



## **Effect of Edmark Program on Reading Fluency in Third-Grade Students with Disabilities**

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The purpose of this research study was to determine if the Edmark Reading Program increased reading fluency, attitudes, and engagement in third-grade students with disabilities ( $N = 7$ ). Student fluency was measured using estimated oral reading fluency determined by the STAR reading assessment. A statistically significant difference was found between the mean gains and losses of the control group ( $M = -9.5$ ) and the intervention group ( $M = 4.25$ ). Student attitudes and engagement were reported using fieldnotes collected by the teacher-researcher. Percentages of student attitudes and engagement were calculated, and the results revealed that students in the treatment group were more engaged and had more positive attitudes than students in the control group.

Keywords: Reading Fluency, Disabilities, STAR, Edmark Reading Program, Third Grade

## **INTRODUCTION**

The ability to read plays an important role in the academic success of students. Those students who are unable to read experience future difficulties in school and in life (Fiester, 2010). For that reason, early-elementary teachers have a large responsibility. If students moving into the upper grades are not able to read on grade level, it is almost impossible for them to make up for those lost skills (Huang, Nelson, & Nelson, 2008). In order for teachers to bring these struggling students up to the appropriate level, an effective reading program must be put into action. According to the No Child Left Behind Act of 2002 (NCLB), reading must be taught in an explicit way, which means skills and strategies are broken down and taught step-by-step. Reading instruction must also be systematic and follow a plan. NCLB required that reading programs must include instruction in phonemic awareness, phonics, vocabulary development, reading fluency, and reading comprehension. NCLB included five essential components of reading instruction in order to move students toward an important academic goal.

These components aimed to bring every student up to grade level by the end of third grade (No Child Left Behind [NCLB], 2010).

Georgia Governor Nathan Deal also made it a priority that students achieve or surpass grade level reading proficiency by third grade. Students must gain the basic skills in the early grades in order to be successful in reading. If these skills are not met in the early grades then, as Deal stated, "we're going to spend a whole lot more money trying to remediate students who don't have those third-grade skills - remediating them all through the rest of the process and having graduation coaches as we try to drag them across the finish line in order to get a diploma" (Badertscher, 2011, p. B1).

#### **DEFICITS OR DIFFICULTIES IN READING**

**National data.** Each high school dropout costs our country an estimated \$260,000 (Fiester, 2010). Fiester (2010) also showed that students who drop out of high school often place financial burdens on society because they are at a higher risk of getting arrested or becoming a teen-aged parent. Third grade is a critical time in education; it is the year when reading instruction moves from learning to read to reading to learn (Kuhn & Schwanenflugel, 2006). If students do not gain the skills needed to engage in the act of reading, they will fall behind and be unable to gain information from what they read for the rest of their time in school. According to the Children's Reading Foundation, students entering fourth grade who are reading below grade level are unable to read the required grade-level text (n.d.).

**Research school.** In the state of Georgia, students in third through fifth grade are required to take the Criterion-Referenced Competency Test (CRCT) in the spring of each year. For the 2009-2010 school year, 81.99% of students in the school who took the CRCT met or exceeded the standard. However, this was a 1.97% loss from the previous year. On the third-grade reading section of the CRCT, 96% of students met or exceeded the standard (Governor's Office of Student Achievement, 2010).

The researcher's third-grade classroom was comprised of a mixture of regular education students and students with disabilities. Researchers have found that students with disabilities typically score lower than their peers. In 2004, the U.S. Department of Education researchers aimed to determine the implementation and effectiveness of the Individuals with Disabilities Education Act (IDEA) (U.S. Department of Education, 2010). In the report, scores in both the reading and math sections of the 2003, 2005, and 2007 administrations of the National Assessment of Educational Progress indicated that students identified for IDEA services scored lower than their peers not identified for services (U.S. Department of Education, 2010). Students with disabilities at the research site did not perform as well as their peers on the state mandated CRCT. On the reading portion of the CRCT, 7% of students with disabilities did not meet the standard as compared to 3% of students without disabilities (Governor's Office of Student Achievement, 2010).

