Improving phonological awareness and decoding skills in a struggling reader

Ryan W. Kroeger

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Improving Phonological Awareness and Decoding Skills in a Struggling Reader

By

Ryan W. Kroeger

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ABSTRACT

The purpose of this case study was to assess various phonological awareness and decoding interventions on a young struggling reader. The selected student was a second grade student from a charter school in Milwaukee, WI. The study began with a pre-assessment on the student’s Sight Word Efficiency and Phonemic Decoding Efficiency. After the pre-assessment, a three-week long intervention session was given to the student. This intervention session included sight-word recognition skills, letter-sound relationships, blending and segmentation skills as well as reading fluency. These interventions were given through various forms such as flash cards, hands-on activities and technology. At the end of each intervention session, the student was informally assessed on the number of sight words recognized and her overall reading fluency. After the three-week intervention cycle was complete, a post-assessment was given. The results showed that the student improved on their Sight Word Efficiency, Phonemic Decoding Efficiency, Sight-Word Recognition and overall reading fluency.
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CHAPTER ONE: INTRODUCTION

Introduction

The present case study examines improving phonological awareness and decoding skills within a struggling reader. Phonological awareness and decoding skills consist of a student’s ability to recognize letter-sound relationships, word patterns, vowel and consonant relationships, digraphs and segmentation. Phonological awareness and decoding skills are essential for beginning readers to become a fluent and comprehensive reader. Therefore, it is extremely important that educators and researchers are aware of the different strategies and procedures that can help benefit a child’s phonological awareness and decoding skills, especially at an early age.

The following thesis contains five chapters that discuss various points of the case study that was performed with a single student. The chapters include an introduction to the study, a review of literature, procedures for the study, results, and a conclusion. The first chapter contains two sections: (a) an introduction to the student that participated in the case study, and (b) a discussion of the Common Core State Standards and their connection to this particular case study. In order to maintain confidentiality, the student that participated in this case study will be referred to by the pseudonym, Faith Jackson.

Profile of the Student

Faith Jackson is the student that I will be conducting my study on throughout the month of July in 2013. She will be a second grade student in the fall of 2013 at a
Phonological Awareness and Decoding Intervention

charter school in Milwaukee, Wisconsin. She has attended this charter school for the past two years. Faith has lived her entire life in the city of Milwaukee, and she lives with her mother just a few blocks away from the charter school.

Before Faith was enrolled at this particular charter school in the fall of 2012, she attended kindergarten at a public school, also located in Milwaukee, WI. At this public school, Faith was given an Initial Individualized Education Plan (IEP) for speech and language difficulties (SD). Faith had a hard time pronouncing some of the letters, and often times had a lisp and talked in very one or two word sentences. However, after she moved past kindergarten and into first grade at her current charter school, she was re-assessed for her IEP and was determined that she did not have an identified disability and no longer qualified for special educational services. However, she still receives additional support from the special education teacher when a task or assignment is causing frustration.

Throughout her first school year at the present charter school, she often worked with the Special Education teacher in the area of reading because of difficulties with decoding words and sounds, sequencing events in a story and overall comprehension of texts. During her first grade year, her teachers identified Faith as a very visual learner, who likes to look at pictures and take picture walks before reading a story. Faith is able to point out pictures and words when asked about a text, but struggles to verbalize or re-tell a story. Overall, Faith’s district-wide assessments show that Faith is currently reading below the expected level after first grade. Faith’s teachers in first grade identified math as an area of strength
for Faith, and they surmise that being a visual learner helps her understand the new concepts being taught in math.

Since the beginning of Faith’s formal education, behavior has been a constant discussion point in her evaluations, as reported by her previous teacher. Faith does not show any negative behavior towards peers or adults, however, she often communicates in a very immature manner for her age. When Faith was younger, she often used to have temper tantrums and would cry and scream if she didn’t get her way. It was also noted that Faith can be very shy when she first meets a new adult, and that it usually takes a few days for her to open up and fully communicate with an adult.

Overall, Faith’s major academic delay is the area of reading and more specifically in phonemic awareness, decoding, sequencing and overall comprehension. Although her district-wide assessments show that she is behind the “expected level”, her scores are very close, and I believe with the proper interventions and practice, she will be able to read on grade level very shortly. It was not possible to attain the actual assessment data from her district-wide assessments, and this information is based off of her previous teacher’s description.

**Connection to the Common Core State Standards**

Faith is a struggling reader in her general education classroom, and often works in a small group setting with a special education teacher. Although Faith does not have an Individualized Education Plan (IEP), she still receives additional support in order to help her stay up to task with her peers. As a result of her additional needs in reading, a unique intervention was developed so Faith could
build skills in her phonological awareness and decoding skills. Under the Common Core State Standards (2013), the standard CCSS.ELA-Reading: Foundational Skills.RF.2.3, state that readers should “know and apply grade-level phonics and word analysis skills in decoding words.” The Common Core State Standards (2013), standard CCSS.ELA-Reading: Foundational Skills.RF.2.4, also states that readers should “read with sufficient accuracy and fluency to support comprehension.” These two standards are greatly supported throughout this case study, as the interventions are aimed to better Faith’s skills in decoding as well as reading fluency. Faith will be an upcoming second grade student in the state of Wisconsin, and therefore, these standards apply to her.

Conclusion

Faith Jackson is an upcoming second grade student that struggles with the basic skills of reading: phonological awareness and decoding skills. Because these two aspects of reading are extremely important to building the skills necessary to becoming a successful reader, an intervention was given to Faith to build upon these particular skills. This unique individualized intervention was given to Faith over a three-week period of time during summer school. Practicing sight-word recognition, blending, letter-sound relationships and fluency were particular strategies that were performed throughout the intervention. Hopefully, with constant practice and repetition, these skills can be mastered by Faith and her overall reading ability with increase.

In the next chapter, a review of literature will be presented surrounding three topics: Reading interventions in general, phonological awareness and
decoding interventions and educational technology interventions. This review of literature will help support and design the particular intervention strategies that will be used with Faith. This review of literature is demonstrates that the skills and procedures taught to Faith are based off of best practices that have already been researched and studied.
CHAPTER TWO: REVIEW OF LITERATURE

Introduction

In this chapter, the discussion and analysis of 12 different studies will be presented in order to gain a better understanding of the overall interventions being done with students who are labeled as struggling readers and some of the separate studies being done for early readers who are struggling with phonemic awareness and decoding skills. Reading interventions have been an extremely important aspect of education since researchers and educators discovered the correlation of reading to overall academic success. When students enter formal schooling at four or five years of age, the education system is quick to identify if a student is a struggling reader based off of various assessments that can be given. The importance of these interventions are discussed throughout this chapter with various studies showing how, given an allotted time, students who are struggling readers can increase their overall reading ability significantly. Although reading interventions have been a staple to education for the past thirty years, deciding what types of interventions and what type of skills they should focus on has been a topic of concern for parents, students, educators and researchers. This chapter will also look at various interventions that focus on phonemic awareness and decoding skills for students who are struggling readers as well as how technology can assist and influence their future reading success.

Reading Intervention Studies
In this portion of Chapter Two, five different studies will be presented that look at various influences of reading success for students who are labeled as “struggling readers.” This portion discusses the overall importance of reading interventions in our school, how reading scores at an early age can be a predictor of overall academic success and how a student’s disability can relate to their reading achievement. These different factors of reading have been influential for educators to determine when and what to look for when deciding if a student needs additional support in the area of reading.

Early readers must develop and master many component skills in order to become proficient readers by the time they are expected to analyze a text. Researchers and practitioners have usually conducted studies to verify the importance of a certain skill. However, the research conducted by Hudson, Torgesen, Lane and Turner (2010) interpreted a set of data on the most instrumental skills to figure out which one relates more to proficient readers verse non-proficient readers. Phonemic blending, letter sounds, phonograms, decoding, single-word reading, reading comprehension and text reading were the main skills in focused during this study. Hudson et al. (2010) tested not only struggling readers but proficient and advanced readers in order to figure out which skills were present.

Because a pre and post test were not used in order to figure out the significance of an intervention, they used a Structural Equation Model in order to determine the skill range of readers. Multiple tests were used throughout the study in all of the reading skills mentioned earlier to see how proficient second graders were in those categories. From the data that was collected, they were able to link those scores to a step by step chart that showed the importance of each skill and how each skill is related to another.
The sample for this study was comprised of all second grade students who were located throughout five schools in north Florida. Ninety-seven boys and 101 girls contributed to the study, and they combined to have an average age of 8 years and 5 months. The students were also comprised of 47% Caucasian, 38% African American, 4% Asian/Pacific Islander, 3.5% Hispanic, 4.5% multiracial, .5% American Indian and 2.5% did not report. Because this study interpreted data from not only struggling readers, it is important to note that 75% of the students were not listed with a disability, 14% had speech impairment, 7% had language impairment and 2.5% were labeled as having a specific learning disability. According to the study, 98% of the students were competent speakers of the English language.

Because this particular study did not involve an intervention process, the procedures for testing the different reading skills were lengthy and included a lot of different assessments. All of the assessments that were given took place in small group settings in separate environments from the regular education classrooms. All of the measurements were given at the end of the second grade during the last three weeks of school and given by graduate students from a local university who were taking education classes. For the reading comprehension portion of the study, the Gray Oral Reading Test, 4th Edition (Weiderholt & Braynt, 2001) and Woodcock-Johnson Test of Cognitive Abilities (Woodcock, 2001) were used. Selected reading passages were used for second graders that allowed them to answer comprehension questions about the passage. For the reading fluency portion of the assessments, the Dynamic Indicators of Basic Early Literacy Skills, 6th Edition (DIBELS; Good & Kaminski, 2002) as well as the Gray Oral Reading Test, 4th edition were used. Students were asked to read passages orally from
both assessments and the passages were to be progressively more difficult. To test decoding fluency, the Test of Word Reading Efficiency (Torgesen et al., 1999) was given and asked students to read as many nonsense words as possible within a given time frame. For phonemic blending, letter sound fluency and rapid automatizes naming, created assessments were given that were consistent for all students partaking in the study.

The results from this study were extremely fascinating for a number of reasons. It was interesting to see the linkage between all of these different skills and how necessary it is to start with phonemic awareness and decoding skills in order to build on the other skills that are necessary to be a “proficient reader.” The results showed the effects of phonemic awareness and letter-sound relationships play the most instrumental role to develop decoding skills. These decoding skills are the most essential skills to build and develop for early readers according to the study. Not only does this study prove that phonemic awareness and decoding skills represent the two most important skills for early readers, but it also draws comparisons to all of the reading skills tested in the study. According to the study, elements of decoding fluency (phonemic blending fluency, letter sound fluency and phonogram fluency) are the base to a set of knowledge that leads to elements of text reading fluency (single word reading and decoding fluency).

The conclusions of this study show many interesting relationships among some of the most discussed reading skills in early readers. Although a lot of studies show the importance of a certain skill, this study shows the relationship between all of the skills and how they build upon each other in order to create a proficient reader that can read fluently and comprehensively.
The evidence for intervening with beginning students is overwhelming when it comes to reading skills. However, the findings in the study by Roberts, Wexler, Vaughn, Fall, Pyle and Williams (2012) show that interventions with older students who struggle with word-level skills also benefit from systematic instruction in basic reading skills such as phonemic awareness and decoding. As children, no matter the age, improve on their word-level fluency, greater effort can be devoted to understanding what they are reading. As basic skills begin to build, less effort is needed by the student in order to identify words, allowing the student opportunities to build on comprehension strategies. Practice in basic reading skills (phonemic awareness and decoding) benefit all struggling readers no matter their reading level or their age.

In this study, students were given a pre-test with the Test of Word Reading Efficiency (TOWRE) (Torgesen, Wagner, & Rashotte, 1999), AIMSweb Maze (Maze-CBM, 2009) and the Gates MacGinitie Reading Test (Gates & MacGinitie, 2000). This pre-test was given within the first month of school when the interventions began and the post-tests were given during the last month of the school year. Trained project staff who were giving the interventions gave the students the assessments. All three of these assessments tested the knowledge of students with word identification, multi-syllable words, reading fluency and reading comprehension.

Three high schools in a urban southwestern US district participated in the study with approximately a third of the sample from each high school. In the sampled schools, approximately 43% of the students were Hispanic, 25% White, 20% African American, 8% Asian and 4% Native American or biracial. In addition to the diverse group of students tested, 43% of the students are economically disadvantaged. Of the 375
participating students, 66 received special education services, and 70 were English Language Learners.

