IMPROVING READING INSTRUCTION:
A REVIEW OF EVIDENCE BASED LITERACY INSTRUCTION
by
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Abstract

This research study seeks to determine the effectiveness of a new reading intervention program for middle school special education students who have not been successful with other reading programs. Evidence Based Literacy Instruction (EBLI) was established in 2006 with the goal of combining all of the best research on literacy to create a comprehensive reading intervention program. A rural middle school in Michigan's Upper Peninsula has implemented a nine-week class for all sixth grade special education students to implement EBLI interventions. An analysis of pre and posttest data determined that EBLI has potential as a remedial tool for reading. The research suggests that a continued, more detailed examination of EBLI is necessary in order to determine its effectiveness.

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Chapter I – Introduction

In the 2008-2009 school year, Sault Area Middle School (SAMS) did not make adequate yearly progress (AYP) as required by the Elementary and Secondary Education Act of 2001. An analysis of the Michigan Educational Assessment Program (MEAP) data was conducted to determine the problematic areas. The analysis indicated that the special education subpopulation scores on the reading portion of the English Language Arts test were the deficient area. To address this problem, the special education department at SAMS used the MEAP data to identify sixth and seventh grade special education students who were either ten points above or below the cut score. There were twenty-four students who fit the criteria. The department then sought to establish a reading intervention program that would address the deficit area.

Three special education staff members had received training in Evidence Based Literacy Instruction (EBLI) during the prior academic year (2007-2008). EBLI is a reading instruction program created by Nora Chahbazi from the Ounce of Prevention Reading Center in Flushing, Michigan (http://www.ebli.org). Chahbazi established the program by compiling research-based strategies for teaching reading. The three-day training provided strategies for improving phonemic awareness skills, spelling, fluency, and vocabulary. An on-site follow up by Chahbazi offered additional resources and instruction for addressing reading comprehension issues. The special education department proposed the establishment of a reading class for special education students as a tool for improving student performance on the MEAP. It was the department's belief that EBLI instruction would garner the greatest increases in student achievement.

Statement of Problem

After not making AYP one year, SAMS was at a critical point and desperately needed to turn things around. The Michigan Department of Education, measures AYP in middle schools by

looking at year-to-year student achievement on the MEAP (www.michigan.gov/mde). Title 1 schools that do not achieve AYP for two years in a row are placed into the "High Priority School" category. Once labeled a High Priority School, there are specific consequences and supports that are put into place. Consequences include offering to transfer the students to a different school and paying for the transportation costs associated with the transfer, creation and implementation of a new school improvement plan, and the use of 10% of the Title I funds for targeted professional development. Support from the MDE includes mentors, curriculum alignment, a needs analysis, and assistance with the school improvement plan. The critical factor for schools is the possible transfer out of students to a different district. The transfer would result in a loss of state per pupil funding and could cause significant financial hardship for the district. It is essential for districts to develop an action plan for correcting the deficit areas after the first year of not making AYP in order to avoid the consequences that result from being labeled a High Priority School.

Research Question(s)

The research seeks to answer the question, "To what extent does EBLI impact the achievement of the special education students at Sault Area Middle School?" The resulting information from this research study will answer the question, "Are the benefits from an EBLI based reading class for special education students significant enough to outweigh the associated costs?"

Chapter II – Review of Literature

Reading Program Comparison

My personal assumptions indicate a belief that individualized EBLI instruction will result in increased student achievement for middle school special education students in Sault Schools. I I believe EBLI offers more effective instructional strategies than the current remedial reading program, Reading Recovery. This belief is based upon the large number of students I taught at the Middle School who were graduates of Reading Recovery. The students lacked basic reading skills and had many bad reading habits. In contrast, schools using EBLI have reported significant, sustained improvements.

Reading recovery.

Historically, Reading Recovery has been offered only to a small percentage of first grade students who are identified as being at risk (S. McFarlane, personal communication, May 1, 2009). Those who were suspected to be eligible for special education services were excluded from the reading program. The exclusion alone rules out Reading Recovery as an effective program for the remediation of all students. Add to the exclusion the ineffective strategies (outlined below) and the program's effectiveness becomes even more questionable.

Reading Recovery utilizes strategies such as using context to predict words, using non-written prompts such as pictures, and focusing on beginning sounds. All of these strategies result in students who often rely on guessing. Using context to predict unknown words is essentially guessing, as there are no phonemic skills being utilized. While this might appear effective at an elementary level, the strategy will result in much confusion as the level of text becomes more advanced. Fuller (2001) offered research that shows students who lack phonemic awareness cannot learn to read. Using picture cues is not a reliable reading skill as not all text contains

pictures. In addition students might not have the correct word even with the picture. Imagine a line of text that reads, "the horse is in the pasture" on the same page as a picture of a horse in a field outside of a barn. Unless the student lives on a farm it is highly unlikely that the picture or the context will result in the student predicting "pasture" as the correct word. I have experience with many middle school students who "graduated" from Reading Recovery and use the first letter(s) of the word to guess what it might be rather than relying on phonemic awareness skills to segment the word. This is a very difficult habit to break and often inhibits the reading ability of students.

PhonoGraphix.

In contrast EBLI offers reading instruction that is based upon the principles of phonemic awareness (www.ebli.org). Many of the reading strategies are based upon *Why Our Children Can't Read and What We Can Do About It* (McGuinness, 1999). The book is highly regarded as a cornerstone of quality reading instruction and highlighted the phonemic awareness principles of Phono Graphix instruction. Geoffrey and Carmen McGuinness established Read America Inc., which promotes the Phono-Graphix reading program, in 1996 (http://www.readamerica.net/). The reading intervention program was based upon understanding the English code through segmenting, blending, and phoneme manipulation. Multiple studies are cited on the Phono-Graphix website that claim the program can result in several grade level increases in student achievement after just a few hours of instruction.

Mullen and Wright (2006) sought to determine the effectiveness of Phono-Graphix for the remediation of students with dyslexia. The researchers utilized the PhonoGraphix program to provide direct reading interventions to ten dyslexic students between the ages of nine and eleven years. Each student was given 24.3 hours of Phono-Graphix instruction. The students were pre

and post tested using three measures: Phonological Processing Tests, Neale Analysis of Reading Ability, and Vernon Spelling Test. In addition, Mullen and Wright (2006) gathered qualitative data from parent and teacher interviews. While the gains documented in the study did not achieve the same results reported by Read America Inc, the researchers utilized pre and post test measures to indicate a strong improvement by all of the participants. In addition, the parents and teachers interviewed revealed favorable opinions regarding the program. The researchers recommended that school administrators take a serious look at using Phono-Graphix as a primary instructional method for students with dyslexia.

Research for Evidence Based Literacy Instruction

The What Works Clearinghouse identified EBLI as a program eligible for review but indicated that EBLI is currently lacking studies that meet the evidence standards (United States Department of Education, 2007). There is no formal research available relating to the effectiveness of EBLI instruction for middle school students; however, there are three middle grade participatory action research studies available for review on the Ounce of Prevention Reading Center Website (www.ebli.org).

