How the use of technology, a co-constructive learning environment, and journaling affect the oral and written comprehension skills of students with cognitive disabilities

Emily M. Schmidt

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How the Use of Technology, a Co-Constructive Learning Environment, and Journaling Affect the Oral and Written Comprehension Skills of Students with Cognitive Disabilities

By

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A Graduate Field Experience

Submitted in Partial Fulfillment of the Requirements for the Degree of Masters of Arts

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CHAPTER ONE

History and Focus

Ever Garrison, a poet, once said, “A teacher is a compass that activates the magnets of curiosity, knowledge, and wisdom in all children” (Klein, 2001). Meeting the needs of all students is something all teachers believe in when they enter into the world of education. Meeting the needs of students with disabilities can be challenging, but rewarding at the same time. Under the No Child Left Behind Act of 2001, legislation requires that all children will be at grade level by 2014. This has added pressure to all educators but especially special education teachers (Dimling, 2010). Educators need to strive to use best practices and effective teaching strategies throughout all their lessons in order to improve their students’ comprehension and language skills.

School Setting

Currently, I work at a high school in St. Francis, Wisconsin. It is a suburban setting with approximately 579 students enrolled in grades nine through twelve. The school has programs such as READ 180 (Hasselbring, T., Goin, L., Kinsellas, K., & Feldmen, K., 2011), an effective comprehensive reading intervention program, alternative education and credit recovery programs, special education services, and a mariner academic success center (M.A.S.C.) which is a program that is a supportive intervention study hall that helps students complete assignments, study for tests, and stay organized.

Along with the academic programs, the school also provides students with opportunities to participate in athletics and other school organizations. Some of the school organizations that students can get involved in are national honor society, peer helpers, student council, Future Business Leaders of America (FBLA), yearbook, art club, international club, and outdoor science
club. These clubs and organizations are all voluntary and student-led. These clubs help in
promoting student involvement in school.

Recently, our school received a federal grant from the Department of Public Instruction
called the Safe and Supportive Schools Project (S3). This is a national discretionary grant
funded project, awarded to 11 states, that runs from the 2010-11 school year, through the 2013-
14 school year. State departments of education, which are recipients of these grants, are required
to invite participation from a sample of Local Education Agencies (LEAs) and the high schools
that they operate. The selected LEAs must enroll a minimum of 20% of the state’s school age
population. Initial participation requires State Education Agencies (SEAs) to collect student
survey data, as well as behavioral incident data from high schools in the select LEAs. The data
collected must be used to determine a “school safety score” that will be used in selection of high
schools during the intervention or implementation phase and help measure project progress.

The goal of the Safe and Supportive Schools project is to improve conditions for learning
in selected high schools. The measurable objectives, also known as Government Performance
and Results Act (GPRA) measures the following:

- The percentage of participating schools that experience either an increase or a decrease in
current (past 30 days) student use rate of alcohol.
- The percentage of participating schools that experience either an increase or a decrease in
student self-reports of bullying or personal harassment on school property in the current
school year.
- The percentage of participating schools that experience either an improvement or a
worsening in their “school safety scores.”
The percentage of participating schools that experience either an increase or a decrease in the number of suspensions for violent incidents without physical injury.

Each participating high school involved in the project is required to administer the Online Youth Risk Behavior Survey (OYRB) in the spring semester, during each year of the project. All ninth and eleventh grade students are to participate in the survey unless parents prohibit (in writing) their inclusion in the survey or students specifically opt out. Schools may opt to include students in grades other than ninth and eleventh in the survey sample. A minimum of 70% participation rate is expected for students in these two grades. All high schools must report the number of out-of-school suspensions and expulsions, along with their building enrollment, as of March 31st of each year. This data is to be submitted by May 1st of each year. Overall, my school will receive $60,000 per year for the next three years because of our high suspension and expulsion rate. Our school was deemed “unsafe” (emotionally, physically, and mentally) so we received money to help change that atmosphere in our high school. After St. Francis High School was deemed unsafe, it has been the goal of administration and staff to provide students more opportunities to get involved and voice their opinions on what they would like their school to look.

