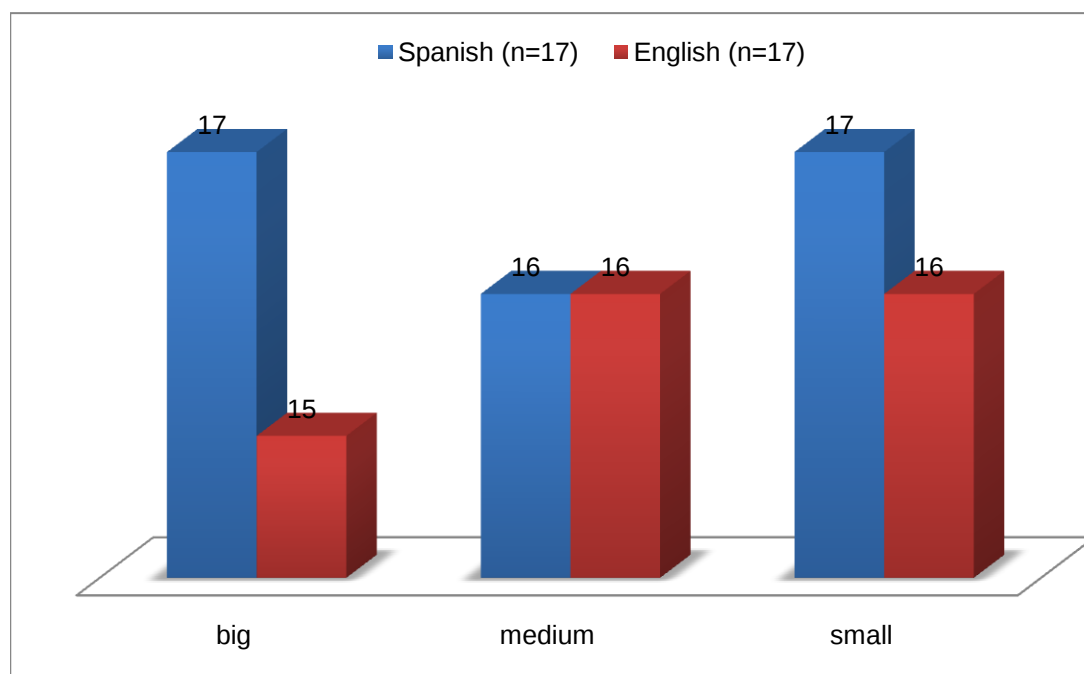


Figure 1.47. Experimental group post- assessment English and Spanish: Colors

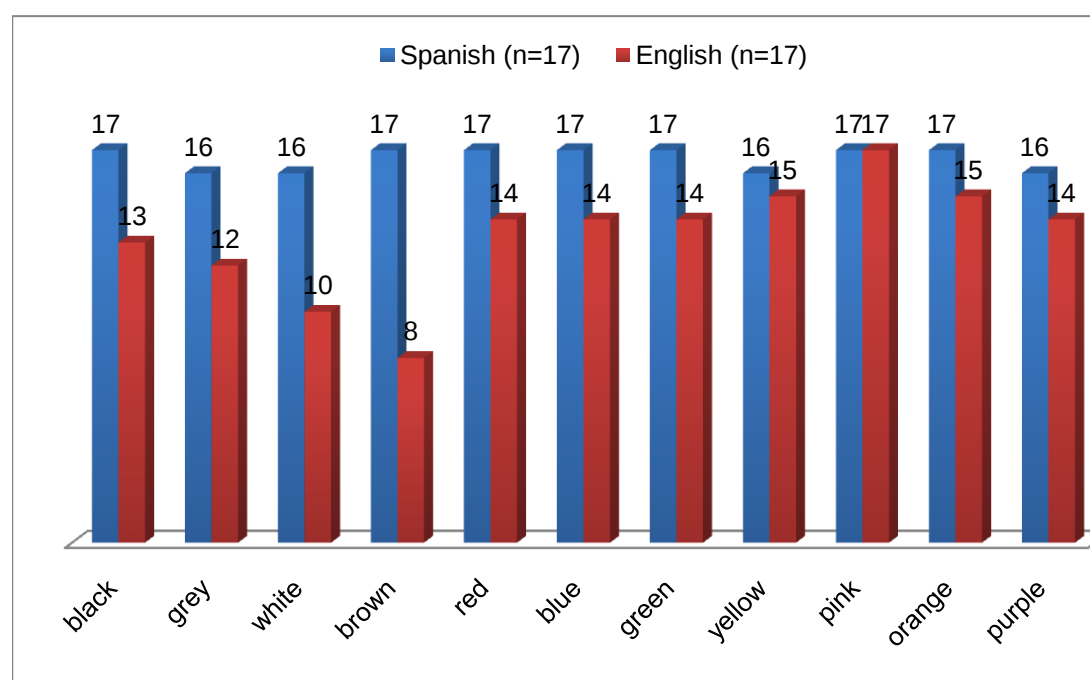


Figure 1.48. Experimental group post- assessment English and Spanish: Relative positions