Research study – Whitehall Public Schools.

Whitehall Public Schools conducted action research to assess the effectiveness of EBLI instruction on the reading level of fourth grade students (Chahbazi, 2006). Students who were in the fourth grade during the 2001-2002 academic year were given whole class EBLI instruction throughout the year. The study does not indicate the actual number of student participants nor the amount of time devoted to instruction. Thirty-five percent of the student population received free or reduced lunch and eight percent were labeled as special education. In 2001-2002 (before the EBLI intervention) 51% of the fourth grade students scored proficient (a level 1 or 2) on the

MEAP. The following year (after EBLI instruction) the percent proficient rose above 80%. By 2004-2005 (the students were then in seventh grade) the proficiency level was at 96%. The increases appear dramatic; however, they should be accepted with caution because of changing cut scores and assessment items.

Research study – Quincy Public Schools.

Quincy Schools also conducted participatory action research to determine the effectiveness of EBLI instruction for increasing the reading level of middle grade students (Chahbazi, 2006). During the 2003-2004 school year, twenty-five sixth-grade students received pull-out instruction using the EBLI strategies from a paraprofessional. Specific criteria for student selection, gender, race, socioeconomic status, or special education status were not given for the student participants. There was an average of 9.52 hours of individualized instruction for each student. The study used the Woodcock Johnson Reading Mastery to obtain pre and post test data. The data was divided into four categories: word identification, word attack, vocabulary, and comprehension. The students increased an average of 1.79 grade levels in the area of word identification, 3.49 grade levels in word attack, 3.53 in vocabulary and 4.20 grade levels in comprehension. Quincy Schools used this data to compare the reading performance of middle grade students taught using EBLI to the previous reading intervention program, "Read Right Systems." The study found that EBLI provided statistically significant gains (in terms of hours of instruction necessary to facilitate one grade level improvement).

Research study – East Jordan Public Schools.

East Jordan Public Schools conducted a study utilizing all middle school students and teachers to determine if EBLI instruction would result in increased student proficiency on the MEAP when compared to prior year MEAP scores (Chahbazi, 2006). All students in grades 6, 7,

and 8 received EBLI instruction in all classes (using cross curricular ideas provided by the

Ounce of Prevention Reading Center). The instruction occurred daily from the first day of school

in 2006 until the MEAP test in mid-October. The student MEAP scores were compared to

student scores from the previous year's MEAP to determine the impact of EBLI instruction. The

comparison demonstrated significant gains, yet the results should be interpreted with caution.

The MEAP test cut scores change from year to year as do the test questions. The 2006 eighth

graders went from being 62% proficient (scoring a 1 or 2) in 2005 to 89% proficient on the 2006

MEAP; a 27 % gain. The seventh grade students had a 23% gain; going from 73% proficient in

2005 to 85% proficient in 2006. The sixth grade students increased from 80% proficient in 2005

to 88% proficient in 2006; an 8% gain.

While each of the participatory action research studies demonstrate the success of EBLI,

they are all lacking in the areas of validity and reliability. The Whitehall School District study

showed that there was in increase in student achievement on the MEAP over time; however, it is

not clear what other factors might have contributed to the increase. In addition, the study did not

indicate the number of participants or the amount of instructional time devoted and there is only

one data source utilized. With the key pieces of information absent, it is hard to assume that the

data shows that EBLI results in improved reading skills.

The study from Quincy Schools lacked information regarding student background data,

which makes it difficult to determine what outside factors might have contributed to the

improvements in student reading abilities. The study employs only one data collection tool. In

addition, the lack of information regarding student selection impacts the validity and reliability

of the study. However, the comparison between the Read Right System and EBLI does enhance

the claim that EBLI is more effective than other remedial reading programs.

The East Jordan School study included all students in the study, which helped eliminate some of the bias that could occur with student selection. In addition, the use of the EBLI strategies in all classes would eliminate some concerns associated with teacher ability and bias. Additional information regarding the exact hours of instruction, alternate data sources, acknowledgement of outside factors, and a clearer timeline would help solidify the research claims that EBLI instruction impacts reading level.

Although no current studies exist to demonstrate the level of EBLI's effectiveness, it is possible to examine the research path used by Chahbazi in formulating this collection of reading strategies. Bibliographical references for EBLI are provided on the Ounce of Prevention Reading Center website (www.ebli.org). The reference list highlights twenty-nine different sources that were used to identify best practices in twelve different literacy categories including: word building, oral phoneme manipulation, charting sounds, listening and spelling, sorting same sound, sorting same spelling, multi-syllable word building, multi-syllable spelling, fluency, repeated readings, vocabulary, and general information. An analysis of the most pivotal resources used by Chahbazi will demonstrate the foundation of EBLI. Chahbazi's instructional methods were based upon information from the National Reading Panel Report from 2000.

National Reading Panel

The EBLI bibliographical list has just one reference that includes all twelve literacy categories, the National Reading Panel Report from 2000. In 1997 Congress asked the National Institute of Child Health and Human Development (a sub-department within the Department of Health and Human Services) to hold a national panel to research the current approaches for reading instruction. The panel was comprised of fourteen educational leaders including representation from scientists in reading research, university educational leaders, reading

teachers, administrators, and parents. After reviewing existing literature and holding public hearings, the panel established five specific categories of reading instruction to review: alphabetics, fluency, comprehension, teacher education and reading instruction, and computer technology and reading instruction (United States Department of Health and Human Services [USDHHS], 2000).

The reading panel established set criteria for the review of literature in the established categories. The criteria were based upon rigorous standards similar to those used in the medical fields. Acceptable studies were coded based upon four characteristics: participants, interventions, methods, and outcome measures. When possible, the panel conducted a full meta-analysis and identified an effect size. In some of the categories there were not a sufficient number of studies to conduct a full meta-analysis. The data analysis was summarized into the reading panel's official report to Congress (USDHHS, 2000).

The findings and determinations were itemized in the reading panel report according to the established categories. In the alpahabetics category, the panel found that phonemic awareness instruction does result in "improvement in students' phonemic awareness, reading, and spelling." The panel stated further, "The findings were replicated repeatedly across multiple experiments and thus provide converging evidence for causal claims" (USDHHS, 2000). Regarding phonics instruction, the panel found that systematic phonics instruction has a significant impact on student reading in the early grades when compared to classroom where phonics is not specifically taught. The panel recommended that both phonemic awareness and phonics instruction are critical components of an effective reading program.

The study of fluency sought to determine which instructional approach(es) would be effective for improving fluency; guided oral reading or independent silent reading.

Recommendations from the panel indicated that guided oral reading was a more effective strategy for teaching fluency. The panel noted that there was no positive effect noted in their review of independent silent reading (USDHHS, 2000).