Due the small size of the high school, the teaching staff, support staff, and administration all work collaboratively to maintain a positive and productive learning environment for all students. Presently, one full-time principal and one assistant principal oversee the school. The school has two guidance counselors that service all of the students in the building and the district social worker and school nurse have their offices at the high school. The teaching staff includes four special education teachers, two Spanish teachers, one part-time Japanese teacher, three physical education teachers, four history teachers, five math teachers, four science teachers, five
English teachers, one family and consumer education teacher, one business teacher, one art teacher, one band/choir teacher, one district-wide librarian, two paraprofessional, and three intervention specialists that work in the M.A.S.C. room. The district office is also located at the high school, where the superintendent’s office is located, along with the business manager, payroll specialist, technology coordinator, and district secretary.

The school staff support the professional procedures of the school based on the policies determined by administration and the school board of education. There are many small leadership committees throughout the school that help in creating a productive and educational work environment such as Student Support Team (SST), Building Leadership Team (BLT), Safe and Supportive Schools Team (S3), and an administration team including all building principals and the superintendent. These committees help support communication, planning, and problem solving issues that arise in the school building. Additionally, in order to address Response to Intervention (RTI), the high school has implemented many policies and procedures to provide effective, timely assistance for students. Each department in the high school works in a professional learning community (PLC) where each department meets weekly to discuss goals, student issues, and work on tier one interventions and curriculum mapping to make sure that all teachers are meeting the core and state standards.

Furthermore, the school has a least restrictive environment framework for special education students where special education students are mainstreamed in the majority of the regular education classes, but have self-contained pull out classes to meet the needs of certain student’s Individualized Education Plan (IEP) goals. These classes include more of a transition and vocational curriculum.
Summary of Project and Best Practices

Student Population and Academic Data

With support from the administration, the teaching staff is able to collaboratively work and reinforce the professional procedures expected to meet the diverse needs of the student population. Current data from the state of Wisconsin Department of Public Instruction indicate that there is a diverse student population. For example, 70% of the students are Caucasian, 18% of the students are Hispanic, 10% of the students are African-American, and five percent of the students are Asian. English Language Learners comprise 10% of the population and 10% of the school population has a disability. Also, there are 38% of students in my high school that qualify for free or reduced lunch status (Wisconsin Department of Public Instruction, 2011).

Moreover, for my research project, I will focus on four students with cognitive disabilities. All students are functioning significantly below grade level in all academic areas. Per the students’ IEPs, they are receiving 50 minutes of reading/writing instruction, 50 minutes of vocational living skills, and 150 minutes of community transition skills. Also, three of the four students receive 50 minutes a week of speech and language services. Of the students, three of them are female and one is male. The male student has Down’s syndrome and is a sophomore in high school. His home language is English. This year he will be taking the Wisconsin Alternative Assessment (WAA) in place of the Wisconsin Knowledge and Concepts Examination (WKCE). He will stay in school until he is 21 years of age. The oldest student is a female student who is 20 years old and is also an English Language Learner. Her primary language spoken at home is Spanish. She is currently functioning at a second grade reading level. The other two female students are a freshman and sophomore. They both speak English at home.
All of these students are enrolled in at least one regular education class where they receive special education support from either the special education teacher or paraprofessional. The regular education and special education teachers collaborate together to modify and accommodate these students while they are in their classrooms. When these students are removed from their regular education classes, they receive specialized instruction such as small group instruction, language modifications, additional time for assignments, and pre-teaching and re-teaching of concepts in the special education room. All four of these students participate in work experience such as working in the elementary school cleaning tables and getting the breakfast program ready for the next school day. This is built into their day in the afternoons to assist them in gaining the skills needed to independently perform job tasks on their own.

**Project Overview**

This project will focus on incorporating technology, a co-constructive learning environment, and writing practices into my classroom as a means to promote better oral and written comprehension for my students with cognitive disabilities. A co-constructive learning environment is an environment where all students work collaboratively together. These components of technology, co-constructive learning, and different writing practices will work simultaneously to enrich students’ comprehension process. For students with cognitive disabilities, providing explicit instruction and numerous opportunities to practice new skills is imperative in supporting students’ literacy needs at their overall instructional level.

