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Computer Based Intervention And Its Effect On Benchmark Test Scores Of English Language Learners

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COMPUTER BASED INTERVENTION AND ITS EFFECT ON BENCHMARK TEST SCORES OF ENGLISH LANGUAGE LEARNERS

by

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ABSTRACT

The Florida Department of Education's (FLDOE) Adequate Yearly Progress (AYP) Report (2007) listed and defined students who are in the process of learning English as a second language as English Language Learners (ELL). The graduation rate of English Language Learners in Florida is consistently smaller than the graduation rate of the total population of students (Echevarria, Short and Powers, 2006) in part due to the requirement for students to pass the FCAT in order to graduate. ELL students face the challenge of having to learn a different language, learn the subject area content in that language, and often-times pass a standardized test in order to graduate. In Florida districts, ELL is categorized as a subgroup often times not meeting adequate yearly progress in Reading (Florida Department of Education 2007). This study measured the effectiveness of a district approved computer based intervention in increasing student achievement for English Language Learners as identified by the Florida Department of Education (US DOE, 2009).

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LIST OF ACRONYMS/ABBREVIATIONS

AYP:	Adequate Yearly Progress
BICS:	Basic Informal Comprehensive Speech
CALP:	Content Area Language Proficiency
CCT:	Curriculum Compliance Teacher
CLD:	Culturally and Linguistically Diverse
CWT:	Classroom Walkthrough
DI:	Differentiated Instruction
ELL:	English Language Learners
ESE:	Exceptional Student Education
ESOL:	English for Speakers of Other Languages
FCAT:	Florida Comprehensive Assessment Test
FLDOE:	Florida Department of Education
GATE:	Gifted and Talented Education
IDEiA:	Individuals with Disabilities Education improvement Act
NCLB:	No Child Left Behind
OSEP:	Office of Special Education
USDOE:	United States Department of Education
WWC:	What Works Clearinghouse

CHAPTER 1
INTRODUCTION

According to the National Center for Education Statistics (NCES, 2004), the English Language Learner (ELL) student population in K-12 school increased at the national level from 2 million students in 1994 to 3 million in 2000. This amounted to an approximately 2% increase in 6 years. The percentage of ELL students varied by region with the West, Midwest, and South regions maintained the highest percentage of ELL students nationwide. While the national percentage of ELL students was 7% in 2004, the percentage of ELL students in California was 16%.

In Florida, the total population of students increased from 155, 280 in 2001 to 165,627 in 2008 (Florida Department of Education, 2008). The ELL student population represented approximately 10% of all K-12 students in the state of Florida. This fact is particularly significant when considering that according to No Child Left Behind 2001, school districts are required to close the achievement gap between subgroups. At the same time that the achievement gap is expected to close between subgroups, the percentage of students expected to perform at grade level continues to increase every year. For example, the percentage of students expected to read at grade level in 2004 in the State of Florida was 31%.compared to 56% by 2008. The percentage of students expected to perform at grade level in Math was 38% in 2004 compared to 62% in 2008. All subgroups including ELL students are expected to make adequate yearly progress. Schools and school districts are expected to close the achievement gap at the same time that expectations increase.

The achievement gap is defined by NCLB (2001) as the difference in the percentage of students from traditionally low performing subgroups such as Black, Hispanic, English Language Learners, Native American, Economically Disadvantaged, and Students With Disabilities passing standardized tests as compared to traditionally high performing subgroups such as White and Asian students. Is the achievement gap truly closing as required by NCLB 2001? Are English Language Learners in particular keeping up with Adequate Yearly Progress (AYP) requirements?

According to the FLDOE, 63% of White students performed at grade level in Reading, which was more than twice the rate of the minimum required percentage of 31% to meet AYP in 2004. Fifty-six percent of White students performed at grade level in Math in 2004 again meeting and exceeding AYP requirements in 2004. In 2008, 71% of White students in Florida were reading at grade level and 66 percent were performing at grade level in Math meeting and exceeding AYP requirements in both subjects.

By comparison, 30% of ELL students read at grade level missing the required AYP proficiency percentage of 31% % in 2004 by 1 point. In the same year, 38% of ELL students performed at grade level in Math meeting the 38% requirement that year. Four years later in 2008, 37 percent of ELL students read at grade level falling far below the AYP expectation of 56%. ELL students did not fare much better in Math with only 47 percent performing at grade level with the expected AYP percentage set at 62 percent that year. According to these numbers, the achievement gap is not closing in the state of Florida; rather the achievement gap is growing.

The plight of ELL students in the state of Florida was not overlooked by advocates for equity in ELL education in 1990 (FLDOE, 1990). Prior to NCLB, the

Florida Multicultural Education Training and Advocacy (META) Consent Decree attempted to provide for equity in education for ELL students. According to the lawsuit, the plaintiffs argued that ELL students were not receiving equal rights under the law as they pertained to curricular and extracurricular opportunities in schools. This law changed the manner in which students are currently identified and assessed, the certification requirements for teachers, and the exit requirements for ELL students among many other stipulations in order to ensure equity. This study will examine whether the achievement gap is also not closing specifically in Orange County Public Schools.

The U.S. Department of Education (2009) defined English Language Learner (ELL) as:

> "A term used to describe students who are in the process of acquiring English language skills and knowledge. Some schools refer to these students using the term Limited-English-Proficient (LEP). The term "Limited English Proficient" is also used in National Education of Educational Progress (NAEP) technical documentation prior to the 2005 NAEP assessment".

Because this definition and classification (ELL) of students learning English is consistent with that of the Adequate Yearly Progress report (FLDOE, 2007), it will be used for the purposes of this study.

Statement of the Problem

According to the Florida Department of Education Accountability website, the percentage English Language Learners (ELL) not performing at grade level in Reading

and Math is consistently much lower than White non ELL students (2009). ELL students face the challenge of having to learn English, learn the subject area content in English, and pass a standardized test in English in order to be promoted and eventually graduate from high school. Included in the graduation requirements for students in the State of Florida are the Writing and Science portions of the FCAT (Florida Department of Education, 2009). ELL students, regardless of how new they are to the country or school system are not exempt from these graduation requirements.

One issue for educators has been ensuring that no child, including the student identified as an English Language Learner (ELL) is left behind. Many interventions have been recommended and implemented in the state of Florida based on the requirements of No Child Left Behind. Another considered when examining the graduation requirements for students in the state of Florida, particularly ELL students, has been to align the time it takes for ELL students to acquire English Language Proficiency (ELP) with the graduation requirements. According to Hakuta, Goto, and Witt (2000), it takes up to 7 years for ELL students to acquire ELP. This estimated time of language acquisition is at odds with the immediate need to ensure that these same students perform at grade level and meet adequate yearly progress.

ELL students are disproportionately failing in high schools across the nation. Of the total number of dropouts in the United States in 1995, 44.3% were classified as having difficulty with English (McKibbin & O'Hanlon, 2005). We are in an educational period where higher standards and accountability (testing) are a major focal point in schools everywhere. State benchmarks for grade level curriculum have continued to increase in complexity and standardized testing has become the primary tool determining

which students gets promoted and which students eventually graduates high school with a standard diploma. It is becoming clear that ELL students are not being as successful as other subgroups in completing requirements for promotion and eventually for high school graduation. For example, there are several subgroups that have large percentages of students failing the Florida Comprehensive Assessment Test (FCAT) in Florida. These subgroups include ELL, Disabled, Black, Hispanic, and Low Socio-Economic Status Students (SES). This study focused on the success or failure rate of ELL students.

There is an expectation by the federal government that no child be left behind in 2014. If there is so much attention being paid to ELL students as well as other subgroups, why then are they still failing the FCAT at such a dramatic rate (FLDOE AYP report, 2007)? Legislation such as the Bilingual Education Act of 1969, No Child Left Behind, Public Law 92-142, IDEA 1997, and the Multicultural, Education, and Training Advocates, Inc. (META) consent decree were all passed with much fanfare in order to provide equitable and comprehensible instruction. All of these laws directly impact the education of English Language Learners.

META united several groups that determined there was a need to provide comprehensible instruction to English Language Learners. META consisted of a coalition of eight groups including the League of United Latin American Citizens (LULAC), ASPIRA of Florida, Haitian Refugee Center, and the Farm Workers Association of Central Florida, Florida Conference of NAACP Branches, Spanish American League Against Discrimination (SALAD), American Hispanic Educator's Association of Dade (AHEAD), and the Haitian Educator's Association (Florida Department of Education, 1999).

The Bilingual Education Act of 1968 and the META consent decree were both written specifically incorporated for the purpose of improving ELL student performance. Why then is the plight of ESOL students not changing? The graduation rate of students cannot be solved solely through legislation. According to McKeown and Gentilucci (2007) legislative decisions do help in providing necessary funds and programs for schools, but if these funds and programs are not used with discretion and if the interventions are not research-based, then they will not produce the intended results.

Purpose of the Study

The purpose of this study was to determine two factors. First, it measured whether there was a statistically significant difference in mean benchmark test score results of English Language Learners receiving a computer based instruction (CBI) intervention program compared to a control group of English Language Learners not receiving the intervention. Second, the study measured whether there was a statistically significant difference in mean benchmark test score based on gender.

Research Questions

1. Was there a difference in the benchmark test results of English Language Learners (ELL) after receiving the SuccessMaker® computer based intervention when comparing pre and post test scores?
2. Was there a difference in the benchmark test scores of English Language Learners based on gender when comparing pre and post test scores?

Dependent Variable

The dependent variable in this study was the EduSoft® Reading Benchmark scores of 8th grade students in three middle schools from one central Florida public school district. The EduSoft® Benchmark test was selected as the pre test and post test for this study due to it being the primary progress monitoring tool for the school district when reporting to the state at the time the study was conducted. EduSoft® Benchmark test scores can play a vital part of a student's educational path throughout middle school and high school as the results can determine whether a student has mastered the content and is eligible for promotion. The results of these tests can also determine student enrollment in college preparatory courses or remedial courses.

Independent Variables

The independent variable in this study consisted of the utilization of a computer based intervention known as SuccessMaker®. SuccessMaker® is a program designed to assess student reading or math ability level with an initial placement (IP) assessment and provide practice for mastery based on the level the student is determined to be at (U.S. DOE 2009). In this study, the mean test scores of ELL students in three middle schools from one central Florida school district was analyzed in order to determine if there was a statistically significant difference pre and post test scores based on treatment and gender.

Research Design

The research design of this study was quasi-experimental with 3 schools (groups) included in the study. A reading benchmark pre test was administered to English

Language Learners from three middle schools in one central Florida school district in order to collect baseline data for the study. A reading benchmark post test was administered after a computer based intervention (SuccessMaker®) was utilized. A One-way Analysis of Variance test (ANOVA) was conducted to analyze the results of the pre and post test scores for both treatment and gender groups.

Participants of the study attended a summer enrichment program for English Language Learners made available by Title III funds. Both the control group and the treatment attended school 5 days per week with 6 hours of instructional time per day. All participants received the same 8th grade curriculum based on grade state standards determined by the state of Florida. Students in the treatment group completed daily one hour sessions on the computer based intervention (CBI) for the four week period between the pre test and the post test in addition to the regular curriculum received by all students. The hour of CBI was the only difference in the day between the treatment and control group.