Comprehension was divided into three categories by the reading panel: vocabulary instruction, text comprehension instruction, teacher preparation and comprehension strategies instruction. The panel was not able to complete a meta-analysis for vocabulary instruction due to the small number of acceptable studies and the large number of variables involved in each study. Based upon the review conducted, the panel determined that there doesn't appear to be one best approach to teaching vocabulary. General guidelines to follow included teaching vocabulary in context, providing multiple exposures, and utilizing computerized technology. Regarding text comprehension instruction, the panel identified seven teaching strategies that have been effective for improving comprehension skills. The seven strategies are comprehension monitoring, cooperative learning, using graphic organizers, question answering, question generation, story structure, and summarization. The reading panel's study of teacher preparation and comprehension strategies instruction was inconclusive due to the small number of studies that met the established criteria. The panel recommended this as an area for further research (USDHHS, 2000).

The reading panel study of teacher education and reading instruction was inconclusive due to the lack of available information. The panel had hoped to determine effective components of both pre-service education and in-service education for teachers; however, there were a small number of studies that sought to determine this information and all were laden with uncontrollable variables. Similarly the study of computer technology and reading instruction gleaned little information. At the time, the use of computers within the classroom for instruction

was a new idea and therefore there were few viable research studies on the topic (USDHHS, 2000).

Overall, EBLI utilizes many of the components of quality reading instruction identified by the National Reading Panel Report. In the category of alphabetics, EBLI instruction includes both recommended approaches (phonemic awareness instruction and phonics instruction). For fluency instruction EBLI utilizes guided oral reading, which was the recommended approach. Of the recommended strategies for reading comprehension, EBLI utilizes the following: teaching vocabulary in context with multiple exposures, comprehension monitoring, question answering, question generating, and summarization (www.ebli.org). Chahbazi has followed up the reading panel recommendations by seeking best practices from research-based studies in each of the identified categories.

Alphabetics.

Chahbazi cited the work of Ball and Blachman (1998) regarding the components of reading instruction that relate to alphabetics. Ball and Blachman sought to determine the effectiveness of direct instruction for phoneme segmentation for kindergarten students as compared to other methods of instruction. The study separated ninety non-readers into three treatment groups. One group received targeted instruction on phoneme segmentation. The second group received language instruction connecting letter names to letter sounds as would be found in a traditional kindergarten classroom (i.e. p says /p/). The third group was a control group that received no phonemic instruction. After the seven-week intervention, the group receiving targeted instruction on phoneme segmentation dramatically out-performed the other two groups.

Blachman, Tangel, Ball, Black and McGraw (1999) examined an eleven-week phoneme awareness intervention in kindergarten that was followed by a first grade program that supported

the same principles. The study indicated that the students in the intervention group outperformed the students in the control group who were taught using standard basal readers. The critical components identified in both have been incorporated into EBLI instruction in the form of phoneme manipulation strategies, spelling instructional techniques, and decoding instruction (www.ebli.org).

Fluency.

Invernizzi, Abouzeid, and Bloodgood (1997) stated, "Students must quickly and accurately perceive word patterns in order to recognize, produce, and understand written language" (p. 11-12). The authors' emphasis on fluency is consistent with the findings of the National Reading Panel. To accomplish this task, Invernizzi et al. promote the use of word study, the process of grouping words into categories of similarity and difference. Through the grouping process, students can identify patterns of spelling, patterns of sound, and become more fluent readers. The strategies are designed to support students who already understand the alphabetic principal and have a firm phonological awareness. Chahbazi has melded the fluency techniques into the EBLI instructional strategies (www.ebli.org).

Vocabulary.

For vocabulary instruction, Chahbazi relied heavily on the work of Beck and McKeown (1982; 2002). Beck and McKeown worked with Perfetti (2002) and Kucan (1982) to identify key components of vocabulary instruction. The book suggested that robust vocabulary instruction is a necessary component of reading programs. Teachers are encouraged to provide direct, explicit vocabulary instruction followed up by playful and interactive practice. Beck and McKeown (2002) promoted a vocabulary instruction technique called "Text Talk" which has teachers using read-aloud time using a normal, age appropriate classroom text to introduce new vocabulary.

Teachers read the text as written and then offer more complex synonyms to replace some of the key words in the story. The idea behind this method is that utilizing the new vocabulary words in a familiar context would make the students are more likely to understand and remember the new word. The students are encouraged to use the new word(s) throughout the week with points being given each time it is used correctly. The direct instruction during the read aloud was followed by the playful practice of the week-long game. These vocabulary instruction strategies are embedded throughout EBLI.

Comprehension.

Pressley (2000) advocated approaching comprehension as a continuum from low-level skills (individual word comprehension) to higher-level skills (overall text comprehension). Providing effective instruction requires moving back and forth along the continuum as necessary, based upon the individual learner's needs. Specific components of word level comprehension include decoding and vocabulary. Pressley advocated the use of phoneme instruction for decoding and cited the collective works of Isabel Beck for vocabulary instruction. At the text level, summary and conscious controllable processing are critical. Pressley cited the following research based practices as valid components of a reading comprehension program: construction of "why" questions during reading, activation of prior knowledge, and the use of mental images. The instruction strategies used in EBLI are directly in line with Pressley's work.

Chapter III – Methodology

Pilot Study

In order to get Sault Area Public Schools to invest in the EBLI program and authorize a full marking period EBLI class, a pilot study was conducted with the 24 students who fell into the MEAP "bubble." The student MEAP scores all fell within ten points above or below the cut score for their grade. The study was conducted during the winter/spring semester of the 2008-09 academic year. The students were primarily sixth graders (18 students) with just six seventh grade students. The students were all special education students with an active Individualized Education Plan. Student disabilities included the following categories: speech and language impairment (5 students), specific learning disability (17 students), and emotional impairment (2 students), cognitive impairment (1). The group was split between males (14) and females (10). One student (male, cognitive impairment) who was initially identified did not participate in the intervention due to scheduling conflicts.

Pilot study methodology.

Data collection for the participatory action research included a pre and posttest to quantify student reading achievement. The study utilized the Woodcock-Johnson Reading Mastery Revised for this purpose. The test provided data regarding student performance on word identification, word attack, word comprehension, and passage comprehension (Table 1). An overall reading score was also tabulated.

Table 1

Woodcock-Johnson Reading Mastery Revised sub test	Description of Assessment
Word Identification	Measures a student's sight word vocabulary – what words can he/she identify from a list
Word Attack	Measures a student's ability to sound out unknown words in order to pronounce them correctly
Word Comprehension	Measures reading vocabulary at three levels of difficulty by looking at antonyms, synonyms and analogies
Passage Comprehension	Measures a student's ability to read and understand a short passage by asking the student to supply the missing word

Pretests using the Woodcock Johnson Reading Mastery – Revised were conducted with all 23 students. The students were randomly assigned to receive individualized instruction from one of the three special education teachers trained in EBLI. Students were slated to meet with the teacher once a week for fifteen minutes over the nine-week marking period. Due to student absences, bad weather days, and teacher absences the students all received instruction for five or six sessions. The total instructional time was between 75 and 90 minutes. Posttests were then conducted to obtain quantitative data regarding the impact of the intervention. It should be noted that the researcher was one of the teachers who provided EBLI interventions during the pilot study.

Pilot study results.