**Best Practices in Technology**

I have read many studies that suggest the essential components of effectively using technology to help with students with disabilities’ comprehension. Recently, many researchers have investigated the impact of using technology in hopes to promote comprehension for those
students who have disabilities. These studies explain the importance of incorporating technology in the classroom to improve students’ comprehension and academic skills. The first study, “Assistive Technology as an Accommodation for a Student with Mild Disabilities: A Case of Alex” by Brackenreed (2008), investigates the impact of selected types of adaptive and assistive technology on the learning gains and academic achievement levels of a female student with mild disabilities in the sixth grade. The second study, “The Effectiveness of Electronic Text and Pictorial Graphic Organizers to Improve Comprehension Related to Functional Skills” by Douglas, Ayres, Langone, and Bramlett (2011) evaluates the effects of a computer-based instructional program to assist three students with mild to moderate intellectual disabilities in using pictorial graphic organizers as aids for increasing comprehension of electronic text-based recipes. Finally, the last study, “Independent Reading of CD-ROM Storybooks: Measuring Comprehension with Oral Retellings” by Pearman (2008) explored the use of CD-ROM storybooks in helping to aid comprehension by providing a multisensory reading experience. Overall, these three studies all focused on the research of using technology in the classroom to help with academic performance for all students. All these studies saw an overall increased academic achievement and comprehension when students used technology.

These three studies all recognized the importance of integrating technology into the classroom as a means of improving students’ comprehension and academic skills. In all of these studies, different types of technology were used; assistive technology, CD-ROMs, and e-texts and pictorial graphic organizers. This is my hope for my action research with my students who have cognitive disabilities. I hope that with the use of technology and working together as a group, students’ overall comprehension of tasks will increase. The exposure to different types of
technology enables students to become more familiar and increases student interest and motivation in the classroom.

**Best Practices in Co-Constructive Learning**

In addition to technology promoting better comprehension, the use of a co-constructive learning approach plays into factor with seeing increased success in comprehension for students with disabilities. The first study, “Social Skills Instruction for Adolescents with Emotional Disabilities: A Technology-Based Intervention” by Cumming, Higgins, Pierce, Miller, Boone, and Tandy (2005), explore the use of multimedia, student-generated social skills lessons coupled with teacher facilitation to improve the social and comprehension skills of middle-school students with emotional disabilities. The second study, “Take It Out of Class: Exploring Virtual Literature Circles” by Bowers-Campbell (2011), analyze the effects of integrating technology into literature discussions as a means to enable authentic reading experiences that honor the voices of all students who have diverse ideas, communication styles, and confidence levels. Lastly, the final study “Reader Response Meets New Literacies: Empowering Readers in Online Learning Communities” by Larson (2009), investigate how collaborative online learning communities provided students equitable opportunities to share their thoughts and voice their opinions about literature to help improve their comprehension. Overall, these three studies all focused on the research of using a co-constructive model with the use of technology to help in improve students’ comprehension and literacy development.

I chose these articles because research says that this type of co-constructive learning model relates to my action research topic of how incorporating the use of technology in a classroom with special education students can increase the students’ comprehension and educators can see higher success rates in their students. In these studies, technology required
students to use new literacies to communicate and socially interact with their peers. As
technology is continuing to expand in the world, teachers should offer students new opportunities
and expand their learning community. By exploring and researching new technology in the
classroom, teachers can provide their students with new ideas to enhance their future.

These three studies all recognized the importance of having students collaborate together
in student-led discussions about literature. In all of these studies, students increased their social
skills, comprehension, and motivation to reading literature.

**Best Practices in Writing**

Each of these studies explore how the use of different writing strategies help in
improving the overall writing and comprehension of students with disabilities and English
Language Learners. The first study, “Promoting Expressive Writing among Students with
Emotional and Behavioral Disturbance via Dialogue Journals” by Regan, Mastropieri, and
Scruggs (2005), explore written dialogue journals as a means to improve writing,
comprehension, and encourage positive social skills by promoting individualized written
discussions between a teacher and students’ emotional and behavioral needs. The second study,
“Enhancing the Writing Development of English Language Learners: Teacher Perceptions of
Common Technology in Project-Based Learning” by Foulger and Jimenez-Silva (2007)
investigate how the use of technology provided English Language Learners an advantage in
developing writing and comprehension skills. Both of these studies addressed the importance of
improving students’ writing and comprehension skills.

