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Examining the effects of the Sheltered Instruction Observation Protocol model on the reading comprehension of first grade students

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Examining the effects of the Sheltered Instruction Observation Protocol model on the reading comprehension of first grade students

by

Sara Lynn Nichols

A thesis submitted to the graduate faculty

In partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Education

Program of Study Committee:
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Iowa State University

Ames, Iowa

2012
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CHAPTER 1

INTRODUCTION

This thesis is a report of a study aimed at finding effective instructional practices for teaching English learners (ELs). The need for such a study is brought about by the changing demographics of the United States, and consequently of U.S. classrooms. In the past two decades, the number of EL students in our schools has dramatically increased. So has the demand on educators to improve all students’ achievement. Studies have found that EL students are succeeding in school at rates lower than non-ELs. The reading scores of 4th, 8th, and 12th grade Hispanic and Black students are below that of White students. Hispanic and Black students have a higher rate of dropping out of high school than White students (Aud, Hussar, Kena, etc, 2011). After high school, the differences continue. Whites comprise 62% of the undergraduate enrollment whereas Blacks, Hispanics, and Asians combined make up 35% of enrollment. The percentage of 25-29 year olds with a bachelor’s degree or higher is higher for Whites than for Blacks or Hispanics (Aud, Hussar, Kena, etc, 2011). One reason for this gap in achievement in school, and consequently afterwards, is that teachers are not prepared to teach students with limited English skills. Because of the No Children Left Behind (NCLB) Act, teachers are required to be highly qualified in the subject area that they teach. This change in legislation ensures that more teachers are qualified to teach the content of the subject they teach, but many teachers still are not equipped with teaching strategies and skills to help make content comprehensible for the ELs in their classrooms.

Another reason EL students have difficulty succeeding is because they have to learn more than just the content while they are at school. If they come in with limited English speaking skills, these students need to learn not only content topics, but also the English language and the manner in which academic tasks should be completed (Echevarria, Short, Powers, 2006). For some ELs, it takes up to four years to become fluent in English, but because of new standards, ELs are forced to take high-stakes tests after
just one year of U.S. schooling (Echevarria, Short, Powers, 2006). The inevitably poor performance (for many students) on this test then results in negative consequences for both students and schools. All of these factors indicate the importance of appropriate instructional techniques for EL students.

There are a variety of methods being used in education to teach students who use English as a second language. The purpose of this study was to examine the effects of implementing an existing model of educating ELs titled Sheltered Instruction Observation Protocol (SIOP) in a first grade classroom. The results were then analyzed to evaluate its effectiveness in delivering instruction to all students, and then specifically ELs, in the area of reading.

This study is important because teachers need to have research-based and effective strategies to work with ELs in their classrooms. ELs in the classroom aren’t a rarity anymore; they are a constant in most classrooms across the United States today. The SIOP model may help ELs understand and internalize information in a deeper way by ensuring teachers are delivering content in a way that all learners, regardless of their level of English, are successful at comprehending (Echevarria, J., Vogt M., and Short, D. 2010). Briefly explained, the SIOP model is a tool for teachers to use when planning and delivering lessons. The model is comprised of 8 components and 30 features. The SIOP model is one way for teachers to intentionally plan lessons that contain sheltered instruction strategies that are effective for helping ELs learn in a classroom. A more in depth look at this model is provided in chapter 2. The SIOP model could be a good tool for English learners because it will help them learn English while simultaneously learning content. In order for ELs to be successful in school, at some point they need to learn the English language. The SIOP model may help students do this more effectively because the focus is not just on learning English while they get behind on content, or conversely, continuing to focus on content that they don’t have a chance of understanding. The SIOP model encourages a mix of
content focus so students don’t get left behind, but with enough language focus that the content is able to be understood and English is being learned in the process.

In addition to helping students, SIOP instruction could be an effective method for teachers because it will help teachers use sheltered instruction (SI) strategies more consistently and with more fidelity (Echevarria, J., Vogt M., and Short, D. 2010). Right now, SI strategies are being used in many schools across the country, but not to the extent they should be and the SIOP model can help ensure teachers are planning and delivering lessons with SI strategies for their ELs (Echevarria, Vogt, and Short, 2008). In this age of testing and accountability, teachers need to implement these types of strategies because ELs, as well as teachers themselves, will be held responsible for the mastering of the curriculum. Schools need to make sure all students are truly learning what is being taught and the SIOP model may be one way to ensure that.

The creators of SIOP, Jana Echevarria, Deborah Short, and Mary Ellen Vogt have spent considerable time developing and refining the SIOP model. However, not a lot of research has been conducted to determine the effectiveness of the SIOP model. For example, according to the What Works Clearinghouse, there are no studies that provide sufficient evidence to draw conclusions about the effectiveness of the SIOP model and ELs. Also, not much research has been done on the effectiveness of Sheltered Instruction in primary grades (K-2). Thus the goal of this thesis is to see if the implementation of the SIOP model in a first grade classroom effects the reading achievement of ELs.

The research questions for this study are:

1. What effect does the implementation of the SIOP model in a first grade classroom have on reading achievement?
2. What effect does the implementation of the SIOP model in a first grade classroom have on the reading achievement of EL students in the class?
In order to accomplish the two goals of this study, a quasi-experimental quantitative research study was designed. The study was conducted in two first grade classrooms with a control teacher delivering standard reading instruction in one classroom and a variable teacher delivering reading instruction using the SIOP model in another classroom. The students’ reading growth was measured using the Individual Reading Inventory (IRI). The test was administered in September 2011 before SIOP instruction was started and then again January 2012 at the end of the study. The complete methodology of the study is discussed in Chapter 3 of this thesis. In anticipation of that section, the following definitions are needed to further clarify terms used in this study:

- **English learners (ELs)**-People who are learning English as a second or additional language (Echevarria, Vogt, and Short, 2008).

- **Sheltered Instruction Observation Protocol (SIOP)**-A model of sheltered instruction designed to make grade-level academic content understandable for English learners while at the same time developing their English language (Echevarria, Vogt, and Short, 2008).

- **Basal**-a reading series published by a company that school districts use to teach reading, phonics, grammar, and writing skills.

- **Language Circle**-a curriculum developed by educators Victoria E. Greene and Mary Lee Enfield. The Project Read part of the curriculum covers phonics, spelling, and handwriting. The Framing Your Thoughts part of the curriculum covers writing and grammar. The school in this study used just the phonics part of the Project Read curriculum ([www.projectread.com](http://www.projectread.com)).

- **Sheltered Instruction (SI)**-A means for making content comprehensible for English learners while they are developing English proficiency (Echevarria, Vogt, and Short, 2008).
CHAPTER 2
REVIEW OF LITERATURE

Growth of English Learners in the United States

The demographics of the United States have been consistently changing since 1980 (Aud, Fox, & KewalRamani, 2010). From 1980 to 2008 the percentage of the total United States population that is White has decreased from 80 to 66. On the other hand, the percentage of the total population that is Hispanic has increased from 6% to 15% and the percentage of the total population that is Asian/Pacific Islander has increased from less than 2% to 4% (Aud, Fox, & KewalRamani, 2010). Between 1999 and 2000, Hispanics surpassed Blacks as the largest racial/ethnic population in the United States after Whites. Hispanics are projected to continue to be the fastest growing racial/ethnic group in the United States with predictions that they will account for 21% of the total population by the year 2025 (Aud, Fox, & KewalRamani, 2010).