Posttest data indicated a significant change in student reading abilities after the nine-week intervention. There is little comparison available due to the lack of research studies on interventions with "bubble students." In the area of word identification there was a .67 average grade level increase (Figure 1).
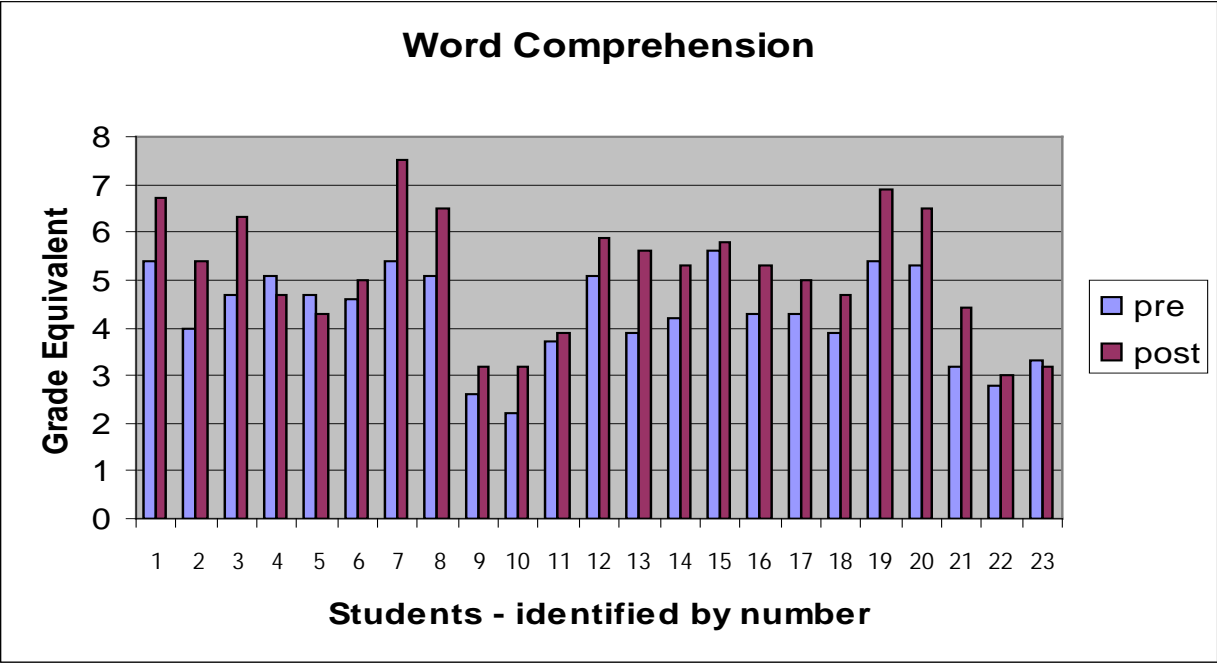
Figure 1
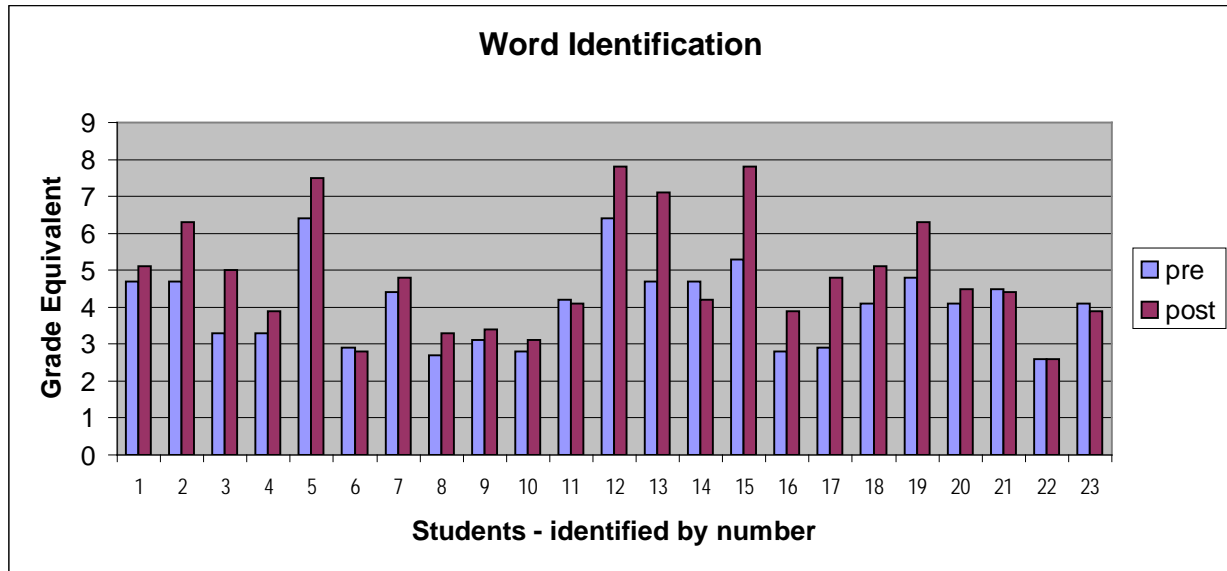
Word attack was the area of assessment that had the greatest student improvement with an

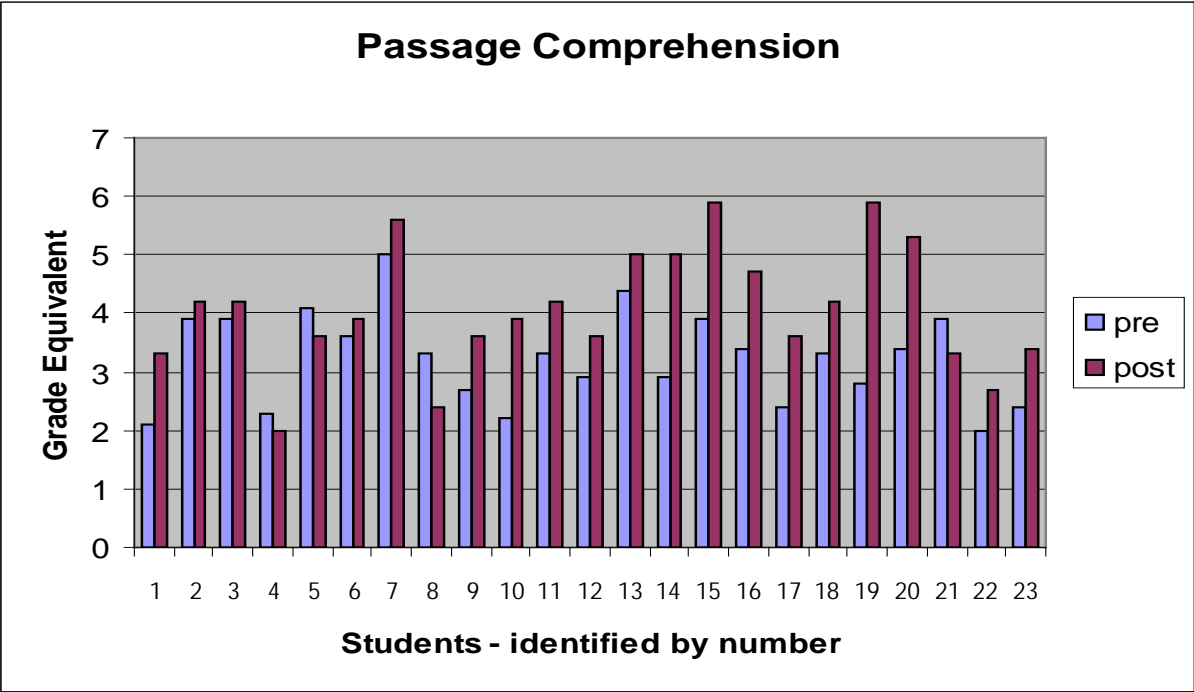average increase of 1.72 grade levels (Figure 2).

