COMPREHENSION GESTURES: TEACHING READING
COMPREHENSION TO STUDENTS WITH
LEARNING DISABILITIES

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In Partial Fulfillment
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Master of Arts
in
Education

by
Nicolas Catomerisios
Summer 2012
COMPREHENSION GESTURES: TEACHING READING
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This action research project was designed to meet the academic needs of a group of students with learning disabilities in a rural education setting. The study focused on the effects of three comprehension gestures on the students’ reading comprehension. The study posed the question: will students with learning disabilities increase reading comprehension by using gestures that represent comprehension strategies? There was not enough triangulated evidence to validate that gestures representing comprehension strategies increased the reading comprehension of students with learning disabilities. The data did validate, through triangulation, that using hand gestures during a reading comprehension discussion does increase reading comprehension. The conclusion was that the students with learning disabilities did increase reading comprehension through gesturing their opinions and thoughts. The significance of the study was that gesturing is
an effect means to help students with learning disabilities increase reading comprehension.
CHAPTER I

INTRODUCTION

Background

Comprehension is the foundation of successful reading. Instructional time spent on teaching and learning phonemic awareness, developing vocabulary, and improving reading fluency are all contributing factors to a student’s ability to comprehend text. Comprehension is a process that starts with engagement, from the moment the student opens the book. Students who use comprehension strategies before, during, and after reading have a better understanding of what they have read. The National Reading Panel (2000) states, “Comprehension is critically important to the development of children’s reading skills and therefore to the ability to obtain an education” (p. 13).

Comprehension is a multilevel thinking process that begins with taking literal information from text. Many students achieve this grasp of literal information through the use of skills such as background knowledge, vocabulary, and fluency. Inferential comprehension is the next level. Inferential thinking uses clues from text and background knowledge to create inferences (Tompkins, 2010). In order to find context clues in the text the reader must use reading comprehension strategies. These strategies are seen as cognitive or behavior actions that skillful readers use to repair and reinforce comprehension while reading. Reading comprehension strategies are a key to improving
comprehension (McNamara, 2007). Effective teaching practices are needed to positively impact the use of inferential strategies.

Nationwide students struggle with drawing meaning from text. The national growth in reading comprehension scores among fourth graders measured by the National Center for Educational Statistics (NCES, 2011) has only increased 1.8% from 1992 to 2011. Almost two decades later and with the adaption of a national intervention policy, the No Child Left Behind Act of 2001 (NCLB), there have been minimal gains in reading comprehension scores.

The nation’s performance on National Assessment for Educational Progress standardized reading comprehension tests has been stagnant (NCES, 2011). The NCLB Act of 2001 was adopted to help increase students’ knowledge and performance on state testing in mathematics and English-language arts. NCLB called for a large amount of school time to be allocated to these two subject areas. The federal government increased its spending on education believing that with more resources and tight regulations, performances would increase (No Child Left Behind [NCLB], 2002).

During the same time it took the nation to gain 1.8 percent in reading comprehension scores, every single year California performed below the national average (NCES, 2011). The NCLB act of 2001 requires schools to make adequately yearly progress (AYP) as determined by each individual state. Schools that have not made AYP in two consecutive years are placed in program improvement (PI). From 2005-2010, the number of PI elementary schools in California has nearly doubled to 1,963 elementary schools (EdSource, 2011). Schools placed in program improvement are mandated to spend a large proportion of the day teaching English-language arts. This puts great
pressure on school faculty and administrators to help their schools make adequate progress in the subsequent years. Grade level, school wide, and district meetings have been held to help teachers in the collaborative process to share noteworthy techniques to increase students’ core subject matter skills.

The continuing low reading comprehension results lead to a logical conclusion that money and time might not be the key to raising students’ comprehension. Implementing more effective teaching practices and research-based comprehension strategies may improve students reading comprehension abilities.

Statement of the Problem

This study addresses the problem of improving the reading comprehension of students with learning disabilities. The study provides documentation of the implementation of reading comprehension strategies that address this problem.

The setting for this study was an elementary school, located in a rural northern California town that was placed in program improvement (PI) based on inadequate yearly progress (AYP). In 2007-2008, Standardized Testing and Reporting (STAR), the school scored 49% of students proficient or above in English-language arts. In the two years that followed, the school received lower results, and in 2010-2011, the school scored 44% of student’s proficient or above (School Innovation and Advocacy, 2011). The school failed to make adequate yearly progress and was placed in program improvement.

The action research project was not taught to the entire school but to a specific population of 3rd-5th grade students with learning disabilities. The guidelines of NCLB require that each school’s qualifying subgroups, 15% of the school population or over
100 students enrolled in the first day of testing, also make adequate yearly progress. The school’s population of students with learning disabilities makes up 14% of the entire school’s population. From 2010-2011, the state English-Language Arts test results have gone from 16% to 38% for this school’s subgroup students with learning disabilities (California Department of Education, 2011). The variation in the year-to-year change is of concern for a school that is struggling to make its way out of program improvement. The population of students with learning disabilities has become a high interest group for the school because its 14% population size makes this a nearly qualifying subgroup under NCLB. The implication is that the use of effective comprehension interventions needs to be increased to benefit this population.