Sample:

The sample method used for the selection of schools that participated in the study was a convenience sample. Three middle schools from one central Florida district were selected based on similar demographics and school AYP status. One of the three schools that participated in the study did not receive the treatment and was designated as the control school. The sample method for selection for students in the treatment schools included in the study was random. Student names were drawn from a hat to determine whether they were in the treatment or control group.

Data Analysis:

The One way analysis of variance (ANOVA) was conducted to compare the mean student benchmark test scores of ELL students before and after the SuccessMaker® intervention is used. These results were compared to the test scores of the control group not receiving the intervention. Test scores on the benchmark tests were recorded and analyzed to determine whether there was a statistically significant difference in test results after the SuccessMaker® intervention was implemented between the groups.

Definition of Terms

Achievement Gap The achievement gap is the difference in overall performance on standardized testing between subgroups. No Child Left Behind (2001) legislation requires schools and states to close the achievement gap between different subgroups.

AYP (Adequate Yearly Progress) AYP is the process of analyzing FCAT performance for students. Students are categorized by subgroup (e.g. White, Black, Hispanic, Free/Reduced Lunch, ELL, and Students with Disabilities). AYP is the demonstration of at least 1year's worth of learning gains according to standardized test results. The expectation is that all students perform at grade level and close the achievement gap by 2014 (U.S. Department of Education, 2002).

BICS (Basic Informal Comprehensive Speech) Type of language acquisition that is acquired by ELL which allows them to communicate with peers, coworkers, teachers, etc. It is a more informal verbal than written language acquisition and can take 2 years to accomplish (Demie and Strand 2006).

CALP (Comprehensive Academic Language Proficiency) Type of formal language acquisition required to attain success in an educational setting. This language acquisition includes reading and writing skills and can take up to seven years to reach Demie and Strand 2006).

DI (Differentiated Instruction) is instruction that focuses on students' individual level of comprehension. This type of instruction focuses on individual comprehension, pairing or grouping students by ability level, assessing students, and providing interventions as necessary.

Edusoft® Benchmark testing a progress monitoring tool utilized by school districts in the state of Florida throughout the year. Benchmark testing is intended to measure student levels of proficiency in different content areas. Schools and school districts use the data available from testing to determine which interventions are working and what benchmarks are (Riverside Publishing, 2009).

ELL (English Language Learners) In Florida, these students are identified and classified based on their response to the Home Language Survey (U.S. Department of Education, 2009). If a student responds affirmatively to any of the questions on the Home Language Survey, the student is identified as a potential ELL and assessed for possible placement into the ESOL program.

ESOL (English for Speakers of Other Languages) Program implemented for ELL students in order to provide accommodations and modifications in Language Arts (English) class (Orange County Public Schools, 2009). ELL students take the class in a sheltered environment in order to focus on language acquisition.

FCAT (Florida Comprehensive Assessment Test) Test used in the state of Florida in order to measure student performance in Reading, Writing, Math, and Science from 3rd grade to 12th grade (Florida Department of Education, 2007). Students must pass the FCAT in order to be promoted and eventually graduate from high school. The test has been used in Florida since 1998 and is used to grade schools based on test performance and to measure Adequate Yearly Progress.

No Child Left Behind This legislation was introduced in 2001 by the Bush administration with the intent to eventually have all students performing at grade level according to standardized test scores (United States Department of Education, 2002). It also required states and school districts to close the achievement gap between subgroups of students.

Limitations

1. The study was limited to three middle schools in one central Florida district.
2. The use of benchmark tests by the selected school district was based on the results of one study conducted by The Princeton Review and Edusoft, Inc. (May, 2008) measuring the correlation between the benchmark test and FCAT.

Assumptions

Specific assumptions in this study included:

1. Appropriate assessment procedures and administration of test
2. Validity and Reliability of the benchmark test

3. Test security maintained
4. Accurate reporting and posting of results by district
5. Implementation and use of SuccessMaker® software with Fidelity

Significance of Study for Practice

Under No Child Left Behind, public schools and school districts are required to provide research-based interventions for individual students and subgroups of students not meeting adequate yearly progress (AYP) (USDOE, 2002). AYP is calculated by determining whether a student has made significant gains with the developmental scale scores on standardized tests as determined by the Florida Department of Education. These gains in Florida are defined as making one year's worth of learning gains. Being able to determine the effectiveness of computer based instruction programs for students classified as English Language Learners under these requirements are imperative for schools and school districts. Because of the intense pressure for schools to meet federal requirements, schools across the country utilize the What Works Clearinghouse (WWC) as a resource to select the best possible interventions for students.

A great part of achieving meaningful learning includes determining what individual students already know (Schraw, 2006). For example, in order for a student to take Calculus, the student has to meet certain requirements. These requirements typically include good grades in previous math classes, teacher recommendations, standardized test scores etc. The point of these requirements is to ensure that students in the Calculus class have the necessary "schema" to be able to process the more advanced information they will be receiving. A student who has not taken a class beyond pre-algebra may not

achieve meaningful learning in a Calculus class. Students in this hypothetical Calculus class would have similar background knowledge in Math, yet may have diverse schemata based on past cultural or educational experiences (Ausubel, 1978).

CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

Because many schools have already been identified as underperforming by the Florida Department of Education and on some cases sanctioned, it is imperative for school leaders and teachers to ensure that all subgroups are performing at a high level or at least showing one year's worth of learning gains. School recognition funding based on a standardized testing thus becomes a system of rewards and punishment in regard to funding and potential resources available to schools with high ELL populations (Martindale, Pearson, Curda, and Pilcher (2005).

Poor test results can impact how and what students are taught in the classroom. For example, with subgroups that are not meeting AYP requirements may need to fund more reading classes than a school that has met those requirements. The result in terms of budgeting decisions can take away programs and electives such as Music, Art, athletics, or computers because more intervention classes are necessary. Because there is increasing pressure to ensure that all students pass the FCAT, administrators are required to utilize for any and all available resources and research based instructional strategies to assist them in accomplishing those goals. These resources include fcatexplorer.com, SuccessMaker®, reading software, reading teachers and reading coaches.

The United States has been experiencing a large demographic shift, especially in the setting of public schools. According to Roseberry-McKibbin, Brice, and O'Hanlon (2005), "racial and ethnic minorities accounted for 80% of the nation's population growth. There was a 43% increase in the minority population between 1990 and 2000

when it ballooned to 87 million. Speech Language Pathologists are dealing with a much more diverse population of students than in the past at a much faster rate. ELL students represented approximately 9.6% of the total number of students across the nation.

Targeting the instructional needs of students classified as ELL

The question for school leaders has quickly become: What works for ELL students? Urban schools are more likely to have higher percentages of ELL students enrolled in schools. ELL students are also more likely to belong to more than one subgroup such as Economically Disadvantaged, Hispanic, and Students with Disabilities (Artiles, Rueda, Salazar, and Higareda, 2005). The results of this study confirmed a disproportionality of ELL students referred for Exceptional Student Education (ESE) services.

ELL students, like all others are in school to learn the state standards in each subject area. Research demonstrates that all students learn best when they are engaged and take responsibility for their own learning (Nesselrodt, 2007). Educators need to find a balance between teaching for improved test scores and teaching for learning. ELL students come to school with a language barrier that can be corrected if addressed in an appropriate manner. Utilizing best practices and creating a safe learning environment where differences are welcomed rather than tolerated can incrementally improve the chances of success for these students as well as all others (York-Barr et al).

According to Obiakor (2007), schools are not meeting the needs of English Language Learners with disabilities. Despite the mandates of No Child Left Behind (NCLB) to close the achievement gap, ELL students and Students with disabilities are not

meeting Adequate Yearly Progress (AYP) in secondary schools. For example, no middle school or high school in Orange County, FL with significant subgroup populations is meeting AYP. These subgroups include ELL and SWD. Within this context, the classification and placement of ELL students as learning disabled needs to be examined in order to determine the root cause of low academic achievement among these students.

One challenge that educators face regarding ELL students who struggle academically is identifying the root cause of the problem. For example, the individual ELL student's low performance can be due to a learning disability or to cultural and linguistic factors. Another factor to consider is that it can be both a learning disability and a language issue. Lesaux (2006) researched these very issues and found that ELL students are in fact being retained disproportionately and dropping out in significantly higher numbers than other subgroups.

A high percentage of student retention and the dropout rate among ELL students have been compounded by the pressure faced by schools to reclassify these students as "fluent English Proficient" due to the mandates in No Child Left Behind (NCLB 2001). The students either stop receiving ELL services or the services are greatly reduced leaving them without resources and support they received as ELL students in mainstreamed classrooms. These evidenced based services include ELL accommodations such as extended time on assignments and tests, ESOL or bilingual classes, and modified curriculum.

The exiting of ELL students from English for Speakers of Other Languages (ESOL) programs creates several problems for students and teachers. When exited ELL students struggle in class and have no accommodations to help them, teachers may

assume that the problems that these students are having in class may be attributed to behavior or to a learning disability rather than a language barrier (Obiakor 2007). Once this issue is observed as a potential concern, the student may be tested for a learning disability (Spinelli 2008). Because the students may have recently been exited out of ESOL, they may perform poorly in an assessment in English to determine whether a learning disability exists. The students may be classified as SLD due primarily to language issues rather than a true disability. On the other hand studnts that may qualify for exceptional education services may not receive them because the perception may be that the issue is a language barrier. Lesaux (2006) pointed out that these types of classification concerns can be occurring far more than educators realize.

In regard to testing, Abedi (2006) reported that all students must be tested in order to ensure accountability. However, Abedi also pointed out that ELL students taking the test in English can have a significant effect in the reliability and validity of the test. He argued that for ELL students, it may be language that is measured rather than the content knowledge. For example, a word problem in a Mathematics standardized test may be more a measurement of the language and vocabulary skills of a student than the math skills and abilities of that student. This same concept may hold true in the classroom setting. ELL students who struggle with the class work may struggle because of the language more than the content itself. In both of these examples, the child is not correctly identified or served.

Theortical Framework

This study was based in part on meaningful learning and schema theory (Ausubel 1961). Two types of learning that can take place in schools are rote learning and meaningful learning. Rote learning consists of surface learning and memorizing facts and being able to recall them for a test (Smith and Colby, 2007). According to Smith and Colby, the problem with rote learning is that it does not require any higher order thinking or reflection on the part of the student. This type of low-order thinking exercise makes it far more likely that the information learned would quickly be forgotten.

The study was also approached in the context of Vygotsky's zone of proximal development (ZPD). Vygotsky, (1978) believed that language accompanied with cultural and emotional experiences played a vital role in teaching and learning. The application of technology for the purpose of language and learning could supplement instruction in through the use of ZPD (Wegerif, 2004).