The changing racial/ethnic make-up of the United States population is becoming apparent in our public schools. From the start of the 2000 school year to the end of the 2008 school year, the percentage of the public school enrollment of Whites decreased from 61% to 56%. During those same years the enrollment of Hispanics increased from 17% to 21% and the enrollment of Asian/Pacific Islanders went up from 4% to 5% (Aud, Fox, & KewalRamani, 2010). These students bring with them their own cultures, traditions, and languages. Between 1980 and 2009, the number of school-age children who spoke a language other than English at home rose from 4.7 to 11.2 million. Concerning different age brackets, the percentage of 5-9 year olds who speak a non-English language at home and spoke English with difficulty is 7%, and 4% of 10-17 year olds speak a non-English language at home(National Center for Education Statistics, 2011).
Ensuring equal education opportunities to all students, regardless of racial/ethnic background, socioeconomic statuses (SES), and language barriers, is a growing challenge for schools. However, this is not a new challenge for educators. For many decades, educators and politicians have been working to end the unequal academic achievement between racial/ethnic groups and SES groups. A term used to describe this difference in achievement scores on national achievement tests among various racial/ethnic and socio-economic groups is the achievement gap (Barton and Coley, 2009). A first major effort to try closing this achievement gap began with the Elementary and Secondary Education Act (ESEA) in 1965. This act came about because of President Lyndon B. Johnson’s “War on Poverty”. He wanted to close the gap in reading, writing, and math performance between low-income students attending school in rural and urban areas and middle-class students attending school in suburban areas. Therefore, in 1965 he passed this law to try to increase support to students in poverty to ensure a more equal education for all students. One way the law did this was by the creation of the Title 1 program. Title 1 is a program created to give funds to schools and school districts with a large population of low-income families. Since ESEA, work to close the gap has been continued with efforts such as periodic funding increases, legislative amendments, program expansions such as Head Start, and the No Child Left Behind Act of 2002 (Barton and Coley, 2009).

One test used to determine if this gap is growing or closing is the National Assessment of Educational Progress (NAEP). This is a nationally representative assessment of what U.S. students know and can do in various subject areas (Aud, Fox, & KewalRamani, 2010). The test is given to 4th, 8th, and 12th grade students. The results of the test are printed as average scores and the percentage of students performing at or above three levels: Basic, Proficient, and Advanced. A basic score means partial understanding of fundamental skills and knowledge needed at that grade level. A proficient score means
solid understanding of skills and knowledge needed at that grade level. An advanced score means superior understanding of skills and knowledge needed at that grade level (Aud, Fox, & KewalRamani, 2010).

In 2007, 33% of all 4th graders performed at or above the proficient level on the reading portion of the NAEP. However, of those students, 46% of Asian and 43% of White 4th graders performed at that level, while only 17% of Hispanic 4th graders received a score at or above the proficient level. Eighth graders showed the same trend in their results. Of all 8th graders who took the assessment, 31% performed at or above the Proficient level on the reading portion. Again, 41% of Asian and 40% of White 8th graders performed at that level, whereas only 15% of Hispanic 8th graders received a score at or above the proficient level (Aud, Fox, & KewalRamani, 2010). Although efforts are being made by teachers, schools, and the national government, the achievement gap between racial/ethnic groups is still persistent in our classrooms.

Methods of Educating English Learners

One possible factor making this achievement gap hard to close is that English learners are required to learn and understand academic content that is often not in their primary language. Research has shown that it takes 1-2 years for students to learn conversational English but 5-7 years for a student to be fluent in academic English (Diaz-Rico, 2008; Rothenberg and Fisher, 2007). In order to more effectively and efficiently educate ELs, a variety of programs are currently being used across United States’ classrooms. These programs vary in the amount of instruction taught in English vs. native language, but all the programs have the goals of helping students learn academic content and academic English. What follows is a description of a sampling of existing programs aimed at more effectively educating ELs. It would be a nearly impossible task to include a comprehensive listing of programs, so only researched-based programs are described in this report.
Bilingual Education Programs

Two-Way Immersion

One such effort to better educate ELs is called Two-Way Immersion (also called Dual-Language or Bilingual Immersion; Genesee, et. al., 2006; Rothenberg and Fisher, 2007; Diaz-Rico, 2008), which includes extensive instruction in the native language. The Two-Way Immersion model was originally developed in Canada in the 1960s to help students receive schooling through both French and English from K-12 (Ovando, Collier, and Combs, 2003). The first two-way immersion program in the United States started in 1963. However, the majority of two-way immersion programs that exist today were established during the past two decades (Howard and Sugarman, 2001). A two-way immersion program will have the following characteristics in educating ELs: 1) language-minority and language-majority students are integrated for at least 50% of the day in all grade levels; 2) content and literacy instruction in both languages are provided to all students and 3) language-minority and language-majority students are balanced, with each group making up about half of the total student population (Howard and Sugarman, 2001).

There are two common ways a two-way immersion program is set up (Howard and Sugarman, 2001). There is the “90/10” or “80/20” model. In this model, the minority language is used for instruction 80-90% of the time in the primary grades with the ratio of minority language to English increasing each year until it is 50/50 by fourth grade. The other model is called a balanced program where instruction time is equal in the two languages at all grade levels. Either way, a two-way immersion program begins in kindergarten and typically continues through 6th grade, but sometimes goes all the way to 12th grade. The goal of two-way immersion is to become fluent in both languages, learning academic content through two languages.
Developmental Bilingual Education

Another type of program is Developmental Bilingual Education (also called Late-Exit Bilingual) (Genesee, et. al., 2006; Rothenberg and Fisher, 2007). Developmental Bilingual Education was previously referred to as Maintenance Bilingual Programs in the 1960s and 1970s. However that name gave negative connotations to this method because some felt that it was not an appropriate use of federal money to “maintain” students’ first languages (Ovando, Collier, and Combs, 2003). Therefore the name changed to Developmental Bilingual Education in 1984. The goal of this type of program is to promote bilingualism, having students reach high levels of academic achievement in all curricular areas and full academic language proficiency in the students’ native language and English (Genesee, 1999). These are very similar goals to two-way immersion programs. The difference is most of the students in these programs are language minority students, not a mix of native speakers and English learners. This program typically starts in elementary school and continues through 5th or 6th grade, depending on how long instruction can be provided in the students’ native language (Ovando, Collier, and Combs, 2003). Ideally, that would be throughout their entire educational process.

Transitional Bilingual Education

Another program is Transitional Bilingual Education (also called Early-Exit Bilingual) (Genesee, et. al., 2006; Rothenberg and Fisher, 2007; Diaz-Rico, 2008). Transitional Bilingual Education is the most common form of bilingual education for ELs in the United States (Genesee, 1999). It was the main model for bilingual education in the United States during 1970s and 1980s (Ovando, Collier, and Combs, 2003). In this type of program, students are taught content area instruction in their native language until they learn enough English to transition into an English only classroom. Unlike developmental bilingual education and two-way immersion programs, the goal is not for full bilingualism but to ensure students’ mastery of grade-appropriate academics and to speed up the process of learning English (Genesee,
Academic instruction is provided in the native language to keep EL students on grade level while they are learning English. Students also receive English instruction during the day to help acquire English. Students remain in these programs for about 2-3 years and then are exited out to mainstream English only classes. This is why transitional bilingual education is referred to as early-exit because students in this program exit out in a shorter amount of time than students in a developmental or two-way immersion program.

Newcomer Programs

Newcomer programs are a fourth type of EL program (Genesee, et. al., 2006; Rothenberg and Fisher, 2007; Diaz-Rico, 2008). They are typically comprised of students who are new to the U.S. with limited to no English proficiency, low literacy, and/or limited formal schooling. The goals of this type of program are to help students acquire basic English skills, provide some instruction in content areas, and acculturate students to the U.S. school system (Short, 2002). Newcomer programs first started being used around 1990 and they are more often found in urban settings than suburban or rural (Short, 2002). This type of program varies greatly with some being half day, a full day, or outside of school hours. The location of newcomer programs also varies with some being a program within a school, separate site, and some being a whole school (Short, 2002). Students can be enrolled in a newcomer program for 1-3 semesters, with the norm being one year. The length of time a student spends in a newcomer program is often determined on a case-by-case basis (Short, 2002). The instructional methods used in a newcomer program also vary depending on the program. English language development courses are taught to help students acquire English. Some programs have native language literacy courses to help students develop literacy skills in their first language. Content areas courses can be taught using sheltered instruction, native language instruction, or a combination on both. Courses are also offered that teach U.S. culture and orientation to the United States. A final characteristic of newcomer programs
is their emphasis on family involvement (Short, 2002). Newcomer programs help not only the students in their programs, but also their families become more acclimated to the United States.