**Priorities to address deficits.** One of the Actions, Strategies, and Interventions mentioned in the research site's school improvement plan was the purchase of Renaissance Learning reading software to develop students' reading abilities. According to Renaissance Learning (2011), their tools provided a personalized program for students which include formative assessments and progress monitoring in reading. This software utilized tests on a student's individual reading level to provide teachers with useful data to target strengths and weaknesses. The School Improvement Plan (2011) also cited the NCLB Performance Goals. The goal that was most relevant to this study was Performance Goal 1 in which students should become proficient or better in reading and math by 2013-2014.

In order to determine various aspects of their current reading levels, students were tested using the STAR reading assessment. According to the Diagnostic Report, 78.6% of students in the classroom were reading below grade level. Of the seven students with disabilities, four were considered either early or late emergent readers (Renaissance Learning, 2011).

Part of the diagnostic testing measured students' estimated oral reading fluency (ORF) reported in correct words per minute. Estimated ORF is an estimate of how well students are able to read accurately and quickly. Students who are proficient in ORF are skilled in decoding and automatic word recognition as well as the ability to read with the appropriate tone and inflection (Renaissance Learning, 2009). The four lowest readers in the class' STAR Estimated ORF rates ranged from 13-26 words per minute. According to the Georgia Performance Standards for third grade, students should be able to read at a target rate of 120 words correct per minute (Georgia Department of Education, 2008).

### **Review of the Literature**

According to the nation's report card or the National Assessment of Educational Progress (NAEP), in 2009, 33% of fourth-grade students tested scored below the basic level in reading (2011). NCLB (2001) requires that teachers attempt to close the educational gap among students by implementing research-based interventions.

Success in reading has been connected to students' success in other areas of school as well as future success in their adult lives (Huang et al., 2008). Reading disabilities may result in greater numbers of students experiencing increased levels of academic failure (Alber-Morgan, 2006). Reading impacts students' lives beyond the Language Arts classroom. If students are struggling in reading, other academic problems can arise. Roundy and Roundy (2009) described reading as a crucial skill primarily because it impacts almost every academic area.

Kuhn and Schwanenflugel (2006) found that effective readers must have ever-developing background knowledge and vocabularies, phonemic awareness, and the ability to understand what is being read. Not only must they have and use these skills, they must do it automatically or fluently (Kuhn & Schwanenflugel, 2006).

**Fluency.** Fluency involves a number of different aspects including speed, accuracy, and prosody (Grabe, 2010). Huang et al. (2008) described prosody as the connection between comprehension and fluency. The researchers believed that readers who are fluent are able to read with expression and make sense of the text as they are reading it. As Rasinski, Homan, and Biggs (2009) described, fluency is the ability to read with automaticity as well as with an understanding of how it should be read.

According to Grabe (2010), when looking at the characteristics of readers, fluency is the central sign of effectiveness. Grabe also discussed the connection between fluency and comprehension and described that when fluency is developed, comprehension is the expectation. Nation (2009) described the fact that as students become more and more fluent, they are focusing less on the individual letter or word, and focusing more on the content of the text. As Rasinski, Homan, et al. (2009) stated, if the goal of reading is that students are proficient in understanding what is being read, fluency must be a part of the instruction. In another review, Rasinski, Rikli, and Johnston (2009) explained that when readers are not fluent, comprehension suffers.

Several studies have cited the work of LaBerge and his theory of automaticity. LaBerge (1976) explained that when the reader is focused on decoding one word at a time, the brain has less capacity with which to comprehend what is being read. As the speaker is able to move easily through certain parts of reading, such as decoding, other parts, like comprehension, can get better attention (Nation, 2009). Roundy and Roundy (2009) found that because the participants in their study struggled to decode the words, they had a difficult time comprehending what was read. Once the students' fluency improved, their levels of comprehension improved (Roundy & Roundy, 2009). When students have significant increases in sight word recognition and are able to read a larger number of words, they experience not only an increase in their fluency but also increases in comprehension as well (Huang et al., 2008).

In a fluency study conducted by Patton, Crosby, Houchins, and Jolivette (2010), students' comprehension scores were negatively affected. The researchers hypothesized that because the students were already struggling readers, the implementation of a comprehension strategy may have actually hindered students' reading process, and that students may not have been developmentally ready to comprehend what was being read (Patton et al., 2010).

Martens et al. (2007) conducted a study on the effect of fluency building in an after-school tutoring program. The participants of the study were low-achieving second- and third-grade students. The researchers found that both intervention groups showed large gains in fluency (Martens et al., 2007). Martens et al. also studied retention rates after 2 days and determined that students' increases in fluency were comparable to the other gains, if not even slightly higher.