Purpose of the Study

The purpose of the study was to examine if students with learning disabilities would increase reading comprehension by their use of gestures that represent comprehension strategies. The study considered the effects that gestures would play on students’ comprehension while reading. Three effective comprehension strategies were taught (Tompkins, 2010). The strategies were clarifying, making predictions from the text, and finding the main idea. The students’ created gestures to represent the three comprehension strategies.

Theoretical Bases and Organization

Kinesthetic learning aids have great value in teaching. Evidence indicates that the number of kinesthetic learners is growing (National Center for Educational Statistics, 2006). Research by Collins (2005), and Viadero (2005) suggests that kinesthetic
movements can increase students’ engagement and generate a representation of abstract concepts such as comprehension strategies.

The kinesthetic motions utilized in the study were hand and arm gestures. Poggi, Pelachaud and Magno describe these as “gestural mind markers,” a specific type of gesture that provides information in the mind of the gesturer. Furthermore, they describe a subtype of this gesture is meta-discursive, with the gesturer making sense of logical relationships within sentences (2003, p. 2). The gestures taught to the students represent comprehension strategies and allow the students to use the gestures as a tool to create understanding from the text.

Previous studies focusing on gestures and the effect on students’ comprehension have found significant positive results. Using hand motions to represent comprehension processes such as finding the main idea, clarifying, inferring, and making predictions yielded especially strong results in primary grades (Block, Parris, & Whiteley, 2008). An additional study provided results that when gestures are used to match verbal instructions, students comprehend more than with verbal instruction alone (Valenzeno, Alibali, & Klatzky, 2003).

One reason why students with learning disabilities struggle with reading comprehension is their lack of persistence on task, which is the ability to stay on task even with distractions (Mckinney, Osborne, Susan, & Schulte, 1993). Lack of motivation and persistence has a potential negative effect on all academic learning. The proposed solution to this dilemma is to use instructional strategies that keep students’ attention focused on a task. The act of physical movement through gestures serves as a means to keep the students engaged, release built up energy, and creates mental and physical
representation for abstract concepts (Collins, 2005). The study used gestures that correspond with comprehension strategies not only to keep students engaged on the task but also to create a mental representation of the strategy being used to improve reading comprehension.

Limitations of the Study

The study has two major limitations. The first limitation was the length of the study. Students received the intervention for 12 weeks making the time to measure student progress intense but short in duration. However the outcomes achieved within this limited time will help determine if the hypothesis that using kinesthetic strategies to teach reading comprehension strategies is an effective teaching method that is employable immediately within the context of limited instructional time.

The second limitation was the small sample size of students used in the study. Four students with learning disabilities who struggle with comprehension at their instructional reading levels were taught the intervention. The size of the study allowed for two reading groups of two students. Students with learning disabilities benefit the most from small group reading instruction (Vaughn, Gersten & Chard, 2000). The sample size of four students with learning disabilities allowed for the teacher to incorporate meaningful ways to differentiate the material to the specific needs of each student. This made the study more realistic for a special education setting with support directed at each student’s needs.
Definition of Terms

- Comprehension gestures: Hand and arm movements that signal a reading strategy that will be used when working with the text (Block, Parris, & Whiteley 2008).
- Explicit instruction: The National Center on Accessible Instruction Materials states “A systematic instructional approach that includes set of delivery and design procedures derived from effective schools research merged with behavior analysis” (Hall, 2002, p. 2).
- Gestural mind markers: A specific type of gesture that provides information in the mind of the gesturer (Poggi, Pelachaud and Magno, 2003).
- Learning disability: “A learning disability is a neurological disorder that affects the brain's ability to receive, process, store, and respond to information” (National Center for Learning Disabilities, 2011, p. 1).
- Reading comprehension: Intentional and active exchange between a reader and text in which meaning is created (Durkin, 1993).
- Reading comprehension strategy: “A cognitive or behavioral action that is enacted under particular contextual conditions, with the goal of improving some aspect of comprehension” (McNamara, 2007, p.6).
- Specific Learning Disability: “The child does not achieve commensurate with his or her age and ability levels in one or more academic area” (Individuals with Disabilities Education Act [IDEA], 2004).
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

In 2009, the National Center for Learning Disabilities stated there are 2.5 million students, 5% of all public school students, who have been identified as having a learning disability under Individuals with Disabilities Education Act (IDEA). A learning disability is defined here as “a neurological disorder that affects the brain's ability to receive, process, store, and respond to information” (Cortiella, 2011). Learning disabilities impede on students’ educational attainment and effective teaching practices must continue to be researched to lessen the achievement gap between them and their grade level peers.

The key to teaching comprehension strategies to students with learning disabilities could lie within an essential part of communication. The majority of communication happens through nonverbal cues such as gestures. This action research project set out to find if students with learning disabilities would increase their reading comprehension by using gestures that represent comprehension strategies. The target population was comprised of students with learning disabilities who experienced difficulties in reading comprehension and their ability to initiate comprehension strategies.
The literature review is comprised of three main topics: the importance of comprehension strategies in contributing to students with learning disabilities ability to comprehend text, why it is important to teach students with learning disabilities through explicit instruction, and the potential role that gestures play in students’ with learning disabilities ability to learn comprehension strategies and improve overall reading comprehension.