Figure 2
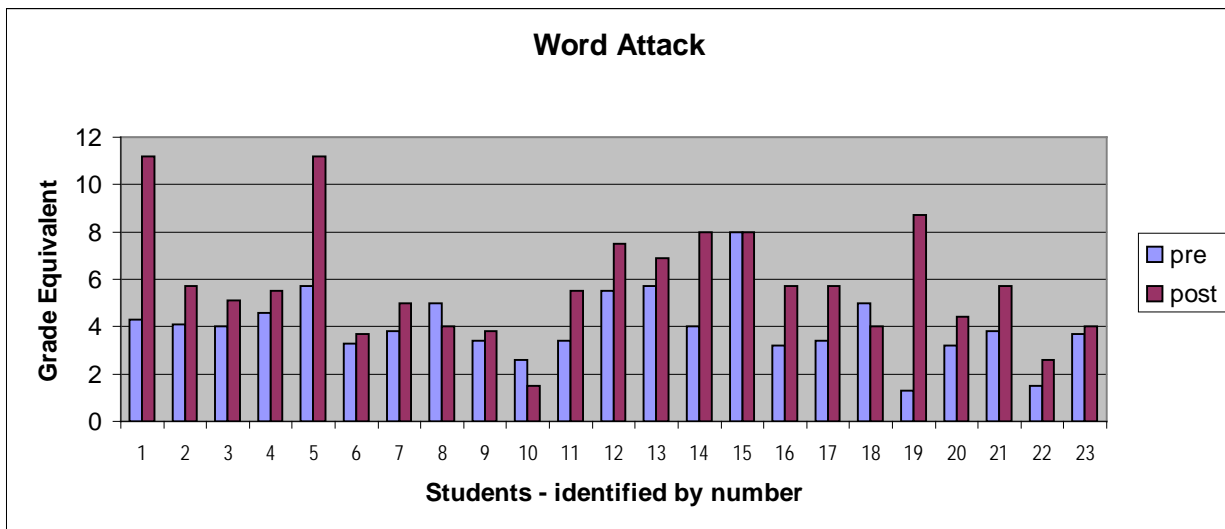
In the area of word comprehension, more commonly referred to as vocabulary, the average

student increase was .80 grade levels (Figure 3).

Figure 3

The final subtest, passage comprehension revealed an average increase of .75 grade levels

(Figure 4).

Figure 4

Pilot study conclusions.

In all four subtest areas there were significant gains in student reading achievement. The overall results (combination of all four subtest scores) indicated an overall reading improvement of .92 grade levels (Figure 5). While the researcher believes the cause for this improvement is the high quality intervention offered by the EBLI strategies, it is impossible to rule out outside factors and biases and attribute the success to EBLI alone.

Figure 5
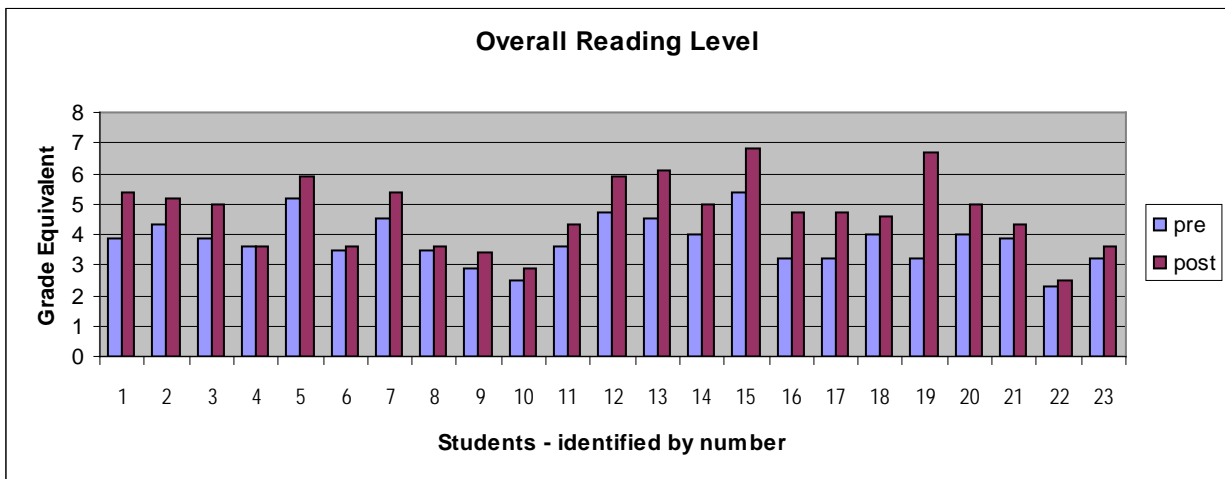
Pilot study qualitative component.

The pilot study also included collection of qualitative data through a student survey. Three of the students from the pilot group were surveyed to determine their perceptions of the EBLI program and its impact on their education. Selection of the three students was accomplished by using a random draw. The students surveyed were all male 6th graders, two with learning disabilities and one with a speech and language impairment. Each student was given a five-question survey (Figure 6), the instructions were read orally, and the students were asked to complete the questions honestly.

Figure 6

EBLI Student Survey Read each statement and choose a number that best represents your feelings.					
	1 definitely not true	2 not true	3 unsure	4 true	5 definitely true
I enjoyed EBLI instruction					
I am a better reader because of EBLI					
I am better at spelling because of EBLI					
I enjoy reading more because of EBLI					
I would like to receive more EBLI instruction					

Two of the three boys indicated that they enjoyed EBLI instruction (giving it a 4 on the five point scale). The third boy indicated he was unsure. In terms of being a better reader, two of the three students indicated that it was a true statement and the third indicated it was definitely true. All three students marked definitely true when asked if EBLI improved their spelling skills. On the question regarding reading enjoyment, one student said that this was a true statement, one was unsure, and one said it was not true. The final statement regarding receiving more EBLI instruction elicited two true scores and one score of definitely true. Overall I found the student survey results to be a strong indication of the impact EBLI had in the pilot study participants but was cautious to attribute student favorably to EBLI alone. There were a significant number of variables that could have contributed to the student perceptions of EBLI and reading.

Results from the pilot study were presented to the Sault Area Public Schools Board of Education on June 8, 2009. The Board and the Central Administration agreed that EBLI has

merit as a reading intervention and agreed to support the marking period EBLI class at Sault Area Middle School in the fall of 2009.