**Students with disabilities.** According to Hausheer, Hansen, and Dumas (2011), when students are not successful in reading, interventions should be set in place. Intervention,

especially at the elementary level, can help to prevent further reading difficulties. If problems with fluency are not addressed, students will fail to become successful readers (Roundy & Roundy, 2009). Many students do not acquire basic reading skills, which can negatively affect their chances for success in school as well as later in life (Hausheer et al., 2011). Intervention can help in preventing frustration and failure before they occur (Huang et al., 2008).

Kuhn and Schwanenflugel (2006) stated there are generally two groups of students that can benefit from training in fluency: those who are typically in second or third grade and moving toward expressive reading, and older students who are experiencing difficulty with decoding. Another group that may gain from fluency intervention includes students with disabilities.

Vacca (2007) described children with disabilities as having additional deficits that make reading more difficult. One group of students with disabilities are students with autism. Many autistic children have "significant problems with attention span, lack any type of motivation to learn to read, and have problems with figuring out the rules of reading and grammar when compared to children who do not have autism" (Vacca, 2007, p. 55). Vacca discussed that some autistic students do read phonetically, but that many more are whole-word readers. Vacca provided several strategies for teachers to help support children with autism including modelling desired outcomes and providing multiple chances to practice.

Fluency is an important aspect of a successful reading program, and for students who have reading disabilities, it may be even more significant (Rasinski, Homan, et al., 2009). According to Kuhn and Schwanenflugel (2006), teachers must determine which of their students need fluency instruction and the extent to which it is needed. Watson, Fore, and Boon (2009) stated that because fluency and comprehension are strongly linked, it is important for teachers to find the appropriate method for reaching struggling students.

**Possible interventions.** One of the misconceptions of fluency is that it is simply reading quickly. Rasinski, Homan, et al. (2009) described that one strategy to explain to students the true meaning of fluency is to model it. Teachers should read to students in a way that uses speed as well as accuracy and expression. Teachers can then model reading in a non-fluent way, and the two can discuss what makes fluent reading more effective (Rasinski, Homan, et al., 2009).

Kuhn and Schwanenflugel (2006) discussed the common oral reading practice, round robin reading. The researchers discuss many of the negative aspects of this intervention. Round robin reading does not give students enough support for literacy learning, and it also allows the student to become disconnected and distracted when they are waiting for their turn (Kuhn & Schwanenflugel, 2006).

In the repeated reading strategy, students reread the same passage over and over. Alber-Morgan (2006) described repeated reading as a way to provide students with chances to increase their accuracy through regular practice. Repeated reading is an appropriate method useful for students of various abilities and backgrounds (Roundy & Roundy,

2009). According to Kuhn and Schwanenflugel (2006), the material should be of interest to the student and not be above his level of ability. After the student reads, the teacher calculates the words per minute. This number is charted and used to assess the student's progress, and the teacher reviews the mistakes made with the student. This process continues until the student reaches 100 WPM. Nation (2009) discussed that comprehension can be negatively affected by reading rates much less than 100 WPM.

One potential problem with repeated reading is that students may become competitive and focus on their records rather than on the material (Kuhn & Schwanenflugel, 2006). Huang et al. (2008) found that repeated reading resulted in significant increases in fluency and comprehension. Repeated readings are not successful without the support and correction made by the teachers, coach, or tutor. Rasinski, Rikli, et al. (2009) described that the teacher will listen to the students and be able to give immediate correction and praise. The teacher can develop and chart the individual success of each student.

In paired reading, students are teamed with another student, and students take turns in their roles as student and teacher. According to Kuhn and Schwanenflugel (2006), this allows the students to support and tutor each other. This method can easily be added to the already existing reading program taking little time from the teacher (Kuhn & Schwanenflugel, 2006).

The strategy of reading-while-listening involves students reading along with recorded text. Kuhn and Schwanenflugel (2006) discussed the fact that students must be fluent before moving to the next level. The difficulty in this method is that the child must be looking at the words not just listening to the story (Kuhn & Schwanenflugel, 2006). In this intervention, the teacher can create a listening center where he/she can record text or have the student record their own text. Rasinski, Homan, et al. (2009) described one of the benefits of this aspect of the intervention is that students are able to hear their own progress.