Theoretical Framework of Meaningful Learning and Schema (Ausubel)

Meaningful learning and schema theorists would identify the achievement gap for the ELL subgroup as an issue of method of instruction rather than an issue of language. In other words, they believe that the first essential component for achieving meaningful learning is to determine the cognitive level of each student. Once the learners' cognitive level and prior knowledge is determined, instructional strategies and material should be developed in a manner that will take the students existing schema into account in order to engage the student with appropriate and authentic learning experiences. Students bring with them schemata based on their life experience, educational background, and culture

according to meaningful learning theorists such Ausubel (1962). The more we understand about students' schemas, the more we will be able to make the learning meaningful if we apply what we know to instruction.

Twenty years of research suggests that ELL students can be more successful in school simply by teaching them phonological awareness, phonics, vocabulary, fluency, and reading comprehension (August and Hakuta, 1998). These areas of instruction areas meant to spark learning opportunities by targeting the learners' schemata. There is a justification in placing ELLs in intensive reading programs if they have not shown proficiency in reading according to their FCAT performance.

York-Barr, Ghere, and Sommerness (2007) reported that too few ELL students receive comprehensible English instruction in a language rich environment. The context of comprehensible instruction in different subject areas and rigor often times is clouded in a setting where the majority of students struggle with the language. The authors propose a different model of instruction similar to schema theory where the students apply their level of background knowledge to new concepts and vocabulary.

A student who is ready to learn the material will learn it and a student who is not ready will not. Ausubel (1978) refers to this statement as anchoring ideas. The material that students are prepared for will be meaningful to them. An example of meaningful learning that I would be able to implement would be with ELL students. ELL students come from all different backgrounds. In this setting, meaningful learning depends in part on the level of proficiency of the student. Some students that had very limited schooling in their native countries had meaningful learning provided through more elementary level reading as well as material they could relate to easier. Reading about something they may

have already experienced in their native country gave them confidence and allowed them to produce better results in assignments.

Meaningful learning and schema theory can be a solution to the issue of ELL students struggling on the FCAT. According to the theory, it is imperative to find out where students are cognitively and to then differentiate the instruction in order to make the learning meaningful to each individual student (Nassaji, 2007). If for example, we teach all the students in a class or in a school the exact same subject matter in the same fashion, then not all students would be successful according to this theory. Nassaji's theory suggests that students learn best when we teach them at a level that they can understand.

Application of Meaningful Learning and Schema Theory

Ausubel (1972) argued that an effective educator will first determine the specific needs of individual students and then teach accordingly based on individual student needs. When observing the instructional strategies that are in place along with the results that are being achieved in schools and districts across the nation, we may need to take a closer look at how we are implementing effective research-based practices.

In terms of individual cognitive structures and schemas, there are specific needs that should be addressed regarding ESOL students. Demie and Strand (2006) discuss several strategies that should be implemented based on students' levels of English acquisition. For example, students new to English need the most support if being taught in English. They suggested teaching some of the content area in the native language while progressively moving toward more English. Less limited English speakers can

receive instruction in English, but may need substantial support with reading and writing. More confident users of English may need to be monitored and fully fluent students are fully immersed.

Demie and Strand (2006) argued that students with limited English are much less likely to complete secondary Education. They found that students in the first two levels passed the required graduation exam at a rate of twenty percent. Students that were fully fluent passed at a forty-three percent rate. The importance in getting students to fully acquire English as a second language is clear as the passing rate more than doubles. It is important to note that even the students that reached full fluency in their second language (English) did not achieve the same passing rate as monolingual English students who passed at a rate of over sixty percent. While this study was conducted in the UK, many of the implications for ESOL still apply to the U.S. as much of their research was based on North American educational programs.

Another implication that Demie and Strand (2006) observed was the growing debate concerning standardized tests that serve as a graduation requirement. While they analyzed the GCSE and the QCA which are assessment tools used in the UK, they can be compared to U.S. standardized tests in regard to their being graduation requirements in a growing number of districts and states. One concern about placing such high value on these tests is the validity of these tests. These tests are designed to assess mastery of standards and benchmarks, however many debate that there are many other methods to assess students without the language component being a factor. The question to ask is whether or not we are assessing the corresponding content area or the language.

In regard to schemata, language acquisition is an important foundational ability to literacy which in turn is a foundational ability toward high school graduation (McCardle and Leung, 2006). More research into this area is necessary as ELL students are not performing at the expected levels. There are also other facets of ESOL that relate directly with schemata. For example, the economic diversity among ELL students is vast and this can have an impact on individual cognitive structure. Some ELL students, just as in any other subgroup, come from economically advantaged backgrounds while others come from economically disadvantaged backgrounds (Hamman, Zulianni & Hudak, 2004). Also, some students come from rural areas versus urban areas. The environment from which a student comes from may have an impact on how these students learn and how they process information. An example of this is analyzed in a study by Saxe (1991, 1994) where Brazilian students were observed calculating complex arithmetic problems as they sold candy in the streets. The issue with this study was that these same children had difficulty computing similar problems in a formal classroom setting. There was an observable lack of connectivity between academic work and real world application.

By definition, differentiated instruction focuses on the individual students' cognitive structure and in theory should increase student performance. Developing a more individualized instruction plan for students with Limited English Proficiency (LEP) should increase student performance on standardized testing which would qualify more students for graduation based on current requirements and the importance put on these tests. In addition the method by which students are taught should greatly impact the success rate of ELL students across the curriculum (Iddings, et al 2009). One method of

individualizing the instruction for students with disabilities and English Language Learners can be the use of computer based instructional software.

Vygotsky's Zone of Proximal Development

When students are given the opportunity to build on what they already know and work at their individual pace, then there is a more likely chance that those students would find the learning meaningful and thus be more likely to succeed. This closely models Vygotsky's zone of proximal development (ZPD) specifically as it relates to ELL students (Iddings et al, 2009). The method of instruction or the supplementary materials utilized can also play a role in how ELL students learn. For example, if the teacher varies instruction based on different students' vocabulary skills, those students may have a better chance at developing language skills while at the same time receiving content area knowledge in a non-threatening environment.

Applying ZPD Theory to ELL strategies

There has been a plethora of research done in regard to best practices for ELL students. The interest in this area oftentimes involves the achievement gap of ELL students as compared to non-ELL students. The study of York-Barr, Ghere, and Sommerness (2007) found that ELL students are less likely to graduate high school and move on to postsecondary education than non-ELL students. They are more likely to be retained, perform poorly on standardized tests, and drop out of school. Because of the at-risk nature of ELL students, strategies must be implemented to combat these trends. Both NCLB and the Florida Consent Decree seek to do just that if in an imperfect way.

In regard to program models that isolate students such as sheltered ESOL, Gándara, Rumberger, Maxwell-Jolly, and Callahan (2003) reported their concern about segregating any population of students within a school. A sheltered class model would keep ESOL students together throughout most of the day. Gándara et al (2003) argued that mainstreaming ELL students and providing appropriate interventions based on the individual student's zone of proximal development greatly improved student performance.

Instructional ELL models such as Two Way Immersion (TWI) allow students to learn the core content in both their home language and the target language. For example, both non-ELL and ELL students would study core subjects in English and Spanish. The utilization of a student's primary language to engage students in larning experiences can be traced to components Ausubel's meaningful learning and schema theory as well as Vygotsy's ZPD. Barnett, Yarosz, Thomas, Jung, and Blanco found that TWI is at least as effective as English Immersion (2007). The added benefits to TWI according to this study included the maintenance of the home language, a second language learned for all students participating, and subject area skills in TWBI classes either increased or remained the same as compared to the English Inclusion model (Barnett et al).

Ausubel and Vygotsky Theories in daily Practice

As part of the increase in accountability and oversight that schools are facing, schools were required to provide research-based instructional strategies and materials to help students who were not proficient in Reading and Math make adequate yearly progress. According to the U.S. Department of Education Institute for Educational Sciences (2009),

a problem that arose due to the requirement to purchase materials to improve student performance was that schools and school district spent inordinate amounts of money on ineffective programs. The U.S. government became aware of the problem and created a database of research-based programs that they found to be effective. This database became known as the What Works Clearinghouse (WWC).

The What Works Clearinghouse serves as a valuable resource for school and district level personnel. The needs of a school can be assessed based on benchmark and standardized tests. Once the needs are determined based on benchmarks and identified subgroups, the WWC can be accessed in order to help make the selection of applicable programs. For example, if a school has ELL students not meeting AYP, then the WWC would provide a list of strategies and programs that have been found to be effective according to peer reviewed educational journals. The WWC even generates a report for the specific strategy. In the example I investigated, it found that adding the children's TV show "Arthur" to a kindergarten curriculum had the potential of increasing student performance by 11 percentage points (U.S. Department of Education, 2009). The report can even be printed out for individual analysis.

McCollin and O'Shea (2005) list specific research based strategies that are effective in providing instruction for culturally and linguistically diverse (CLD) learners across the curriculum . CLD learners include students who are identified as subgroups in the AYP reports such as Black, Hispanic, Native American, and ELL. These strategies are ones that work for all students as they are considered to be best practices. Providing these strategies in an inclusive classroom would benefit all students. The strategies they listed focused on increasing the reading achievement of CLD learners.

The first strategy listed in the journal article by McCollin and O'Shea (2005) was explicit instruction of phonics. They highlighted the importance of spending time with sounds, syllables, and words. It is important for teachers to realize that many CLD learners display limited levels of literacy in their native language. This fact further emphasizes the importance of not rushing through this step, which is what many educators tend to do.

The second strategy McCollin and O'Shea recommend involves "using a variety of instructional materials at different reading levels" (2005). They suggest finding and utilizing high interest, relevant readings that CLD students can relate to. The different reading levels of the readings will accommodate students based on reading level and sometimes possible learning disabilities. They also suggest modeling effective reading skills as a pre-reading activity. This allows students to hear correct pronunciation of words and allows for repeated practice once they read individually.

Another strategy listed in the article included developing written stories from wordless pictures. The authors stated that this is a great strategy in that it allows students to utilize their own cultural and knowledge backgrounds to synthesize. The assignment becomes relevant to them and it utilizes higher order thinking skills as they improve their vocabulary, writing skills, and creativity. This concept could also be used with word and vocabulary games during instructional time.

One last strategy among the many they listed in their article involved explicit instruction on the use of contextual clues in the text. These clues could include pictures, headings and subheadings, graphs, or story titles. They also recommended using graphic

organizers and picture maps to retell stories. Reflecting on the reading in spoken or written form was also a key to internalizing knowledge and comprehension.

Strategies for closing the achievement gap for ELL

How do educators address these concerns prior to classification and placement of ELL students? One growing intervention that can have a significant impact on ELL students is Response to Intervention (RTI). RTI is a step by step intervention developed specifically to reduce the number of students who are labeled as having a learning disability. Kamps and Greenwood (2005) focused on the importance of providing research based practices for reading interventions such as Fastforword, SRA, Success for All, and Vocabulary Improvement Programs (ELL WWC, 2007). This focus is based on the correlation between success in reading and overall academic performance. These interventions also need to be individualized to meet the specific needs of each student.