Research Study

The research study to assess the effectiveness of the EBLI class was conducted during the first semester of the 2009-10 school year. The class was designed to provide one nine-week marking period of intervention for all sixth grade special education students and all seventh grade special education students who were not a part of the pilot study. In contrast to the pilot study, the class was to be all inclusive, not dependant upon MEAP scores or other academic data. The class included a maximum of six students per marking period.

The study included twelve special education students from both sixth and seventh grade. The sixth grade students (four males and two females) included three students who were classified as having a cognitive impairment and five students who were classified as having a specific learning disability in the area of reading comprehension. The seventh grade students (two male and two female) included three students who were classified as having a specific learning disability in the area of reading comprehension and one student classified as other health impaired due to a medical diagnosis of Attention Deficit Hyperactivity Disorder.

Pretests using the Woodcock Johnson Reading Mastery – Revised were conducted with all 12 students. One teacher, who had received EBLI training in April of 2007, provided the students EBLI instruction. The teacher had been one of the staff members who provided instruction during the pilot study. The students were enrolled in the EBLI class for one nine week marking period. Due to student absences, bad weather days, and teacher absences the students averaged 35 class periods of instruction. EBLI interventions were utilized daily in a

small group setting and weekly in one-one instruction. Posttests were then conducted to obtain quantitative data regarding the impact of the intervention.

It should be noted that the research study did not include the qualitative data collection from student surveys as in the pilot study. While student perception of EBLI and beliefs about reading are important, the pilot study data demonstrated a significant number of uncontrollable variables with the student survey. The variables make the student survey data less relevant.
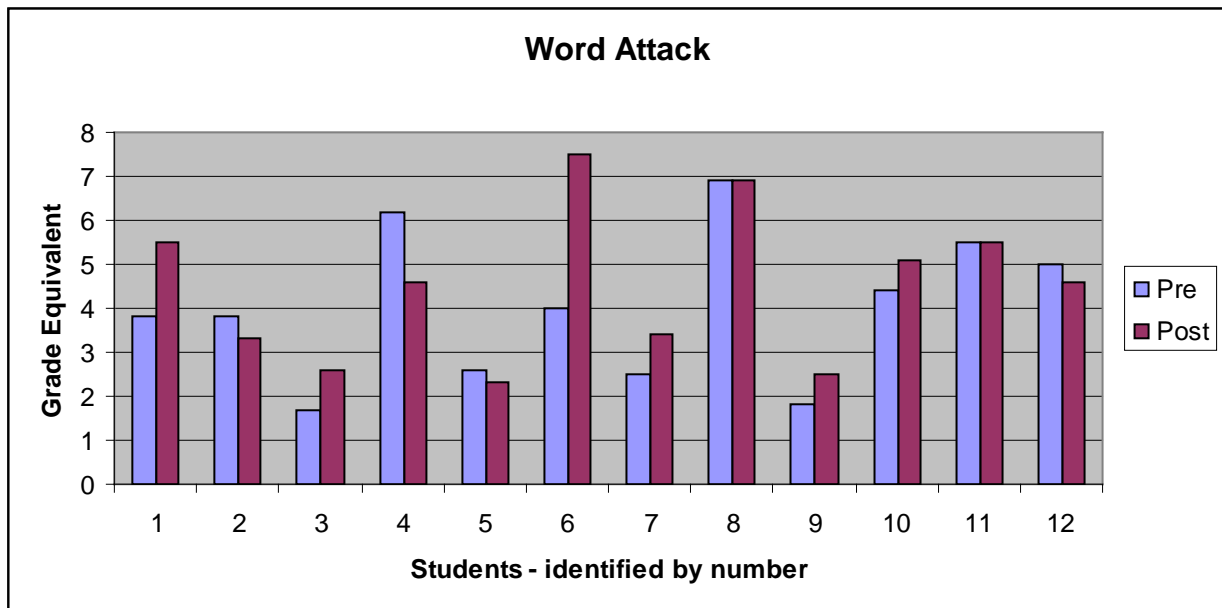
Chapter IV – Results

Posttest Data

Posttest data indicated a positive change in student reading abilities. In the area of word

identification there was a .18 average grade level increase (Figure 7).
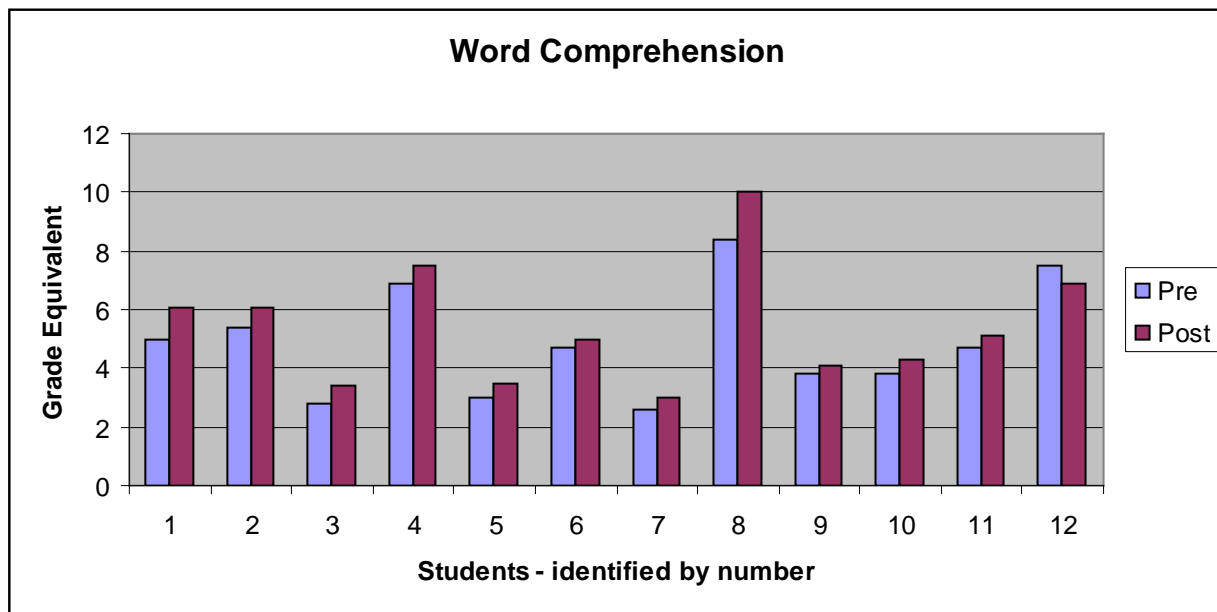
Figure 7
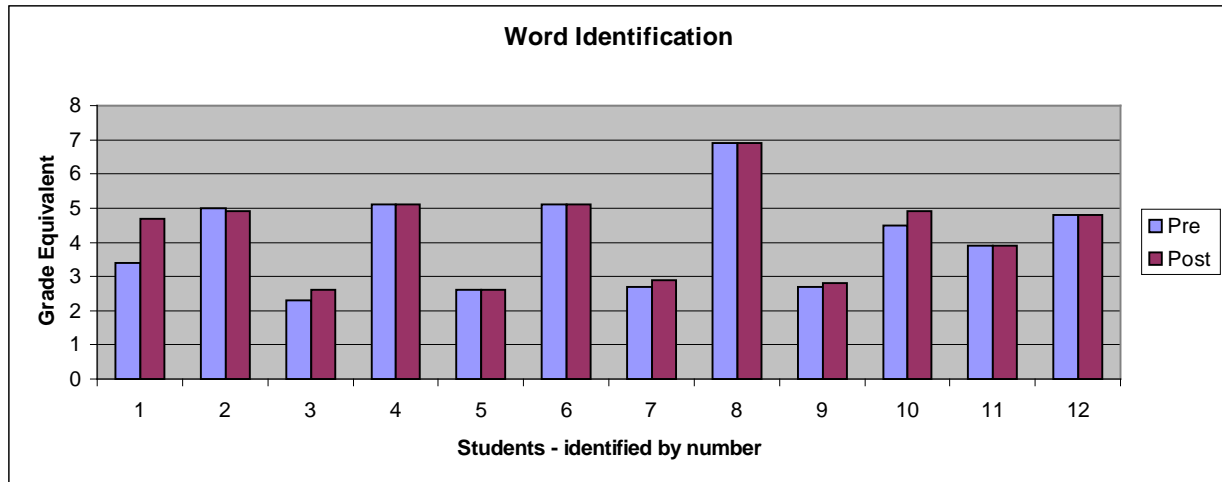
Word attack showed an average increase of .46 grade levels (Figure 8).