Some research has shown that the two-way immersion and developmental bilingual education methods of educating ELs are the most effective (Cummins, 1983; Thomas and Collier, 2002). When ELs are instructed in a bilingual program, studies have shown they reach the same level or higher of achievement than ELs instructed in monolingual programs. Given 4-7 years of bilingual education, ELs were also shown to score just as high as native English speakers on English exams (Cummins, 1983; Thomas and Collier, 2002).

In the early 1980s, Cummins looked at the results of a study conducted by the Southwest Educational Development Laboratory (SEDL). This study was conducted in Seattle involving Cantonese speaking students. The researchers studied the effect of bilingual education on these students’ academic growth. Even though Cummins himself did not conduct this study, he used the results to explain how his Interdependence Hypothesis fits with the findings from this study (Cummins, 1983). The Interdependence Hypothesis states that if EL students have enough effective instruction in their native language (L1) so they are proficient in L1, then they will be able to transfer that proficiency to the language they are trying to learn (L2) as long as there is adequate exposure to L2 and motivation to learn L2. For this hypothesis to be correct then EL students receiving instruction in both their L1 and L2 would perform better on English academic skills than EL students receiving instruction in English only or in their native language only.

The SEDL study found that those students who had the greatest amount of bilingual instruction performed considerably better in both English reading and writing than those who had little bilingual instruction. This suggested that the Chinese students in the study benefitted academically from bilingual instruction (Cummins, 1983). Cummins found this data to be consistent with his interdependence
hypothesis and recommended to policy makers that this study is evidence that bilingual education programs should be promoted.

Another study was done by Wayne Thomas and Virginia Collier to study the educational achievement of language minority students. They found five school districts across the nation to participate in this longitudinal study. The research started in 1985 and is an ongoing study. These school districts had a variety of programs being used to serve EL students so the researchers were able to follow the students throughout their educational experiences and track which programs showed the most growth in English academic achievement. Programs that were used by districts in this study include two-way bilingual immersion, developmental bilingual education, transitional bilingual education, English as a Second Language, and English mainstream. An important part of this study is that the researchers didn’t change any school practices; they just examined the existing practices in the school systems.

Thomas and Collier wrote a research study in 2002 about the findings of their study from 1996-2001. After looking at their data from across their study, they found some policy implications for bilingual education (Thomas and Collier, 2002). They found that two-way bilingual immersion and developmental bilingual education programs were the only programs that assisted students to fully reach the 50th percentile in both L1 and L2 and maintain that level of high achievement. They also found that when ELs initially attended segregated, remedial programs, those students did not close the achievement gap after entering the English mainstream classroom. Finally, the data also showed that bilingually school students outperform comparable monolingually schooled students in academic achievement in all subjects after 4-7 of dual language schooling. The evidence from this study also points to the effectiveness of bilingual education.
While it would be best practice for all ELs to be educated in a two way immersion or developmental bilingual education program, it is not always possible for a school district to provide that. There might not be enough resources (money, staff, space, materials) to support a bilingual program or there might not be enough of a population that speaks the same language in a district to support a bilingual program for them. When this is the case for a district, monolingual programs are used to help EL students learn academic content and English while staying in the mainstream classroom.

**Monolingual Education Programs**

*English as a Second Language*

One prominent type of monolingual program is an English as a Second Language (ESL) program which are also called English Language Development programs (Genesee, et. al., 2006; Rothenberg and Fisher, 2007; Diaz-Rico, 2008). This type of program varies widely in how it is carried out. One type of ESL program is pull-out. In pull-out the EL students leave the mainstream classroom and head to an ESL teacher’s classroom for English instruction. In elementary school students are pulled out for 30-60 minute time blocks. While students are in their pull-out ESL program, they miss the instruction that is going on in the mainstream classroom. Rarely is the ESL instruction integrated with what is being taught in the mainstream classroom and when ELs return to their mainstream classroom, they usually are not instructed in the material that was taught while they were gone (Diaz-Rico, 2008). In middle school and high school students are pulled out for an entire class period. This class period often focuses entirely on English and do not help students with their academic content (Diaz-Rico, 2008).

There are some ESL programs that combine content based instruction and English instruction in the same class. These classes are still separate from the mainstream classroom and contain only ELs, but they do have more of a focus on learning English through academic content. In these classrooms, the ESL teacher and the mainstream classroom teacher need to collaborate together to make learning the
most effective for ELs (Diaz-Rico, 2008). Something common to most ESL programs though is that they have highly skilled teachers providing instruction to students and generally that instruction is focused around the learning of English. ESL instruction is the most used method of educating ELs right now in our schools even though it is the most expensive and the least effective way of instruction (Diaz-Rico, 2008).

**Cognitive Academic Language Learning Approach**

Whereas ESL programs focus more on helping ELs learn English, other monolingual programs focus on helping ELs learn content and English at the same time in a mainstream classroom. One model with this focus is called Cognitive Academic Language Learning Approach (CALLA). CALLA is a model based on cognitive learning theory and integrates content-area instruction with language development activities and explicit instruction in learning strategies (Rothenberg and Fisher, 2007). CALLA was developed in 1986 by Anna Chamot and J. Michael O’Malley. The model has three components. The first component is a content-based curriculum correlated to the mainstream program. While ESL classes focus mainly on learning English, CALLA integrates science, math, and social studies. These content areas are more motivating and interesting to students which make them feel like they are doing real school work and not just learning English (Chamot and O’Malley, 1986). The second component is English language development in academic areas. Reading and language arts are taught as part of content area subjects in the CALLA model (Chamot and O’Malley, 1986). The final component is direct instruction in the use of learning strategies. To help students in CALLA learn the content that is being taught, students are directly taught three types of learning strategies, metacognitive, cognitive, and social, to help them comprehend the material (Chamot and O’Malley, 1986). To ensure the three components of CALLA are being met in a lesson, an instructional sequence has been designed. The 5 stages of the instructional cycle are preparation, presentation, practice, evaluation, and expansion (Chamot and O’Malley, 1996). In the preparation stage, students are made aware of their previous knowledge on the topic and the
learning strategy being taught. In the presentation stage new concepts, language, or strategies are introduced to the students. Through the practice stage, students get the opportunity to practice and apply the new content, language, or strategy they learned. In the evaluation stage, students get an opportunity to evaluate their success. In the final stage of expansion the students can relate their new learning to their own culture and the outside world.

_SHELTERED INSTRUCTION_

A final method of instructing EL students in the context of a monolingual program is through Sheltered Instruction, which is sometimes also referred to as Specially Designed Academic Instruction in English (Genesee, et. al., 2006; Rothenberg and Fisher, 2007; Diaz-Rico, 2008). This program is implemented in some schools when there are multiple native languages spoken and providing instruction in the native language is not possible. Sheltered Instruction programs use specific teaching methods that make content assessable to ELs while at the same time increasing their English proficiency. One program that incorporates many aspects of Sheltered Instruction is called Sheltered Instruction Observation Protocol (SIOP). SIOP is a model for teaching grade level content in a way that is understandable for ELs while at the same time promoting their English language development (Rothenberg and Fisher, 2007). The SIOP model is the model selected for the current study. Thus the components of this model will be described more thoroughly in the subsequent section. Table 1 is provided to compare the methods previously described. It gives a brief summary of each method and highlights a few key aspects of each one.
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<th>Program Summary</th>
<th>Two-Way Immersion</th>
<th>Development Bilingual Education</th>
<th>Transitional Bilingual Education</th>
<th>Newcomer</th>
<th>English as a Second Language</th>
<th>Cognitive Academic Language Learning Approach</th>
<th>Sheltered Instruction</th>
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<td>Bilingualism</td>
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<td>Language of ELs and English</td>
<td>Language of ELs and English</td>
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<td>Mostly middle and high school</td>
<td>K-12</td>
<td>Mostly middle and high school</td>
<td>K-12</td>
</tr>
<tr>
<td>Program Length</td>
<td>5-12 years</td>
<td>5-12 years</td>
<td>2-4 years</td>
<td>1-3 semesters</td>
<td>pull-out or integrated in mainstream classroom</td>
<td>Integrated in Mainstream Classroom</td>
<td>Integrated in Mainstream Classroom</td>
</tr>
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</table>
Sheltered Instruction and the Sheltered Instruction Observation Protocol

As mentioned in the previous section, Sheltered Instruction is one of the programs used to educate English learners. Sheltered Instruction is a method that makes content knowledge more accessible to English language learners, while at the same time helping these students develop their English skills in reading, writing, speaking, and listening (Echevarria, Vogt, and Short, 2008). Sheltered Instruction makes content more accessible by the use of extralinguistic cues such as visuals, props, and body language. Sheltered Instruction also employs linguistic modifications such as repetition and pauses during speech. Teachers using sheltered instruction methods also use interactive lectures with frequent comprehension checks, cooperative learning strategies, and focus on central concepts rather than details. Content is also made more accessible by developing reading strategies to promote independent student work and thinking (Freeman and Freeman, 1988).