The theory behind this movement which is supported by IDEA reauthorization act of 2004 is that too many students are labeled and then trapped in programs that they may not have needed if an early intervention would have been put into place. These interventions are broken up into three tiers ranging from tier 1 which is the least intrusive intervention to tier 3 which is the most intrusive. If a student reaches tier 3 and is still struggling academically, only then should it be determined that interventions have been exhausted and testing of the student would be appropriate Haager (2007).

One of the first steps that can be included within the umbrella of RTI is that of a child study team for ELL students. If implemented correctly, the child study team can serve as an effective tool in determining specific needs of ELL students. Because

parents, teachers, placement specialists, the ELL Curriculum Compliance Teacher (CCT). and an administrator are included in this team, it should in theory look out for the best interest of the student and base it the decisions should be based on specific assessment data and group anecdotal observations. The study include students being served under the three different tiers of RTI. Students have been identified based on FCAT and benchmark tests and scheduled into core classes, resource classes, and additional support classes with services based on their individual needs. SuccessMaker has been identified by OCPS (2003) as an additional approved source of support for students in Tiers 2 and 3 for students.

Klingner and Harry (2006) studied whether these child study teams (CST) were effective and addressed several concerns. The first concern they pointed out was that the 12 child study teams' decisions they observed overwhelmingly decided for testing of the student for learning disabilities. While some teachers in the team were extremely knowledgeable about ELL strategies and interventions, other teachers had very limited background information regarding ESOL programs. Klingner and Harry questioned the intentions of some of the meetings and whether there was a predetermined outcome to the meetings based on their observations. In order for the CST to truly be effective and to be an appropriate step within the RTI model, it needs to be set up to study the whole child and to take steps toward avoiding premature classification and placement of learning disabilities.

Linan-Thompson, Cirino, and Vaughn (2007) explained the importance of reading interventions within the RTI model. They highlighted some of the basic tenets behind literacy intervention assessment such as fluency, comprehension, and content area

knowledge. There needs to be specific strategies implemented that will effectively target the needs of ELL students. Linan-Thompson et al argued that more research needs to take place in regard to ELL students and predictability of future success in the RTI model. Specifically, they mention the predictability accuracy in first grades compared to other grades levels.

SuccessMaker® as bridge to schema and zone of proximal development

According to the Education Commission of the States, SuccessMaker® is recognized as a computer based intervention program "that uses literature-based activities to focus on comprehension, vocabulary, phonics, and writing" (1999). The modules in the program can be customized to meet the individual needs of students based on specific needs as determined by assessments and/or teacher observations. Again, the tenents of both Ausubel and Vygotsky can be applied to this type of individualization for students.

The SuccessMaker® program is designed to complement and not replace classroom instruction by the teacher. Among the main features of the program include individualized instruction which is similar to the concept of differentiated instruction. The program can also be modified to meet the needs of special populations such as bilingual or ELL groups. In regard to RTI, SuccessMaker® can be considered an additional intervention for students needing additional support based on benchmark data.

In one study (Brush, 1998) first to fifth grade students in the treatment group using SuccessMaker® in Michigan demonstrated significant gains from pre test to post test using the Iowa Test of Basic Skills. According to the study by Kulik (1994), reported that students using components of SuccessMaker® such as Initial Reading and Reader's

Workshop performed significantly better on standardized test scores than students who did not have access to the intervention.

CHAPTER 3
RESEARCH DESIGN AND METHOD

Introduction

The purpose of this study was to measure whether there was a difference in benchmark test scores among three groups of ELL students after the implementation and use of the SuccessMaker® computer-based intervention. The study was limited to 8th grade English Language Learners in three middle schools from a central Florida public school district. The study measured how students performed on Reading Benchmark tests in the three middle schools before and after receiving the intervention.

Design

The research design of this study was quasi-experimental. A pre and post test design was used with a reading benchmark pre test administered to English Language Learners from three middle schools in one central Florida school district in order to collect baseline data for the study. A reading benchmark post test was administered after a computer based intervention (SuccessMaker®) was utilized with randomly selected ELL students. A one-way analysis of variance test (ANOVA) was conducted to analyze the results of the pre and post test scores for both treatment and gender groups.

Selection of Participants

A convenience sample was used to select the three middle schools that participated from one central Florida public school district. The schools selected had a student population of approximately 800 to 1,000 students during the 2009-2010 school

year. School one had a student enrollment count of 817 students. School two had a student enrollment count of 968 students, and school three had a student count of 816 students (EDWBI, 2010).

Over 90 percent of students at each of the three schools qualify for free or reduced lunch according to the Enterprise Data Warehouse Business Intelligence (EDWBI, 2010) which identified each of the schools as a Title I school. In order to qualify as a Title I school in the selected district, 75 percent of students are required to qualify for free and reduced lunch. The three schools selected for the study were among the top 5 middle schools in the district in regard to percentage of students that qualified for free or reduced lunch. As Title I schools, each participating school was provided with additional funds to run a summer program during June and July of 2010.

Teachers at each school used the same instructional strategies, curriculum, and lesson planning in order to limit outside variables that can affect results of test scores. Teaching strategies and lesson plans were designed during the summer and teachers received in-depth staff development training throughout the year in order to `maintain high quality consistent instruction school-wide at each school. Fidelity of effective instructional strategies used in the classrooms was monitored by school administrators as well as by district and state Differentiated Accountability Model personnel.

Each of the three middle schools selected for this study was classified as a Correct II school by the Florida Department of Education (School Improvement Plan 2009-2010) at the time the study was conducted. This classification was determined according to the number of years the schools have failed to meet adequate yearly progress. The number of years not meeting AYP for each school included in the study is 5 years (FLDOE, 2007).

In correct II schools, administrators and personnel are required to provide state auditors with documentation demonstrating how they plan and implement educational programs designed to increase student performance. If the schools continues to fail at meeting AYP, they can be reclassified as an intervene school by the state.

Each school had a significant number of students classified as English Language Learners (FLDOE, 2010). The majority of ELL students at school one speak Creole as their primary language. The majority of ELL students at school two speak Spanish. The majority of ELL students at school three had a primary home language of Haitian-Creole documented in the school's home language survey (HLS).

School one was selected as part of a convenience sample to be the control school. The CBI treatment was not made available to any participant in school one. Data then were analyzed to determine whether there was any difference in mean test score between schools participating in the study based on treatment and gender. Schools two and three included both treatment and control groups in each school. This allowed for analysis of data to determine whether there was a difference in mean score within schools based on treatment and gender. Student names from the treatment schools (schools two and three) were drawn from a hat for placement in the treatment group. A total of 53 students from the three schools received the treatment while 70 total students were part of the control group.

The study ran four weeks with all participants (control and treatment) receiving the same curriculum five days per week. The control group received six hours of the standard curriculum per day. The treatment group received five hours of the standard curriculum and one hour of CBI. Classroom walkthrough observations were conducted

during the periods of computer based intervention as well as during periods of classroom instruction to ensure fidelity of the programs and instructional strategies being utilized. User data from the SuccessMaker® computer based intervention was collected which included individual student time on the program, number of items answered, and percentage of correct answers.

The study tracked the amount of time students spent on the SuccessMaker® intervention, how quickly they move through the modules, and the level of engagement during the use of the intervention as measured by the software, and the level of proficiency met in the program. The benchmark test results were analyzed to measure whether the mean benchmark test score differed between the group using SuccessMaker® and the control group.

The principal researcher of the study, Assistant Principal, and an administrative intern conducted classroom walkthrough (CWT) observations in both the treatment and contol groups in order to maintain fidelity on the instructional program and of the treatment during the course of the study (see CWT form in appendix A). Computer generated reports were also utilized to monitor amount of time, and student progress in the CBI program.

Analysis

A one way ANOVA was conducted to compare the mean student benchmark test results before and after the SuccessMaker® intervention. Student scores on the benchmark tests were recorded to determine whether there was a statistically significant difference in mean score between the treatment group and the control group. The study

also measured whether there was difference in the mean test score on the EduSoft® Benchmark Test between male and female students.

The ANOVA test is appropriate as the sample mean of test scores prior to the intervention is compared to the mean of the test score after the intervention and there were three groups (schools) involved in the study. The ANOVA would be used to measure whether there is a significant difference between subjects from each school.. The percent of students on target in the benchmark tests was used to determine possible effect of SuccessMaker® intervention. The results were compared to determine whether there was a difference in pre and post benchmark test score after the SuccessMaker® intervention was implemented.

Research Questions

1. Was there a difference in mean test scores of English Language Learners (ELL) after receiving the SuccessMaker computer based intervention when comparing pre and post test scores?
2. Was there a statistically significant difference on EduSoft Benchmark post test scores for ELL students based on gender?

Hypotheses

The following hypotheses were tested:

1. There was no statistically significant difference on EduSoft Benchmark mean scores based on computer-based intervention.

2. There was no statistically significant difference on EduSoft Benchmark mean scores based on gender.

Dependent Variable

The dependent variable selected for this study was the EduSoft® Benchmark test score in the subject area of Reading. The test has been utilized by the central Florida school district that participated in the study as a way to monitor student progress regularly throughout the year in preparation for the FCAT.

The results of the test were gathered and analyzed electronically by the EduSoft® company and made available for disaggregation by school and district personnel. The data collected by the EduSoft® corporation was collected, managed, monitored, and disseminated by the participating school district. The data were then made available by the district to school administrators, teachers, and other instructional personnel.

The test has been utilized by the school district as a way to monitor student progress district-wide throughout the year in preparation for the FCAT. In order to be compliant with No Child Left Behind (2001), OCPS established progress monitoring through these tests as a way to more closely and frequently monitor student performance. The results of the test are gathered and analyzed electronically by the EduSoft ® Company and made available for disaggregation by school and district personnel.

The results of the test were gathered and analyzed electronically by the EduSoft ® Company and made available for disaggregation by school and district personnel. The data collected by the EduSoft® Company is collected, managed, monitored, and disseminated by the school district that participated in the study. The data was then made

available by the district to school administrators, teachers, and other instructional personnel.

The EduSoft® assessment tool was vital for this study in that it could be disaggregated by subgroup. Because the participants in the subgroup included in this study were AYP ELL categorized students, it was important to compare how the students performed based on the use of a What Works Clearinghouse (WWC) recommended intervention. The standardized test score of subgroups such as ELL was used to determine whether a school meets AYP criteria in turn determining whether a school needs state or federal intervention.

Independent Variables

The independent variable in this study was a CBI program known as SuccessMaker®. The computer based instruction supplemental program utilized in this study was recommended by the What Works Clearing House (USDOE, 2009).

In the context of No Child Left Behind, AYP subgroups, and Reading Interventions, this study measured whether there was a statistically significant different in average test score after the a computer based intervention was utilized with ELL students. The computer based intervention utilized in this study is known as SuccessMaker®. This intervention was selected based on the recommendation of its use by the What Works Clearinghouse for reading (U.S. DOE, 2009). Because the selected schools were all classified as correct II school as classified by the Florida Department of Education (2009) based on NCLB guidelines, they previously purchased a site license for the program.