Comprehension Strategies for Students with Learning Disabilities

Nationwide, students are struggling with reading comprehension. According to the National Center for Educational Statistics (2011), the national growth in reading comprehension scores among fourth graders has increased merely 1.8% over the past two decades. The nation continues to make small gains. The Public Broadcasting Service (PBS) reported over 85% of students with learning disabilities struggle with reading grade level text (2003). Students with learning disabilities often exhibit difficulties in reading comprehension as well as in the inability to initiate strategies that improve comprehension. Gersten et al. (2001) found:

Students with learning disabilities possess the necessary tools to effectively process information, but for some reason they do so very inefficiently. Most researchers suspect that the breakdown occurs in the domain of strategic processing and metacognition. (p. 3)

Tompkins (2010) referred to reading comprehension as the essence of reading and Durkin (1993) the reason why people read. Undoubtedly this is an area of teacher interest. A traditional understanding and definition of reading comprehension is the construction of meaning through text. When constructing meaning from a text, the reader
uses thoughtful behaviors to ensure that they understand what is being read, also known as comprehension strategies (Afflerbach, Pearson, & Parris, 2008).

There are two types of comprehension strategies, cognitive and metacognitive. Both comprehension strategies contribute to students’ ability to gain meaning from the text. Cognitive strategies involve thinking, and making predictions about the text. Metacognitive strategies require students to reflect on their thinking, for example, asking for clarification (Tompkins, 2010). Questioning is a metacognitive strategy because it requires the reader to notice when there is confusion or lack of comprehension.

One of the comprehension strategies that will be used within the study is predicting. Predicting is a strategy that requires students to access their prior background knowledge to make educated guesses, or predications, as to what will happen in the story prior to and while reading. The strategy also involves the students’ ability to recognize pivotal points in the story and make predictions on what will happen next based on what they have read so far (Tompkins, 2010).

The second comprehension strategy that will be taught is clarifying, a strategy where readers develop questions as they read the text. The questions are student-created, and this strategy has been found to lead to high comprehension (Duke & Pearson, 2002). Students struggle with generating questions to guide their reading and need a teacher to teach them the process of doing so (Tompkins, 2010).

The comprehension strategies that have been selected for the study are effective strategies to improve reading comprehend (Tompkins, 2010). The comprehension strategies of prediction, clarifying, and finding the main idea were also chosen because of the level of comprehension of the group of students being studied and
teaching to the needs determined by their Individualized Educational Plans. All three of
the strategies work towards building the students’ ability to think on the inferential level,
moving beyond simple literal comprehension.

Explicit Instruction for Students with Learning Disabilities

The study will use explicit instruction to teach students comprehension strategies. The National Center on Accessible Instructional Materials states, “explicit instruction is a systematic instructional approach that includes set of delivery and design procedures derived from effective schools research merged with behavior analysis” (Hall, 2002, p. 2). Explicit instruction is highly controversial because of its more teacher-centered approach than student-centered. The benefits of explicit instruction have not always proven to be effective for all student populations.

Students with learning disabilities exhibit positive gains in reading comprehension when lessons are taught with explicit instruction (Chan, Cole, & Barfett, 1987). The delivery of the instruction involves high amounts of teacher and student interaction within small groups. This allows for more intensive instruction. The process of guided instruction is particularly important to students with disabilities. The teacher is able to control task difficulty and give relevant examples; both are key factors identified in a synthesis of educational research on students with learning disabilities (Swanson, Hoskyn, & Lee, 1999).

Explicit instruction is depicted by its use of scaffolding, “whereby students are guided through learning the new skill, clear explanations and demonstrations of the instructional target, and supported practice with feedback until independent mastery has
been achieved” (Archer & Charles, 2011, p. 1). Scaffolding requires the teacher to break
down instruction into mini lessons.

The reason explicit instruction is effective with teaching reading
comprehension is that it provides specific comprehension strategies and cues to use when
a reader has difficulty understanding the text. Readers often learn comprehension
strategies informally, but when they fail to do so, explicit instruction has been found
highly effective in teaching students to use the strategies (National Reading Panel, 2000).
When comprehension strategies are taught explicitly, students are able to see when and
how to use the strategy and are given guided practice to use the strategies with their own
reading.

Numerous studies have shown how students with learning disabilities benefit
from explicit instruction. All parts of explicit instruction are essential to creating positive
student outcomes and the greatest results are with students of diverse needs (Hall, 2002).
Explicit instruction is proven beneficial to teaching students with learning disabilities and
is an effective instructional approach to teaching comprehension gestures. Explicit
instruction exhibits qualities that require students to making connections to the text,
become active readers, and use metacognition. All of these behaviors benefit an
instructional approach that asks students to play a more active role not only mentally but
also physically and mentally in their comprehension of the text.

Research shows that students with learning disabilities need to be explicitly
and effectively taught comprehension strategies, steps that good readers employ or use to
better understand text. Teachers try not to over prompt and guide students to the point
where the students cannot perform a task independently and without teacher support.
Reviews of reading comprehension research found that students with learning disabilities should be given instruction that is designed with teacher scaffolding that is slowly reduced over time (Klingner, Urbach, Golos, Brownell, & Menom, 2010; Vaughn, Gersten, & Chard, 2000). Explicit instruction of comprehension strategies allows students to draw meaning from text read independently by initiating the strategy without prompting.