Sheltered instruction classes can be set up a couple different ways. One way is with an entire class of English learners (ELs) where these students are “sheltered” from competing academically with English speakers because there are only ELs in the classroom (Freeman and Freeman, 1988). The teacher uses sheltered instruction methods to teach the class of ELs. Another way a sheltered instruction class could be set up is with both ELs and non-ELs in the class with the teacher using sheltered instruction methods.

Even though educators have been using sheltered instruction methods in their teaching, prior to the development of the SIOP model there was not an explicit model for effectively delivering sheltered lessons nor many investigations in which researchers measure what constitutes an effective sheltered lesson (Echevarria, Short, and Powers, 2006). That is why Echevarria, Short, and Vogt developed the Sheltered Instruction Observation Protocol (SIOP). This is a tool for educators to ensure their lessons contain effective sheltered instruction strategies and a tool used for administrators and coaches to rate
teachers on the fidelity of their implementation on the sheltered instruction strategies in their lessons. Since both the instructional model of teaching and the instrument used to measure the fidelity of lessons implementing this model are referred to as SIOP, there will need to be a differentiation between the two. From this point the instructional model of teaching will be referred to as the SIOP model and the instrument used to measure fidelity will be referred to as the SIOP protocol (Echevarria, Vogt, and Short, 2008). The SIOP model has 30 strategies grouped into 8 components. Those 8 components are Lesson Preparation, Building Background, Comprehensible Input, Strategies, Interaction, Practice/Application, Lesson Delivery, and Review and Assessment (Echevarria, Vogt, and Short, 2008). Each of these components will be described in detail in a subsequent section.

Features of the SIOP model

Lesson Preparation

As mentioned in the previous paragraph, the SIOP model features 8 components. Using the Sheltered Instruction (SI) model, the first component of Lesson Preparation focuses on what needs to be included in an effective SI lesson. Using this model, teachers not only include a content goal to be presented to the students, but also a language goal that should be told to the students. The lesson preparation component also has teachers take into consideration if the concepts being taught to the students are appropriate, what supplemental materials and adaptations will be needed, and what meaningful activities will be planned.

Building Background

Building Background is another component that takes place along with Lesson Preparation. Building Background requires teachers to think about where ELs might have holes in their schema and what teachers can do to build that schema for students (Echevarria, Vogt, and Short, 2008). Schema is a
person’s background knowledge and what he/she uses to understand and comprehend text (Tierney and Pearson, 1985). Readers rely on their schema to help understand what they are reading, drawing on their prior experiences, background knowledge, and vocabulary to bring meaning to text. If students don’t have the schema to understand the subject content, teachers need to find strategies that help link concepts to students’ background and past learning and also develop key vocabulary students will need to know to understand the content.

**Comprehensible Input**

Comprehensible Input is a component that contains features that makes SI different than other good teaching strategies (Echevarria, Vogt, and Short, 2008). Making sure the content is presented in a way for all students to understand is referred to comprehensible input. One way teachers can make the content understandable is by using appropriate speech and rate. They can also clearly explain tasks by providing an example of a finished product, modeling the steps to an assignment or procedure, and by writing the steps so students can see them and refer back to them. Teachers can also use a variety of techniques to make the concept understandable such as using technology, providing repeated exposure to material, using sentence strips, chucking information into small segments, and by using graphic organizers, gestures, pictures, or objects.

**Strategies**

The Strategies component encourages teachers to teach EL students strategies they can use on their own to help understand the content. Teachers should provide lots of opportunities for students to practice using learning strategies. There are three types of learning strategies students should be taught: metacognitive strategies to help students monitor their thinking, cognitive strategies to help students find ways to organize the information they are learning, and social/affective strategies to help students learn in social settings. These strategies should be taught to students through scaffolding where
students are able to model their teacher using the strategy, spend time practicing the strategy with feedback, and then be given opportunities to independently use the strategy. Another part of the strategies component is that teachers should use a variety of questions and tasks that promote higher order thinking skills. These higher order thinking tasks are authentic opportunities for students to practice learning strategies.

**Interaction**

Interaction encourages teachers to focus on providing opportunities for students to interact with both content and language during the lesson. Teachers can do this by providing frequent opportunities for interaction and discussion. The discussion shouldn’t be just between teacher and students, but also between students. Student to student discussion should be occurring just as much as teacher to student discussion during a lesson. Teachers can provide opportunities for student interaction by grouping students in different ways throughout a lesson. Another way of promoting interaction in a lesson is by providing students with sufficient wait time after asking a question. Wait time is pausing about 5-10 seconds after asking a question before calling on someone to answer. This time provides ELs with the opportunity to process the language they need to answer the question and increase their chance of interacting during the lesson.

**Practice and Application**

The Practice and Application component ensures that students are getting time to practice the concept and language goals for the lesson. Students should get multiple opportunities to practice concepts and language in relevant, meaningful ways. They should first practice in a guided setting where the teacher is providing feedback to ensure the skill is being practiced correctly before the student tries the skill independently. This practice time will also be more effective for ELs if hands-on materials and/or manipulatives are available. There should be multiple opportunities to practice the content
during the lesson and the activities chosen to practice the content should contain all four language
domains of reading, writing, listening, and speaking. This way students can apply both the content and
language skills they are focusing on in the lesson.

*Lesson Delivery*

Lesson Delivery ensures that the content and language objectives for the lesson are supported
by the way the lesson is delivered. This component is very similar to the lesson preparation component.
The effectiveness of a lesson’s delivery can be linked back to how much preparation the teacher put into
preparing the lesson. To help increase the effectiveness of the lesson being delivered the lesson should
also be paced appropriately and students should be engaged 90-100% of the lesson.

*Review and Assessment*

With Review and Assessment, students should get opportunities during the lesson to review key
vocabulary and concepts covered during the lesson. This review of vocabulary and concepts should not
be just at the end of the lesson, but imbedded multiple times throughout a lesson. Additionally, the
assessment part is for the teacher to give students feedback on their learning and monitor the students’
comprehension of the content. At the end of a lesson, the teacher should be able to tell if all students
met both the content and language objectives of the lesson because of the ongoing informal
assessments the teacher is constantly doing and possible with a more formal assessment at the end of
the lesson. This is what makes an effective SIOP lesson: if all students in the classroom are able to
successful met the objectives at the end of that lesson.

Arguably, sheltered instruction strategies are simply good teaching strategies that benefit all
students. However, what makes Sheltered Instruction different than instruction aimed at native English
speakers is its focus on the language aspect of each lesson. Each lesson has a content objective and a
language objective (Echevarria, Vogt, and Short, 2008). The content objective focuses on what the students are going to learn during the lesson. The language objective focuses on how students are going to show they have learned the content through one or more of the four modes of language: reading, writing, speaking, and listening. Using the SIOP model, the language objective is written, posted, presented, and referred back to regularly throughout the lesson which is unique to the SIOP model (Echevarria, Vogt, and Short, 2008). The SIOP model also provides a structure for teachers to ensure they are including all components of quality instruction for ELs instead of just using a few strategies here and there.