CHAPTER 4 ANALYSIS AND RESULTS

Introduction

Because a pre test-treatment-post test design was used and three schools were included in this study, a one-way ANOVA was conducted to analyze the data. Green and Salkind (2008 p. 183) noted that for a one-way ANOVA, "each individual or case must have scores on two variables; a factor and a dependent variable." The benchmark test score is the dependent variable for this study and the factor is the SuccessMaker® intervention. The factor in this study divides the participants into groups: treatment group, control group, school, and gender. The ANOVA is also appropriate because the study is quasi-experimental.

The one way analysis of Variance (ANOVA) was used in order to "evaluate the null hypothesis that the population adjusted means are equal across groups" (Greeen & Salkind 2007). The ANOVA will be used since there are three different schools involved in the study. Also, within the schools there are several subgroups divided by gender and treatment group.

Description of Study

No Child Left Behind (NCLB) requires that subgroups as defined by the legislation meet AYP (USDOE, 20002). Subgroups targeted in the legislation include English Language Learners, Economically Disadvantaged Students, Students with Disabilities, Black students, and Hispanic students (FLDOE 209). Schools and school districts across the nation are expected to provide research-based interventions that will

assist in closing the achievement gap that exists in standardized test results for these subgroups. This study focused on the adequate yearly progress of ELL students and whether there was a statistically significant difference between student groups in a non-treatment control group as compared to a SuccessMaker® treatment group.

The participants in this study consisted of 8th grade Middle School students in three schools from one central Florida public school district. The study involved the use of SuccessMaker® as a Reading intervention for English Language Learners. School one was selected (convenience sample) to be the control group with no student receiving the treatment. The data were than analyzed to determine whether there was any significant difference in mean test score based on school. Students in school two and three were randomly selected to be in either a non treatment control group or a SuccessMaker® treatment group utilizing the treatment to determine whether there was any difference in mean test score within school based on treatment and gender.

The selection of the three middle schools in this study was based on similar demographic data (FLDOE 2009). Over 90% of students at each school were either Black or Hispanic and qualified for free/reduced lunch at the time of the study. Two of the schools were classified by the participating school district as bilingual centers. One of the three schools was classified as a Spanish bilingual center and the other was a Haitian-Creole bilingual center during the 2009-2010 school year. Due to the nature of the study in regard to required state reporting of data, IRB approval was not required to complete this study (see appendix B). This chapter will include descriptive statistics as well as test results used to test the hypothesis. The chapter concluded with a summary of the results.

Descriptive Statistics

Table one shows the three schools involved in the study along with the number and percentage of participants from each school. The data from each school were gathered based on pre and post test EduSoft benchmark tests taken by students classified English Language Learners (ELL) from each school before and after the computer based intervention (CBI) known as SuccessMaker®. The percentage of students from each school was 26.8% for school one, 51.2% for school two, and 22% for school three. A total of 123 students participated in the study taking a pre and post test accounting for the 246 total score frequncy as illustrated on tables one and two.

Table 1: Participant Frequency Table

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	School 1	66	26.8	26.8	26.8
	School 2	126	51.2	51.2	78.0
	School 3	54	22.0	22.0	100.0
	Total	246	100.0	100.0	

The majority of the students (52.8%) included in the study were identified by OCPS as speaking Haitian-Creole as their primary home language. Students identified as speaking Spanish as their primary home language represented 42.3% of the study participants. Students who were identified as other primary home language represented 4.5% of study participants. Table 2 illustrates the percentage and frequency of participants' primary home language spoken at the three schools participating in the study. Over 95 percent of the participants' primary home language is either Spanish or Creole.

Table 2: Primary home language of participants included in study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spanish	104	42.3	42.3	42.3
	Haitian Creole	130	52.8	52.8	95.1
	Other	12	4.9	4.9	100.0
	Total	246	100.0	100.0	

Male students represented 51.2% of study participants while female students represented 48.8% of study participants. Table 3 illustrates the frequency and percentage breakdown in regard to gender.

Table 3: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	126	51.2	51.2	51.2
	Female	120	48.8	48.8	100.0
	Total	246	100.0	100.0	

Figure 2 below shows that the scores by school based on gender appear somewhat random. For example the mean score of male students in school one is approximately six points higher than the mean score of female students from school 1. Both male and female mean scores from school one are lower than either school one or school two. School two female mean scores are approximately three points higher than male mean scores from school two. Male and female mean scores from school three are nearly identical.

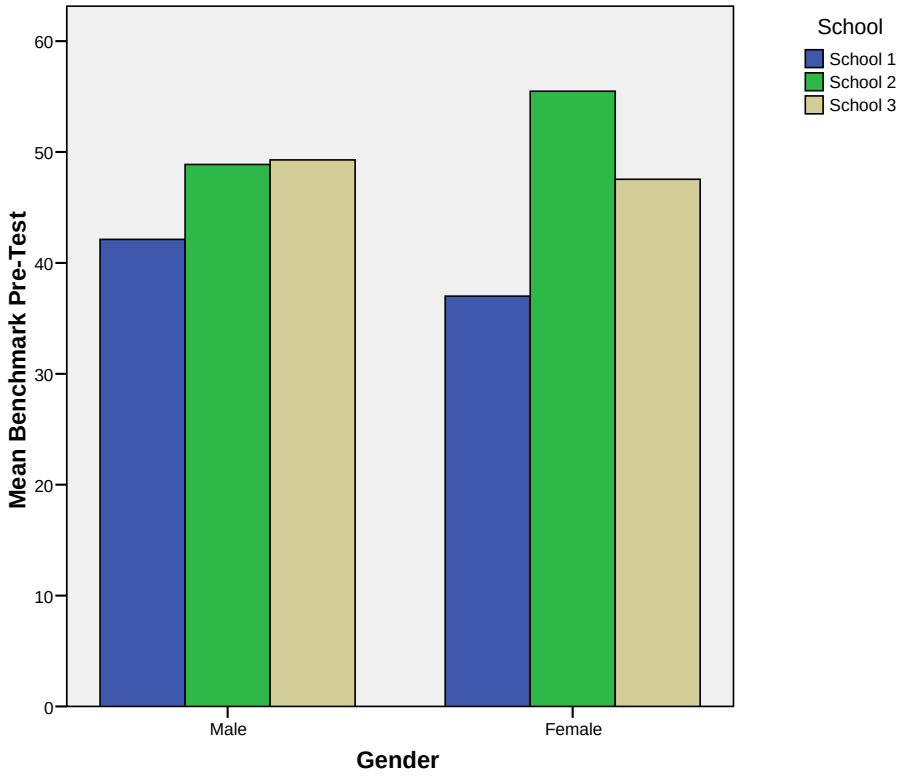

Figure 1: Benchmark pre test mean score by school based on gender

Figure 2 illustrates that female students from each school scored higher on the post test than male students from the respective school. The most significant difference

in mean score by gender occurred in school 2 with female students scoring approximately 8 points higher than male students. The control school (school one) mean score decreased for both male and female students when comparing pre and post test. The mean score of male students from school two remained the same while the mean score of female students increased by approximately 8 points after the SuccessMaker intervention. The mean score for both male and female students in school 3 increased by approximately 9 points after the SuccessMaker intervention.

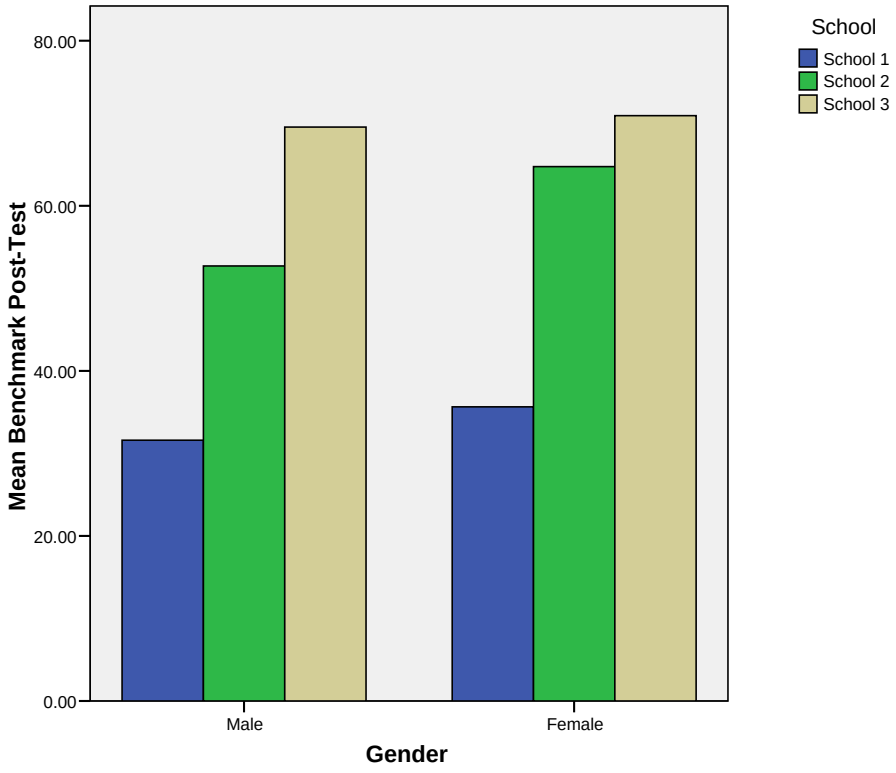

Figure 2: Benchmark post test mean score by school based on gender

Research Question 1:

Was there a difference in mean test scores of English Language Learners (ELL) after receiving the SuccessMaker computer based intervention when comparing pre and post test scores?

Figures 3 and 4 (below) illustrate that there was a difference in mean score of control school 1 (40), treatment school 2 (52), and treatment school 3 (48) on the pretest. The difference in mean score on the post test of control school 1 (34), treatment school 2 (59), and treatment school 3 (70) was statistically significant. The overall mean score for control school one dropped by 6 points, while the mean scores of treatment school two and school three increased by 7 and 22 points respectively (see figures one and two on page 42 and 43).