**Gestures**

The act of gesturing is part of nonverbal communication, a major contributor to the way humans and animals communicate. Gestures provide visual representation of an idea or concept and create benchmarks in one’s brain to more easily access information. Gestures are not typically associated with reading comprehension. Babies who are taught hand motions before speaking have higher IQs at age 8 than those who were not (Acredo & Goodwin, 2000). The fact that babies can use hand gestures to show comprehension before being able to do so verbally gives reason to believe that there might be naturalistic benefits of nonverbal cueing.

Some of the greatest thinkers such as Thomas Alva Edison (n.d.) were thought to have believed the idea that our body holds a key to a source of knowledge. Howard Gardner was one of the first researchers to study how bodily kinesthetic effects the attainment of knowledge in his 1983 book, *Frames of Mind: The Theory of Multiple Intelligences*. Gardner’s theory supports the idea that hand gestures and other body movements are a way students can create symbols to express their comprehension (1983).
The use of gestures as an instructional method of improving students’ comprehension has recently received more attention in educational research. Like most educational trends, the current research on the use of gestures in the classroom setting stems from psychology research. Valenzeno et al. (2003) found that teachers’ gestures improved student outcomes in comprehension and suggested that gestures “play an important role in instructional communication” (p. 1). Knowing that gestures help students better comprehend teachers’ instructions gives reason to believe that gestures will help facilitate instructional techniques such as scaffolding that require high student and teacher interactions.

Research has progressed to involve more unique ways of using gestures to assist students’ ability to comprehend. When students take the role of the gesturing, they are taking a more active role in the learning process. When analyzing the use of comprehension strategies, gestures proved to increase student engagement and effectively create representation of abstract concepts (Collins, 2005; Viadero, 2005).

The act of gesturing can also be considered a kinesthetic learning aid, where students are using physical movements to help their cognitive processing. With evidence provided by the National Center for Educational Statistics (2006), the number of kinesthetic learners is growing. Instruction that utilizes physical movement has shown that it accesses students’ neurological strengths, and keeps them energized and attentive (Gurian & King, 2006).

New areas of research continue to examine the connection of gestures to comprehension strategies. A study by Block, Parris, and Whiteley (2008) yielded especially strong results as to the effectiveness of using explicit instructional strategies
that included the use of gestures in reading instruction for the primary grades. This approach helped students with finding the main idea, clarifying, inferring, and making predictions.

Conclusion

Including comprehension strategies within an explicit instructional approach has been shown as an effective method for teaching reading comprehension and in teaching students with learning disabilities (Chan, Cole, and Barfett, 1987; Klingner et al., 2010; National Reading Panel, 2000; & Vaughn, Gersten & Chard, 2000). The explicit instruction method provides students with a rationale for learning the strategy and guides demonstration of the strategy until students can successfully use the strategy independently. “Making instruction visible and explicit is an essential feature of effective intervention for students with LD” (Vaughn, Gersten & Chard, 2000, p. 108).

Successful reading comprehension requires active participation and gestural cues (Tompkins, 2010). The physical movement allows students to engage in the text and can create representation of comprehension strategies (Block, Parris & Whiteley, 2008; Collins, 2005; Gurian & King, 2006; Viadero, 2005). The use of gestures is designed to create a mental representation of effective comprehension strategies that will help the students to initiate the strategy, thus leading to comprehension of the text. The gestures will be used with instructional practices proven beneficial for students with learning disabilities.

Using gestures as an instructional tool to help students learn comprehension strategies is an instructional approach that needs more examination across different
populations of students. Block, Parris, and Whiteley (2008) determined the effectiveness of gestures within a K-6 general education setting. The most significant gains were made in grades K-3. Research can confirm that primary grade students need clear representation of abstract concepts to create meaning from text (Swaab, Baynes, & Knight, 2002). The research on gestures is still relevantly new as an effective method in the process of teaching student comprehension strategies and needs further research.

Future

The future of this topic lies in the concerns of the National Reading Panel (2000). Can effective instructional methods such as the one produced by Block, Parris, and Whiteley (2008) be recreated to produce positive results with students with learning disabilities? The greater number of students an effective instructional method serves may increase the significance it has in the educational setting. This proposed action research project on the use of gestures to aid reading comprehension will examine students in 3rd through 5th grade that read at a primary grade level. The results of this study may further the significance of the Block, Parris, and Whiteley (2008) study or show the limitations in the population that the instruction reaches.
CHAPTER III

METHODOLOGY

Students with learning disabilities struggle to draw meaning from the text, which causes their reading comprehension to suffer (Gersten et al., 2001). This action research project is designed to improve students’ reading comprehension by using gestures that represent comprehension strategies. Gestures help increase student engagement and create representation of the comprehension strategies (Collins, 2005; Viadero, 2005).

Design of the Investigation

Three inferential comprehension strategies were selected to increase the reading comprehension of students with learning disabilities. The comprehension strategies were chosen based on the goals of the students’ Individualized Education Plans, their performance on Star Reading tests, and the Qualitative Reading Inventory. All of the students had Individualized Educational Program (I.E.P.) goals designed to improve their inferential reading comprehension. The strategies were carefully matched to meet the needs of the students within this study.

The students participated in 25 minute lessons two times a week. The lessons were taught for a 12 week period and concluded with a summative assessment of the students reading comprehension ability. Eight lessons were taught for each reading
comprehension strategy. All previously learned strategies were continuously reviewed and used in future lessons. Table 1 shows the sequence of the lessons matched with the comprehension gestures.