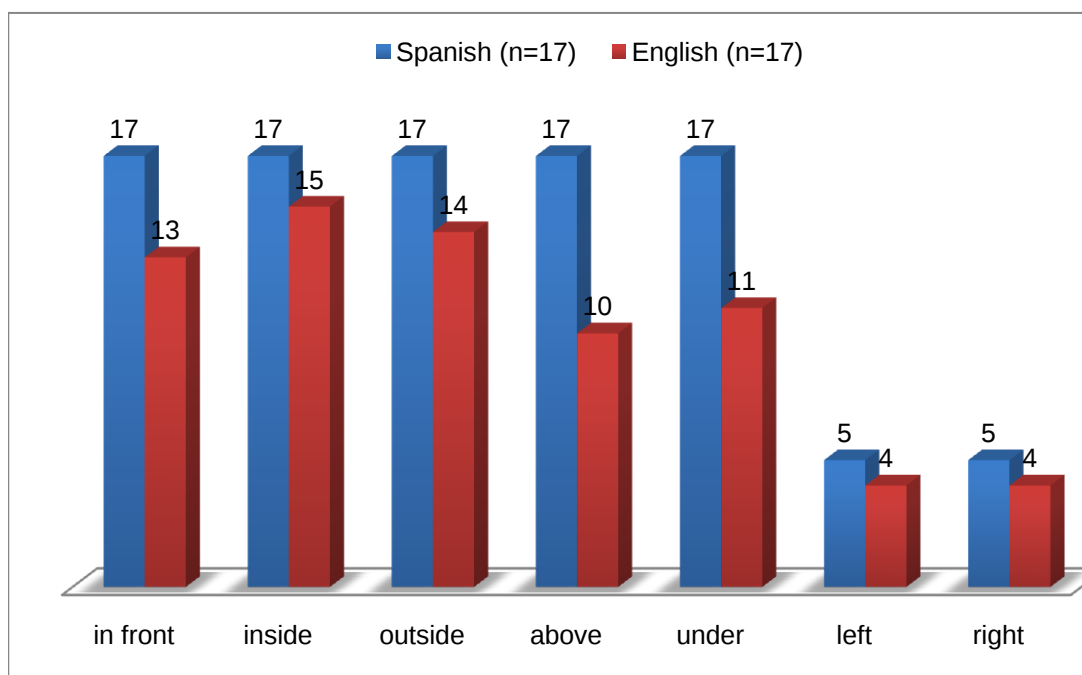


Figure 1.49. Experimental group post- assessment English and Spanish: Ordinal positions