Overall, these two studies demonstrate the importance of enhancing the writing
development whether the students have disabilities or if the students are English Language
Learners to help in the students’ overall comprehension and learning opportunities. When
thinking about my action research question, I believe these studies will help lay the foundation. Incorporating different writing strategies in my classroom helps in improving not only expressive writing, but also attention and comprehension for students with disabilities.

**Project Design**

I will implement systematic comprehension instruction in accordance to current best practices related to comprehension acquisition. Students will participate in a systematic process to effectively learn, practice, and use multiple strategies to help with comprehension. The use of technology such as digital pictures and video and writing tools such as graphic organizers and journaling in a co-constructive setting will help students to link what they are learning and help with improving oral and written comprehension of lessons.

Students with cognitive disabilities struggle academically and functionally at St. Francis High School. Without the language and comprehension capabilities to effectively communicate different activities and job responsibilities, these students find it difficult to communicate wants and needs while at school or in the community.

Students will further develop their language and comprehension skills through meaningful and authentic activities based on their abilities. The students will follow their consistent schedule and will actively participate in teacher-modeled activities to create graphic organizers, write sentences, and retell lessons in a co-constructive setting. For example, students will work together to discuss the different activities that they have done. They will use technology to help in assisting with their writing process. They will practice journaling, filling out graphic organizers, and using flash cards to help with their overall comprehension of the lesson.
Throughout the week, these students follow regimented routines which help in their transition from week to week. Students will continue to follow these routines, but will incorporate more writing and technology into their activities. Based on the activities, students will show an increased comprehension and communication about the activities they have accomplished.

The weekly schedule of activities and development of functional life skills is shown on the table below.

<table>
<thead>
<tr>
<th>Day</th>
<th>Technology</th>
<th>Co-Constructive Learning</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday (Grocery Shopping)</strong></td>
<td>Teacher will take pictures of students grocery shopping</td>
<td>Students will be working together while they shop</td>
<td>Students will fill out a graphic organizer of everything they purchased at the store</td>
</tr>
<tr>
<td></td>
<td>Students will be following the recipe for what they will be cooking on Wednesday</td>
<td>When students are done shopping they will work together with unloading cart</td>
<td>Students will be able to use the pictures to aid them in their writing process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students will unload groceries in the kitchen back at school together</td>
<td></td>
</tr>
<tr>
<td><strong>Tuesday (Work Experience)</strong></td>
<td>Teacher will take pictures/video of students during their job</td>
<td>Students will work together to complete their responsibilities at their job while communicating what needs to get done</td>
<td>Teacher will model a journal about what they did at their job with sentence starters and punctuation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Students will complete their journal entry about what they did at their</td>
</tr>
</tbody>
</table>

### Wednesday (Cooking)
- Teacher will take pictures/video of students during their cooking lesson.
- Students will work together to follow recipe step by step.
- Students will each be assigned a job while in the kitchen to help with everything running smoothly.
- After cooking lesson is done and everything is cleaned up, students will work together to fill out a graphic organizer on the Smart Board with putting all the pictures in the correct sequence of the cooking process.
- Students will then write what is happening in each picture.

### Thursday (YMCA/Art Therapy/Recreation)
- Teacher will take pictures/video of students while at the YMCA for adaptive fitness or at Art Therapy.
- Students will work together on their art projects.
- Together, students will talk about everything they did at Art Therapy or the YMCA on the car ride home with teacher prompts.
- Students will write in their journals when they get back to school about their experience.
- Students will be given a writing prompt.

### Friday (Work Experience)
- Teacher will take pictures/video of students during their job.
- Students will work together to complete their responsibilities.
- Teacher will model a journal about what they did at
<table>
<thead>
<tr>
<th>job</th>
<th>es at their job while communicating what needs to get done</th>
<th>their job with sentence starters and punctuation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Students will complete their journal entry about what they did at their job</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Students will be able to watch the video or look at the pictures to aid in their writing</td>
</tr>
</tbody>
</table>

Overall, I hope to give my students opportunities to expand their communication skills and comprehension through simultaneously using technology, a co-constructive learning approach, and different writing strategies. Students will experience research based best practice techniques such as increased technology use, language scaffolding through teacher modeling, think-alouds, small group instruction, and the use of graphic organizers and journals. Additionally, they will also scaffold each other’s language though systematic peer interactions and assignments that focus on these important skills.