Table 1

Sequence of Lessons Implemented with Comprehension Gestures

<table>
<thead>
<tr>
<th>Lesson #</th>
<th>Comprehension Strategy</th>
<th>Comprehension Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-8</td>
<td>Clarification</td>
<td><img src="image1.png" alt="Clarification Gesture" /></td>
</tr>
<tr>
<td>9-16</td>
<td>Predicting</td>
<td><img src="image2.png" alt="Predicting Gesture" /></td>
</tr>
<tr>
<td>17-24</td>
<td>Main Idea</td>
<td><img src="image3.png" alt="Main Idea Gesture" /></td>
</tr>
</tbody>
</table>
The three comprehension strategies selected were clarification, making predictions, and finding the main idea. All three of these strategies were represented by individual gestures that the students created. The teacher demonstrated the use of each comprehension strategy as the students slowly increased participation through an explicit instructional sequence. The following teaching sequence is an example lesson for finding the main idea:

1. *Review previous lessons.* The teacher used the student-created poster board to review the previous learned comprehension strategies. The teacher asked the students to demonstrate verbally or physically when they would use the strategy, how they might use the strategy, and the gesture that goes with the comprehension strategy.

2. *Define new concept and attributes.* The teacher guided the students to verbally state what they already know about the comprehension strategy, main idea. All student responses were recorded on poster board for future reference. Students will be asked to explain what they think the phrase main idea means and how they might use it while reading. The students will help create the new gesture representing the main idea.

3. *Develop positive and negative examples.* The teacher referred back to previous passages that the group has read to give both positive and negative examples of the main idea of each passage. As the teacher gives a positive example the students and teacher will give the gesture for main idea.

4. *Teacher demonstration of concept.* The teacher read a passage from Read Naturally at the students’ instructional level. The teacher stopped after each sentence to demonstrate a think-aloud and gesture to what the main idea of that sentence was. The students underlined the words that the teacher has identified as the main idea of the
sentence. The students were encouraged to underline any additional words they found important. After the passage had been completely, the teacher went back and looked for a common idea between all the sentences. The teacher verbally stated one main idea in a complete sentence using his own words.

5. **Formative assessment.** Students were asked to answer the main idea question about the passage. If time allowed, the students were asked to answer additional questions as well.

6. **Review newly learned concept.** Students looked back at their poster board to review what they wrote and add any new ideas.

The students were placed into groups of two, based on their instructional reading level, also known as zone of proximal development (Vygotsky, 1978). Each week the students read or were read a passage from Read Naturally at their instructional reading level. Read Naturally passages were selected because the text is expository and a five question formative assessment is provided at the end of each passage.

The students received information through visual, auditory, and kinesthetic senses. Visual aids of the gestures provided another source of prompting for the students to use with the comprehension strategies. The passages were read to the students when a new comprehension strategy was being learned to allow students attention to be focused on learning how the strategy was used. The comprehension gestures were used as a way for students to use kinesthetic movement to increase acquisition of the comprehension strategies.
Student Population

This action research project was implemented at a K-5 elementary school in a rural part of Northern California. The students in the study were in a special day class. The four students in the study were each identified as having a specific learning disability (SLD), as defined under the reauthorization of IDEA 2004. The students in the study were a 3rd grader, two 4th graders, and one 5th grader.

All students in the study showed the ability to comprehend at a literal level. Results from their performance on the Qualitative Reading Inventory, STAR reading test, and the weekly Read Naturally formative assessments demonstrated they were able to take direct information from the differentiated text to answer questions. All of the students had reading I.E.P. goals focused on developing their inferential comprehension skills. It should be noted that the students ranged in their phonetic ability. The students’ scores on the Basic Phonic Skills Test (BPST) III ranged from 65 to a 91. Analysis of the BPST scores and the students’ grade levels indicated that all four students were below grade level expectations. Table 2 shows a graphic view of the student demographics.

Data Collection Instruments

The data collection in this action research project was designed to measure the effect that gestures had in three areas of the students’ reading comprehension. To accurately measure the effect gestures had on reading comprehension, multiple data collections were used. A combination of reading comprehension assessments, student work samples, and teacher anecdotal notes were used to show the results of the study.
Table 2

**Student Demographics**

<table>
<thead>
<tr>
<th>#</th>
<th>Gender</th>
<th>Age</th>
<th>Grade</th>
<th>Disability</th>
<th>Comprehension IEP Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>9</td>
<td>3rd</td>
<td>SLD</td>
<td>The student will ask questions and support answers from information found in and/or inferred from the text at her instructional level with 70% accuracy on 2 of 3 consecutive trials as measured by teacher charted student records/student work samples.</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>11</td>
<td>5th</td>
<td>SLD</td>
<td>When asked to formulate predictions about the text, the student will use prior knowledge and ideas from illustrations, titles, topic sentences, key words and clues to make and confirm predictions with 80 percent accuracy in 4 of 5 trials as measured by teacher-charted observations/student work sample.</td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>9</td>
<td>4th</td>
<td>SLD</td>
<td>When asked to formulate predictions about the text, the student will use prior knowledge and ideas from illustrations, titles, topic sentences, key words and clues to make and confirm predictions with 80 percent accuracy in 4 of 5 trials as measured by teacher-charted observations/student work sample.</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>11</td>
<td>4th</td>
<td>SLD</td>
<td>The student will make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, and foreshadowing clues with 70% accuracy in 2 of 3 trials as measured by student work samples/teacher observations.</td>
</tr>
</tbody>
</table>

*Note. SLD = Specific Learning Disability. The child does not achieve commensurate with his or her age and ability levels in one or more academic area” (Individuals with Disabilities Education Act [IDEA], 2004).*
There were three different reading comprehension assessments used before, during, and after to measure the students’ progress. The first assessment was the norm-referenced STAR reading test. This assessment measures the students’ reading comprehension by assigning the students an appropriate independent and instructional reading level. The students were given the test at the beginning, middle, and end of the study.