**The Edmark Reading Program.** The Edmark Reading Program (ERP) was developed specifically for students with disabilities and emergent readers (Edmark, 2011). The program was created in the 1960s and became commercially available in 1972. It is an alternative to a phonics-based reading program. The ERP uses an errorless learning technique with which even beginning readers can have success. The learning is set up in such a way that students will not make errors. Students' attitudes toward the intervention can play a role in their success (Roundy & Roundy, 2009). In their study, Roundy and Roundy (2009) found that there was a direct link between students' negative attitudes and fluency deficits.

The ERP consists of two levels. Level 1 of the program introduces students to 150 commonly-used sight words. Level 1 also teaches the word endings -s, -ed, and -ing. Students begin by recognizing and reading a new word in isolation and then in the context of phrases, sentences, and stories (Edmark, 2011). In order to move on to level

2, students must have learned all of the 150 sight words from level 1. Level 2 introduces 200 additional sight words that gradually increase in difficulty.

Multiple methods of instruction are used in the ERP including picture matching, writing practice, games, and story reading (Edmark, 2011). Meadan et al. (2008) stated that students' ability to recognize sight words is one of the most important aspects of early reading. In a study conducted with students at-risk, Meadan et al. found that students learned sight words through the use of games and students enjoyed the process.

### **Purpose of the Study**

The purpose of this study was to determine how the ERP affects student fluency, attitudes toward reading, and participation in reading. This study added to the body of research on the importance of explicit teaching of fluency. The researcher hoped the implementation of this research would result in the improvement of students' fluency with the ultimate goal of preparing students for future success in education.

### **Research Questions**

**Research question 1.** Will the Edmark Reading Program increase student fluency compared with regular classroom reading instruction?

**Research question 2.** Will the Edmark Reading Program improve student attitudes toward reading compared with regular classroom reading instruction?

**Research question 3.** Will the Edmark Reading Program improve student engagement in reading compared with regular classroom reading instruction?

### **Definition of Variables**

**Edmark Reading Program.** The Edmark Reading Program is a beginning reading program that uses a whole-word approach to teach beginning reading skills.

**Student oral reading fluency.** Student oral reading fluency is defined as the number of words correct per minute and is determined by the STAR Estimated ORF.

**Regular classroom reading instruction.** Regular classroom reading instruction is the usual reading practices used in the classroom.

**Student attitudes.** Student attitudes are the feelings students had about reading. Data on student attitudes were collected through fieldnotes.

**Student engagement.** Student engagement is defined as participation and attentiveness in reading instruction. Data on student engagement were collected through fieldnotes.

## **METHOD**

### **Setting and Participants**

The third-grade participants in this study ( $N = 6$ ) were enrolled in an elementary school located in a metropolitan city in west-central Georgia. Table 1 shows the demographic data of the student participants, including specific disabilities. For the 2009-2010 school year, enrollment at this elementary school was 466. The percentage of students

qualifying for free or reduced lunch was 59% (Governor's Office of Student Achievement, 2010).

Participants were selected by convenience sampling and were the students of the teacher-researcher. The students' ages ranged from 8-9 years old. Most of the students were classified as having a Specific Learning Disability.

According to the STAR Diagnostic Report, all six of the participants were reading below the 25th percentile for their grade level placement (Renaissance Learning, 2011). Students' grade equivalencies ranged from 0.7 to 2.0. Four students (57%) were considered to be reading at the pre-primer reading level.

Table 1: *Student Demographics*

Ethnic Group				Designations		
Group	Black	White	Other	Specific Learning Disability	Mild Intellectual Disability	Significant Developmental Delay
A	1	1	0	1	1	0
B	2	1	1	3	0	1

### Intervention

Students in both the control (Reading Instruction) and intervention (Edmark Reading) groups had the same teacher and received regular classroom reading instruction. Regular classroom reading instruction included the same content and use of the same textbook. All students completed the same assignments and assessments. The hour-long lessons in reading were similar each week, focusing on a selection from the basal and a skill. The class spent a week on concepts such as main idea and details, comparing and contrasting, and summarizing. On Fridays, students were assessed on the skill as well as comprehension and vocabulary from the basal selection.