Research on the Sheltered Instruction Observation Protocol

Because of the need for an explicit model for effectively delivering sheltered lessons, three researchers, Jana Echevarria, Deborah Short, and Mary Ellen Vogt developed a model to help ensure teachers were using sheltered instruction with fidelity. They worked with the Center for Research on Education, Diversity & Excellence (CREDE), to develop the Sheltered Instruction Observation Protocol. Their purpose was to develop an explicit model of sheltered instruction that teachers could implement to improve the academic success of their limited English proficiency students (Echevarria & Short, 1999). They first studied the SIOP model in four large urban school districts where they trained middle school teachers in implementing effective sheltered instruction strategies in their classes (Echevarria & Short, 1999). The researchers began working with these four school districts in the spring of 1997 and continued through 2000. A small group of teachers from the study along with the researchers worked together to refine the SIOP model. Part of their refining included distinguishing between effective strategies for beginning, intermediate, and advance ELs; determining “critical” versus “unique” sheltered teaching strategies; and using the SIOP protocol and providing feedback for making it more user friendly (Echevarria & Short, 1999).
With the beginning of the study in 1997, teachers from these four school districts who were participating in the study received two 3-day professional development institutes. At these institutes the teachers explored the project’s goals and the SIOP model. The teachers also set personal development goals for themselves. Finally the institute also provided practice on implementing the project’s model of sheltered instruction. During the 1997-98 school year, the researchers began observing classroom instruction. They videotaped the participating teachers 3 times during the school year-fall, winter, and spring-and were also observed once a month. With each videotaping and observation, a SIOP checklist was completed on the teacher. The researchers went over the SIOP checklist with the teacher to improve instruction and keep track of teacher growth using the model (Echevarria & Short, 1999).

After looking at teachers’ reflections and teaching, the researchers found four areas that the teachers had changed and grown in their teaching. The teachers were increasingly using the SIOP protocol for lesson planning and reflection, finding ways of incorporating language objectives into their lessons, and being conscience of how to assess if their students were understanding the content. Teachers were also realizing that it takes time to change their teaching and that change doesn’t happen alone; they need the support of others. The researchers were also interested to see how the students in these schools had progressed, but those data were not available at the time that they published their initial work on the SIOP model.

In addition to the original study with the Center for Research on Education, Diversity & Excellence (CREDE), the authors of the SIOP model have also conducted other studies to confirm and improve the impact of the SIOP model on student achievement. One study the authors conducted was a 2 year study done with one West Coast public school district and two East Coast school districts (Echevarria, Short, Powers, 2006). Three hundred forty six students in grades 6-8 made up the intervention group of the study. An exact number was not given, but a comparison group of students
with backgrounds and makeup similar to the intervention group was also compiled to compare student achievement scores. The teachers of the intervention were provided with training and professional development in SIOP. Besides trainings, these teachers also communicated with other teachers in the study and the researchers through emails and the teachers kept reflection journals. The intervention teachers were videotaped 3 times a year and rated according to the SIOP model to determine overall teacher change and significant development in specific areas of instructional practice (Echevarria, Short, Powers, 2006). The teachers in the comparison group were qualified teachers, but they did not receive training or professional development in the SIOP model. They were also videotaped 2 times a year and rated according to the SIOP protocol, but they did not get their scores shared with them.

As a measure for student achievement, an expository writing assessment from the Illinois Measurement of Annual Growth in English (IMAGE) was used. The same writing prompt was used for both the pre and post test measures. The results of this study indicated that even though the intervention groups scored lower on the pretest, their post test scores were higher than the comparison group. The authors of the study concluded that the SIOP model improved student scores in writing and that further research needs to be done on the effects of the SIOP model on reading and other content area test scores (Echevarria, Short, Powers, 2006).

An additional study conducted on the effectiveness of the SIOP model in raising student reading achievement was done by McIntyre, Kyle, Chen, Munoz, and Beldon (2010). These five researchers worked with a large urban school district in the Midwest to compare the reading achievement growth of EL students in classrooms with a teacher trained and implementing the SIOP model to the reading achievement growth of EL students in classrooms without a teacher implementing the SIOP model. Twenty-three classroom teachers participated in the project. The teachers taught grades ranging from kindergarten through upper elementary. To ensure the teachers participating in the project, were
implementing the SIOP model with fidelity, professional development in the SIOP model was required of the teachers. Teachers were observed at the beginning and end of the study to measure how much teacher learning was gained about the SIOP model during the study.

After looking at the teachers’ scores based on the observations using the SIOP protocol, they decided to only use the classrooms where the SIOP model was being fully implemented to measure student achievement. This would give them a more accurate and reliable measure to see if the SIOP model was the variable causing the student achievement. Seven of the twenty-three classrooms were deemed full implementation classrooms and could use their data to see if reading achievement grew. The test used to measure reading achievement growth was the reading portion of the Predictive Assessment Scales (PAS) test. When compared using a pre and post test, the control group who did not receive SIOP instruction had a loss of .80 points between the two tests while the treatment group had a gain of 5.28 points between the two testing periods.

After examining the relevant literature, with a specific focus on previously conducted studies on the SIOP method, it is apparent that there is insufficient evidence to support the use of the SIOP model in classrooms. None of the eight studies on this topic that have been identified by the What Works Clearinghouse (WWC) meet the WWC evidence standards. Thus this topic warrants further research. Consequently, the purpose of the current study was to determine the effect on the reading achievement of first grade students’ when the SIOP instructional model is implemented. The SIOP instructional model sounds like a promising approach to educating ELs in mainstream classrooms. However there is a lack of research-based evidence about the effectiveness of this strategy for reading instruction and its usage and effectiveness in the primary grades. Thus, the current study is timely and needed to fill a gap in the current research on the SIOP model.
CHAPTER 3

METHODOLOGY

Purpose of the Study

This study was a quasi-experimental, quantitative study. The purpose was to determine the effects on the reading achievement of first grade students who received reading instruction through the SIOP model as compared to first grade students in a control classroom who did not receive reading instruction with the SIOP model. A second purpose was to determine if there was a difference in the reading achievement of ELs in the classroom receiving instruction with the SIOP model as compared to ELs in the control classroom who did not receive the instruction.

Description of the Population

The school in which this study was conducted is in a small urban community in the Midwest. The subjects in this study were first grade students between the ages of six and seven. The control classroom had 24 students, consisting of 10 boys and 14 girls. The classroom consisted of 11 White, 6 Hispanic or Latino, 4 Asian, and 1 African American student. The variable classroom had 20 students; 7 boys and 13 girls. Fifteen of the students were White, 3 Hispanic or Latino, 2 Asian, and 0 African American.

Description of the District and Teachers

The experimental teacher was also the researcher of this study. The district the study was conducted in has a large population of EL students and the administration decided to start training its entire staff in the SIOP model. The district has six K-4 schools, one being a two-way immersion school, a 5-6 intermediate school, a 7-8 middle school, and a 9-12 high school. Some buildings in the district had already been trained and using SIOP, but again the district decided that everyone should be trained. The elementary school this study took place in had not been previously trained in SIOP. A cohort of teachers,
one from each grade, was selected to start receiving professional development in SIOP. They received three days of training before school started and then four half-day trainings throughout the school year. The first year they studied four components of SIOP. After each component was introduced and studied, the teachers were observed by the SIOP coach to help the implementation of SIOP in their classrooms. The second year SIOP was being rolled out, this cohort of teachers finished their training on the last four components of SIOP while the rest of the teachers became a second cohort and received three days of training before school started and then trainings throughout the year on three components of SIOP during Wednesday early outs. Cohort 1 teachers continued to be observed by the SIOP coach after each component, and were expected to have SIOP fully implemented in one content area (reading, math, writing, science, or social studies) by the end of the second year.

The experimental teacher was a teacher from this district who was trained with Cohort 1. She is also the researcher for this study. Since her district was training her in SIOP and expecting to see academic growth from this model, she decided to spend time researching and studying it. The experimental teacher had taught in the district for seven years, six of them teaching first grade. As stated previously, the experimental teacher had one year of SIOP training when the study started and continued to receive professional development every other month throughout the study.