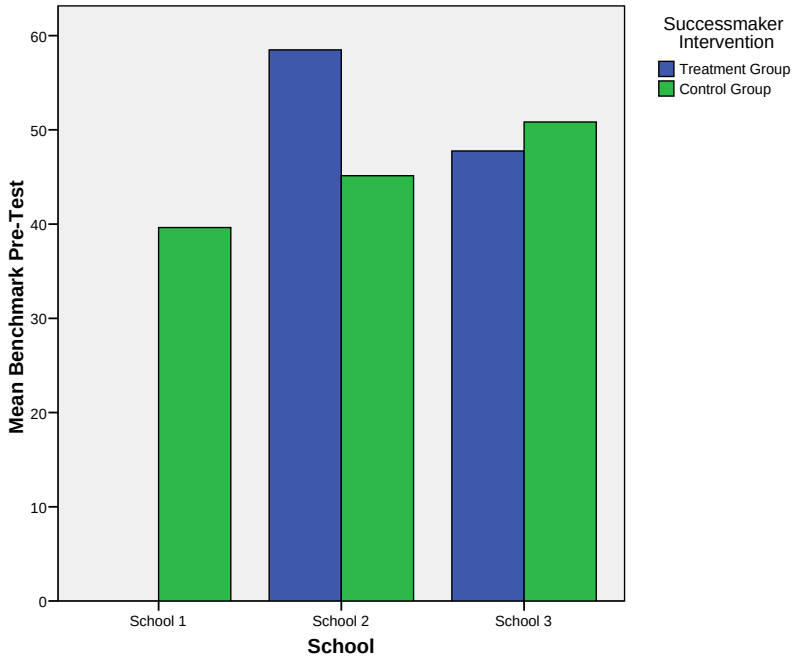

Figure 3: Benchmark pre test mean score by school

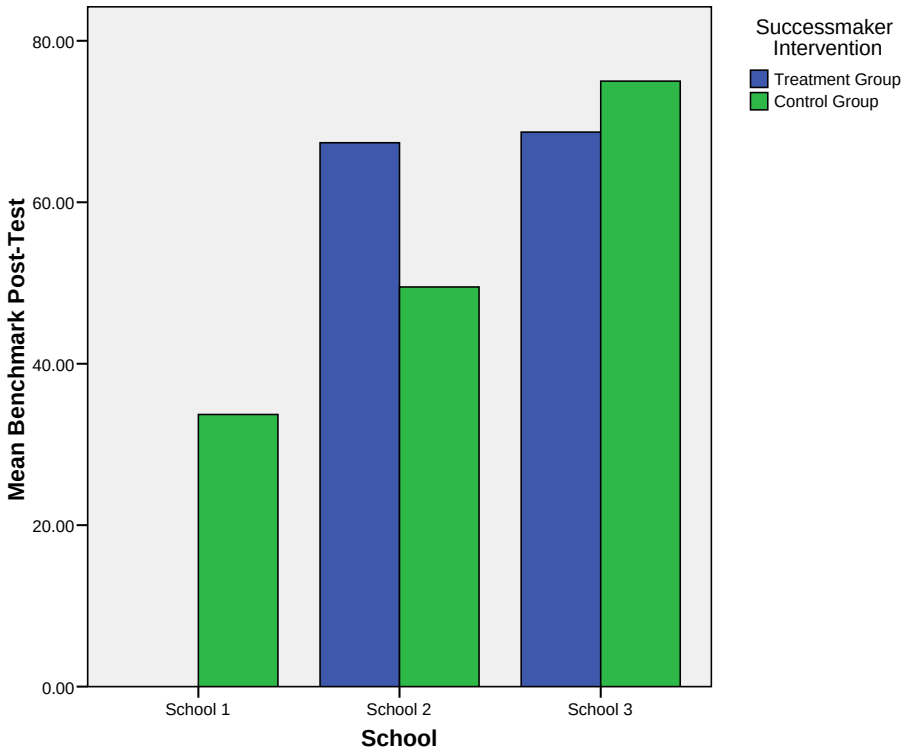

Figure 4: Benchmark post test score by school

A one way ANOVA (see table 4) was conducted to evaluate the relationship between mean benchmark test scores and the school attended by the participant based on treatment. The dependent variable was the mean score of the pre test and post test. The ANOVA was statistically significant, F (1, 106) = 28.97, p = 0.0. Because the p value was less than .05 the null hypothesis that there were no significant differences between schools is rejected.

There are several factors that are important to note when analyzing the data by school (table 4). First, school one (control school) dropped from a mean score of 40 on the pre test to a mean score of 34 on the post test. School two demonstrated an increase of mean score on the pre test of 52 to a score of 59 on the post test. The treatment group of school two demonstrated an increase of these points while the control group did not

demonstrate any increase in mean score from pre test to post test (see figure 4). School three demonstrated the highest increase in mean score from pre test to post test for both the treatment and the control group. The treatment group's mean score increased nearly 20 points while the control group increased over 24 points in school three.

Table 4: Dependent Variable: Difference in mean test score by school

Multiple Comparisons

Dependent Variable		(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Benchmark Pre-Test	LSD	School 1	School 2	-12.491*	3.863	.002	-20.14	-4.84
			School 3	-8.808	4.666	.061	-18.05	.43
		School 2	School 1	12.491*	3.863	.002	4.84	20.14
			School 3	3.683	4.136	.375	-4.51	11.87
		School 3	School 1	8.808	4.666	.061	-.43	18.05
			School 2	-3.683	4.136	.375	-11.87	4.51
	Dunnett C	School 1	School 2	-12.491*	3.904		-22.01	-2.97
			School 3	-8.808	4.761		-20.58	2.96
		School 2	School 1	12.491*	3.904		2.97	22.01
			School 3	3.683	4.155		-6.54	13.91
		School 3	School 1	8.808	4.761		-2.96	20.58
			School 2	-3.683	4.155		-13.91	6.54
Benchmark Post-Test	LSD	School 1	School 2	-25.01152*	5.05152	.000	-35.0277	-14.9953
			School 3	-36.48571*	5.92226	.000	-48.2285	-24.7430
		School 2	School 1	25.01152*	5.05152	.000	14.9953	35.0277
			School 3	-11.47419*	4.74004	.017	-20.8728	-2.0756
		School 3	School 1	36.48571*	5.92226	.000	24.7430	48.2285
			School 2	11.47419*	4.74004	.017	2.0756	20.8728
	Dunnett C	School 1	School 2	-25.01152*	3.92134		-34.6366	-15.3865
			School 3	-36.48571*	3.83396		-46.1139	-26.8575
		School 2	School 1	25.01152*	3.92134		15.3865	34.6366
			School 3	-11.47419*	4.18143		-21.7100	-1.2384
		School 3	School 1	36.48571*	3.83396		26.8575	46.1139
			School 2	11.47419*	4.18143		1.2384	21.7100

*. The mean difference is significant at the .05 level.

Table 5: Descriptive Table for Mean Score by School

Descriptives

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
							Lower Bound	Upper Bound			
Benchmark Pre-Test	School 1		33	39.64	18.456	3.213	33.09	46.18	12	88	
	School 2		63	52.13	17.609	2.219	47.69	56.56	4	83	
	School 3		27	48.44	18.255	3.513	41.22	55.67	17	71	
	Total		12	47.97	18.593	1.676	44.65	51.29	4	88	
	Model	Fixed Effects			17.979	1.621	44.76	51.18			
		Random Effects				4.053	30.53	65.41			36.077
Benchmark Post-Test	School 1		21	33.7143	11.49845	2.50917	28.4803	38.9483	17.00	58.00	
	School 2		62	58.7258	23.72808	3.01347	52.7000	64.7516	17.00	100.00	
	School 3		25	70.2000	14.49425	2.89885	64.2171	76.1829	42.00	92.00	
	Total		10	56.5185	23.26864	2.23903	52.0799	60.9571	17.00	100.00	
	Model	Fixed Effects			20.00729	1.92520	52.7012	60.3358			
		Random Effects				10.26452	12.3539	100.6832			241.48498

Table 6: ANOVA table for treatment and control group

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Benchmark Pre-Test	Between Groups	3386.583	2	1693.291	5.238	.007
	Within Groups	38789.287	120	323.244		
	Total	42175.870	122			
Benchmark Post-Test	Between Groups	15902.339	2	7951.169	19.863	.000
	Within Groups	42030.624	105	400.292		
	Total	57932.963	107			

. The descriptive table data (table 7) shows the increase in mean test score of over 13 points (from 54.31 to 67.86) for the treatment group. There is an increase of less than 4 points (from 43 to 46.37) in mean score for the control group. An ANOVA was conducted (table 8) to evaluate the relationship between the SuccessMaker computer based intervention and benchmark test scores The ANOVA for the pre test F (1, 121), p = .001 and for the post test (1, 106), p = 0.00 was significant. Because p value is less than .05, the null hypothesis that there are no differences between the treatment group and the control group is rejected.

Table 7: Descriptive table for pre and post test scores by treatment and control group

Descriptives

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
							Lower Bound	Upper Bound			
Benchmark Pre-Test	Treatment Group		54	54.31	17.587	2.393	49.51	59.12	17	83	
	Control Group		69	43.00	17.948	2.161	38.69	47.31	4	88	
	Total		123	47.97	18.593	1.676	44.65	51.29	4	88	
	Model	Fixed Effects			17.791	1.604	44.79	51.14			
		Random Effects				5.693	-24.36	120.30			58.788
Benchmark Post-Test	Treatment Group		51	67.8627	19.53665	2.73568	62.3680	73.3575	17.00	96.00	
	Control Group		57	46.3684	21.71786	2.87660	40.6059	52.1309	17.00	100.00	
	Total		108	56.5185	23.26864	2.23903	52.0799	60.9571	17.00	100.00	
	Model	Fixed Effects			20.71762	1.99355	52.5661	60.4709			
		Random Effects				10.76259	-80.2332	193.2702			223.02986

Table 8: Results on one-way ANOVA conducted based on treatment group

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Benchmark Pre-Test	Between Groups	3878.222	1	3878.222	12.253	.001
	Within Groups	38297.648	121	316.509		
	Total	42175.870	122			
Benchmark Post-Test	Between Groups	12435.661	1	12435.661	28.973	.000
	Within Groups	45497.302	106	429.220		
	Total	57932.963	107			

Figures 5 and 6 (page 47) illustrate a significant difference between the treatment and control groups in this study.