Because the ERP was designed for students who have not yet learned to read, the four lowest readers in the class were chosen to be a part of the intervention group. The intervention lasted 6 weeks. Each day, all students were pulled to work one-on-one with the teacher for approximately 10 minutes. The students in the control group read aloud to the teacher. The students in the intervention group worked through the levels of the ERP.

In order to determine students' baseline level, a mastery test was given. This test also helped to monitor student achievement and progress (Edmark Reading Program, 2011). Students using the program advanced through the planned activities based on their current level and ability. Because the ERP allows students to move at their own pace, students were often at different levels at the same time.

The main focus of the ERP was the word recognition activities. Level One of the program includes 150 word recognition lessons. In word recognition, the student hears, sees, points to, and reads new words one lesson at a time.

The lessons began by asking the student to choose the target word from a row of similar-looking words, and as the student progressed, he had to choose the target word from a row of very similar-looking words. After the student had worked on word recognition, the lessons included a phrase-match activity. In this activity, students were presented with a board containing a group of pictures and had to match a short phrase card to the correct picture.

Each student in the intervention group had an ERP record book to document their progress through the lessons. This record book contained places to record scores from the mastery test, words mastered, and words missed.

#### **Data Collection Techniques**

Data collected in this study consisted of both qualitative and quantitative techniques. Students' STAR estimated ORF was assessed and the rates were compared to determine growth. Fieldnotes were taken to describe student behavior and attitudes toward the intervention. Patterns and themes from the notes were analyzed to help interpret the results of the study. The researcher looked for changes in behavior and engagement during reading instruction.

**STAR Reading.** The STAR reading assessment was developed by Renaissance Learning, and several studies have been conducted to establish its validity. Laurits (2010) conducted a study of four different early literacy and reading assessment tools, and found that STAR reading assessments were easily administered, and the reports contained specific information about readers. Through the National Center on Student Progress Monitoring, the U.S. Department of Education (2006) reviewed a number of progress monitoring tools and found the STAR reading assessment to be reliable and valid. The U.S. Department of Education (2009), with the National Center on Response to Intervention, conducted research ( $n=63,291$ ) and found "convincing evidence" in regard to the reliability and validity of the STAR test.

Students in both Reading Instruction Group and Edmark Reading Group took the 25-question STAR reading test that lasted approximately 10 minutes (Renaissance Learning, 2011). The STAR assessment was administered to students at individual computers before and after the intervention. The software was designed to determine whether the student needs a more or less difficult level test item based on his/her responses. If a student answered a question correctly, the next question was at a higher level, and if the question was answered incorrectly, the next question was at a lower level. Following the test, the STAR diagnostic report provided results from the assessment including grade equivalency, reading range, and estimated ORF (Renaissance Learning, 2009). The STAR Estimated ORF was used to determine changes in student fluency. Data were analyzed using unpaired, one-tailed *t*-tests comparing gains and losses from each treatment.

**Fieldnotes.** Throughout the intervention, fieldnotes were kept daily by the teacher-researcher. Fieldnotes were taken daily to record students' behaviors and engagement in the reading instruction. Student engagement and attitudes were ranked using a 5-point Likert scale, where 1 was no participation or attention given and 5 was full participation

and attentiveness. Student attitudes were ranked on a scale of 1 to 5, where 1 described a completely negative attitude and 5 described a completely positive attitude. In order to determine if the intervention affected student engagement and attitudes, the rankings were analyzed using a *t*-test analysis.

## RESULTS

Data collected in this study provided information to compare the Reading Instruction Group, the students who participated in regular classroom reading instruction, and the Edmark Reading Group, the students who participated in the ERP. Data were collected using the STAR reading assessment as well as fieldnotes gathered by the teacher-researcher.

Means and standard deviations for the two tests are given in Table 2. The teacher-researcher analyzed the mean gain/loss for students' scores after the intervention. A pretest was given to the Reading Instruction Group ( $M = 55.5$ ,  $SD = 10.61$ ) and given to the Edmark Reading Group ( $M = 25$ ,  $SD = 9.42$ ). After the intervention, a posttest was given. On the posttest, the Reading Instruction Group ( $M = 46$ ,  $SD = 1.41$ ) outscored the Edmark Reading Group ( $M = 29.25$ ,  $SD = 7.54$ ). The change in scores of the Reading Instruction Group ( $M = -9.5$ ) was significantly different than the change in the scores of the Edmark Reading Group ( $M = 4.25$ ). Estimated ORF scores for students in the Edmark Reading Group using the ERP increased significantly more ( $p = 0.02$ ) than scores for students in the Reading Instruction Group instructed using regular classroom reading instruction.