Students who participated in the study worked in small group settings of 10 students or less once a day for 50 minutes. The intervention process occurred in place of an elective such as art, music or athletics. Students were then given an eight day instructional units to address reading comprehension and reading fluency. These units were aligned with the IES Adolescent Literacy Practice Guide (Kamil, Borman, Dole, Salinger, Torgesen, 2008) which involved scripted lessons to be given by the instructor. These reading units involved a lot of teacher led instruction in the beginning which became student led discussions about texts throughout the last four instructional units. This was meant to be so that students were engaged in the texts they were reading and having constructive conversations about the readings. The students were randomly selected into one of four conditions: (1) reading intervention only, (2) dropout prevention only, (3) reading plus dropout prevention intervention and (4) a business as usual comparison to the regular curriculum. All of these students were given the intervention during their 9th grade year of schooling. These different intervention groups dealt with various difference texts and the dropout prevention intervention used high school graduation material for their reading texts.

Overall, the findings of the study showed that each intervention group increased their phonemic awareness, decoding, fluency and comprehension skills. However, groups 1, 2 and 3 outperformed the control group (4) in each reading skill. This was predicted by Roberts et al. (2012) because even the control group was given an extra 50 minutes of intervention compared to students who did not participate. One important part
of the results to mention is that there was no difference in the increase of reading skills for the students who participated in the study that were labeled as special education students or English language learners.

The findings of the study showed the importance of an intervention time for struggling students. Additional time to focus on reading, dropout prevention awareness and more curriculum demonstrates the importance of giving struggling students the ability to work on individualized learning difficulties. Even if there is a wide range of reading deficiency in a student, a small group setting can benefit that student in phonemic awareness and decoding and will lead to better reading fluency and comprehension. The overall message of the study is to give our struggling students additional time when it comes to education, because they need to be involved and participating in order to make strides towards their education.

The difference between an early successful reader and an early struggling reader is a problem for all educators and parents no matter the skin color, socio-economic status or part of the world. Creating an environment conducive for early readers to build skills that will enhance their willingness to read, stimulate positive reading growth, limit the amount of negative side effects from experiencing reading failure and the development of reading strategies and abilities are all essential in the process of a successful reader. The study conducted by Olofsson and Niedersoe (1999) demonstrate not only the importance of building reading skills at an early age, but also the necessity to involve reading in all aspects of children's lives.

Most families build reading skills before their children enter school so that they are prepared and ready for the fast pace of school learning. Olofsson et al. (1999) wanted
to see if there was a significant connection between early language measures and reading skill in the first four years of schooling. They also wanted to see if the amount of literature in a home, oral reading by parents and the amount of trips to educational facilities influence the reading rates of young readers.

At the end of the fourth grade, 481 children on the Danish island of Bornholm were given group tests for sentence reading. At random, language and speech data from 205 of these students was used from the speech therapist's screening at age 3. The researchers were also given language comprehension and linguistic awareness data from the students’ kindergarten year (age 6), as well as decoding assessments that were given in grades 2, 3, and 4. The students were also given a questionnaire that was sent to their parents in order to gain information on the amount of literature children are receiving at home.

Because this study was not given as a pre and post-test intervention, the study reports on measures from seven sessions; the first session was given at the students’ homes, the second and third in the kindergarten, and the last four sessions in the children's current school. The data collected from these seven sessions were analyzed using path analysis (Duncan, 1975; Werts & Linn, 1970). The only other relevant piece of information that was received from this data was the questionnaire that was sent out to the parents of the students. The parents were asked to answer questions on a rating scale of prevalent to not prevalent on the amounts of different literature is currently in their home (newspapers, chapter books, magazines, directions, etc.). In the sessions where data was collected on reading skills, students were assessed in five different areas in kindergarten and again in the fourth grade. Those five different skills were vocabulary,
Phonological Awareness and Decoding Intervention

phonology, speech comprehension, sentence construction and morphology. The assessments were all created by Niedersoe (1986a, 1986b, 1990).

The results from looking at the difference between the student's kindergarten assessments, fourth grade assessments and the questionnaire sent home, was that there is a significant relationship between preschool language variables and word decoding and sentence reading ability in school. The students who scored the highest scores in kindergarten were testing with proficient or above levels when they entered the fourth grade. The study also proved a small correlation between the amount of literature in the students’ households and their overall reading abilities. Students who had parents that reported a “large” amount of literature in the house and frequent stops at educational facilities (museums, libraries, etc.) scored within the top 90% of students in the school. According to the study, early language abilities in kindergarten students seem to affect reading acquisition, and these effects are both indirect and direct. Because students are not given the proper reinforcement from home, they are only operating through kindergarten language awareness skills that are being taught at school.

We can learn that in order to give our children the best chance of becoming a proficient reader once they reach the fourth grade, we must allow them to be surrounded by literature and to build on the most basic of reading skills (phonology and decoding). It is interesting to see the direct relationship between students who have mastered these basic skills at an early age to being able to read fluently, and with comprehension, once they become 11 and 12 years old. It is also important to note that students who have not mastered these skills at an early age, do not automatically fall into the “struggling readers” label. These are the students who need direct interventions to build upon those
skills that were not taught or given to them at home. The importance of the first few years of schooling is highlighted and its importance is emphasized in this study.

Struggling readers are often identified at an early age because of their lack of decoding and prior knowledge when reading a text. However, the study by Rydland, Aukrust & Fulland (2010) takes a different look at decoding, vocabulary and prior knowledge when it comes to learning a new language. Rydland et al. (2012) decided that they wanted to see if the lack of knowledge in decoding and vocabulary was as influential as prior knowledge when it came to the ultimate goal of reading, comprehension. A person is often known as a successful reader when they can read high leveled texts with fluency and comprehension. However, early struggling readers and language-minority students both struggle with decoding and vocabulary when it comes to the words they are reading. Rydland et al. posed the question: Is there a relationship between early struggling readers that speak English and language-minority students (students whose first language is not Norwegian) when it comes to learning decoding, vocabulary and prior knowledge in reading?

In order to assess the students who were not fluent in speaking Norwegian, multiple tests were given to test vocabulary, word decoding and passage comprehension. The British Picture Vocabulary Scale 2nd edition (Dunn, Dunn, Whetton, & Nurley, 1997) was given to assess the students’ vocabulary. The Test of Oral Word Reading Efficiency-Form A (TOWRE-A) (Torgesen et al., 1999) was given to test word decoding and the Woodcock Reading Mastery Test-R, Passage Comprehension (Woodcock, 1989) was given to test reading comprehension. Although the Picture Vocabulary and the
TOWRE-A were given before the interventions, they were not given after because data was collected to see if the students had built their skills in reading comprehension.

Rydland et al. (2012) decided to use fifth graders who were still not fluent in the Norwegian language, in order to test their decoding, vocabulary and reading comprehension skills. Overall, there were 67 participants who were all bilingual fifth graders from 21 different classrooms in Norway. Thirty-seven of the students were Turkish and 30 of them were Urdu. It is important to note that almost 45% of the mothers and 14% of the fathers of the students were unemployed, while the employed parents all had jobs that required less than three years of high school. These parents were all immigrants who moved to Norway for marriage, family reunification or to seek work. The employment of the parents is a notable piece of information because it shows that these students are not receiving much if any help when it comes to learning the Norwegian language in their households.

The procedure of the intervention was much different than most reading interventions that are performed in the United States. Rydland et al. decided to use global warming as a topic to introduce some of the basic reading skills they wished to work on with the fifth grade students on. Because global warming is not a topic that is introduced in the Norway curriculum until the fifth grade, it was a good way to make sure that the student didn't have a lot of prior knowledge on the subject. However, because global warming is a highly discussed topic in society, it was expected that the students would have some informal knowledge on the topic. In order to measure the prior knowledge of the topic, students were given a questionnaire with 19 items related to global warming. During the intervention process, students were then given multiple texts
that included one narrative-based text, one peer letter to an editor, and one textbook extract gathered from two different science textbooks. While reading these texts, students were prompted on different decoding and vocabulary skills in order to help them identify words. Students continued to practice these texts until a final assessment was given. This final assessment was called the “Global Warming Test” which was made by the researcher (Rydland et al., 2012). This test consisted of 14 multiple choice questions and 7 open-ended questions that dealt with the decoding, vocabulary and comprehension taught during the intervention period.

The findings of the study investigated the role of decoding, vocabulary and prior knowledge in fifth graders as it pertained to their reading comprehension. According the results of the final comprehension assessment given to the fifth graders, word decoding made a strong contribution to the Woodcock Passage Comprehension assessment. The results of the assessment also showed that vocabulary made a weak contribution to the Woodcock Johnson Comprehension assessment. According to Rydland et al. this was not a surprise because vocabulary was hard to teach to fifth graders when they were reading about global warming. Global warming vocabulary was often taught at a much higher education level than that of a fifth grader, and words were often not filtered for fifth grade usage. The final portion of the study was the relationship of prior knowledge to reading comprehension. According to the results, prior knowledge made the biggest contribution to the success of reading comprehension in fifth graders.

Rydland et al. found that although older students need to learn the basics of language such as decoding and vocabulary, the fact that they have experienced more in life and have more prior knowledge to topics is the biggest contributor to their success in
reading comprehension. Prior knowledge has been studied by educators and researchers for a long time and is well known to assist in the success of struggling readers. However, it is interesting to note that all three facets of reading (decoding, vocabulary and prior knowledge) contributed to higher comprehension skills in fifth grade students in Norway as well. No matter the type of language, the country students are located in or the age, basic reading skills play an instrumental role in creating readers that can successfully comprehend.

Students with disabilities create a different a set of questions and problems when it comes to students that struggle with reading skills. Often times, our students that struggle in reading at an early age are considered for special education services. As a society, we see a student who isn’t grasping the basic concepts of reading (decoding and phonemic awareness) and assume that he or she must have a disability. Although this is not always the case, a large number of students who are labeled as “struggling readers” at a young age do have some type of disability. This leads to the question that is asked by Blackorby and Schiller (2011): Do students with disabilities have a slower growth rate in reading compared to their non-disabled peers?

During the study conducted by Blackorby and Schiller (2011), many different models of data collection were used in order to track the success of the students in their study. For their formal assessments, they used the SRI International (Strattman, 2002) and the Woodock Johnson III (Johnson, 2001). These assessments were used to test their student’s pre and post knowledge in letter-word identification, comprehension and overall reading ability. Blackorby and Schiller (2011) also used family information to determine some of the effects of the student’s home life as well.
Because this study dealt with students with disabilities, Blackorby and Schiller (2011) oversampled students with “low-incidence” disabilities. In all, 3,421 students made up the sample of the study with 41% of the students being categorized as having a “learning disability”, 33% categorized as having a “speech or language” disability and less than 1% of the students having visual or traumatic brain injuries. This population was taken from various parts of the country and was labeled a “national sample” (Blackorby & Schiller, 2011, pg. 99).

In the study, a pre and post-test was given in order to calculate the change in the students’ assessment scores given to the selected students. Students were tested for their overall reading achievement which was made up of letter-sound relationships, vocabulary and reading comprehension. This study wanted to look at the different test scores for students labeled as having a different disability, therefore each student no matter the disability was given the SRI International (Schiller, 2002) and the Woodcock Johnson III (2001). The discussion of the lag verses the deficit model was discussed to see if students with disabilities fell into one of the two models. The lag model gives an understanding that poor readers will catch up to their general education peers in time, whereas the deficit model provides an understanding that poor readers will continue to have a bigger gap of achievement compared to their general education peers in time.

The results of the study were extremely interesting when it came to the different test scores of students with different disabilities. Overall, it was found that the hypothesis given by Blackorby et al. (2001), that students with disabilities will demonstrate delayed reading scores, was true. No matter the disability of the student, students with disabilities scored significantly lower than their general education peers. In this study, African
Americans scored the lowest when it came to ethnicity testing, males with disabilities scored higher than females with disabilities, the rate of growth was not affected by the disability and students labeled as having a “speech or language” disability scored the highest when compared to other disabilities.

It is interesting when comparing the differences of student reading achievement when it comes to students with disabilities. Although the student in my study (Faith) does not have a disability, she was given an IEP (Individualized Education Plan) for a “Specific Learning Disability” when she was five years of age. Since that time, she no longer identifies with the characteristics of student with SLD, however, is still labeled by her teachers as a “struggling reader”. Early struggling readers often get referred to for special education because of the missing gaps in some of their reading skills. Although that is not always the case, educators need to be aware of how a student’s disability or possible disability will affect their overall reading achievement.