Figure 8

In the area of word comprehension, more commonly referred to as vocabulary, the average

student increase was .52 grade levels (Figure 9).

Figure 9

The final subtest, passage comprehension was the area where the increase in student achievement

was the highest. The average increase for passage comprehension was .66 grade levels (Figure

10).

Figure 10

Figure 10. Passage Comprehension. Grade Equivalent for Pre and Post scores of Students identified by number 1-12.
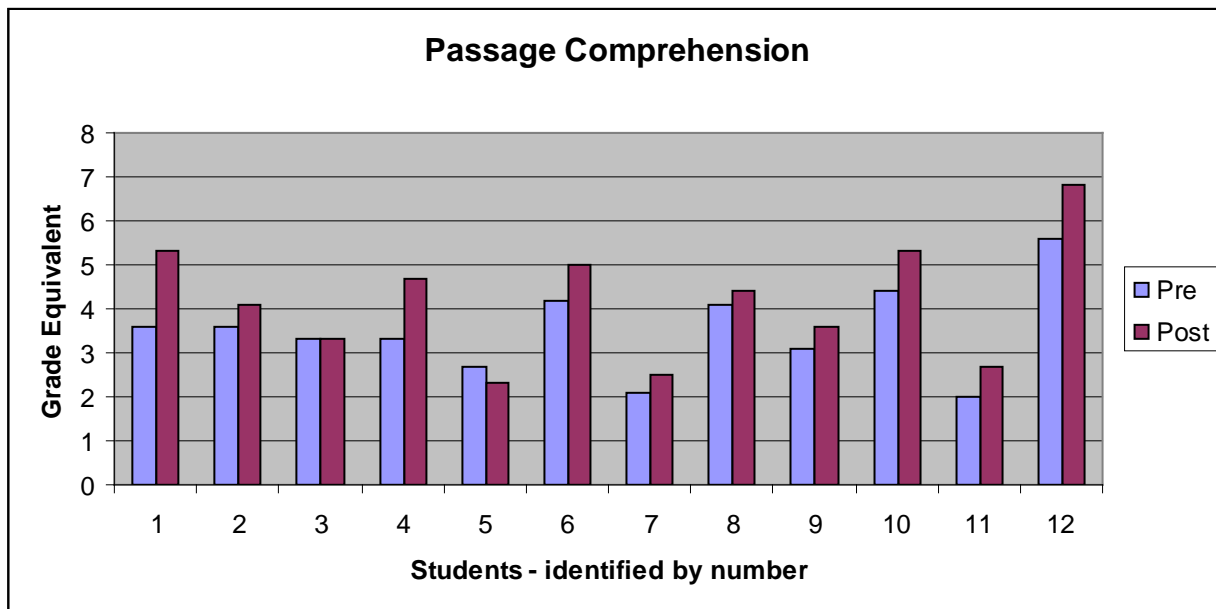
All four sets of subtest data demonstrated positive gains in student reading achievement. The overall results (combination of all four subtest scores) indicated an overall reading improvement of .41 grade levels (Figure 11).

Figure 11

Figure 11. Overall Reading Level. Grade Equivalent for Pre and Post scores of Students identified by number 1-12.
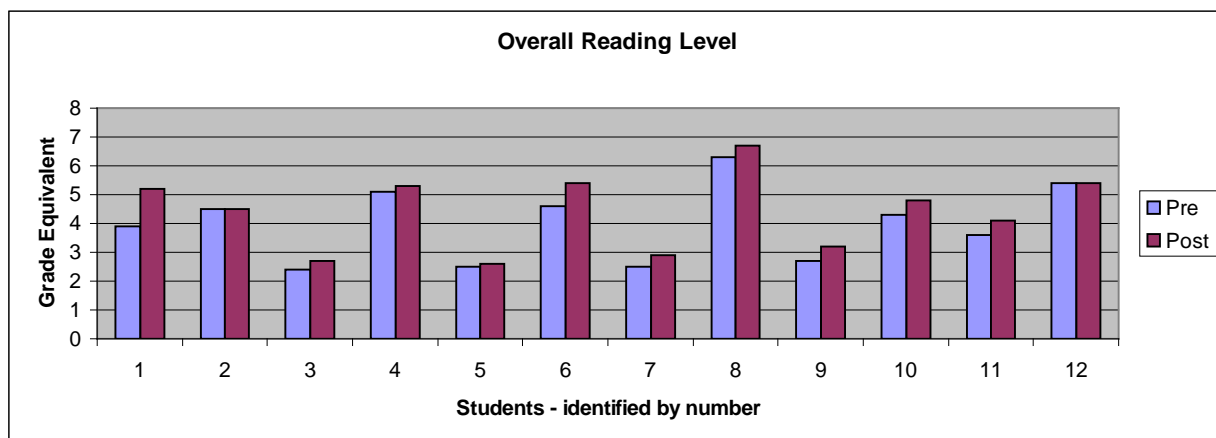
On the surface, the results of the study indicate that EBLI is an effective intervention for reading difficulties for some students. However, there is no comparison data because there has not been a middle school focused intervention used at Sault Schools in the past three years. The

overall reading level of each student improved, except for two students who remained consistent. While there was an average gain in each of the subtest areas, individual student gains were often inconsistent. Some students demonstrated marked improvement in one area while moving backwards in other areas. Using only one data source does not provide enough information to determine the effectiveness of EBLI.