Table 2: STAR Estimated ORF Results

	Pretest		Posttest		Mean Gain/Loss	<i>t</i> -value	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Reading Instruction Group ( <i>N</i> = 2)	55.5	10.61	46	1.41	-9.50	-3.10	0.02*
Edmark Reading Group ( <i>N</i> = 4)	25	9.42	29.25	7.54	4.25		

\* $p < .05$ , \*\*  $p < .01$

To determine the practical significance of the difference in scores, Cohen's *d* was computed. The intervention had a huge effect ( $d = 3.28$ ). An average student who used the ERP would be expected to have a larger gain in Estimated ORF than about 99.9% of students who did not use the ERP. Participating in regular classroom reading instruction decreased students' ORF by 145%.

Throughout the intervention, the teacher-researcher gathered fieldnotes on student attitudes. Student attitudes for both groups were measured using a 5-point scale. The mean percentage of positive attitudes was higher for the Edmark Reading Group ( $M = 87\%$ ) than for the Reading Instruction Group ( $M = 73\%$ ). One student in the Edmark Reading Group brought the average percentage down. This student's attitude was

positive only 60% of the time, while the other 3 students who participated in the ERP were positive at least 95% of the time. Most students in the Edmark Reading Group were happy to participate in the ERP daily. Most students enjoyed working through the various levels of the program, and were excited when they progressed to the next stage.

The teacher-researcher also used fieldnotes to examine student engagement. Student engagement for both groups was measured using a 5-point scale. Overall, students in the Edmark Reading Group (Group B in Figure 1) were more engaged than the students in the Reading Instruction Group (Group A in Figure 1). Individual percentages for engagement during the intervention are shown in Figure 1.

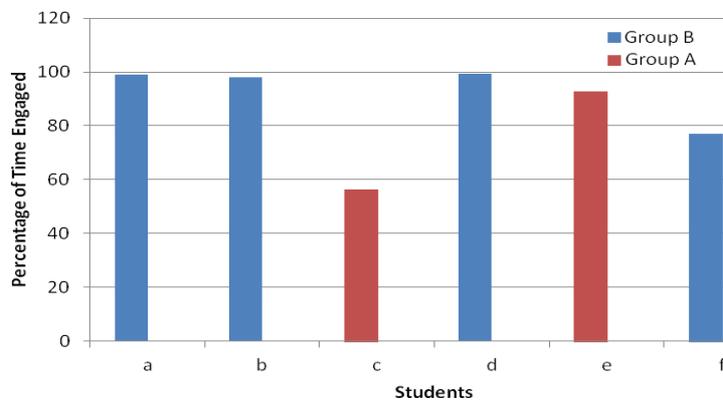


Figure 1: Individual Engagement Percentages.

The mean engagement percentage for the Reading Instruction Group ( $N = 2$ ) was 75%, and the mean engagement percentage for the Edmark Reading Group ( $N = 4$ ) was 93%. All students participating in the ERP were engaged at least 70% of the time, and most were engaged at least 98% of the time. One of the students in the Reading Instruction Group was only engaged 56% of the time. Students in the Edmark Reading Group did not require prompting. Students in the Reading Instruction Group required frequent prompting to stay engaged and on-task. The Reading Instruction Group students were seen flipping through pages in their books, getting up out of their seats, and staring off into space.

## DISCUSSION

### Conclusions

The results indicated that the ERP (utilizing a whole-word approach) increased student fluency. Although the mean estimated ORF was higher for the control group, the Reading Instruction Group, the students in the Edmark Reading Group's mean gain ( $M = 4.25$ ) was significantly higher than the Reading Instruction Group's mean loss ( $M = -9.5$ ). Vacca (2007) also found success in his study utilizing a whole-word method, and believed that many students with disabilities respond and learn better when they learn to

read using this style. Although not directly measured, students may have also made gains in understanding what they read due to the important correlation between fluency and comprehension (Huang et al, 2008). Similarly, Roundy and Roundy (2009) found that after intervention, students' comprehension improved as fluency increased.