Interventions are provided for our struggling readers to help them link the missing strategies and skills. Without reading interventions in our school systems, a lot of our students would continue to fall further and further behind building a large achievement gap for these students in all aspects of academia. These five studies not only show the importance of a reading intervention, but the importance of properly assessing our students to identify which ones need the additional support to help them succeed in school and life beyond.

Researchers and educators in general, understand the important correlation between reading ability and overall academic success. However, identifying the needs of our early struggling readers has been a much more challenging task. Throughout the next
portion of Chapter Two, five different studies will be analyzed that demonstrate the extreme importance of building phonemic awareness and decoding skills in our young children. These five studies look at different interventions that deal with phonemic awareness and decoding, however, all draw the same conclusion; phonemic awareness and decoding strategies must be built within our young readers in order for them to become a successful reader and build an overall intelligence to contribute positively to society.

**Phonological Awareness and Decoding Studies**

Calculating a student's current reading ability can be difficult when that student is a struggling reader. It is often difficult to find out in which skill that present student is not proficient in, and even more difficult to create an assessment and an intervention to help that student become a successful comprehensive reader. The study conducted by Cummings (2011) investigated the ability of first grade students to read Nonsense Word Fluently (NWF) as a indicator of their present level of decoding skills and compared it to their Oral Reading Fluency (ORF). Cummings suggested that NWF indicates a student’s decoding skills because it formats a connection between letters in words and the sounds in the pronunciations of those words. The overall purpose of the study is to demonstrate the relationship between students with low NWF and their eventual ability to have high ORF skills.

In order to track students’ skills in NWF and ORF, Cummings used the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Good & Kaminski, 2003) to monitor and track students progress. Students were chosen from schools that had a minimum of six years experience with DIBELS so that data collection could be done by educators in
the schools that housed the students. Educators that administered the DIBELS assessment were given extensive training and participated in a mandatory online class that taught them the correct ways to administer the assessment.

First grade students across 12 different districts were tested and used to examine the relationship between NWF and ORF during the 2008-09 school year. Assessments were given three times a year. Once in the fall, once in the winter and once in the spring. Eight of the school districts were located in rural areas and four of the school districts were located in urban settings. It is important to note that even the urban school districts reported demographics 70-90% White students in their school. The overall demographics of the study are as follows: 72% White, 17% American Indian/Alaskan, and 8% Latino. Although this study is not as diverse as many other studies, 58% of the students participated in free or reduced lunch programs within their schools.

The procedures of the study were fairly simple because the teachers were already trained and the students had already practiced in the program of DIBELS. DIBELS was conducted year round by the teachers within the schools and assessments were given at the end of the Fall, Winter and Spring. The data was collected by trained data collectors from an authorized institution. The DIBELS program focused on both NWF and ORF. During the NWF portion of the intervention, students read a series of randomly ordered vowel-consonant (VC) and consonant-vowel-consonant (CVC) nonsense words. Students started by saying the individual letter sounds that make up the nonsense words and eventually moved to blending the sounds together to create an entire nonsense word. The ORF portion of the DIBELS intervention had students reading passages aloud as the educator corrected them on words pronounced incorrectly. DIBELS allows for a large
amount of freedom for the educator to focus on skills that a child might be having a hard
time grasping. Teachers and assistants are able to analyze these errors and determine a
differentiated instruction to help that student overcome his/her deficiency.

The overall outcome of this study, showed that Nonsense Word Fluency relates to
future Oral Reading Fluency outcomes and that the NWF of a student can accurately
provide information on how to provide additional support for that student. In order to
read and comprehend fluently, students needed to score a “proficient” rating in their
NWF assessment, otherwise, they would not test into the “basic” or above of the DIBELS
assessment. This direct correlation shows the importance of teaching our students
phonemic awareness and decoding skills in order to become a fluent and successful
reader. Giving our students the ability to attempt a Nonsense Word Fluency level gives
the educator and parents a better understanding of what skills the student lacks and a
pathway to becoming an on grade-level reader.

Studies and observations prove that reading interventions are a necessity for
struggling early readers in order for them improve certain skills that will help them
become a fluent and comprehensive reader. However, determining what that intervention
should be is a problem that most educators face when determining which skill to focus
on. In, Explicit instruction in phonemic awareness and phonemically based decoding
skills as an intervention strategy for struggling readers in whole language classrooms,
Ryder, Tunmer and Greaney (2010) discuss the importance of teaching struggling readers
phonemic awareness and decoding skills. They pose the very important question: What is
the most effective reading strategy that educators can use to reduce the influence of
differences in literate and non-literate students? According to their study, phonemic
awareness and basic decoding skills are two strategies that play the most important role in aiding struggling readers.

Ryder et al. (2010) used the Burt Word Reading Test, New Zealand Revision in order to pre and post test students in four main reading skills: Phonemic awareness, phonological decoding, context free word recognition and word recognition accuracy in text and reading comprehension (Ryder, Tunmer, Greaney, 2007). Pre and post-tests were given in these skills to determine if there was a significant positive correlation to the interventions that were given or not. It should be noted that the Burt Word Reading Test was revised for New Zealand because that is where the study took place.

In New Zealand, education systems use the “whole language approach.” New Zealand educators believe in assessing and teaching their students various parts of speech and reading strategies together instead of focusing on a certain aspect. Whole language classrooms are more dependent on students’ knowledge outside of school and hope that students pick up on patterns and word sequencing on their own before they enter a formal school. The children who participated in the study were chosen from a group of sixty-four, 6 and 7 year olds whose native language was English. Students were selected from four different classrooms who were comprised of Year 2 and Year 3 classrooms in a primary school that had a total of 264 students. The school’s population was 64% European, 34% Maori, 1% Pacific Islander and 1% Chinese. Because of the number of students that were diagnosed as “struggling readers” by educators in the school (64), an assessment was given to lessen the number to 24 of the most struggling students. In New Zealand, schools are rated from a decile of 1 (low) to 10 (high) according to the socioeconomic community the school (Ryder et al., 2007). The school that the students
were in was listed as a 3; indicating a mixture of middle and low income families. It should be noted that eight of the special education students were excluded from the study.

In this study, the 24 students selected to take part in the interventions were paired up with the student who scored most similarly to them. These two students were separated into two groups; one group that was given the interventions and one group that was given regular classwork. The group that received the intervention was given an intervention that was 24 weeks long and semi-scripted and given by a teachers assistant. The intervention focused attention towards phonemic awareness and decoding and was a one-on-one teaching strategy. The intervention program made connections between their speech sounds and the corresponding letters and the patterns that they make. The main schedule of the intervention on a daily basis was that students recapped the previous lessons for two minutes, performed a phonemic awareness exercise for five minutes, did a main lesson focusing on teaching letter-sound relationships for 10-15 minutes and then an activity reinforcing the new material for 5 minutes. Throughout the interventions, teacher assistants used flash cards, syllable picture cards, word lists, sound mats and letter tiles. At the end of the 24 week intervention, students from both groups (controlled group and intervention group) were tested again on the Burt Word Reading Test. It should be noted that students were not tested throughout the 24 week intervention process, just at the end of the 24 weeks.

Overall, the findings of the study were extremely revealing and give more evidence to the importance of intervening at an early age for phonemic awareness and decoding for struggling readers. During the Burt Word Reading Test, subtests included measures of not only phonemic awareness and decoding but context free word
recognition ability, accuracy of recognizing words in connected text, and reading comprehension. Gains were made by both groups, however, the intervention group outperformed the control group at posttest in all measures. The effect sizes were 1.71 for phonological awareness, 1.69 for pseudoword decoding, .88 for the Burt raw scores. Not only did this study compare the scores before and after the 24-week intervention lessons, but it also re-tested students after two years. After two years, the data showed a positive effect for the intervention program was not only maintained but had also generalized into reading strategies that weren't originally tested (ex. word recognition accuracy in text). We can learn a lot from this study conducted by Ryder et al.. It further proves that providing reading interventions at an early age is essential in making sure struggling readers can get back to grade level. In this study, it is proven that these interventions need to focus on phonemic awareness and decoding especially.

Reading interventions have been a main focus of educators and researchers for a number of years, and phonemic awareness and decoding strategies have been the skills most associated with future success of early struggling readers. The kind of intervention and the strategies used have therefore varied dramatically in a lot of interventions. Although the interventions used by Hudson, Isakson and Richman (2011) deal with phonemic awareness, letter-sound correspondences and word families, they included an extremely important aspect that most researchers fail to highlight, goal setting. Goal setting and corrective feedback are two important aspects during this intervention that are worth noting, goal setting plays a critical role in the success of our struggling readers during reading interventions.
Most interventions deal with text-level practice, however, the main purpose of this study is to test if practice in lower-level skills will help mid-level skills such as decoding and upper-level skills of reading fluency and comprehension. Early struggling readers need to focus on basic skills such as decoding, letter-sound relationships and phonemic awareness in order to allow these readers to make bigger strides towards reading fluency and comprehension. In order to collect data, Hudson, Isakson and Richman (2011) used multiple means of data collection to assess the students in various reading skills. The Kaufman Test of Educational Achievement (KTEA) (Kaufman, 2004), was used to test the decoding accuracy of the students, the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Pressley, Hilden & Shankland, 2006) was used to assess reading fluency and the Woodcock-Johnson III (Woodcock, McGrew, Mather, 2001) was used to test reading comprehension. These assessments were given as both a pre and post-test to see the difference the two intervention groups had in their case study.

The participants of the study were all second graders in Washington and Florida. The second-grade teachers of seven different schools nominated students who were struggling in text reading rate and accuracy (Hudson et al., 2011). Students were then assessed with the DIBELS and Woodcock-Johnson III assessments to determine the lowest 58 students within the seven schools. Fifty-five percent of the students were boys, 25% were White, 44% were African American, 1.7% were African, 16% were Hispanic and 14% were Asian. It is important to note that students who received special education services were allowed to participate in the study. However, only students receiving special education services in the area of Specific Learning Disability participated.
The intervention process of the study allowed a “tutor” to work with the students in a small group of two to four students for 20-28 minutes long. Each session allowed the adult to model fluent reading, read as much as possible while implementing some type of motivational support as well goal setting. Participants of the study were randomly assigned to either an accuracy condition (27 students) or an automaticity condition (29 students). The goal was that the small groups would meet 40 times during the intervention process, although, that was not completed by all students. Both of the groups used the same materials; letter-sound manipulation, phonemic awareness materials (plastic disks and paper) and digraph isolated letter pages were used the most. The main focus of the accuracy and automaticity condition was to develop automaticity with letter sounds and decodable words, whereas the main focus of the accuracy condition was to get students to read words correctly regardless of speed.

As predicted, students in both practice conditions improved in their overall levels of reading performance by improving reading fluency and reading comprehension. Although there was no difference in decoding accuracy, the students in the accuracy and automaticity practice improved more than the students in the accuracy condition on both measures of decoding automaticity. These test results make sense because of the difference of the intervention groups. The group that worked more on automaticity scored better on automaticity.

This intervention allows educators and researchers to identify two important aspects of reading; automaticity and accuracy. These two factors in reading allow our struggling readers to become more fluent and comprehensive readers. Both intervention groups set goals for their students, showing the importance of creating goals and plans
with our students. When students are given a target and the correct practice on a skill, they show the remarkable ability to reach that goal.

Struggling readers draw major concerns for educators in today's society, especially for struggling readers who are at the beginning stages of their education (Grades 1-3). Decoding has been a proven tool of skilled readers, and continues to be an emphasis in assessments and early reading interventions. In the article, *Effects of Explicit Instruction on Decoding of Struggling First Grade Students: A Data-Based Case Study*, Pullen, Lane, Lloyd and Nowak (2005) discuss if explicit instruction in letters to promote segmenting, blending, sounding out, and spelling skills increase student's decoding skills with the use of pseudowords.

Throughout the investigation research was conducted on nine first-grade students who were identified as “struggling readers” (Pullen, Lane, Lloyd & Nowak, 2005). These students were selected by their general education teachers and identified as “stuggling readers” with a class-wide screening that was given to all of the students. Students who scored the lowest on this assessment were chosen to participate in the investigation. The study took place in Florida at a parochial school and the interventions took place in the back of two first-grade classrooms. The interventions took place in a closed off section of the classroom and a distraction-free environment was created for the students who were given the interventions. The socio-economic status of the students who participated in the interventions was not available to the researchers (Pullen et al., 2005).