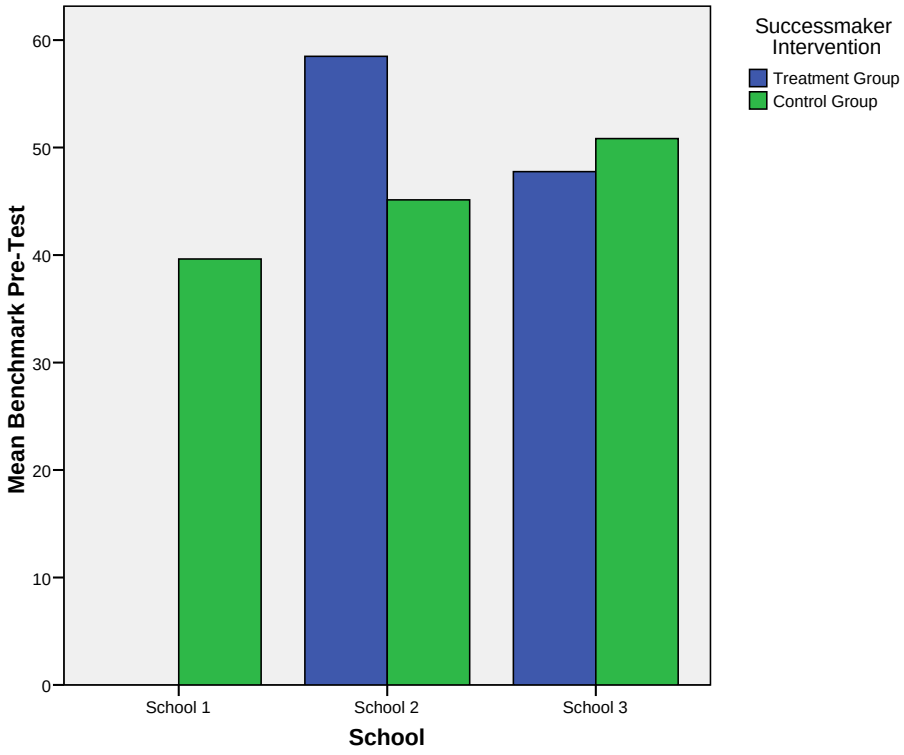

Figure 5: Pre-test mean score by treatment and control group

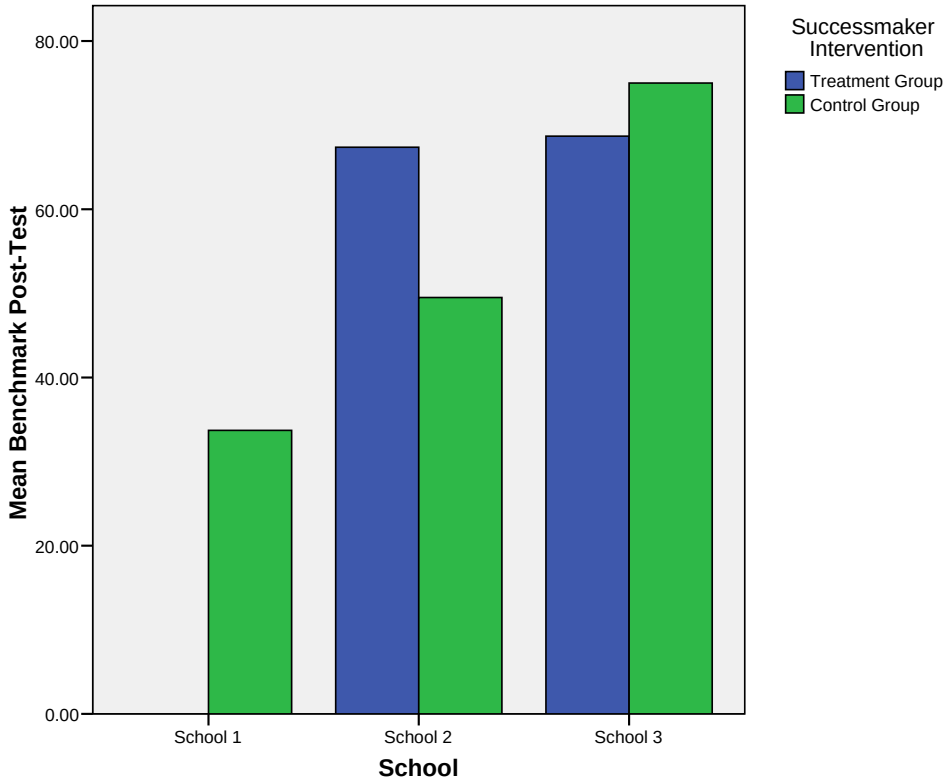

Figure 6: Post test mean score by treatment and control group

Research Question 2: Was there a statistically significant difference on EduSoft Benchmark post test scores for ELL students based on gender?

The descriptive statistics on table 9 illustrate the even distribution of 54 male and 54 female students on the post test. The number of male students accounted for 64 student pre test scores while female students accounted for 60 pre test scores. The pre test mean score for male students was 47.14 and the post test mean score was 52.85. The pre test mean score for female students was 48.83 and the post test score for female students was 60.19. The mean test score for male students increased by almost 6 points while the mean score increased by over 11 points for female students. Initially, the increase in mean score for female students appears significantly higher than the mean score for male students (see figures 7 and 8 below).

Table 9: Descriptive statistics based on gender

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
							Lower Bound	Upper Bound			
Benchmark Pre-Test	Male		63	47.14	19.072	2.403	42.34	51.95	4	88	
	Female		60	48.83	18.197	2.349	44.13	53.53	13	83	
	Total		123	47.97	18.593	1.676	44.65	51.29	4	88	
	Model	Fixed Effects			18.650	1.682	44.64	51.30			
		Random Effects				1.682(a)	26.60(a)	69.33(a)			-4.230
Benchmark Post-Test	Male		54	52.8519	21.84371	2.97255	46.8897	58.8140	17.00	92.00	
	Female		54	60.1852	24.25966	3.30132	53.5636	66.8068	17.00	100.00	
	Total		108	56.5185	23.26864	2.23903	52.0799	60.9571	17.00	100.00	
	Model	Fixed Effects			23.08331	2.22119	52.1148	60.9222			
		Random Effects				3.66667	9.9291	103.1079			17.02149

Figure 7: Pre test scores based on gender

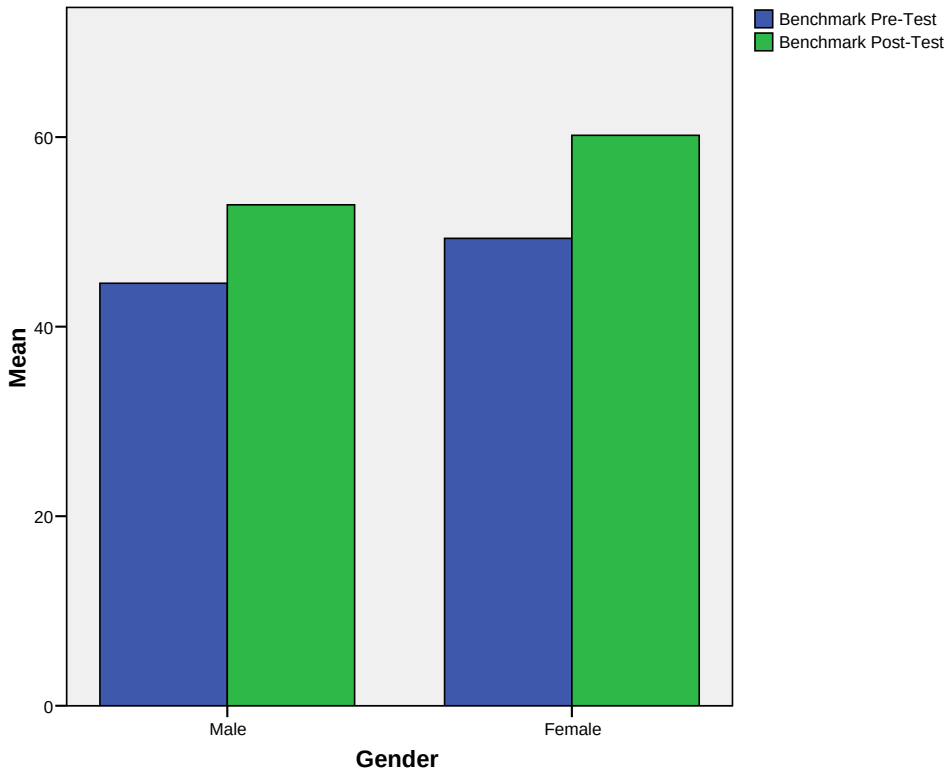

Figure 8: Post test scores based on gender

A one-way ANOVA was conducted to evaluate the relationship between the dependent variable (mean test score) and independent variable (the gender of the study participants). The tests of between subject effects was analyzed to determine that the overall ANOVA (table 11) was statistically significant, F (1, 106) = 2.725, p = .102. However, because the p value is greater than .05 the null hypothesis that there are no differences between groups is not rejected (table 10).

Table 10: Test of homogeneity of variances

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Benchmark Pre-Test	.001	1	121	.977
Benchmark Post-Test	1.098	1	106	.297

Table 11: Analysis of Variance for Gender

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Benchmark Pre-Test	Between Groups	87.822	1	87.822	.252	.616
	Within Groups	42088.048	121	347.835		
	Total	42175.870	122			
Benchmark Post-Test	Between Groups	1452.000	1	1452.000	2.725	.102
	Within Groups	56480.963	106	532.839		
	Total	57932.963	107			

CHAPTER 5: FINDINGS, CONCLUSIONS, AND SUGGESTIONS

Overview

The purpose of this study was to determine whether there would be a statistically significant difference in test scores after a computer-based intervention was given to ESOL students at three different middle schools in one central Florida public school district. The computer-based intervention (CBI) known as SuccessMaker is an approved intervention for OCPS schools to utilize and is also listed on the What Works Clearing House as an effective tool for Reading (USDOE, 2009). EduSoft Benchmark results were used at each school based on the state accepted assessment for progress monitoring in preparation for the Florida Comprehensive Assessment Test (FCAT) (Brown & Coughlin, 2007).

Results of the study support Ausubel's (1978) theory of meaningful learning and schema that student learning is optimized when the student is ready to learn the material. This concept is referred to as "anchoring ideas". The SuccessMaker® intervention is specifically designed to provide an initial placement (IP) assessment to determine the background knowledge or what Ausubel would refer to as schema.

Results of the study also supported Vygotsky's theory of zone of proximal development (ZPD). Students participating in the study worked on SuccessMaker®, the computer based instruction program that created individualized modules for students based on IP results and later increased or decreased in difficulty level based on student progress. Vygotsky (Levykh, 2008) emphasized the need to challenge students as they are challenged almost to the point of frustration and then providing support as needed.

Because of the frustration level that could be reached, it was is important in this theoretical framework to develop positive and nurturing relationships with students in order to optimize the learning experience of each student.

Findings

There were two research questions analyzed in the study. First, was there a statistically significant difference between groups on mean test score based on the use of SuccessMaker intervention for English Language Learners (ELL)? Second, was there a statistically significant difference in mean test score based on gender of participants? A pre-test and post-test was given to the groups participating at each of the three schools in order to compare any difference between test scores before and after the intervention. There was also a treatment and control group randomly selected at schools 2 and 3. School 1 served as the control school received no treatment. School two and school three randomly assigned students to either a treatment or control group.

An analysis of test scores was conducted in order to determine whether there was a statistically significant difference between mean scores based on participants randomly assigned for treatment or control group assignment at each school. There was a significant increase in mean score of 13 points (from 54.31 to 67.86) for the treatment group. The overall control group had a mean post-test score of 46 compared to a 68 overall mean score for the treatment group. It is important to note that although the overall mean score of the treatment group was higher than that of the control group, the mean score of the control group in school three was higher than the mean score of the treatment group in school three.

The comparison suggests that ELL students are more likely to score higher on the post test after the SuccessMaker® intervention is used with fidelity. The increase in mean score for the treatment group was three times the increase in mean score of the control group. The results based on treatment group supported findings regarding the specific application of the zone of proximal development (Iddings et al, 2009) to English Language Learners (ELL). In the same manner in which students in an English/Spanish bilingual literature circle could peer assist and refer to background language knowledge in order to reach next reading levelaccording to lexile score, SuccessMaker® advanced students through modules by simulating this type of support by automatically reducing or increasing complexity of reading passages based on number of correct responses.

The one-way ANOVA was conducted to determine whether there was a significant difference in test score based on treatment schools and control school. The mean scores of the pre test and post test for control school 1 were 40 and 34 respectively. This demonstrated a decrease in mean score of 6 points for school 1. The mean pre test and post test score for treatment school were 52 and 59 respectively. This demonstrated an increase of 7 points in mean score for school 2. The mean pre test and post test scores of treatment school 3 were 48 and 70 respectively. There was a difference of 22 points on mean score for school 2.