The increases in fluency were consistent with the growth found in Martens et al.'s (2007) study of low-achieving second- and third-grade students who participated in tutoring to build fluency. The results were also similar to those of Meadan et al. (2008), who found that teaching students at-risk sight words through the use of games increased their fluency. Although most of the daily lessons in the ERP were focused on sight word recognition and reading in isolation and then in increasingly more complex settings such as in sentences and stories, several of the lessons were games and activities which the students seemed to especially enjoy. Meadan et al. (2008) found that the students' enjoyment of learning through games and activities allowed them to improve over a short period of time.

The teacher-researcher's fieldnotes provided insight into student attitudes during the intervention. Students in the Edmark Reading Group ( $M = 87\%$ ) were more positive than students in the Reading Instruction Group ( $M = 73\%$ ). Three of the students who participated in the ERP were positive almost all of the time ( $M = 96\%$ ). The students in the Edmark Reading Group looked forward to the activities, and were positive and excited throughout the intervention. The students were most excited about progressing through the levels of the ERP. The students' excitement level seemed to have an impact on their growth. The two students with the highest mean percentage for positive attitudes also had the highest gain in fluency. Similarly, Roundy and Roundy (2009) found a correlation between students' attitudes and increases in fluency. Kuhn and Schwanenflugel (2006) also found that the appeal of advancing to new levels had a positive impact on student attitudes and performance. As was the case in Roundy and Roundy's (2009) study, as students progressed through the program, their attitudes toward reading and their motivation improved.

The Edmark Reading Group ( $M = 93\%$ ) was more engaged during the intervention than the Reading Instruction Group ( $M = 75\%$ ) during regular classroom reading instruction. The students in the Reading Instruction Group were frequently off-task. They required repeated prompting in order to get them focused on the task at hand. The students in the Edmark Reading Group, however, rarely needed any sort of prompting.

Students were especially motivated because of the level progression in the ERP. Although they were never told what level their classmates were on, they strived to be the best. A competition between the participants arose, making them want to outperform themselves and the other students. In their study, Kuhn and Schwanenflugel (2006) found that this competitiveness could potentially be a problem if students focus on the records rather than on the reading itself. The students in this study, however, seemed to be able to do both.

**Significance/Impact on Student Learning**

Students who participated in the ERP showed increased gains in fluency over those in the control group. The Edmark Reading Group had a mean increase of 4.3 WPM, and Reading Instruction Group had a mean loss of 9.5 WPM. An increase in fluency could help students' comprehension. As students make the shift from only reading one letter or word at a time, they are more able to focus on understanding what the text means.

The Edmark Reading Group showed an improvement in both student attitudes and student engagement. Being engaged in the reading lesson and being positive about what they are learning often helps students as they progress through school. Students with a positive attitude were more likely to make gains in reading fluency.

**Implications and Limitations**

Although the implementation of the ERP in this study showed student growth in fluency, the program would not be beneficial to the typical disfluent student. The program is specifically designed to help those students who are emergent readers. As most of the research shows (Badertscher, 2011; Fiester, 2010; Hausheer et al., 2011), if students learn to read earlier in their school careers, the more success they will see.

There were several limitations in the research study. The six week implementation of this study was a relatively short time in which to carry out the intervention and analyze the results. The size of the intervention group may have impacted the reliability of the study results. The treatment group had four participants compared to the control group with only two participants. Working with a larger group of students would likely result in a stronger study.

There were several factors that influenced the implementation of the intervention. The largest hindrance to this study was approval from the county. The teacher-researcher had a number of additional tests and measures that would have provided a more well-rounded picture of the results of the ERP, but the school district was very specific in what was and was not allowed in research studies. All but two of the data collection instruments had to be removed from the study in order to abide by district policies.

Another factor that may have impacted the intervention is time. The students who participated in the ERP worked through one lesson per day, which was generally 10 min per session. The students in the control group often spent slightly longer in their time with the teacher. This variation in time may have negatively impacted those students' attitudes and engagement in the reading.

Research on the developmental relationship among emergent literacy skills such as word reading fluency, listening comprehension, and text reading fluency to reading comprehension in Korean elementary school students by Kim et al (2014) suggests that "the unique relation of text reading fluency to reading comprehension may depend on children's reading skill level" (p. 82). Cohen-Mimran (2009), in research with Hebrew-speaking elementary students, explored how language skills contribute to reading fluency. Further research in this area, expanded beyond the confines of

English-speaking students, would illuminate our understanding of language acquisition relative to reading fluency and overall text comprehension.