The control teacher was a teacher from this district who was trained with Cohort 2. Because SIOP had become a district initiative, it was challenging to find a teacher who was not doing SIOP. All teachers were receiving SIOP training, but the control teacher was in Cohort 2 and when the study started, had just received 3 days of training so that was as close to a teacher not doing SIOP that could be found. The control teacher had taught in the district for nine years, two of them teaching first grade. As stated previously, the control teacher had three days of SIOP training when the study started and continued to receive professional development every other month throughout the study.
Methods and Procedures

This study was conducted over a fifteen week period. The two classrooms received two different types of reading instruction. The control classroom received reading instruction using the Houghton-Mifflin basal series, the Language Circle components of Project Read (phonics) and Framing Your Thoughts (writing curriculum), and supplemental nonfiction texts. These curricula were required by the school district. The experimental classroom received reading instruction that utilized the same materials but the instruction was delivered using sheltered instruction techniques. Each classroom received an hour and a half of reading instruction daily.

In the control classroom the curriculum was implemented by following the lessons given in the teacher’s manuals. A reading comprehension skill was focused on weekly, taught through using stories in the basal. To introduce the story, the teacher introduced a background building question to discuss with the students. The basal also highlighted vocabulary words to introduce and discuss with the students. After going over the selected vocabulary words for the text, the class then read the story. The story is usually read 2-3 times using different ways of reading such as the teacher reading the story to the students, echo reading, choral reading, listening to the story on CD, partner reading, or reading the story individually. After the story had been read, the class was brought back together and comprehension questions were gone over with the class. Then the comprehension skill was discussed and first modeled by the teacher and then practiced as a whole class activity.

In the experimental classroom the teacher still used the same stories to teach the comprehension skills. However she did not follow the lessons in the teacher’s manual. First, based on the SIOP model, the teacher introduced the content and language objectives for the lesson using student interaction. Students read the objectives with the teacher and/or picked out important words that they would be talking about in the lesson for the day. Next the teacher spent time activating prior
knowledge and building background about the comprehension skill and story. This activity varied depending on if it was the first day the skill/story was being introduced or if it was just review. This activating prior knowledge and building background took between 5-20 minutes. On occasions, activating prior knowledge/building background did take a whole lesson in itself. Sometimes a whole lesson was spent on building background on the comprehension skill being focused on in the lesson to ensure the students had the knowledge of the skill to be successful when they attempted to use the skill the next day in reading the story. Spending time building background on the actual comprehension skill was one difference between the variable and control teachers’ lessons.

After building background, the teacher then reviewed the objectives again with the students and proceeded to the modeling part of the lesson. The teacher explicitly modeled the skill for the students. Throughout the modeling, the teacher provided think alouds of what she did and gave the students opportunities to talk with each to understand what was being taught. When the modeling was completed, the teacher then gave the students opportunities to practice the skill in a group, with a partner, or independently depending on where the students were in their understanding of the skill. Throughout each entire lesson, the teacher referred back to the objectives so students were always aware of what they were focusing on. To end the lesson, the teacher provided one more way to review the objectives and skill and then assessed the students’ understanding of the skill. Figure 1 is an example of a lesson plan aimed at utilizing the SIOP method. This lesson was taught by the teacher of the experimental group and represents the typical lesson format employed during the study.
Figure 1. Sample SIOP model lesson plan

<table>
<thead>
<tr>
<th>WHAT/Content Objective:</th>
<th>Identify topic, main idea, and details</th>
</tr>
</thead>
<tbody>
<tr>
<td>How/Language Objective:</td>
<td>Tell the topic, the main idea, and the details of the story using a complete sentence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHAT/Key Academic Vocabulary:</th>
<th>• topic</th>
<th>• main idea</th>
<th>• details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplementary Materials:</td>
<td>• graphic organizer</td>
<td>• big book – Counting on the Woods</td>
<td>• HOT question</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HOW: Teacher Sequence:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduce the objective with student engagement.</td>
</tr>
<tr>
<td>2. Activate prior knowledge on what we have seen in the woods. Students share with partner and then share out to list on the board. Guide students to recognize that plants and animals live in the woods. When we look at this list, if I wanted to sort them into two groups, what two groups could I make? Then work with students to sort their ideas by plant/animal. To build background, ask students if there is anything else we could add to either group.</td>
</tr>
<tr>
<td>3. Link to past learning – Today we will be reading a nonfiction story about the woods. Do you remember the strategy from yesterday? I’ll give you a clue the strategy helps us to focus our understanding of what we read. If you still can’t remember another clue is in today’s objective.</td>
</tr>
<tr>
<td>4. Elicit from students ‘topic, main idea, and details’. Discuss what we remember about this strategy. Refer to previous day’s GO.</td>
</tr>
<tr>
<td>5. Explicitly review the strategy (identifying the Topic, Main idea, Details) – What is it? How do we use it? When &amp; why do we use it?</td>
</tr>
<tr>
<td>6. Review objective. Today as we read we will work to identify the topic, main idea, and details.</td>
</tr>
<tr>
<td>7. To help us with our thinking, we will use this question (post on the board) – “Using the book, can you tell me about the topic (main idea, details)?” This is an important question because it helps us to remember to use the book to look for information. To begin, we are looking for the topic. So we will ask “Using the book, can you tell me about the topic?”</td>
</tr>
<tr>
<td>8. Think-aloud “how” you would predict the topic. Using our question, I will think “Using the book, can you tell me about the topic?” Guide students to predict the topic. Talk about how students make their predictions.</td>
</tr>
<tr>
<td>9. To help me understand my reading, I start thinking about what the main idea might be? Refer to HOT question. Using our important question, I will think “Using the book, can you tell me about the main idea?” I know a main idea is one sentence that tells what I learned about the topic. As I read, I know that the topic is “The Woods”. I know plants and animals live in the woods. Guide students to predict the main idea.</td>
</tr>
<tr>
<td>10. When we read this book about the woods, we know that plants and animals live in the woods. To see if the book matches our thinking, let’s use a sticky note to identify those two groups as we read.</td>
</tr>
<tr>
<td>11. Teacher reads aloud. Stopping to clarify understanding. Stopping to identify plant/animal with sticky note.</td>
</tr>
<tr>
<td>12. To check our prediction, (ask) “Using the book, can you tell me about the topic?” Remind students how we identify the topic. Using the HOT question, guide students to use the response frame. Talk to your partner. Share out. Discuss possible topics to check prediction. Note the topic on the GO, orally using the response frame.</td>
</tr>
<tr>
<td>13. To check our prediction, (ask) “Using the book, can you tell me about the main idea?” Let’s check our prediction. Review how we identify the main idea. Remember the topic is “The Woods.” What did we read about the woods? What were the things we watched for as we read? Guiding students to remember the use of the sticky notes. Using the HOT question, guide students to use the response frame. Talk to your partner. Share out. Agree on a main idea to write on GO, orally using the response frame.</td>
</tr>
<tr>
<td>14. Reference the objective. So far we have found the topic. Chorally use the HOT’s question to ask and chorally respond regarding the topic. Then, we found the main idea. Chorally use the HOT’s question to ask and chorally respond regarding the main idea. Now we need to find the details.</td>
</tr>
<tr>
<td>15. To help me understand more about the main idea, I need to find the details. Using our question, I will think “Using the book, can you tell me about the details?” This time as I read, I want to name the detail on each page. I will name the plant or animal on that page.</td>
</tr>
<tr>
<td>16. Re-read together as an echo read. Stopping on each page to identify the details by naming the plant or animal, use the response frame.</td>
</tr>
<tr>
<td>17. Ask, “Using the book, can you tell me about the details from the story?” Guiding students (using the response frame if needed) to name the plants and animals to list on the GO.</td>
</tr>
<tr>
<td>18. Review strategy connecting back to the CO/LO. What is the strategy? What was the topic, main idea, details of this book? Students take turns asking the HOTS question and responding by telling the topic, main idea, details. Why did we use this strategy with this book? (Because it is a NF book and we needed to understand the information.)</td>
</tr>
</tbody>
</table>
The Individual Reading Inventory (Houghton Mifflin, 2003), a measure of reading achievement, was administered to students in each classroom at the beginning and end of the 15 week period. This instrument is described in detail in a subsequent section. The results of the Individual Reading Inventory were used to determine if there was a statistically significant difference between the two classrooms. A comparison was made between the two classrooms. A second comparison was also made between the EL and non-EL students.