An analysis of data determined that there was in fact a statistically significant difference in mean test score based on the school attended by the participant. This analysis contradicted the hypothesis that stated there would be no statistically significant difference based on school attended. The mean post-test score at school 1 was 34, the mean post-test score at school 2 was 59, and the mean post-test score at school 3 was 70.

School 1 was 25 points lower than school 2 and 36 points lower that school 3. School 2 was 11 points lower than school 3.

There was no statistically significant difference between school 2 and school 3 in mean pre-test score. However, there was a statistically significant difference in mean pre score between schools 2 and 3 and school 1. This demonstrates that there is in fact a difference in results based on school setting. As mentioned in previous sections, school one did not utilize the SuccessMaker® treatment. School one did not show any gain between pre test and post test. School two had the largest gains from pre test to post test. The teachers in school two had more experience utilizing SuccessMaker® and were able to get through initial placement modules faster than school three. Incentives were also offered in school 2 for accuracy and speed of module completion. This teacher support and encouragement supports the importance of the affective domain regarding relationships and support from Vygotsky's ZPD (Levykh, 2008).

An analysis of the data determined that there was no statistically significant difference in mean post-test score after the SuccessMaker® intervention based on gender of participants. The mean score of male students was 7 points lower (53) than the mean score of female students (60). Comparisons between groups analysis determined that there was no statistically significant difference based on gender.

Implications for Practice

The findings of this study can potentially be significant for school and district leaders at the selected central Florida public school district for several reasons.

1. No Child Left Behind legislation established national requiring schools and school districts to close the achievement gap (USDOE, 2009). Students classified by the state as English Language Learners (ELL) are less likely than non-ELL students to meet adequate yearly progress (FLDOE, 2007). The use of SuccessMaker in this study increased the likelihood that ELL students will perform higher on progress monitoring tools than students that to not have access to SuccessMaker®.
2. The fidelity of use of program would be worth analyzing considering the difference in post-test scores between the schools in the study. The demographics of each school were similar in regard to the percentage of minority students, economically disadvantaged students, and students with disabilities.
3. The correlation between EduSoft® Benchmark test scores and FCAT as identified by the central Florida public school district (May, 2008) suggests that if students increase mean test scores on benchmark tests after the SuccessMaker® intervention, than the same students are likely to increase mean score on the FCAT.
4. An increase in FCAT scores by ELL students after use of the CBI will assist in closing the achievement gap, decreasing retention based on low standardized test scores, and increase the percentage of students meeting AYP.

5. Increasing the percentage of subgroups meeting AYP can assist the district in reducing the number of schools labeled as Correct II and Intervene by the state (FLDOE DA, 2010).

Limitations of the Study

1. The study was limited to three middle schools in one central Florida district.
2. The use of benchmark tests by the selected school district was based on the results of one study conducted by The Princeton Review and Edusoft, Inc. (May, 2008) measuring the correlation between the benchmark test and FCAT.
3. More research assistants would have assisted in conducting more classroom walkthrough observations from school to school to ensure fidelity of instruction and program.
4. One of the schools in the study offered incentives unknowingly to researcher at time of study for participants who demonstrated increase in mean score from pre test to post test. This may have accounted for higher mean scores for both control group and treatment group in school three.

Suggestions for Future Studies

The review of literature and analysis of the data in this study suggest several areas that should be investigated in the near future. Future studies should include the following ideas..

1. Future studies should measure the performance of other subgroups after the use of computer-based interventions for reading such as SuccessMaker®. Other subgroups in Florida may include but not be limited to students with disabilities, Black students, Hispanic students, and economically disadvantaged students.
2. Future studies should further analyze the correlation between the EduSoft® Benchmark test results and the FCAT results due to the limitation of research in this area
3. Future studies should analyze the differences in mean test scores between schools similar considered similar based on demographics when there is a significant difference in mean scores of benchmark and FCAT test scores.
4. Future studies should analyze the length of time use of CBI at each school to determine whether more frequent use of SuccessMaker® would have additional potential impact on EduSoft® Benchmark test scores.
5. Future studies should further analyze the difference in test score between male and female students after receiving computer based reading intervention.

The data analysis gathered in this study will be shared with school and district personnel and administrators in order to assist in making data based decision when purchasing educational materials district-wide. The data also will be shared with other Correct II and Intervention schools in order to make them aware of the results of the study.

Final thoughts

Ausubel's meaningful learning and theory along with Vygotsky's ZPD theory focus on the needs of individual students. Both theories are similar in that they both emphasize the learners' level of understanding and the importance of finding meaning in what the student learns. The importance of accessing the prior knowledge and background knowledge of ELL students in order to increase literacy in the target language can be directly tied to both theories (Iddings etal, 2009).

The treatment groups in schools one and two in this study increased the mean score from pre test to post test after the intervention was applied. The control school was the only school that showed a decrease in test score during the course of the study. When analyzing these results, the data supports the likelihood of increased test scores after the intervention is used. The results also support validity of both theories when applied to technology as a literacy resource for ELL students.

When students were observed in the classrooms utilizing the computer based intervention, the students could be monitored by teacher run reports to measure time on task, number of correct responses, and time spent on each module. The recommended time on the intervention was less than an hour in order to prevent user weariness. Teachers at treatment schools acknowledged that students grew weary and lost focus as measured by student reports after 30 minutes of use. Additionally, as the weeks passed by, students at times resisted more often when taken to computer lab. This finding supported the option of providing incentives for scoring well and for completing modules successfully.

Upon completion of the study school one continued to utilize the intervention. School one decided to research Computer Based Intervention based on results of the study. The computer based treatment supported ZPD and schema-based -learning experiences. The concept of differentiated instruction in this context can be further analyzed to include traditional or new teaching strategies that may or may not be computer based in order to improve reading skills for English Language Learners. As mentioned in previous chapters, one of the goals of No Child Left Behind is to increase percentage of ELL students that pass the FCAT and that ultimately graduate from high school. Utilizing research-based strategies that work are imperative in order to close the achievement gap of this subgroup as well as all other subgroups.

The results of the study demonstrated that a computer based instructional program can effectively be utilized to increase the mean test score on benchmark test results of English Language Learners. Although the control group in school three demonstrated higher gains pre test to post test than the treatment group, the overall increase in overall post test score was significant when looking at the three schools. This finding is important to note because often times a school's status as a Prevent, Correct I, Correct II, or Intervene as determined by the state can be determined by one subgroup's performance on the standardized test.

If a subgroup such as ELL students can make adequate yearly progress within a school based on how much it improves on FCAT performance from one year to the next. This helps to determine the status of the school in regard to AYP status on the school report card. Schools have struggled to make AYP and each year as the standard to make AYP increases, more and more schools fall into the corrective measures categories.

The three schools in this study all fell into the category of Correct II status. These schools, like many others across the state utilize research based interventions that will assist all students including those in different subgroups to make significant learning gains from one year to the next. The stakes are high for these schools in many ways. Students in correct II schools and intervene schools have the opportunity to transfer to schools that made AYP. Traditionally, the students that end up transferring score higher on standardized test scores and are students more likely to be enrolled in advanced classes. This tradition sometimes makes it harder to maintain or increase the percentage of students performing at grade level on the FCAT.

Because school funding is based on student enrollment, whenever a student leaves a school that didn't meet AYP, that school budget decreases. Every ten students that transfer out can represent one teacher in regard to school funding. This change in funding can greatly impact how the school has to utilize its resources. The three schools in the study all have a high percentage (over 40 percent) of students scoring at a level 1 or 2 on the FCAT. The school is required to provide intensive reading classes to all students scoring at a level one or two in the Reading portion of the FCAT. This provision means that these schools require more teachers in order to maintain the instructional program required of them.

More and more schools are becoming classified as correct II schools making it more difficult to find certified Reading teachers required for the necessary intensive reading classes. Many of the teachers, especially at the secondary level struggle with providing interventions for students struggling with Reading. When funding sources are

limited, this can take away from other valuable instructional programs at the school such as elective classes including the arts.

Many teachers have started to become certified in Reading due to the high demand for them. Unfortunately, many lack the in depth training required to reach students who have struggled with reading for extended years. Computer based instruction programs such as the one utilized in this study can assist with ensuring that the students will have a strategy that significantly increases student test scores.

APPENDIX A: CLASSROOM WALKTHROUGH OBSERVATION FORM

Effective Instructional Strategies (Thinking Maps, Labs, Pair Work, Cooperative Learning, Differentiated Instruction, Reading and Writing Across the Curriculum)

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Posted objective written in student comprehensible language (*Students will be able to + measurable action*)

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Posted Agenda

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Higher Order thinking (Bloom's Taxonomy/Costa's Level of Questioning)

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Sunshine State Standards (Written in student comprehensible language)

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

AVID Strategies (Particularly if you are on the Site Team) WICR, Socratic Seminar, Cornell Notes, Binder Use, etc.

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Appropriate Use of Word Walls

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Data/Student Focused Instruction

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Student Active Engagement

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Technology/Manipulative Use

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Bell to Bell Instruction/Reflection

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

ESE/ELL accommodations

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Positive Learning Environment (Classroom Procedures, Bell work, Decorated Classroom, Model Student Work Displayed, etc.)

- ☐ Evident
- ☐ Partially Evident
- ☐ Not Evident
- ☐ NA

Comments

APPENDIX B: UCF INSTITUTIONAL REVIEW BOARD NOTIFICATION OF NON-HUMAN RESEARCH APPROVAL

University of Central Florida

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

From : **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To : **Gabriel Berrio**

Date : **July 12, 2010**

Dear Researcher:

On 7/12/2010 the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review:	Initial Review
Project Title:	Computer Based Intervention and its effect on benchmark tests.
Investigator:	Gabriel Berrio
IRB ID:	SBE-10-07017
Funding Agency:	None

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

On behalf of the IRB Chair, Joseph Bielitzki, DVM, this letter is signed by:

Signature applied by Janice Turchin on 07/12/2010 12:55:39 PM EDT

Janice M Turchin

IRB Coordinator

APPENDIX C: DEFENSE ANNOUNCEMENT

Announcing the Final Examination of Mr. Gabriel Berrio for the degree of Doctor of Education

Date: November 1, 2010

Time: 3:30 PM

Room: Education ED 306

Dissertation title: Computer Based Intervention (CBI) and its effect on benchmark test scores of English Language Learners

This study investigated the benchmark test results of three schools before and after the use of a computer based intervention. The study measured mean pre-test and post-test scores based on treatment group and gender.

Analysis of Variance (ANOVA) results were conducted to measure several key factors of the study. First, was there a statistically significant difference in mean test score based on treatment? Second, was there a statistically significant difference in test score based on gender of student?

Recommendations were made for modification and future applications of the treatment used in regard to length of time of treatment and number of participants involved in the study.

Outline of Studies:
Major: Education

Educational Career:
B.A., 1993, Northern Illinois University
M.Ed., 2001, University of Central Florida

Committee in Charge:
Dr. Suzanne Martin
Dr. Mary Little
Dr. Martha Lue Stewart
Dr. Deborah Brown

Approved for distribution by Suzanne Martin, Committee Chair, on September 30, 2010. The public is welcome to attend.

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