During the investigation, focus was drawn on five different elements of early effective interventions. Explicit and systematic instruction, emphasis on developing
phonological awareness and decoding skills, repeated reading to build fluency, use of appropriate text and small-group instruction were all used throughout this intervention because they were proven effective interventions. Graduate students from a local university took three groups of three students to work on these different elements of early reading. Students were taken for nine separate sessions with the graduate students and were given an assessment after each session. The dependent variable in the procedure conducted was pseudoword-reading rate, or the number of pseudowords read correctly in 1 minute. The assessment given after each session was to have the children read lists of pseudowords daily and scorers recorded the number of words read correctly and incorrectly. Pullen et al. wanted the nine students to decode unfamiliar pseudowords so that it ensured that the child did not have any previous experience with the words and used the skills taught during the session to convert the print to speech. The independent variable in this investigation was the explicit decoding instruction using manipulative letters. This was implemented on a consistent basis and the procedures were practiced by the graduate students and they were required to follow a set of scripted interventions. Overall, the procedure of the study was to give a baseline assessment that was followed by interventions and conclusive data.

The results of the study showed constant growth from all nine students during each intervention and assessment given. Pullen et al. reported that the growth was slow in the beginning of the intervention, however it began to grow more dramatically throughout the later intervention sessions. The improvement in the nine students showed a functional relationship between the instruction of all five elements that were focused on during intervention sessions and decoding variables (Pullen, Lane, Lloyd and Nowak,
The results of the study show that small-group interventions benefit beginning readers. This study also shows that implementation of manipulative letters also develops a higher functionality of decoding in early readers. A much larger increase in the number of the pseudowords that students could read after a session began after lesson five, showing that student comfort level with the researchers and procedures of the study could have influenced some of the findings. Overall, students were able to read 46.5% of the pseudowords during the baseline study given before the interventions, and could read 86.5% of the pseudowords after all ten lessons. The growth of these students’ skills throughout all ten lessons show that skills must be built upon each other in order for them to be successful. Blending, association of letters with sounds, and pronouncing words, are all skills that must be practiced in order to achieve mastery. The conclusion to the study showed that student's skills in decoding increased after being exposed to explicit instruction on skills that build decoding knowledge in beginning readers.

It is widely thought and proven that phonological processing skills are a necessity in order to become a fluent and comprehensive reader later in life. However, *Variables That Influence Decoding And Spelling In Beginning Readers* (Strattman & Hodson, 2005) link multiple cognitive and linguistic variables that influence our beginning readers likelihood of becoming an adequate reader in the future. Although there are many different tasks that students are asked to master in first and second grade, this article suggests that educators must incorporate additional tasks and assessments to determine the true level of reading performance of our students. Strattman and Hodson looked at the link between decoding and spelling and how they influence the direction of student reading performance as well as the significant relationships between working memory,
rapid naming, multi-syllable word meaning, receptive vocabulary and nonverbal intelligence with our adequate and non-adequate readers in the 2nd grade.

In the study conducted by Strattman and Hodson assessed seventy-five second graders (45 females and 30 males) from four regular education classrooms in a midwestern metropolitan public school. The ethnicity was divided so that 63% of the students were Caucasian, 28% African American, and 9% Asian American. Out of all of the applicants, 22% qualified for the “free or reduced lunch” program in the school district. It is important to note that none of the students in this study received speech-language services at the time of the investigation.

Because of the many aspects of literacy that Strattman and Hodson wanted to assess for this study, the testing procedures were conducted during two 30-minute sessions in the fourth month of their 2nd grade year. In the first of two 30-minute sessions, students were “assessed in a small group followed by individual administration of the PPVT-III and the TONI-3” (Strattman & Hodson 2005, Pg. 174). In the second of the two 30-minute sessions, students took the Word Attack subtest of the Woodcock-Johnson Reading Mastery Test-Revised (Johnson, 2001) for phonological awareness, working memory, rapid naming and multi-syllable word naming (Strattman & Hodson 2005, Pg. 174). Students were audio recorded for later scoring as well as to review some of the student's desire and participation levels. Overall, Strattman and Hodson performed a lot of assessments for different reading tasks and used the two 30-minute sessions in order to complete all of those tests.

Developing reading strategies at an early age is extremely important in the development of a child's academic future. However, Strattman and Hodson looked into
what factors of reading should be focused on more than others and how they determine proficient readers. Strattman and Hodson reviewed their test results and found that the strongest correlation to reading performance are decoding and spelling. Although their results between all of the reading tasks they performed and reading proficiency showed significant correlation, the results between decoding, spelling and phonological awareness stood out from the other reading tasks.

**Technology**

With the increasing use of technology in today’s society, educators and students now have the ability to look gain access to a wealth of knowledge with the click of a button. However, the question that is asked in *Technology Infusion in Success for All: Reading Outcomes for First Graders* is: Can technology benefit young struggling students get back to grade level reading? In this study, Chambers, Slavin, Madden, Abrami, Tucker, Cheung and Gifford (Chambers, Slavin, Madden, Abrami, Tucker, Cheung & Gifford, 2008), examine two different factors of technology: (a) Does technology help students through individual lessons and (b) Does technology help organize and plan for teachers?

Chambers et al. used two different case study groups to gather their data. One group used the technology-based interventions that will be discussed later, and the other group continued their regular curriculum without technology. Participants were given individual pre and post-test that consisted of five different assessments. Chambers et al. used the Woodcock Letter-Word Identification, Woodcock Word Attack, Gray Oral Reading Test-Fluency, Gray Oral Reading Test-Comprehension and Gray Oral Reading Test-Total to measure the difference between the two groups.
All of the participants in the case study were students who were entering the 1st grade from two different year-round schools in Los Angeles. One school was a charter school in which 94% of students received free lunch and 95% of the students were Mexican American. The other school was a public school in which 81% of the students received free lunch and 69% were Mexican American. Overall, there were 159 first graders in total that participated in the case study from the two schools. As stated above, one school (not mentioned which one) used the technology-infused instruction and the other school used the regular curriculum without the use of technology. In all, 75 students were exposed to the technology-infused instruction and 84 were exposed to the regular curriculum without technology.

The procedures for the case study were fairly simple because of the use of a technology-based curriculum called, *Success for All*. This technology-based curriculum involved multimedia content called Reading Reels, which were short skits that taught students the different phonemic strategies (i.e. blending, segmenting, etc.). In all, *Success for All*, used four different steps to teach first graders these different strategies. The Animated Alphabet, The Sound and the Furry, Word Plays and Between the Lions were all steps in the curriculum where students worked on various skills to help their phonological awareness. The Animated Alphabet used sound/symbol relationships that often taught students the sounds that each letter makes. The Sound and the Furry used word-blending processes, spelling and fluency to increase students reading. Word Plays used different skits to increase student’s vocabulary. Between the Lions were short skits that taught phonemic awareness, sound/symbol correspondence and sound blending.

Overall, *Success for All* incorporated different strategies and activities to increase
student’s overall reading ability that is usually taught in the general curriculum within schools.

The findings showed numerous notable differences between the control group (general curriculum without technology) and the experimental group (technology-based curriculum). The pre-test that was given showed no difference between the two groups, however, the post-test scores showed a consistent advantage for the experimental group. In the Letter-Word Identification assessment, a positive growth of .33 was shown for the experimental group. In the Word Attack assessment, a positive growth of .28 was shown for the experimental group. In the GORT Fluency assessment, a positive growth of .28 was shown for the experimental group. In the GORT Comprehension assessment, a positive growth of .17 was shown for the experimental group and in the GORT Total a positive growth of .28 was shown for the experimental group. In short, each post-test showed a greater success rate in the technology-based curriculum verse the general education curriculum.

Because of the increasing amount of use of technology in our students of all ages, Chambers et al. wanted to analyze the difference between technology-based curriculums and non-technological based curriculums. Their findings showed a positive increase in vocabulary, fluency, comprehension and overall reading ability for students that learned through technology.

In the case study, A Preliminary Investigation of Supplemental Computer-Assisted Reading Instruction on the Oral Reading Fluency and Comprehension of First-Grade African American Urban Students (Gibson, Cartledge & Keyes, 2011), found that computer-assisted instruction can increase the fluency and comprehension of struggling
readers. Struggling readers often need reading concepts and skills taught to them in various ways in order to comprehend the necessary strategies. Gibson et al. introduce the idea of a technology-based curriculum in order to increase the fluency and comprehension scores of their African American students.

Gibson et al. used a pre and post-test scenario in order to compare fluency and comprehension scores before and after the intervention. In order to accurately determine the student’s current level and post level of fluency and comprehension they administered the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) oral reading fluency (ORF). This assessment allowed Gibson et al. to correctly determine if there was or was not an increase in student’s fluency and comprehension skills.

In this particular case study, Gibson et al. gave the intervention to eight African American first-grade students (six boys and two girls) who attended one of two urban charter schools in a predominately African American community. Their general education teachers identified these eight students as “struggling readers”. 95% of the students received free or reduced-price lunch from their respective schools. The interventions were given by a certified educator in an unoccupied room, which included two laptops, teacher and pupil desks and instructional material. During the intervention sessions, two students participated at the same time, however, each student worked independently on their own separate computer. During the pre and post-test administered assessments, students were pulled individually into an unoccupied room to avoid any distractions.

The procedures for the intervention was determined by a computer-assisted program called, Read Naturally Software. This software allowed students to navigate
through one lesson a day that hit on six steps in order to complete. These steps were as follows: (a) key words, (b) cold reading, (c) practice reading phase I, (d) practice reading phase II, (e) comprehension quizzes and, (f) final reading checkout. Key words introduced three to five essential words that were presented both visually and auditory. Cold reading had the students read a short story with the ability to click on any unknown words so they could be read aloud for the student to comprehend. Practice reading phase I, had students read in a similar fashion to “cold reading”, however, timed the students reading until they hit 40 words per minute (WPM). Practice reading phase II was similar to practice reading phase I, except it increased the WPM from 40 to 65. Comprehension quizzes consisted of five questions (four multiple choice, one short answer) designed to test specific areas of comprehension. Final reading checkout presented a different story with similar concepts and instructed the student to read to his/her teacher orally.

The results for the case study presented by Gibson et al. showed that each of the eight students improved on both their reading fluency and reading comprehension. These results were based off of the pre and post-test of the DIBELS reading fluency and comprehension. The DIBELS assessment also tested the student’s overall reading growth rate in which seven out of the eight students also increased in their scores. It was discussed that removing the students from their general education classrooms into a one-on-one intervention was the cause of the increase of the scores instead of the actual intervention. However, the drastic increase in scores show the importance of the Read Naturally Software.

Reading interventions come in different formats and focus on different skills and concepts. The case study by Gibson et al. showed the importance of the Read Naturally
Software the possible benefits for technology-assisted curriculums to be used to increase the fluency and comprehension scores of struggling readers. Closing the achievement gap between African American students and their counterparts is an issue that many educators and researchers are seeking an answer to. Technology-based curriculums could be a part of that answer.

Differentiation has been a focal point for many education systems throughout the world, and technology has created a different way of practicing particular skills. These two case studies both show the importance of the increasing use of technology within our classrooms. Young children are learning differently than they have in the past, and with the advancement of technology, students are able to grasp concepts through online videos, activities and games. These two studies support the use of technology in today’s classrooms because it presents concepts and ideas in a different setting and way than teachers present it to the classroom.

**Conclusion**

As an educator, it is easy to see the relationship between decoding and phonological awareness and how it correlates to proficient readers in the early grades of school. However, it is still interesting to see the various interventions and case studies that can lead to successful readers. Struggling readers often face various challenges when it comes to overcoming their reading difficulties. These studies show the importance of starting with the basic reading skills (phonological awareness and decoding) when trying to become a fluent and comprehensive reader. Although all of the studies performed various activities, tasks and overall curriculums, phonological awareness and decoding was a constantly repeated by all of the interventions. This shows the importance of
building up our struggling readers skills in letter-sound relationships, segmentation, vowel and consonant recognition, blending and beginning-middle-end sounds. Overall, these different studies show the ultimate importance of not only involving our students in interventions, but interventions that contribute to the basic skills of reading: Phonemic awareness and decoding. These studies also showed the wide variety of interventions that can enhance the knowledge of struggling readers, including technology. After analyzing these very important studies, the importance of building phonemic awareness and decoding strategies has become more evident within our students no matter their race, age or disability.