Variables and Reliability

There are a myriad of outside variables that cannot possibly be controlled such as parental support, amount of outside reading, English language arts instruction occurring in other classes, etc. Another factor to consider when interpreting the results of the study is the relatively small sample size. The desire to keep the class size small has limited the number of study participants. It is not ethical to make broad results statements with such a small sample.

Comparison of Pilot Study and Study

Based upon data collected, the pilot study appeared to be a more effective intervention than the EBLI class. It is not possible to determine the exact reason why the scores with the pilot group were higher but there are several factors to consider. One possible cause is the individualized nature of intervention in the pilot study. The students were given less of the intervention but all of the time spent in EBLI strategies was in a one-to-one setting. The elimination of outside distractions could have been significant. Another possible factor is the teacher giving the intervention. The pilot study included three teachers while one teacher taught the class.

Perhaps the most significant possible cause is the nature of the participants. The pilot student targeted students who were on the MEAP "bubble." These are students who were within a few points of passing the state assessment and were thus typically in all general education

classes with limited special education support. In contrast, the class targeted all special education students without consideration to academic performance. The average academic achievement of the study group was significantly lower than that average academic achievement of the pilot group. It could be that those who are lower functioning would respond to interventions at a slower rate.

Chapter V – Recommendation and Conclusions

Recommendation

I would recommend that Sault Area Middle School continue to offer EBLI as a class for incoming sixth graders with the understanding that additional data sources would be solicited to determine its effectiveness over regular classroom instruction. Similar to the research study by Mullen and Wright (2006) three measures of student reading ability should be used in order to enhance the validity of the study. The researcher recommends using the Woodcock-Johnson Reading Mastery Revised, Bader Reading and Language Assessment Inventory, and the Test of Written Spelling – Fourth Edition. These three assessment measures will provide a comprehensive picture of student achievement, providing data regarding word identification, word attack, word comprehension, passage comprehension, writing, and spelling (see Table 2). In addition, the Woodcock Johnson Reading Mastery Revised will provide a total reading score and the Bader Reading and Language Assessment Inventory will offer a current grade equivalent for reading.

Data analysis could consist of descriptive statistics to report the pre and posttest data. The quantitative information could be organized into a form that shows each participant's pre and posttest scores on all three assessments. Care would need to be taken to assign numerical values to the participants and ensure confidentiality. Inferential statistics would allow for trend analysis or address any anomalies that are uncovered. For example, a *t*-test could provide insight regarding any distinctions that might occur between male and female participants.

In addition, student motivation can be a significant factor in the success of a reading intervention program. It is imperative that the researcher acknowledges the level of student motivation. As in all areas of classroom instruction, teachers will have bias regarding student

potential for reading improvement. As the reading interventions are occurring it is important to identify the student reactions. How a student reacts toward individualized intervention is often indicative of his or her true motivation and feelings. The researcher must be cognizant of these factors. Teacher reaction is just as critical as it can reveal much teacher expectations. The final variable to address is administrative support. In times of financial crisis, having administrative support for a one-to-one intervention is significant. Throughout the process the researcher must keep an open line of communication with the administration to ensure continued support. The intervention will only be successful if the administration continues to view it as valuable and makes it a priority in the budget/programming.

Table 2

Woodcock-Johnson Reading Mastery Revised sub test	Description of Assessment
Word Identification	Measures a student's sight word vocabulary – what words can he/she identify from a list
Word Attack	Measures a student's ability to sound out unknown words in order to pronounce them correctly
Word Comprehension	Measures reading vocabulary at three levels of difficulty by looking at antonyms, synonyms and analogies
Passage Comprehension	Measures a student's ability to read and understand a short passage by asking the student to supply the missing word
Bader Reading and Language Assessment Inventory	**Description of Assessment**
Word Recognition	Measures a student's sight word vocabulary – what words can he/she identify from a list
Reading Comprehension	Measures a student's ability to comprehend read material by requiring student responses to a series of reading comprehension questions
Writing Sample	Measures a student's ability to write connected sentences that are grammatically correct and contain no spelling errors.
Test of Written Spelling – Fourth Edition	**Description of Assessment**
Spelling	A norm-referenced assessment to analyze a student's spelling level based upon grade level equivalents.

Areas for Further Research

In addition to the continued research for Sault Area Public Schools as listed in the researcher recommendation, further research regarding the impact of EBLI on students with cognitive impairments could be useful. Pulling out the data from the EBLI class study for the three students who are classified has having a cognitive impairment shows that this subpopulation might benefit significantly from the use of EBLI strategies. Table 3 shows that all three students with cognitive impairment classification made gains in all subtests.

Table 3

	Word Identification		Word Attack		Word Comprehension		Passage Comprehension		Overall Reading Level	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Student 1	3.4	4.7	3.8	5.5	5.0	6.1	3.6	5.3	3.9	5.2
Student 2	5.1	5.1	6.2	4.6	6.9	7.5	3.3	4.7	5.1	5.3
Student 3	2.7	2.8	1.8	2.5	3.8	4.1	3.1	3.6	2.7	3.2

The gains made by students with cognitive impairments were statistically more significant than the gains made by the students in the other disability categories.

Cognitive impairment is the new classification given to people who were previously considered mentally retarded. The Council for Exceptional Children website defines it as "a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills" (2010, p. 3). An accurate diagnosis of mental retardation requires an IQ score of approximately 70 or below, a determination of deficits in adaptive behavior, and origins of the disability prior to age 18. The

websites describes people with cognitive impairments as being less efficient learners due to deficits in language development, memory, and attention.

While the Council promotes the inclusion of students with cognitive impairments in the general education curriculum, the organization acknowledges that instruction typically shifts to a life skills focus in the secondary grades. This shift is consistent with the commonly held belief that there is a maximum academic learning potential for students with cognitive impairments. Imagine the possibilities for students with cognitive impairments to advance in reading if EBLI is proven to be an effective teaching strategy. Further research on a larger population of middle school students who are classified as having a cognitive impairment would be beneficial to determine if EBLI is an effective strategy.

Summary and Conclusion

The Florida Center for Reading Research (FCRR) website indicates that schools need to have a systematic approach to reading instruction (www.fcrr.org). The approach must include all five pillars of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension. The reading instruction should include lessons that build on previously taught information following a spiral curriculum format. Each lesson should include clear, concise student objectives that are based upon ongoing assessment. The lessons should incorporate opportunities for students to practice the lesson skills. EBLI met the FCRR criteria.

However, the research study did not completely determine the extent to which EBLI is an effective intervention for special education students. The data indicated that the study participants made gains in reading but it is not possible to state that the gains were a result of EBLI instruction alone. In addition, there is a lack of comparison data. Sault Schools has relied

on the Reading Recovery program at the elementary level to identify and remediate student-reading issues. Prior to EBLI, the middle school has not attempted any reading interventions beyond individual teacher work in classroom.

The study provided more research paths and additional factors to include in future EBLI studies. One research path could focus on the impact of EBLI for students with cognitive impairments. The research also led to a qualitative study that focuses on student perceptions of their reading ability after the EBLI intervention. Further research in these areas would provide more validity for EBLI as a viable program for improving student reading abilities.

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