The second comprehension measurement used was the Qualitative Reading Inventory V (QRI V). The QRI V has a comprehension component that asks the students to retell the story and answer both implicit and explicit questions. The students were assessed at the beginning and end of the study. Expository passages were used to assess the students. Students were given passages at their instructional reading level determined from the STAR reading test.

The third measurement of comprehension was the formative assessments given to the students at the end of each Read Naturally passage. The Read Naturally curriculum used was a range of 2nd-3rd grade expository passages. Each passage was followed by five implicit and inferential comprehension questions. The students completed 24 Read Naturally passages, eight focusing on each comprehension strategy.

Student work samples were three posters for each comprehension strategy and written responses to the comprehension questions at the end of the Read Naturally passages. The posters were a collaboration of student responses to when and how to use the comprehension strategies. The comprehension questions provided an immediate assessment of the student attainment of the comprehension strategies. The five
comprehension questions were corrected with the students allowing them to receive immediate feedback.

Teacher anecdotal notes were used to track students’ behavior, verbal responses, and use of comprehension gestures during the lessons. During and after each lesson the teacher tallied the number of times and types of gestures the students used. The teacher also wrote down any behavior or verbal response that showed the students’ comprehension of the passage.

Data Analysis Procedures

The grounded theory method is used to analyze the data for this action research project because the study’s quantitative findings are limited in time and sample size. The ground theory methodology is a qualitative research approach to analyze data (Strauss and Corbin, 1997). The anecdotal notes taken during and after each lesson were coded to find patterns in the Students’ behaviors.

The coding of the anecdotal notes, the reading comprehension assessments, and the student work will be compared to help validate the findings. This part of the data analysis is called triangulation, “a vehicle for cross validation when two or more distinct methods are found to be congruent and yield comparable data” (Jick, 1979, p. 602). The findings of the coding were compared with the quantitative results found in the reading comprehension assessments and charting of the use of gestures. The results of the study were derived from triangulation of the data collected.
CHAPTER IV

RESULTS

The data collected in the study was triangulated to help validate the findings to the question: will students with learning disabilities increase reading comprehension by the use of gestures that represent comprehension strategies? Triangulation is the theory that “multiple view points allow for great accuracy” (Jick, 1979, p. 2). Triangulation increased the validity of the study by confirming the results from at least 3 different sources.

Presentation of Findings

The study was documented using five data sources: STAR reading test, Read Naturally formative assessment, Quantitative Reading Inventory V, Student work samples, and teacher anecdotal notes.

STAR Reading Test

A pre and post STAR reading test was used to help measure the change in the students’ comprehension. Table 3 shows the change in the students’ grade equivalent independent reading level. This is the level at which the students are able to fully comprehend a book on their own.

The results showed that the students’ independent reading level increased by an average of 0.4. This statistic is equivalent to a four month growth in the students’
Table 3

**STAR Independent Reading Level**

<table>
<thead>
<tr>
<th>Student</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.7</td>
<td>2.3</td>
<td>+0.6</td>
</tr>
<tr>
<td>2</td>
<td>PP</td>
<td>P</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1.8</td>
<td>3.0</td>
<td>+1.2</td>
</tr>
<tr>
<td>4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.5</td>
<td>4.0</td>
<td>-0.5</td>
</tr>
<tr>
<td>Average</td>
<td>2.2</td>
<td>2.6</td>
<td>+0.4</td>
</tr>
</tbody>
</table>

<sup>a</sup>The student missed 7 of the 24 lessons.

The independent reading levels. The expected growth of the students’ independent reading level was three months, the length of the study. This led the researcher to conclude that the students improved at a 33% faster rate.

**Read Naturally Assessment**

Each one of the 24 lessons was followed by a five question comprehension assessment. Each assessment was comprised of a question asking to identify the main idea and a written response to an explicit question of the passage. The data collected on the written response is reported in both the Read Naturally measure of comprehension and student work samples.

Figure 1 displays the number of questions the students answered correctly on the five comprehension questions for the passage. The colored area shows the students’ comprehension of each passage. The white area in the graph shows the amount that the students did not answer correctly. The trend line measured the growth of comprehension. The steeper the trend line, the greater improvement in the student’s reading
The student missed 7 of the 24 lessons.

Figure 1. Read Naturally formative assessment results.

comprehension. Three of the four students showed improvement in their ability to comprehend the passages by having positive trend lines.

The comprehension strategy of finding the main idea was the only comprehension strategy that could be individually measured. The students’ ability to identify the main idea was measurable because each Read Naturally passage contained a comprehension question focused on finding the main idea. Table 4 shows the students’ average scores in correctly identifying the main idea in lessons 1-16 compared to lessons 17-24, where the comprehension strategy was first taught.