In the next chapter, Chapter Three, a description of the methodology will be addressed. Chapter Three will focus on the daily lessons and activities as well as the overall procedures for the three-week intervention process.
CHAPTER THREE: PROCEDURES

Early readers need assistance in multiple categories in order to be a successful reader of academic and personal material. As Chapter Two discusses, it is essential for young readers to have a base knowledge of how the English language works before they will be able to read comprehensively. This base knowledge is known as decoding, phonemic awareness and the ability to retain sight words. As shown in the previous chapter, when students lack these necessary skills, their overall reading ability diminishes. These basic categories of reading are what need to be developed in Faith Jackson, in order for her to become a comprehensive and successful reader in the future. Therefore, during the intervention process with Faith, she worked on the difference between short and long vowels, the relationship between vowels and consonants, letter-sound relationships, blending two letters to make one sound, and the correct spelling and the use of pictures to help her comprehend a short story. This chapter discusses the setting in which the student was given reading interventions, the assessments given to track data and, the different interventions given to the student.

Methodology

In this section, the case study's setting, sample population, and the means of data collection are described.

Setting

This case study took place at a charter school in the Midwest. The student was pulled from her general education classroom for one hour, four times a week to work on phonological awareness, decoding and basic comprehension skills. The
student was pulled out and worked in a one-on-one setting in a separate classroom from any of her peers.

Sample Population

This case study focused on one African-American female student who was attending summer school at a public charter school in the Midwest. The student finished first grade and will be promoted to the second grade in the fall. In an effort to maintain confidentiality, the student will be referred to as “Faith”. Faith’s first grade teacher hand selected her as one of the students who has struggled in reading throughout the past year. Her teacher reported that she had difficulty with phonological awareness, decoding and comprehension skills. Her teacher also reported that although Faith does not have an Individualized Education Plan (IEP), she still worked with the special education teacher during small group work. Due to Faith’s reading struggles in phonological awareness, decoding and comprehension skills, she was the focus of this particular case study.

Data Collection

Data was collected throughout the three-week time frame that interventions were given to the student. In the first session, a baseline formal assessment was given to assess Faith’s beginning skill level in the areas of phonological awareness, decoding and comprehension. She was given the TOWRE assessment as a pre-test that focused on her sight words, letter-sound relationships and beginning-middle-end sounds. During her last session, Faith was again given the TOWRE assessment as a post-test to see the progress or lack of progress made from the first session to the last.
Throughout the three weeks of interventions, Faith was also given various informal assessments to see her growth in the amount of sight words recognized as well as her comprehension skills. To end each session, Faith was given a list of Dolch Sight Words (compiled by Edward Dolch) that were on flash cards that contained 110 of the most frequently used words in beginning reader books. Faith started with twenty words during the first session and ended with fifty words by the last session. In order to keep track of Faith’s progress, the number of words read correctly was recorded daily. In addition, every Thursday, Faith was asked to read a short story from Reading A-Z and to say one sentence that summarized the story. The response was written and recorded in order to quickly write the verbal response from Faith.

For reflection purposes, I recorded anecdotal notes in an online journal after each session that allowed me to focus on intervention notes that would help in the future. This journal is in the form of a chart and includes suggestions for future use, reflections of the most recent session, and concerns or changes that need to be made in the future. The journal is included in the Appendix A.

**Overview of the Procedures**

After analyzing the previous studies about struggling readers, a set of procedures was created to help improve Faith’s phonological and decoding skills in the area of reading. As stated by Strattman and Hodson (2005), “Children who are likely to experience difficulty learning to read and spell need to be identified as early as possible before they become discouraged and ended the cycle of failure” (Strattman & Hodson, 2005, Pg. 182). Because of the attention that is being drawn
to early struggling readers and how best to get them back on grade level, it was important to create a set of interventions that dealt with Faith’s personal phonological and decoding strengths and weaknesses. Therefore, six different strategies were used to help Faith become a more knowledgeable reader. These six strategies were: (a) an understanding of fifty Dolch Sight Words, (b) an understanding of syllables in words, (c) all of the letter-sound relationships, (d) how those sounds blending together to make words, (e) how two letters blend together to make one sound, (f) how to read fluently to build on overall comprehension.

These six strategies were taught through various activities that were mentally and physically stimulating and allowed her to practice and evaluate her knowledge on the various skills.

Because it is important for Faith to self-monitor her reading, various short stories were also given to her to practice when she went home. It was Faith’s responsibility to underline or circle any of the words that she didn’t know and to briefly report on the story she read the night before. This was separate from the interventions that were given during the intervention time, and was given for additional practice between Faith and her parents.

Each session followed the same routine to allow for Faith to feel comfortable in a one-on-one setting with an adult she has never worked with before. This routine was important to keep because it allowed Faith to have consistency during her one-hour intervention time and she understood what activity would happen next. Sight Word practice, introducing new letter-sound relationships, vowel and consonant relationships, reading fluency and a computer activity involving the
lesson of the day was the daily routine that Faith and I followed everyday. Although the activities and lessons would change, the general format of the hour was consistent in order to allow Faith to feel as comfortable as possible.

**Description of Daily Procedures**

This section outlines the daily procedures used during this case study in more detail. Each strategy and activity is outlined in the same order as it is given to Faith in her daily routines of intervention: (a) daily sight words, (b) letter-sound relationships, (c) blending and segmentation, (d) reading practice, (e) computer based activity to reiterate the lesson. Visual aids were used to help Faith self-monitor her progress with various activities and these are located in Appendix B.

**Sight Word Recognition**

Sight words are words that beginning readers must know by memory in order to become a fluent and successful reader. Because Faith struggled with her sight word recognition, it was important that she worked on memorizing them for a duration of the intervention process. In Session 1, the TOWRE assessment was given as a pre-test to measure Faith’s sight word recognition. In Session 2, twenty sight words were given to Faith based off of her grade level. She was introduced to these sight words and practiced them during the intervention hour. For the remainder of the sessions, Faith was to say each sight word when it was shown to her on a flash card during the first five minutes. This was given to see if certain letter-sound relationships were causing more confusion than any other. At the end of each session, Faith was given five new sight words and practiced memorizing them for the final ten minutes of the intervention. By the last session, Faith was up
to 50 sight words that she was learning on flash cards. In order to practice her sight words, Faith often used flash cards and played the game, Memory (flip a flash card over and match it to the same word).

**Letter-Sound Relationships**

After going through the sight word recognition portion of the intervention hour, Faith was introduced to various letters and the sounds they represented. In Sessions 2, 3, 4, 5, 6, Faith was introduced to all of the vowels (A, E, I, O, U), and the sounds that they represented. Faith practiced these sounds by repeating me, putting them in words she knew and listening to me read short stories that emphasized each vowel sound. Faith was also introduced to each consonant letter-sound relationship as well throughout her various sessions. If you look at table 1, you can see a chart of when each vowel and consonant was introduced during the sessions. Faith was given the Reading A-Z (http://www.readinga-z.com) short stories that used vowel sounds in them. Faith would first listen to me read the story and would then attempt to read the story herself sounding out each letter as best as possible. After session 6, Faith would do an activity called the “Dice Game” in order to practice her vowel and consonant sounds. The first and third dice had various consonant sounds (six different letters) and the second dice had all of the vowel sounds. She would sound out each letter as she rolled the dice. A worksheet was given to Faith to help her organize the letters she rolled and you can see an example of this in Appendix C.
Blending and Segmentation

After Faith is introduced to her new letter-sound relationships for the day, Faith worked on her blending and segmentation. During the three-week intervention process, Faith worked on four different blending sounds, “ch”, “th”, “sh”, “pl”. Blending and segmentation are separate skills that build decoding strategies when reading an unknown word. As Strattman and Williams say, “Children who have difficulty decoding real and pseudowords in 2nd grade are considered at risk; however, with appropriate intervention severe reading problems can be prevented” (Strattman & Williams, 2005, Pg. 166-167). In order to build on these skills, Faith performed multiple activities to help her learn these four blending sounds. In order to introduce the blend sounds, the blend was written on a flash card, and Faith was instructed to say the sound the blend made. After she was able to recognize the sound that the two letters made, she was asked to find words around the classroom that included that blending sound (beginning or end sounds). In order to reinforce the blending sounds, she read books from Reading A-Z and played an interactive game on starfall.com that allowed her to create her own words with those blending sounds. In order to practice Faith’s segmentation in reading, a more advanced step to the Roll-A-Word activity was created. Instead of just sounding out each letter independently, Faith was asked to blend all of the sounds together to make a three-letter word. Although these three letters sometimes made real words, she still sounded out the letters to make a nonsense word if the three letters didn’t create a real word.
Reading Practice

As Hudson, Torgesen, Lane and Turner (2010) discussed in their study, early readers must develop and master multiple components of reading in order to become a proficient reader. Reading fluency is one of those components that they discussed. Because Faith was a student entering the second grade, fluency was going to be a task that was new to her. Because of this new concept, Faith and I participated in a read aloud activity that allowed Faith to listen to me read a short story first and then try her best to read it after me. We included a book that Faith mentioned was one of her favorite books in the first session, Words Are Like A Volcano (Cook, 2011). This book was chosen because it used a lot of the Sight Words that Faith worked on in the beginning of the sessions, and also because it discussed the proper times to speak in organized settings (a problem that Faith had in summer school). In order to make sure Faith followed along with the reading, she was to put her finger on the word being read at all times. Times were recorded on how long it took Faith to read the short story every day.

Computer Based Activity

Technology is becoming more and more frequent in student’s lives, and was used throughout the intervention process with Faith to reinforce some of the lessons that were taught. As stated by Chambers, Slavin, Madden, Abrami, Tucker, Cheung and Gifford (2008), “...embedding technology in classroom and tutorial instruction can improve the reading performance of at-risk first graders.” (p. 65) Therefore, for the last ten minutes of each session, Faith and I went on a website called starfall.com. Starfall is a motivation website that helps struggling readers
with phonemic awareness and decoding practice. This website is specifically
designed for instruction of kindergarten through second grade readers. Starfall was
chosen for this case study because it allows the student to pick a vowel sound,
consonant sound, blend or segmentation that the student is currently working on.
On the website, various activities are laid out for the student to practice reading and
manipulating words to accomplish activities and games.

Conclusion

This chapter discussed the procedures and methodology used in the case
study in order to increase the overall phonological and decoding skills of the target
student. Overall, the procedure and methodology of the case study was very precise
so that Faith worked on as many skills and strategies as possible within the eleven
intervention sessions. Without consistent procedures, it would have been hard for
Faith to successfully complete and comprehend all of the skills being taught. This
chapter first discussed the methodology by going into detail about the setting, the
sample population and the data collection. Secondly, this chapter discussed the
overview of procedures and broke down each session’s timeline and the skills and
activities that were worked on with the target student. These strategies were as
follows: (a) sight word recognition, (b) letter-sound relationships, (c) blending and
segmentation, (d) reading practice, and (e) computer based activities.

Chapter Four will discuss the results of the assessments given throughout the
intervention process for Faith. These results will include the pre and post-test of the
TOWRE as well as the daily analysis presented for sight word recognition and
reading fluency.
CHAPTER FOUR: RESULTS

The purpose of this study was to investigate the effects of phonological awareness and decoding interventions with a young struggling reader. Chapter Four shows the data of the assessments given throughout the three-week intervention process with Faith. This data was collected in a pre and post-test as well as daily logs of the progress of sight-word recognition and reading fluency. Overall, this data was collected throughout eleven one-hour intervention sessions with the student. This chapter has four separate sections to discuss the various data collected. The first section displays the data from the pre and post-test assessment of the Test of Word Reading Efficiency-Sight Word Efficiency (TOWRE). The second section displays the data from the pre and post-test assessment of the TOWRE-Phonemic Decoding Efficiency. The third section displays the daily log and progress of Faith’s fluency level. Finally the fourth section displays the daily log and progress of Faith’s sight-word recognition. These findings are taken directly from the intervention sessions with the student.

Test of Word Reading Efficiency-Sight Word Efficiency

Some of the data that was collected throughout the case study came from a pre and post-test assessment of Faith’s sight-word efficiency. The TOWRE assessment was administered to the student in session one and session eleven.