Instrumentation

The Individual Reading Inventory (IRI) was used to measure the reading achievement of the students in this study. The IRI was given to each student individually by their respective classroom teacher two times during the study. It was given once in September to collect pre-intervention data and then once again in January to collect data to measure the reading achievement of the students. With the IRI, students are asked to read short leveled passages. The test administrator records the rate at which the student read the passage and the number of errors made. After the student reads the passage, the administer then asks the student to retell the story in his/her own words. After the retelling, the administrator then asks 5-6 comprehension questions about the passage. The data from these three areas are used to assign the student a score in the areas of fluency, summary of the passage, and comprehension. If the student scores above benchmark in both areas of fluency and comprehension, he/she moves on to the next higher level. If the student scores at benchmark on one or both of the areas, he/she stays at that level. If the student scores below benchmark on one or both of the areas, he/she is tested at the next lower level. According to Houghton Mifflin, the first grade benchmarks for this assessment are reading at a level CD in September and reading at a level EFG in January.

Method and Data Analysis

The current study was conducted to answer the following two questions:
1. What effect does the implementation of the SIOP model in a first grade classroom have on reading achievement?

2. What effect does the implementation of the SIOP model in a first grade classroom have on the reading achievement of EL students in the class?

These questions were studied by implementing SIOP strategies in the teacher-researcher’s classroom. During reading instruction the teacher used a SIOP lesson plan to deliver instruction to her students. A common difficulty found in studies using the SIOP model is ensuring that the teachers are implementing the SIOP model with fidelity. To help ensure that this study implemented SIOP with fidelity the teacher-researcher worked closely with a SIOP coach. The SIOP coach had been providing SIOP training to the teacher-researcher the previous year and had conducted 4 observations of the teacher-researcher. The year the study was conducted the SIOP coach continued to provide SIOP training and came to observe every other month. On top of these scheduled observations, the SIOP coach conducted unannounced monthly observations using the SIOP checklist to ensure all the features were included in the lessons. These unannounced observations were put into place to keep the teacher-researcher accountable for implementing the SIOP model with high levels of fidelity.

The measure used to determine if the SIOP model had an effect on reading achievement was the Individual Reading Inventory (IRI). This assessment measures decoding skills, comprehension and assists the test administrator in assigning a reading level to the student. This test was administered early in September to collect pre-intervention data and then again at the end of the study in January to determine what effect was made on reading achievement. This assessment was chosen because the teacher-researcher’s district already required it and it contains both a fluency measure and a comprehension measure to get a fuller picture of reading achievement. As with much research in
education it would be difficult to determine if any effect in reading achievement can be directly related to SIOP or to other factors going on in the classroom. To address this problem the teacher-researcher used another first grade classroom as a control group. The two classrooms had about the same amount of students, same amount of ELs, same amount of teaching experience, same curriculum, and same amount of time for reading instruction. The only discernible difference was different was the implementation of the SIOP model in the experimental classroom and the control classroom teacher not using the SIOP model. This helped conclude that any differences in scores were due to the implementation of the SIOP model.
CHAPTER 4

RESULTS

The overall goal of this research study was to find effective teaching practices for English learners (ELs). This study looked in particular at one method currently being used, Sheltered Instruction Observational Protocol (SIOP). The purpose of this study was to determine the effect of implementing SIOP during reading instruction on first grade reading achievement. The study looked at the effect SIOP had on all students in the first grade classroom and then at only the ELs.

Data were collected at two points during the study. The Individual Reading Inventory (IRI) was given in September before SIOP instruction was started and then again in January after students in one classroom received SIOP instruction during reading for 15 weeks. Data were also collected monthly on the experimental teacher through unannounced visits by the school’s SIOP coach to monitor if the teacher was implementing the SIOP approach with fidelity. The teacher was given a rating using the SIOP checklist. In this section, results of the reading inventories and the teacher’s SIOP ratings will be reported.

Four paired t-tests were used to compare the differences between the control classroom and experimental classrooms’ scores on the pre and post scores on the Individual Reading Inventory. The Individual Reading Inventory gives the tester a letter reading level. In order to make the data quantifiable, a number was assigned to each letter reading level. Table 2 contains a chart that shows the correlation of what reading level the number score stands for.
Table 2

*Correlation of reading levels on the Individual Reading Inventory to numbered value*

<table>
<thead>
<tr>
<th>Reading Level</th>
<th>Numerical Value</th>
<th>Grade Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>pre-AB</td>
<td>0</td>
<td>non-reader</td>
</tr>
<tr>
<td>AB</td>
<td>1</td>
<td>kindergarden</td>
</tr>
<tr>
<td>CD</td>
<td>2</td>
<td>early 1st grade</td>
</tr>
<tr>
<td>EFG</td>
<td>3</td>
<td>middle 1st grade</td>
</tr>
<tr>
<td>HI</td>
<td>4</td>
<td>late 1st grade</td>
</tr>
<tr>
<td>J</td>
<td>5</td>
<td>early-mid 2nd grade</td>
</tr>
<tr>
<td>KL</td>
<td>6</td>
<td>late 2nd grade</td>
</tr>
<tr>
<td>MN</td>
<td>7</td>
<td>early-mid 3rd grade</td>
</tr>
<tr>
<td>OP</td>
<td>8</td>
<td>late 3rd grade</td>
</tr>
<tr>
<td>QRS</td>
<td>9</td>
<td>4th grade</td>
</tr>
<tr>
<td>TUV</td>
<td>10</td>
<td>5th grade</td>
</tr>
<tr>
<td>WXYZ</td>
<td>11</td>
<td>6th grade</td>
</tr>
</tbody>
</table>

The first test compared all students in the experimental classroom to determine whether or not students in this classroom scored significantly better on the winter IRI than they did on the fall IRI. Students in the experimental classroom received the SIOP instruction. The mean score on the fall IRI for students in the experimental classroom (n=20) was 2.35 (SD=1.3) and the mean score for the winter test (n=20) was 3.95 (SD=1.5) (See Table 3). In terms of reading levels, the students in the experimental classroom went from reading at an early first grade level to a late first grade level. Results from the t-
test indicate that students in the experimental classroom scored significantly better on the winter IRI than they did on the fall IRI, $t(19)=-10.51, p<.001$.

Table 3

*Mean IRI Scores for All Students in the Experimental Class*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Number of Students</th>
<th>Standard deviation</th>
<th>Standard deviation error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall</td>
<td>Winter</td>
<td>Fall</td>
<td>Winter</td>
</tr>
<tr>
<td>All students</td>
<td>2.35</td>
<td>3.95</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

A second paired-samples t-test examined EL students in the experimental classroom to determine whether or not the EL students in this classroom scored significantly better on the winter IRI than they did on the fall IRI. Again, these EL students received SIOP instruction. The mean score of EL students ($n=6$) on the fall IRI was 1.33 (SD=.5) and the mean score of EL students on the winter IRI ($n=6$) was 2.67 (SD=.8) (See Table 4). In terms of reading levels, the EL students in the experimental classroom went from reading at a kindergarten level to an early first grade level. Results from the t-test indicate that EL students in the experimental classroom scored significantly higher on the winter IRI than they did on the fall IRI $t(5)=-6.33, p<.001$.

Table 4

*Mean IRI Scores for All Students in the Experimental Class*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Number of Students</th>
<th>Standard deviation</th>
<th>Standard deviation error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall</td>
<td>Winter</td>
<td>Fall</td>
<td>Winter</td>
</tr>
<tr>
<td>All students</td>
<td>1.33</td>
<td>2.67</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>
A t-test was also conducted to determine if there was a statistically significant difference in the achievement of all the students in the control classroom from the fall to winter IRI. This is the classroom that did not receive SIOP instruction. The mean score for the fall IRI was 2.00 (SD=1.4) and the mean score for the winter IRI was 3.29 (SD=2.2) (See Table 5). In terms of reading level the students in the control classroom went from reading at an early first grade level to a mid first grade level. Results from the t-test indicate that students in the control classroom scored significantly higher on the winter IRI than they did on the fall IRI $t(23)= -5.13, p<.000$.