Given the findings of the current study, ERP's positive effects on third-grade students with disabilities' fluency, attitudes toward reading, and participation in reading, there is a continued need for research on the importance of explicit teaching of fluency in the elementary grades. Further studies like the implementation of this research may result in the improvement of students' fluency with the ultimate goal of preparing all students for future success in education. Expanding the scope of the research to include related developmental skills that may impact students' fluency would also increase the opportunities for improving our understanding of best practices in reading instruction.

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#### Turkish Abstract

##### Edmark Programının Engelli Olan 3. Sınıf Öğrencilerinin Okuma Becerisi Üzerindeki Etkisi

Bu çalışmanın amacı engelli olan 3. sınıf öğrencilerinin (N=7) okumadaki akıcılığının, tutumlarının ve ilgilerinin Edmark Okuma Programıyla artıp artmadığını belirlemektir. Öğrencilerin okumadaki akıcılığı STAR okuma değerlendirmesiyle belirlenen tahmini sözel okuma akıcılığı kullanılarak ölçülmüştür. Kontrol grubuyla (M=-9.5) müdahale grubu (M=4.25) arasında istatistiki olarak anlamlı bir fark bulunmuştur. Öğrencilerin tutumları ve ilgileri öğretmen-araştırmacı tarafından tutulan notlarla rapor edilmiştir. Öğrencilerin tutum ve ilgilerinin yüzdeleri hesaplanmış ve sonuçlar müdahale grubundaki öğrencilerin kontrol grubundaki öğrencilerden daha olumlu görüşlere sahip olduğunu ve daha ilgili olduklarını göstermiştir.

**Anahtar Kelimeler:** Okumada akıcılık, engeller, STAR, Edmark okuma programı, 3. sınıf

#### French Abstract

##### Effet du Programme Edmark sur la Fluidité de Lecture chez les Élèves de Troisième Année avec les Personnes Handicapées

Le but de cette étude de recherche était de déterminer si l'Edmark Lisant Programme a augmenté l'aisance lisante, des attitudes et l'engagement dans des étudiants de troisième année avec des handicaps (N = 7). L'aisance d'étudiant a été mesurée utilisant l'oral évalué lisant l'aisance déterminée par l'ÉTOILE lisant l'évaluation. Une différence statistiquement significative a été trouvée entre les gains moyens et les pertes du groupe témoin (M = -9.5) et le groupe d'intervention (M = 4.25). Les attitudes d'étudiant et l'engagement ont été rapportés utilisant fieldnotes rassemblé par le chercheur-professeur. Les pourcentages d'attitudes d'étudiant et l'engagement ont été calculés et les résultats ont révélé que les étudiants dans le groupe de traitement ont été plus engagés et avaient des attitudes plus positives que des étudiants dans le groupe témoin.

**Mots-clés:** en Lisant aisance, handicaps, ÉTOILE, Edmark lisant programme, troisième année

#### Arabic Abstract

##### تأثير برنامج EDMARK على القراءة الطلاقة في طلاب الصف الثالث ذوي الإعاقة

وكان الغرض من هذه الدراسة البحثية لتحديد ما إذا زادت برنامج القراءة EDMARK قراءة الطلاقة، والمواقف، والمشاركة في عدد الطلاب في الصف الثالث المعوقين (N = 7). وقد تم قياس الطلاقة الطالب باستخدام بقدر الطلاقة الشفوية القراءة يحدده تقييم القراءة النجوم. تم العثور على فروق ذات دلالة إحصائية بين المكاسب والخسائر متوسط المجموعة الضابطة (M = -9.5) ومجموعة التدخل (M = 4.25). ولم يبلغ عن والمواقف الطالب والمشاركة باستخدام fieldnotes التي جمعها المعلم والباحث. تم حساب النسب المئوية من المواقف الطالب والمشاركة، وأظهرت النتائج أن الطلاب في مجموعة العلاج كانت أكثر انخراطا وكان مواقف أكثر إيجابية من الطلاب في السيطرة على المجموعة. الكلمات الرئيسية: قراءة الطلاقة، الإعاقة، نجمة، برنامج القراءة EDMARK، الصف الثالث