Faith began session one by taking the TOWRE-Sight Word Efficiency assessment, which allows Faith to read as many sight-words as possible in a forty-five second time frame. A practice list of words was presented to Faith before she was to read the list of sight-words for the assessment. If Faith came to a word that
she didn’t know, she said “skip” and moved on to the next word. If Faith took more than three seconds on any one word, she was directed to move on to the next word as well.

In the pre-test, Faith read a total of thirty sight-words, with seven read incorrectly. This gave Faith a raw score of 23 (number of words read minus words read incorrectly). With a raw score of 23, Faith’s age equivalent assessment score according to the TOWRE was 6-9 (six years and nine months). Faith’s grade equivalent score was 1.6 and she tested into the 27th percentile. Overall, Faith had a standard score of 91.

In the post-test, Faith read a total of thirty-six sight-words, with ten read incorrectly. This gave Faith a raw score of 26, which was three points higher than her pre-test. Faith’s age equivalent assessment score was 6-9, which was exactly the same as her pre-test. Results for the pre and post-tests can be found in Figures 1 and 2.

Faith’s grade equivalent assessment score was 1.6, which was also the exact same as her pre-test. Finally, Faith tested in the 35th percentile, which was eight percentiles higher than her pre-test. Overall, Faith had a standard score of 94 on the post-test. These results are reported in Figures 3 and 4.
Figure 1. Results of raw scores for pre and post-tests for TOWRE-Sight Word Efficiency

Figure 2. Results of Age Equivalency scores for pre and post-tests for TOWRE-Sight Word Efficiency
Figure 3. Results of Grade Equivalency scores for pre and post-tests for TOWRE-Sight Word Efficiency

Figure 4. Results of Percentile scores for pre and post-tests for TOWRE-Sight Word Efficiency
Pre and post-tests results are important in determining the overall progress that was made throughout the intervention sessions. The pre-test was taken before the interventions were given in order to see baseline data on the student. The post-test was taken after the interventions were given to see the difference between what the student knew before the interventions and what she knows after the interventions.

![Sight-Word Efficiency](image)

*Figure 5. Results of raw scores, age equivalency, grade equivalency and percentile for pre and post-tests of TOWRE-Sight Word Efficiency*

**Test of Word Reading Efficiency-Phonemic Decoding Efficiency**

After Faith took the Sight-Word Efficiency portion of the TOWRE assessment, she was then assigned the Phonemic Decoding Efficiency portion of the assessment. Similar to the Sight-Word Efficiency assessment, Faith was given forty-five seconds to read non-sense words (not real words). Faith was given a practice set of words to practice before taking the assessment and was told to skip any words she struggled on and was told to move on if she took more than three seconds.
In the pre-test of the Phonemic Decoding Efficiency portion of the TOWRE assessment Faith read a total of nine words with four read incorrectly. This gave Faith a raw score of five (number of words read minus words read incorrectly). With a raw score of five, Faith’s age equivalency according to the TOWRE was 6-6 (six years and six months). Faith’s grade equivalency according to the TOWRE was 1.4. Finally, Faith’s percentile that she tested into in the Phonemic Decoding Efficiency portion of the assessment was the 21st percentile. Overall, Faith had a standard score of 88 in her pre-test.

In the post-test of the Phonemic Decoding Efficiency portion of the TOWRE assessment, Faith read a total of fifteen words correctly with three words read incorrectly. This gave Faith a raw score of twelve, which was seven points higher than her pre-test. With a raw score of twelve, Faith’s age equivalence according to the TOWRE was 7-0 (seven years and zero months), which was six months higher than her pre-test. Faith’s grade equivalence was calculated at 1.8, which was .4 points higher than her pre-test. Finally, Faith’s percentile that she tested into in the Phonemic Decoding Efficiency portion of the post-test assessment was the 45th percentile, which was twenty-four points higher than her pre-test. Overall, Faith had a standard score of 98 in her post-test.

Results are presented in the figures listed below. Raw scores are listed in Figure 6, age equivalent scores are in Figure 7, grade equivalent scores appear in Figure 8, and Figure 9 reports percentile
Figure 6. Results of raw scores for pre and post-test for TOWRE-Phonemic Decoding Efficiency

Figure 7. Results of age equivalency for pre and post-test for TOWRE-Phonemic Decoding Efficiency
Figure 8. Results for grade equivalency for pre and post-tests for TOWRE-Phonemic Decoding Efficiency.

Figure 9. Results for percentile for pre and post-tests for TOWRE-Phonemic Decoding Efficiency.

Pre and post-tests are used to see the difference a certain intervention has upon the scores of a particular student. In Figure 10, the pre and post-tests show the data that was collected using the TOWRE-Phonemic Decoding Efficiency.
assessments. The pre-test was taken before the interventions to get baseline data on the student, whereas the post-tests are taken after the interventions to view the difference made by the intervention.

Figure 10. Results show the pre and post-tests of raw score, age equivalency, grade equivalency and percentile for the TOWRE-Phonemic Decoding Efficiency.

**Fluency**

On a daily basis, Faith read a book aloud and was timed to see how fast she could read it orally. These recordings were made on a daily basis labeled (See Table 1). This was a non-formal tracking method to see if working on Faith’s phonological and decoding skills helped her fluency levels. In order to keep track of Faith’s progress, her reading times were converted to total seconds. Because the TOWRE assessment was given on the first day of the intervention process, Faith didn’t start reading the book until Session 2. As you can see on Table 1, Faith started reading the book at 450 seconds on session two, and ended the very last session (Session
11) reading it in 375 seconds (six minutes and fifteen seconds). Figure 11 reposts the data in graphic form.

Table 1
Fluency Timed Reading

<table>
<thead>
<tr>
<th>Session &amp; Date</th>
<th>Time (Total Sec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session #1 (Monday)</td>
<td>N/A</td>
</tr>
<tr>
<td>Session #2 (Tues.)</td>
<td>450</td>
</tr>
<tr>
<td>Session #3 (Wed.)</td>
<td>460</td>
</tr>
<tr>
<td>Session #4 (Mon.)</td>
<td>420</td>
</tr>
<tr>
<td>Session #5 (Tues.)</td>
<td>420</td>
</tr>
<tr>
<td>Session #6 (Wed.)</td>
<td>400</td>
</tr>
<tr>
<td>Session #7 (Thurs.)</td>
<td>380</td>
</tr>
<tr>
<td>Session #8 (Mon.)</td>
<td>390</td>
</tr>
<tr>
<td>Session #9 (Tues.)</td>
<td>380</td>
</tr>
<tr>
<td>Session #10 (Wed.)</td>
<td>380</td>
</tr>
<tr>
<td>Session #11 (Thurs.)</td>
<td>375</td>
</tr>
</tbody>
</table>
Figure 11. Results for Fluency Timed Reading.

**Sight-Word Recognition**

The final group of results that were taken from the case study was Faith’s daily recognition of sight words. This was different from the TOWRE-Sight-Word Efficiency assessment because it was informal and contained words that she will see often in her upcoming school year. This informal gathering of information started on the first day of the intervention and included twenty sight words. Each day, five sight words were added to the list of words Faith was tested on until she had a total of fifty-five words. Each day, the number of words read correctly was counted and totaled.

As seen on Table 2, the percentage of words read correctly jumped from 70% in the first session to 100% in the last session. Although the percentage does not
continuously go up (see Session 3, 6 and 8) from session to session, the percentages of the number of words read correctly does slowly increase.

Table 2
Sight Word Recognition

<table>
<thead>
<tr>
<th>SESSION #</th>
<th>TOTAL WORDS</th>
<th>TOTAL WORDS READ CORRECTLY</th>
<th>TOTAL WORDS READ INCORRECTLY</th>
<th>PERCENTAGE OF WORDS READ CORRECTLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>14</td>
<td>6</td>
<td>70.0%</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>22</td>
<td>3</td>
<td>88.0%</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>26</td>
<td>4</td>
<td>86.6%</td>
</tr>
<tr>
<td>4</td>
<td>35</td>
<td>33</td>
<td>2</td>
<td>94.2%</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>39</td>
<td>1</td>
<td>97.5%</td>
</tr>
<tr>
<td>6</td>
<td>45</td>
<td>43</td>
<td>2</td>
<td>95.5%</td>
</tr>
<tr>
<td>7</td>
<td>50</td>
<td>48</td>
<td>2</td>
<td>96%</td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>52</td>
<td>3</td>
<td>94.5%</td>
</tr>
<tr>
<td>9</td>
<td>55</td>
<td>54</td>
<td>1</td>
<td>98.1%</td>
</tr>
<tr>
<td>10</td>
<td>55</td>
<td>54</td>
<td>1</td>
<td>98.1%</td>
</tr>
<tr>
<td>11</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Conclusion**

Data collection is an integral facet of this case study because it shows the progress or lack of progress made throughout the eleven day intervention process.

The TOWRE was a formal assessment that was used as both a pre and post-test to see the difference in scores from the first to the last day of the intervention.
Whereas, the fluency and sight-word recognition were informal assessments meant to calculate the daily progress being made by Faith, a formal assessment was broken up into two assessments: Sight Word Efficiency and Phonemic Decoding Efficiency. According to the pre and post-test of both of these assessments, the scores were all higher or the same in the post-test. The reading fluency informal recordings showed a steady decrease in time read accept for sessions three, five and eight where the time slightly increased. The sight-word recognition informal recordings showed a steady increase in the amount of sight words recognized by Faith by starting at a 70% recognized words to 100% by the last session.

In the following chapter, Chapter Five, a discussion of the results and possible reasons for the outcomes will be addressed. This chapter will also discuss future recommendations for the student, as well as specific implications of the study.
CHAPTER FIVE: CONCLUSIONS

This case study examined the effects of one on one interventions using phonological and decoding strategies to increase a young struggling reader’s overall reading ability. Data was collected throughout an eleven-day intervention process that included interventions with sight-words, reading fluency, comprehension, phonological and decoding skills and technology assistance. Data was collected using pre and post-tests as well as daily assessments to see the progress made by the target student. This chapter will further analyze the data that was collected in the previous chapter and have a discussion of how to understand the data as well as why the results ended up as they did. During this discussion, connections will also be made to the previous studies that were discussed in Chapter Two and will discuss the limitations of the current study. The second section of this chapter will analyze the implications that the current study had on Faith and make recommendations to assist Faith in her future academic career. To conclude the chapter, a brief discussion about the future research on the topic will be given.

Discussion

This section will look more deeply into the results of Chapter Four and into the relationships from previous studies that were presented in Chapter Two. To begin, the numerical data that was presented in Chapter Four will be further analyzed in order to understand the findings from the pre and post-test of the TOWRE, and the two informal assessments given to Faith daily: Sight Word Recognition and Reading Fluency. After the data has been further analyzed, a discussion between the similarities and differences between the previous case
studies presented in Chapter Two and the current case study will be discussed. These similarities and differences will both touch on the best practices when teaching phonological awareness and decoding as well as results. To conclude this section, a discussion of the strengths and limitations of this study are presented for further information and consideration for future research in the area of phonological awareness and decoding.

**Explanation of Results**

The results from the Test of Word Reading Efficiency (TOWRE), were somewhat informative when looking at the progress Faith made during the eleven days of the intervention process. The TOWRE-Sight Word Efficiency was an assessment that took various levels of sight words and assessed the number of words that Faith could read aloud in a forty-five second time frame. The results showed that Faith read more words correctly but also read more words incorrectly. According the TOWRE results, Faith’s overall raw score increase from a twenty-three to a twenty-six. The raw scores three point jump is not extremely significant, but it should be noted that Faith read a total of six more words during the post-test. Faith was much more comfortable taking the post-test and felt confident in her ability to sound out words she didn’t recognize. According the results from the TOWRE assessment, Faith’s age and grade equivalency stayed the same during the pre and post-test. Although Faith’s overall raw score did increase, it didn’t increase enough to effect her grade and age equivalency. This is important to note, because it shows that although she did increase her raw score, the increase was not very significant. However, Faith’s percentile ranking did increase from the 27th
percentile to the 35th percentile. This eight-point increase shows more of an increase than any of the previous scores (raw score, age equiv., grade equiv.).