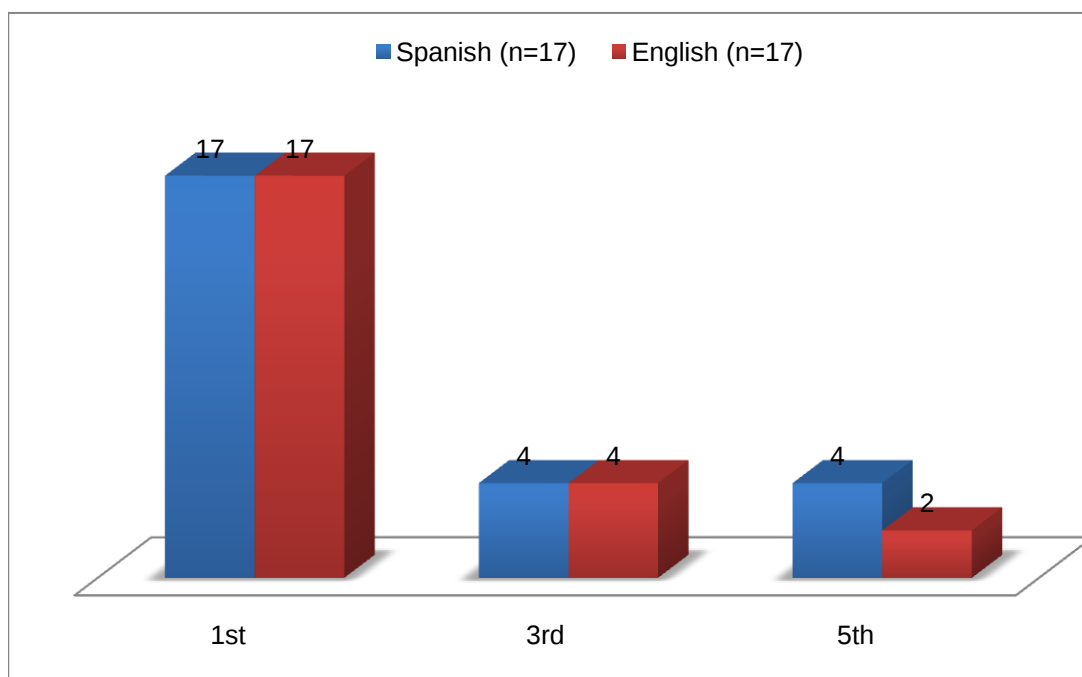
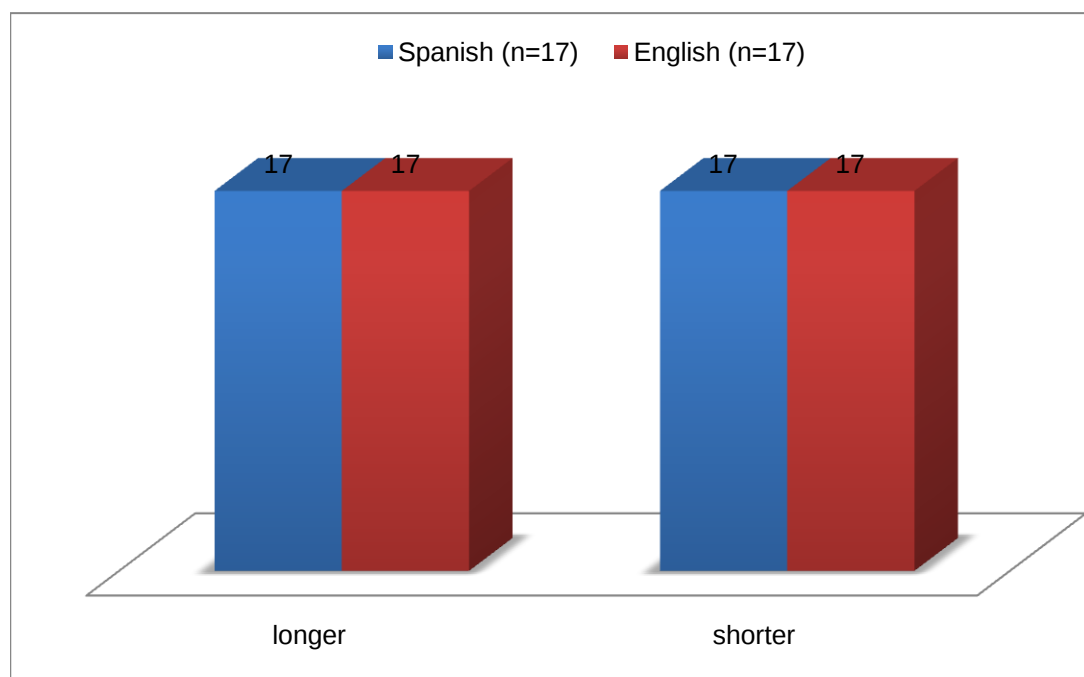


Figure 1.50. Experimental group post- assessment English and Spanish: Lengths



VITA

Monica Salas was born in Brownsville, Texas, on August 26, 1986. She is the daughter of Adan Sergio Gutierrez and Oralia Gutierrez. She is sister to Marcos Moises Salas, Patricia Valmores, Jose Humberto Salas, Dalia Gutierrez, and Adan Sergio Gutierrez Jr. She is also sister-in-law to Philip Valmores, Claudia de Souza Salas, and Luz Garcia and aunt to Marcos Moises Salas Jr., Dante Salas, and Madison Valmores. In 2004, she completed her work at James Pace High School, Brownsville, Texas, and began her undergraduate program at the University of Texas at Brownsville. In the fall of 2008, she graduated Cum Laude from the University of Texas at Brownsville with a Bachelor of Arts in Interdisciplinary Studies: Early Childhood-4th Grade Bilingual Generalist. Thereafter she moved to Austin, Texas, where she began her teaching career and has been a bilingual teacher in Pflugerville Independent School District in Northeast, Austin, Texas. In the Fall of 2010, she pursued a Master in Arts in Curriculum and Instruction emphasis in Bilingual/Bicultural Education.

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This thesis was typed by Monica Salas.