*The student missed 7 of the 24 lessons.*
Table 4

*Identifying the Main Idea*

<table>
<thead>
<tr>
<th>Student</th>
<th>Lessons 1-16 average</th>
<th>Lessons 17-24 average</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>56%</td>
<td>100%</td>
<td>+44%</td>
</tr>
<tr>
<td>2</td>
<td>44%</td>
<td>75%</td>
<td>+31%</td>
</tr>
<tr>
<td>3</td>
<td>44%</td>
<td>100%</td>
<td>+66%</td>
</tr>
<tr>
<td>4(^a)</td>
<td>69%</td>
<td>75%</td>
<td>+6%</td>
</tr>
<tr>
<td>Average</td>
<td>53%</td>
<td>88%</td>
<td>+37%</td>
</tr>
</tbody>
</table>

\(^a\)The student missed 7 of the 24 lessons.

All students showed an increase in their ability to identify the main idea once the comprehension strategy was taught. There was an average percent point increase of 37 for all the students from lessons 1-16 compared to lessons 17-24.

**Qualitative Reading Inventory**

The Qualitative Reading Inventory V was another source of data collected to measure the students’ change in reading comprehension. Table 5 shows the change in two different measures of comprehension provided by the Qualitative Reading Inventory test that was given prior to and after the completion of the study. The data in Table 5 shows minimal gains in the students’ reading comprehension with no regression in any area.

**Student Work Samples**

Student work samples were collected from their posters representing each comprehension strategy and written responses to the Read Naturally assessment. Figure 2 is an example of a poster that was created by Students 3 and 4 during the lessons focused on teaching clarification. All of the students demonstrated their knowledge of the
Table 5

Quantitative Reading Inventory

<table>
<thead>
<tr>
<th>Student</th>
<th>Pretest # items recalled</th>
<th>Posttest # items recalled</th>
<th>Pretest questions out of 8</th>
<th>Posttest questions out of 8</th>
<th>Total Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>+7</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>9</td>
<td>5</td>
<td>6</td>
<td>+1</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>+4</td>
</tr>
<tr>
<td>4^a</td>
<td>12</td>
<td>13</td>
<td>5</td>
<td>5</td>
<td>+1</td>
</tr>
</tbody>
</table>

^aThe student missed 7 of the 24 lessons.

comprehension strategy by listing when they would need to use the strategy and how they could use the strategy.

In Figure 3, the students wrote responses to explicit questions from each Read Naturally passage. The responses were a way to measure the students’ comprehension of inferential information. The first written response if translated to “the trees might die” and the second “We can at day but not at night because this when there awake.” The students were able to demonstrate their ability to infer information from the passage in their written responses. The students were able to add and connect information that was not included in the passage. The majority of the responses by all of the students include mostly implicit information even though the questions prompted for an explicit response.

Teacher Anecdotal Notes

The teacher’s anecdotal notes tracked the students’ behavior, verbal responses, and uses of gestures during the lessons. Student behavior was noted after each lesson to see if any trends occurred. The students showed two notable behaviors
throughout the study. The first was their enthusiasm to participate in each lesson. The second behavior was the students desire to physically act out their responses. Students 1, 2, and 3 acted out their verbal responses to comprehension questions with their hands multiple times throughout the study. An example was when Student 3 showed how the smaller dinosaur was able to defeat a larger dinosaur by acting out the scene with his hands. This shows the students’ desire to use their bodies to create and express comprehension.
Students’ verbal responses to comprehension questions were recorded in the teachers’ notes during each lesson. Table 6 shows two ways that the students were able to demonstrate their comprehension of the text and of the strategies with a verbal response.

Table 6

Examples of Students’ Verbal Responses

<table>
<thead>
<tr>
<th>Student</th>
<th>Verbal Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The student verbally stated that she had a prediction than said “no, no”. The student changed her mind and gestured the comprehension strategy clarification and went back to reread. After the student clarified what she had read, she then gestured and verbally made a prediction.</td>
</tr>
<tr>
<td>2</td>
<td>The student read the sentence “Most frogs lay their eggs in water.” The student gestured the comprehension strategy of clarification and asked the teacher a question, “Which frog don’t lay their eggs in water?” The student continued to read to find the answer but the passage never answered it. She then wrote down her question so she could look it up on the computer later.</td>
</tr>
</tbody>
</table>
The first example shows the student’s command of the comprehension strategy and the ability to notice when she did not understand what she read. The student went back to reread and then immediately applied the information she read to make a prediction. The second example shows the student’s ability to take in information and analyze it by asking further questions. Throughout the lessons, all students were able to verbally demonstrate literal and inferential comprehension of the passages.

Anecdotal notes provided data on the students’ use of the gestures. Each time a student used a comprehension gesture without prompting, a tally mark was made next to the strategy and under the student’s name. Figure 4 shows the number of times student used each comprehension gesture.

![Figure 4. Frequency of comprehension gestures.](image-url)
Discussion of the Findings

The data was triangulated to answer the research question: will students with learning disabilities increase their reading comprehension by the use of gestures that represent comprehension strategies? Table 7 provides a correlation score for the three different quantitative data sources that measured comprehension to the number of gestures the students used during the lessons.