It is difficult to analyze the data from the TOWRE-Sight Word Efficiency assessment because the increase of scores in the raw score and percentile were very minimal, whereas the age and grade equivalency stayed the same. However, it could be explained because of the short amount of time the student had with the intervention process. An eleven day intervention process is not a long time and therefore, Faith's increase in scores could hint at the beginning of an increase in overall reading ability. It should also be noted that Faith was much more nervous about her post-test than she was about her pre-test. Because Faith didn't have any idea of what the assessment was about, she seemed much more relaxed during the pre-test. Before the post-test was assigned, Faith repeatedly announced that she was nervous about taking the assessment and didn't want to mess up. This test anxiety could have also led to scores that were not as accurate as the pre-test. Because Faith knew that she was taking the same assessment at her pre-test and that we would be comparing the two scores, it was obvious to see the anxiety on her face. She also stated numerous times “I don’t want to mess up”. This anxiety caused Faith to read the words too quick which caused more words being read aloud, but also caused more errors. The TOWRE-Sight Word Efficiency assessment also tested Faith on various sight words from various grade levels. The general increase of difficulty of sight words was not a practiced skill during the intervention process. Instead, Faith worked on sight words that she would see most often in the grade level work she was currently in (second grade), not any grade levels past. The
TOWRE-Sight Word Efficiency may not have been the most appropriate assessment to test the progress made throughout the eleven-day intervention process.

The results of the TOWRE-Phonemic Decoding Efficiency gave more information than the TOWRE-Sight Word Efficiency. The Sight Word Efficiency assessment tested Faith’s ability to recognize letter-sound relationships, blending, segmentation and beginning-middle-end sounds. The data showed that Faith had a seven-point increase in raw score (five for pre-test and twelve for post-test). She read only nine words (four incorrectly) in the pre-test and read a total of fifteen words (three incorrectly) in the post-test. This increase could be more significant than the increase in the Sight Word Efficiency assessment and shows more relevant analysis. There was also an increase in her age and grade level equivalency, as well as her percentile that she tested into. These increases in score from the pre to the post-test show that the interventions being used throughout the eleven days helped Faith’s ability to phonemically decode words at a much faster and accurate pace.

The increase in these scores can be explained through various interventions that were presented throughout the eleven-day process. One of the skills that Faith worked on daily was her ability to segment letters and the sounds they make into beginning, middle and end sounds. This was skill that Faith did not possess when she first started the intervention process. By working on this segmentation, she was able to fluently move from one sound to the next without hesitating or stopping. Another reason Faith’s scores significantly increased, was her overall ability to recognize letters and the sounds they make. Faith worked daily on the sounds of the alphabet and the different sounds they make. Throughout this practice, she was
also able to tell when two letters were next to each other, they made a different sound (blending). For example, when the letter “s” and the “h”, are together, “sh”, it makes a different sound then when the letters are separate from each other in a word. Another possible reason for the increase in scores could be Faith’s recognition with the assessment. Because the TOWRE-Phonemic Decoding Efficiency tests student’s ability to recognize letter-sound relationships in words that are not real, it can often confuse the examinee. Young children are not used to having to read a word that isn’t real, and it can often be confusing and cause students to come up with a real word that may have the same beginning or ending sound. With eleven days of practice, the recognition of the assessment process could also be an influential reason for the increase in scores.

Faith’s fluency levels were also an integral piece to this case study and the progress made. Every day, Faith was given the same book and asked to read it aloud. The amount of time it took Faith to verbally read the book was reported daily and recorded in Table 12. It was clear that Faith’s reading time gradually went down, with the exception of session three and eight. One of the reasons for an increase in reading time for session three is that it was the beginning of the intervention process, and Faith was getting used to reading aloud to a person she has never met. Session eight was on a Monday, which was three days after the last time she had an intervention meeting. This three-day break from reading could have caused her to forget some of the essential words and some of the repeated phrases in the book. Overall, Faith’s reading fluency times went down a total of seventy-five seconds from session two through session eleven. This large increase
can be explained for various reasons. The first reason is that Faith was getting used to some of the repeated phrases that were constantly used in the book. These phrases used some unfamiliar words such as “tummy”, “rumble” and “grumble”. Once, Faith became familiar with those words and those phrases, she didn’t even have to follow along with her finger because she knew exactly how the phrase should be read. The second reason that Faith’s overall reading fluency times decreased was because of the sight-words that were used throughout the book. Overall, thirty of the sight words that Faith practiced in the beginning of the interventions were used throughout the book. With continuous practice of these sight words, she was able to verbally read these thirty sight words quicker and quicker once she became familiar with them. Faith was able to master all fifty-five sight words by the end of the intervention process, and therefore was continuing to be able to read those words in a text at faster rate. The final reason that Faith was able to decrease her reading time was because of her comfort levels with the intervention process. It was obvious to see the overall comfort levels increase daily when working in a one-on-one setting. Faith was willing to ask questions about words, read louder and was eager to show off the work she was doing in her reading summer class and her practice reading at home. This ability to feel comfortable in her surroundings was another important factor into why her reading time decreased. Amount of time between intervention sessions, memorization of repeated phrases, ability to master sight words and overall comfort levels are the four main reasons why Faith’s reading time was able to decrease by one minute and fifteen seconds within the intervention process.
The last portion of the formal and informal assessments to understand the progress made by Faith throughout the eleven-day intervention process was her ability to master fifty-five sight words. Because five new sight words were introduced daily, it was hard to determine the day-to-day progress being made. As shown in Table 13, the percentage of words read correctly increased from 70% in session one to 100% in session eleven. This 30% increase can be explained by multiple reasons: (a) Faith’s work on letter-sound relationships, (b) Faith’s continued practice by seeing sight words in her daily reading, (c) Faith’s daily repetition and memorization and (d) Faith’s overall feeling of comfort in the intervention process.

The first reason that Faith was able to increase her percent of words read correctly was her ability to correctly identify letter-sound relationships. Throughout the intervention process, Faith practiced her letter-sound relationships and in particular the beginning sounds to words. This ability to recognize the first sound in each word allowed Faith to start the process of memorizing words. Although Faith would sometimes mix up words that began with similar beginnings (ex. “this,” “then,” “that”), she was quickly able to recognize her mistake and correct herself.

The second reason for Faith to increase in her percent of words read correctly was her continued practice when reading aloud for fluency pace. As stated earlier, thirty of the sight words that were used on a daily basis were also in the book she read at least one time, with the majority of words being used more than once. This repetition and practice was another important reason for her success.
The third reason for Faith’s ability to increase her percent of words read correctly was the daily repetition of the assessment and her ability to memorize the words. Because she was being tested with the same words each day, she was able to memorize a lot of the words without having to recognize the beginning, middle or ending sounds to the words. As best practice shows, memorizing sight words is an essential part to reading fluently.

The final reason for Faith’s ability to increase her percent of words read correctly was her overall feeling of comfort throughout the intervention process. Similar to her reading fluency, her sight-word recognition was also influenced by Faith’s overall feeling of comfort between her and the intervention. As Faith became more comfortable with the hour long intervention process, her ability to memorize and recognize reading patterns became more evident. Overall, Faith’s sight word recognition was influenced by her reading skills being learned (letter-sound relationships, blending, etc.), her practice with reading literature, the daily repetition of seeing the same words, and the fact that Faith became more comfortable in the intervention process.

**Connections to Existing Research**

The current case study aimed to improve a struggling reader’s phonological and decoding skills. The decision to focus on these particular skills throughout the intervention have been researched and studied by many educators because they are the beginning level skills necessary to become a fluent and comprehensive reader. Strattman and Hodson (2005) state, “By 3rd grade, children need to be able to read in order to learn because comprehension then becomes the major focus of reading”
Phonological Awareness and Decoding Intervention

(p. 166). This makes a student’s early academic career (Kindergarten through Second Grade) the most important when it comes to building the reading skills necessary to be labeled a sufficient reader. With the students that are behind in early grade levels, it makes interventions that much more important in order to build the skills necessary to avoid a child that reads inefficiently, reads less, enjoys reading less and encounters a problem where reading becomes a self-defeating task. Studies indicate the importance of building skills in our younger students however, less studies give specific detail into what those skills should be and how they can help a young child’s ability to get back on grade level. Throughout this portion of the case study, relationships will be highlighted between what was done throughout the intervention process and the research that supports it.

In order to properly assess a student’s current level of reading phonologically as well as with decoding skills, a formal assessment had to be assigned to gather pre and post data. The Test of Word Reading Efficiency (TOWRE) was assigned throughout this case study. Hester and Hodson (2004) mention the importance of being able to read non-words because it shows the true ability of the student to recognize proper sounds that make up words. During the Phonemic Decoding Efficiency portion of the assessment, Faith was asked to read the sounds of non-words as fast as she could for forty-five seconds. The research by Hester and Hodson support the use of non-words when assessing a student’s phonological and decoding skills. Sight Word Efficiency was the second portion of the TOWRE assessment and important in a different way for this case study. According to Carver (1998), sight words are the most common forms of words and should be
memorized in order to help a student’s fluency and comprehension skills. The TOWRE was a proper assessment tool because it worked on two important aspects of early reading as researched: Non-words and Sight-words.

Practicing sight words was an instrumental part of this case study and helped Faith become a more fluid reader. Integrating the work of recognizing sight words was an appropriate intervention because of the amount of sight words used throughout early reading books. Carver (1998) describes sight words as essential words that must be quickly memorized because of the amount of times students will see them in their academic careers. Due to the research collected on sight words, sight word recognition became a daily procedure during the one-hour intervention process.

Reading fluency and reading comprehension have been linked for years by researchers in order to create a successful reader. As Cummings (2011) mentioned, fluency and comprehension are linked together as the final stages of complete reading for a beginning reader. Therefore, allowing Faith the opportunity to practice her reading fluency was an important aspect of the intervention process. Although Faith is not a “fluent reader” the practice of reading the same book allowed Faith the ability to understand how a fluent reader sounds. Although some researchers suggest the use of reading aloud and having the student listen, it was important that Faith have the ability to read fluently on her own.

Throughout the intervention sessions, Faith was given the last few minutes to practice the skills taught using an interactive computer game to reinforce those lessons. With the overall advancement in technology, researchers are beginning to
see the influences of educational technology on students. Chambers et al. state, “The effects of the computer-assisted tutoring...provide more support for the use of computers in teaching reading” (Chambers et al., 2008, pg. 13). With the amount of different activities and lessons that can be done on the computer, it was important that Faith do various activities to comprehend the phonological and decoding skills necessary to become a better reader. The use of technology in this case study is supported and becoming a more researched topic in the educational world.

Overall, the use of the TOWRE assessment, providing phonological and decoding lessons, working on sight words and reading fluency and the use of technology are all supported strategies by previous researchers and case studies. When creating an intervention for Faith, it was important that I use well-researched procedures and strategies that have been proven to be successful. These previous case studies and researchers lay the foundation of the intervention process given to Faith, and give the case study evidence and support for what was used.

**Strengths and Limitations of the Current Study**

This study was supported a strong design based on previous research and case studies. An intervention model was put in place to benefit the individual needs of Faith instead of creating procedures and lessons that would benefit an entire classroom. The one-on-one setting was beneficial for Faith because of her ability to stay on task in a classroom setting. During the one-on-one interventions, Faith was able to take mini breaks when she felt that she was getting off track, and I was able to focus 100% of my attention to helping Faith’s basic reading needs. Faith was able to develop a positive relationship with myself during these interventions, which was
something she was struggling at developing during her summer school classes. Faith was often getting into trouble before the intervention started, and it helped her to get away from the classroom for an hour to refocus on her educational needs.

Despite the many strengths that this case study brought to Faith, there were areas where Faith could have potentially benefited more with different information and planning. Although reading her file from previous schools and receiving an e-mail from the special education teacher who worked in her room gave important information, I could have received more valuable information if I could have spoken to her classroom teacher from the previous school year in person. I would have been aware of Faith’s inability to stay in her seat for more than ten minutes at a time, and might have been able to develop more interactive activities to keep her hands and feet moving. It was also difficult to develop the most influential relationship in just eleven days and with as many breaks as Faith and I had. Eleven days didn’t allow the lessons and strategies being taught to fully develop in Faith. If more time was given for interventions, I believe the results of all of the informal and formal assessments would have been better. Another issue that was constant throughout the intervention process was Faith’s attitude to begin the session. She was often in trouble during summer school, and would enter the intervention setting in a sad or upset mood. This usually caused myself to have to build her emotions to a more positive level before involving her with the daily procedures. Faith loved to be positively rewarded for doing certain assignments or tasks, and that was an integral part of how Faith stayed motivated during the intervention process. For future educators that will work with Faith, a reward system would
benefit her ability to stay on task. Faith also loves to talk about her two sisters and her mom, and if there was a way to incorporate them into the lessons, I believe Faith would increase her on-task behavior. Although progress was made throughout the intervention process, I believe that with more information about Faith’s personality, longer intervention time, and Faith’s ability to be positive before entering the intervention room would have allowed for an even greater increase in all of her assessment scores.