**Table 5**

*Mean IRI Scores for All Students in the Control Class*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Number of Students</th>
<th>Standard deviation</th>
<th>Standard deviation error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall</td>
<td>Winter</td>
<td>Fall</td>
<td>Winter</td>
</tr>
<tr>
<td>All students</td>
<td>2.00</td>
<td>3.29</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

A final t-test was conducted to determine if students in the control classroom scored significantly better on the winter IRI than the fall IRI. Again these EL students did not receive SIOP instruction. The mean score of EL students on the fall IRI was 1.13 (SD=.354) and the mean score of EL students on the winter IRI was 1.63 (SD=.744) (See Table 6). In terms of reading level, the EL students in the control classroom went from reading at a kindergarten level to an early first grade level. Results from the t-test indicate that EL students in the control classroom scored significantly higher on the winter IRI than they did on the fall IRI $t(7)= -2.65, p<.033$. 
Another area where data were collected was with the fidelity of the implementation of the SIOP model in the experimental classroom. A SIOP coach came in unannounced three times during the 15 week study and observed the experimental teacher’s lessons. She then rated the teacher’s lessons using the Sheltered Instruction Observation Protocol. The protocol consists of a checklist of all 30 features of SIOP. The coach then watches the lesson to see if all the features are observable and included in the lesson. Each feature is then given a score ranging from zero to four. A 4 means the feature was highly evident in the lesson, a 2 means the feature was somewhat evident in the lesson, and a 0 means the feature was not evident at all in the lesson. The SIOP coach always met with the experimental teacher after the lesson to ask some questions about the features that might have taken place during the planning of the lesson to make sure they were included and then gave the teacher feedback about the lesson.

There are a possible 120 points on the observation protocol. A score of 120 would mean all 30 features of the SIOP model were highly present in the lesson. There are four features that sometimes are not available in a lesson so those features could be marked NA. If that happens, those features aren’t counted against the teacher; you just subtract four points for each NA given from 120 and then that becomes the total points possible for that lesson. The first lesson the SIOP coach observed the experimental teacher received a score of 108/108 (there were three NAs in this lesson) for a percentage

Table 6

Mean IRI Scores for EL Students in the Control Class

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Number of Students</th>
<th>Standard deviation</th>
<th>Standard deviation error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall</td>
<td>Winter</td>
<td>Fall</td>
<td>Winter</td>
</tr>
<tr>
<td>EL</td>
<td>1.13</td>
<td>1.63</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>
score of 100%. The second lesson the experimental teacher received a score of 113/116 (there was one NA in this lesson) for a percentage score of 97%. The third lesson the experimental teacher received a score of 108/112 (there were two NAs in this lesson) for a percentage score of 96%. These scores indicate that the SIOP approach was consistently implemented with fidelity.
CHAPTER 5

SUMMARY AND DISCUSSION

As explained in previous chapters, this study was a quasi-experimental, quantitative study. The purpose of this study was to determine the effect of implementing SIOP during reading instruction on first grade reading achievement. The study compared the reading scores of all students in the both the experimental and control classrooms, and then just the reading scores of the EL students in both classrooms.

The study was conducted for 15 weeks in two first grade classrooms. The control classroom received reading instruction as had been taught previously. The experimental classroom received reading instruction taught using the SIOP model. To help ensure the experimental teacher was teaching the SIOP model with fidelity, a SIOP coach observed her unannounced 3 times during the 15 weeks and rated her lessons on the SIOP rating scale.

To determine the level of reading achievement, the Individual Reading Inventory (IRI) was used to determine the amount of growth. The IRI measures both fluency and comprehension. The test was administered in September before SIOP instruction began and then in January after the 15 weeks of SIOP instruction. T-tests were run to determine if significant growth occurred in each classroom.

The T-tests showed there was a statistically significant amount of reading achievement in four areas. The following section of the paper will go through each area of growth and identify reasons why this growth may have occurred. The first area that showed statistically significant growth was in all the students in the experimental classroom. This was the classroom that received the SIOP instruction. The authors of SIOP have said that sheltered instruction is good teaching for all students, not just ELs (Echevarria, Vogt, and Short, 2008). Even though this wasn’t an area the study was looking for growth in,
it showed that all students in the experimental classroom benefitted from the SIOP instruction. This could be because in some respects first grade students are like language learners. Much of the first grade curriculum is about learning how to read, phonics instruction, and the structure of the English language which are areas ELs are learning as well. So it would be plausible that SIOP instruction would benefit all learners in a primary classroom.

The second area that showed statistically significant growth was in the EL students in the experimental classroom. Again this was the classroom that received SIOP instruction. As SIOP is a teaching method specifically for ELs, this matches other studies conducted on SIOP that show EL students improving with SIOP instruction (McIntyre, etc. 2010, Echevarria & Short, 1999, Echevarria, Short, Powers, 2006). While there are studies showing SIOP improving achievement scores, there have not been many SIOP studies conducted in primary classrooms. This study seems to indicate that SIOP instruction was effective in this lower elementary classroom.

Another area that showed statistically significant growth was in all the students in the control classroom. This was the classroom that did not receive SIOP instruction. Although this was an area where the study wasn’t looking for growth, it is still one to note. It was hypothesized that the students in the experimental classroom would grow more than the students in the control classroom; however it is unreasonable to expect the control classroom to make no reading growth at all. There is expected to be growth in reading achievement in a first grade classroom. First grade is a monumental year in reading development and no matter what methods are being used, growth should be seen in the area of reading achievement.

The final area that showed statistically significant growth was in the EL students of the control classroom. Again this was the classroom that did not receive SIOP instruction. This growth could be accounted for the same reason discussed in the above paragraph. In addition, another reason for the
growth in the EL control classroom students might be that the control teacher did have to include some parts of SIOP into her reading lessons. This factor was out of the researcher’s control. The control teacher was told at the beginning of the school year when the study was being designed that she only had to include SIOP in her math instruction. Even though she was being trained in some features of SIOP she was only going to be required to implement them during her math instruction which wouldn’t affect the quality of the research. Then the administration decided to require all teachers to incorporate SIOP into their reading lessons as well. While the control teacher did have to teach some lessons incorporating the SIOP features of Lesson Preparation and Building Background, the experimental teacher taught all of her reading lessons using all the features of SIOP. So although the control group received some instruction that was consistent with the SIOP approach, it was not as closely aligned with the approach as the instruction that the students in the experimental classroom received.

As the experimental classroom teacher is also the teacher-researcher, this study has some personal implications for her own teaching. The teacher-researcher’s school is now in its third year of implementing SIOP and no longer has a SIOP coach in their building. The teacher-researcher is now expected to implement SIOP in all areas of her teaching and will be a “coach” to help train the rest of the teachers in her building, especially her first grade team. Throughout her training in SIOP and then conducting this study, the teacher-researcher felt like she grew as an educator. She felt it was the best she had ever taught reading and was excited to see that the results of the study echoed her gut feeling that this was quality, effective reading instruction. A challenge for the teacher-researcher this year is learning how to incorporate SIOP into a workshop approach to teaching reading. She is piloting this teaching method in her classroom while still being expected to incorporate all the features of SIOP.

There were some limitations to the results of this study. First the IRI is not a very sensitive instrument. Also the sample size was small. Only two classrooms were used for a total of 44 students.
Even though there were six elementary schools in the district, only two did not have their entire teaching staff trained in the SIOP model. From the teachers to choose from in those two buildings, it was hard finding teachers who had about the same teaching experience and style of the teacher researcher. Therefore, only two classrooms were involved in the study and attributed to the limitation of a small sample size.

This also leads to two other limitations. First of all, the researcher of this study was also the experiment classroom teacher. Second of all, teacher differences are also a limitation. Even though the control classroom teacher was picked because she had roughly the same amount of teaching years and experience as the experiment classroom teacher, their teaching styles varied. This could have had a contributing factor to the differences in reading scores and is a difficult limitation to control for.

There are a couple different areas where additional research would be beneficial. As the review of literature showed, there have not been many research studies conducted on SIOP outside of the realm of the designers of SIOP. To demonstrate the effectiveness of SIOP, more studies should be conducted around it. Another area that could be further researched is using SIOP in lower elementary grades. This study showed using SIOP in a first grade classroom did make a statistically significant improvement in reading scores for the students in that room. Other research is needed to see if those findings would be true in other studies and situations.
REFERENCES


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