Table 7

*Correlation Score to the Number of Gestures Used and Reading Comprehension Assessments*

<table>
<thead>
<tr>
<th>Student</th>
<th>Read Naturally Trend Line</th>
<th>CHG QRI</th>
<th>CHG STAR IRL</th>
<th># of Gestures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0913</td>
<td>7</td>
<td>0.6</td>
<td>42</td>
</tr>
<tr>
<td>2</td>
<td>0.063</td>
<td>1</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>3</td>
<td>0.0757</td>
<td>4</td>
<td>1.2</td>
<td>49</td>
</tr>
<tr>
<td>4</td>
<td>-0.1135</td>
<td>1</td>
<td>-0.5</td>
<td>18</td>
</tr>
<tr>
<td>r&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.8958</td>
<td>0.6896</td>
<td>0.9758</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note. CHG = change; QRI = Qualitative Reading Inventory V; IRL = independent reading level.*
<sup>a</sup>*Pearson’s r correlation was used to compare the three comprehension assessments to the number of gestures used.*

The two correlation scores over .8, Read Naturally trend line and change in STAR independent reading level shows a strong positive relationship between the number of gestures the students used and an increase in reading comprehension. Neither of the other two data sources, anecdotal notes and student work, showed a consistent relationship between the comprehension gesture and reading comprehension. However, the students’ active learning observed in the anecdotal notes showed that the students
improved comprehension when acting out verbal responses with their hands. Student’s 1-3 were observed using their hands to express their answers to comprehension questions. Student 4, who missed seven lessons and used the comprehension gestures the least, was not observed using his hands to answer comprehension questions. The relationship between the participation of student 4 and his growth strengths the results found.

The triangulation of the findings in the Read Naturally assessment, STAR reading test, and anecdotal notes provides enough evidence to come to a validated conclusion. There is not enough evidence to conclude that comprehension gestures increase reading comprehension in students with learning disabilities. However, it can be concluded that gesturing while discussing the reading, such as using hands to express one’s thoughts, is an effective means to increase reading comprehension for students with learning disabilities.

In addition to the synthesis of data to address the research question, the study showed improvement in the following:

1. The average of students reading comprehension scores in the STAR reading test, Qualitative Reading Inventory, and Read Naturally assessment all increased. The gains were minimal and could be compared to the expected growth in each student’s comprehension over a similar amount of time.

2. The data collected from the anecdotal notes and student work samples showed minimal evidence of higher-level thinking.

3. The data collected on the students’ ability to identify the main idea in the Read Naturally assessment yielded strong results when compared to prior results before the comprehension strategy was taught. Table 4 shows a 37 percent point increase in the
students’ ability to identify the main idea. There is no definite conclusion to this finding because there was only one source of data to justify the findings.
CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

This action research project was designed to meet the academic needs of a group of students with learning disabilities in a rural education setting. The students’ ability to comprehend text at their instructional level was below their grade level peers. Research-based teaching practices were implemented to address the problem. Block et al. (2008) found that teaching students without learning disabilities to explicitly use gestures representing comprehension strategies increased their reading comprehension. Comprehension strategies are abstract concepts that can be difficult for students performing at a primary level to grasp (Swaab, Baynes & Knight, 2002). Gestures are a way to give clear representation of abstract concepts (Collins, 2005).

The study used the teaching practices from Block, Parris, and Whiteley (2008) study and applied it to a population of four students with learning disabilities. The students participated in a 12-week study aimed to increase their reading comprehension. The study focused on the effects of three comprehension gestures on the students’ reading comprehension. The study measured the students’ growth in reading comprehension in five ways and then triangulated the data to determine the effects of the study.
Conclusion

The study posed the question: will students with learning disabilities increase reading comprehension by the use of gestures that represent comprehension strategies? There was not enough triangulated evidence to validate those gestures representing comprehension strategies increases the reading comprehension of students with learning disabilities. The data did validate, through triangulation, that using hand gestures during a reading comprehension discussion does increase reading comprehension.

The study did not yield as strong of results with students with learning disabilities as the Block, Parris, and Whiteley (2008) study did with students without disabilities. However, the conclusion was that the students with learning disabilities did increase reading comprehension through gesturing their opinions and thoughts. The significance of the study is that gesturing is an effect means to help teach students with learning disabilities increase reading comprehension.

Recommendations

The study faced limitations in the length and sample size. The length of the study was sufficient to measure the immediate impact that comprehension gestures affected the students’ with learning disabilities reading comprehension, but not sufficient to show the future impact. The sample size for the study was four students with learning disabilities. A larger sample size would have decreased the sampling error, allowing the data collection to stand on its own without as much cross-referencing. By decreasing the sampling error, more results would be found within the multiple measured assessments.
It is recommended that future researchers who wish to replicate the study use a larger sample size in order to decrease the sampling error and show more conclusive results. A replicated study with a larger sample size could provide more definitive answers to which comprehension gestures produced the strongest results.

There are two recommendations for future studies based upon the results found in this study. First, examine the gestures that students with learning disabilities use when verbally answering comprehension questions. The finding in this study showed that students used gestures to help verbally explain what they read. A study should compare the students’ gestures to the ability to comprehend text. The second recommendation would be to examine the students’ level of engagement while using gestures as they explain and discuss their understanding of the text. These two areas for examination could be combined in one study.
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