**Implications**

This section describes the next steps for Faith and the continued research on phonological awareness and decoding. To begin this section, I will make some recommendations for Faith to work towards for her upcoming academic year. These recommendations will focus on the skills and strategies that Faith will need to work on in the future in order to become a fluent and comprehensive reader. The final portion of this section will look at the impact that this case study has on future research about phonological awareness and decoding. These suggestions are to better support Faith and the future of struggling readers with phonological awareness and decoding strategies.

**Recommendations for Student**

Faith’s progress during the intervention sessions showed her ability to pick up on new skills and strategies at a quick rate. However, instead of Faith’s progress stopping with the intervention sessions; new skills, procedures and strategies should be taught to help Faith continue to make strides with her reading ability. One of the important aspects of the intervention process that helped increase Faith's
phonological awareness and decoding skills was her visual learning. She was able to see pictures of the sight words, and was able to use hands-on activities to help reinforce these skills. With any lesson or skill that needs to be taught to Faith in the future, visual aids and hands-on activities allow Faith to stay on task and take more responsibility to her learning.

Throughout the eleven intervention sessions, Faith worked rigorously on her sight word recognition, which in turn helped her fluency and overall reading ability. Therefore, continued work on various sight words should be practiced throughout the next academic school year. The recognition of more difficult sight words will allow Faith to read at a more fluent pace and allow her to comprehend what she is reading with more accuracy.

Faith also worked hard on various phonological and decoding strategies. These strategies helped her with letter-sound relationships, beginning-middle-end sounds, vowel and consonant relationships, blending and digraphs. Although Faith’s work during the intervention process went well, she has yet to master a lot of the blending sounds with vowels. Blending sounds such as /ai/, /ea/, and /ue/ should be focal points throughout the next few months of her education. Another aspect of phonological awareness and decoding skills that Faith should also attempt to master are the short and long vowel sounds. These different sounds have caused problems during her reading fluency practice and throughout her assessments.

Finally, reading fluency and individualized reading should be a next step to build on Faith’s reading ability. Faith began to recognize her potential when she was reading the same book throughout the intervention process, and it allowed her
to feel more confident in her ability to sound out words she didn’t know. Faith loves to read books about children her age, and loves to demonstrate her reading fluency to her family. Therefore, I would suggest that when Faith works on her reading fluency in the future, that she is able to make a choice between appropriate grade level books. This choice, will allow Faith to read a book that she thinks is interesting which will cause her to practice more and more. If possible, I would also suggest that Faith take the book home with her during school nights to demonstrate her reading fluency to her family. This will allow Faith to build more confidence as well as add additional reading practice.

Assessment anxiety was an issue that might have caused Faith to not test as well as possible. Because of this test anxiety, I would suggest that the next educator that works with Faith should find a room where Faith can be alone and during the time of day when she is most relaxed. If Faith doesn’t feel the pressure of test taking, I believe her test scores will be more accurate to her knowledge than during times when Faith feels anxiety before taking an assessment. With more practice, I believe Faith could be reading beginning first grade and possibly beginning second grade level texts to start the next academic calendar. Faith’s ability to comprehend new strategies and skills is very positive and with the right direction and dedication, I believe Faith can be reading on grade level within the next school year.

**Future Research**

The current study joins previous research on the importance of practicing phonological and decoding skills on a young struggling reader. Most of the studies indicate the importance of practicing the basics of reading when a reader is
identified as one that is behind his/her peers. These strategies include letter-sound relationships, beginning-middle-end sounds, vowels, digraphs, blending and syllables. These strategies all have overwhelming evidence supporting the need to practice these skills in a struggling reader in order for them to make positive strides. However, little research has been conducted on the use of phonological and decoding skills using technology. With the increase use of technology by our students, it is important to tap into education technology in order to better support our struggling readers. Various programs work on these basic skills, however, few of them go in depth and create assessments to see the positive or negative effects that they have on our children. If future research can give educators a better glimpse of the activities, skills and strategies that can assist our struggling readers, it would allow for more differentiation within our classrooms.

**Conclusion**

This study demonstrates the importance of practicing phonological awareness and decoding skills within our struggling readers. These skills are a necessity to master in order to become a fluent and comprehensive reader. Without these skills, our struggling students fall behind their peers in all aspects of their education. All of the assignments showed a positive correlation between the work that was being done in the intervention sessions and the student’s overall phonological awareness, decoding skills, sight-word recognition and reading fluency. These results show similarities to the research findings that were reported on in Chapter Two and continue to give important information regarding best practices for students who are behind their peers in reading. Building phonological
awareness and decoding skills in struggling readers is the first step to helping them gain the confidence and knowledge necessary to becoming a successful reader, student and person.
References


Hudson, R., Togesen, J., Lane, H. & Turner, S (2010). Relations among reading skills and sub-skills and text-level reading proficiency in developing readers. *Reading Proficiency In Developing Readers,* 484-504


Strattman, K., & Williams Hodson, B. (2005). Variables that influence decoding and spelling in beginning readers. *Child Language Teaching and Therapy, 21*(2), 165-190


**Appendices**

**Appendix A**

<table>
<thead>
<tr>
<th>SESSION</th>
<th>INSTRUCTIONAL PLAN</th>
<th>SPECIFIC OBSERVATIONS FROM LESSON</th>
<th>CONCERNS/CHANGES WARRANTED</th>
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<tr>
<td>07/01/13</td>
<td>Get to know student. Initialize TOWRE assessments and give brief sight words to see current level of reading.</td>
<td>Talked about some of her favorite activities. She liked to talk about her family, coloring, movies and going to the water park. We took the TOWRE Form A today. We practiced some basic sight words to see where Lyric is currently at. She was able to get...your, you, may, yes, when, what, we, way, was, who, will and with. She struggled and needed help on word, write and many. We will continue to work on some sight words and I will introduce some basic phonemic awareness and decoding activities tomorrow. TOWRE assessments will be included in the next summary.</td>
<td>It was clear that she struggled with blending word sounds together. She tested better with the actual words than she did with the letter-sound relationship in non-words.</td>
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<tr>
<td>07/02/13</td>
<td>Instructional plan was to work on five new sight words and</td>
<td>To begin the session, we reviewed the 15 sight words that we</td>
<td>After doing the dice activity, I am still concerned with the</td>
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<tr>
<td>some decoding strategies using the three dice game (consonant-vowel-consonant).</td>
<td>went over on Monday. Student was able to get 10/15 to begin the session. After a few minutes of practice, the student was able to get all 15 words with 100% accuracy. We added five new words today...would, my, more, were, which. After 10 minutes of practice on the new words, the student was able to get 20/20 words correctly. In the beginning of the session, we practiced our decoding strategies by playing the dice game (consonant, vowel, consonant). Student practiced with 5 different groups of letters (PAB, TAB, CAD, CAT, BAP). Student struggled with getting the ending letters correctly. Student was able to say the first and middle sound but struggled blending all three sounds together when a non-sense word was created. Tomorrow we need to work on blending more than two sounds together. I am happy with the progress being made with the sight words, need to create a more interactive activity for</td>
<td>student's inability to make the third sound (especially in non-sense words). She often changes the last letter/sound in a word to make the word sound like a real word. For example, the student might see T, A, and will automatically add a “p” in order to make it sound like TAP, even if the last letter is a D, or C.</td>
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<tr>
<td>07/03/13</td>
<td>Instructional plan was to work on five new sight words and some decoding strategies using the three dice game (consonant-vowel-consonant).</td>
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<td></td>
<td>To begin the session today, I wanted to see how many of the sight words the student could get correctly without any practice. She was able to get 18/20 words correctly and missed the words “were” and “would”. The student was able to think about some of the words that she was missing yesterday and used some of the hints (ex. What do you do with a pencil? Write) that we discussed yesterday. Overall, the repetition and answers are coming much quicker. Read a book that has a lot of the sight words in them. Asked the student to point to as many of our sight words as possible when we read the book. She was able to point to a lot of the sight words. Sight words that begin with “w” seem to draw the most difficulty for this particular student. Played the dice game to deal with vowel sound “a” in the middle. Student showed a much better understanding for putting all three of the sounds together. She was able to get the last</td>
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<td></td>
<td>Concerned with Faith's ability to blend multiple sounds together to create a word. She often knows the beginning sounds of words, but struggles to add the middle and end sounds. Also, silent letters and blends cause a lot of problems.</td>
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<tr>
<td>Date</td>
<td>Description</td>
<td>Thoughts</td>
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<td>07/08/13</td>
<td>Wanted to work on some blending sounds /th/ is what we started with today. Also wanted to continue to work on sight words and introduce reading fluency</td>
<td>Thought Faith did a good job of remembering a lot of the sight words. It was clear that she identifies a lot of the sight words based off of first sound recognition. She often struggles at reading some of the sight words that have the same beginning sounds.</td>
<td>I was a little concerned that Faith struggled with some of the sight words that I thought she had memorized last week. However, four days off of not working on them can cause her to lose focus and forget a few.</td>
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<tr>
<td>07/09/13</td>
<td>Introduced the same blending sounds. Sight words, beginning-middle-end sounds. Reinforced with technology-based learning</td>
<td>Faith did a great job of focusing on her sight words today. She also took the book home to practice her reading fluency with her mom. She read a lot better and has some of the repetitive lines memorized.</td>
<td>Faith entered the room in a bad mood because she got in trouble this morning with summer school. However, after a few minutes of getting back to our procedures she was focused. No issues during the lesson today.</td>
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<tr>
<td>07/10/13</td>
<td>Introduced new blending sounds, /wh/. Practiced segmentation of words, worked on sight words, and completed the entire book on her own.</td>
<td>Faith seems to pick up on the /wh/ blends a lot better than the /th/ blends. Faith continues to practice her reading fluency at home and it is paying off on her reading time.</td>
<td>No issues today. Continued success</td>
</tr>
<tr>
<td>07/11/13</td>
<td>Introduced new blending sounds,</td>
<td>Faith is doing remarkably well on</td>
<td>I am concerned about the technology-based</td>
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<td>Date</td>
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<tr>
<td>07/15/13</td>
<td>Adding different vowel and consonants to the dice game. Picking up on all of the consonants. Still adding five sight-words a day. Faith continues to do well on the sight words. The new consonant sounds gave Faith a hard time. “F”, “K” in particular were a lot tougher than any other letter so far. Strange because “F” is a soft letter and “K” is a hard letter. Faith struggled paying attention today during all of the activities. It showed in her sight word recognition drill. Although she brought the book home over the weekend, it was evident that she didn't practice. She still struggles during the same points of the book.</td>
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<tr>
<td>07/16/13</td>
<td>Adding different vowel and consonants to the dice game. Picking up on all of the consonants. Still adding five sight-words a day. Faith continues to do well on the sight words. The new consonant sounds gave Faith a hard time. “F”, “K” in particular were a lot tougher than any other letter so far. Strange because “F” is a soft letter and “K” is a hard letter. Faith struggled paying attention today during all of the activities. It showed in her sight word recognition drill. Although she brought the book home over the weekend, it was evident that she didn’t practice. She still struggles during the same points of the book.</td>
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<td>07/17/13</td>
<td>Worked on all of the consonant and vowel sounds. Allowing After giving Faith the ability to create her own words using the activities causing Faith to lose focus on her reading. The technology-based activities work however, they often have games at the end of the activities that don't involve much learning.</td>
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Faith to create her own words today. dice, I was impressed with her ability to create words that were in her fluency book. She often knew the letters and all of the sounds to a lot of the sight words as well.

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<th>Date</th>
<th>Description</th>
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<tr>
<td>07/18/13</td>
<td>TOWRE Post-Test was given today. Final assessments for sight words and fluency also given</td>
<td>Overall, I was impressed with Faith's ability to progress throughout the eleven days she was with me. The assessments show great strides No issues today.</td>
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### Appendix B

**Roll-A-Word**

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<tr>
<th>1&lt;sup&gt;st&lt;/sup&gt; Roll</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Roll</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Roll</th>
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<td>(VOWEL)</td>
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### Appendix C

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<thead>
<tr>
<th>Word (ex. Cat)</th>
<th># of letters (a, b, c, d)</th>
<th># of Sounds (1, 2, 3...)</th>
<th># of Syllables (1, 2, 3...)</th>
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