Conclusion

In conclusion, St. Francis High School has a caring and collaborative sense of school community that believes on teaching students to become critical members of society. The main focus continues to be meeting each student’s individual needs through an academically challenging curriculum delivered in a safe and nurturing environment. We also encourage all of our students to become involved in the many clubs, organizations, special events and athletic activities that are offered at the high school. We are committed to equipping students with the experiences,
knowledge and skills necessary to be successful in the 21st century. I must strive to make sure that students with special education needs are learning functional life skills that will help them survive in the real world and help them to achieve their goals by maintaining a career once they finish high school. It is my hope that by doing this action research project; I will gain new insight and strategies to help my students become more successful not only in the classroom, but also in the real world.
CHAPTER TWO

Review of Literature

Technology is ubiquitous, touching almost every part of our lives, our communities, and our homes. Yet most schools lag far behind when it comes to integrating technology into classroom learning. “Many are just beginning to explore the true potential technology offers for teaching and learning. Properly used, technology will help students acquire the skills they need to survive in a complex, highly technological knowledge-based economy” (Edutopia Staff, 2008). In this chapter I summarize research studies that have informed my action research of how journaling and co-constructive learning with the use of technology affects the comprehension skills of students with cognitive disabilities. Chapter two is divided into three sections. Each section contains research reviews from three to five studies. In the first section, four articles focus on enhancing and promoting writing development through journaling and the use of technology as a means of enhancing overall comprehension. In the second section, three studies focus on the effectiveness of using a co-constructive approach to learning as a means of promoting comprehension. Finally, in the third section, five studies focus on the effectiveness of technology in the classroom to improve students’ comprehension.

Writing Development

In the first section of this chapter, four research studies are presented. Each of these studies explores promoting the development of writing for students who have disabilities or are English language learners. The first study, by Regan, Mastropieri, and Scruggs (2005), explores written dialogue journals as a means to improve writing, comprehension, and encourage positive social skills by promoting individualized written discussions between a teacher and students’ emotional and behavioral needs. The second study, by Foulger and Jimenez-Silva (2007)
investigated how the use of technology provides English language learners (ELLs) an advantage in developing writing skills. The third study, by Kostos and Shin (2010) investigated how the use of math journals affected second grade students’ communication and comprehension of mathematical thinking. The fourth study, by Liao and Wong (2010) examined the efficacy of English dialogue journal writing (DJW) on students’ writing fluency, reflections, anxiety, intrinsic motivation, as well as the students’ responses to journal writing. Overall, these four studies demonstrated the importance of enhancing the writing development whether the students have disabilities or if the students are English language learners to help in the students’ overall comprehension and learning opportunities.

The first study, conducted by Regan, Mastropieri, and Scruggs (2005) examined expressive writing using dialogue journals. This study also compared how this method affected comprehension.

**Written Dialogue Journals**

The study, “Promoting Expressive Writing among Students with Emotional and Behavioral Disturbance via Dialogue Journals” conducted by Regan, Mastropieri, and Scruggs (2005) used a qualitative approach which provided both social development and academic learning for students with emotional disabilities. These authors reported that dialogue journal communication is a learning strategy that affects students’ perceptions of themselves as writers, motivates students to produce writing, and increases their writing fluency and comprehension. The dialogue journal was used to discuss students’ individualized targeted behaviors. The purpose of this study was to examine the impact of the dialogue journal as an intervention for students with emotional and behavioral disorders. This study looked at the following questions:
1. How will dialogue journals influence student attention, writing fluency, and writing quality?

2. How do students with Emotional Behavioral Disabilities (EBD) perceive the value of dialogue journals (pg. 34)

Writing performance among students with emotional and behavioral disorders may be improved by providing opportunities for students to produce writing in a more casual and consultative style as encouraged by the dialogue journal.

Reagan, Mastropieri, & Scruggs (2005) conducted their research at an elementary school in a diverse suburban county in the eastern part of the United States. The elementary school included kindergarten through sixth grade. The school population included 500 students; 125 were English language learners, 90 received services for gifted and talented, 128 received special education resource services, and 41 students were served in self-contained settings for students with emotional disturbances.

Participants in this investigation were five students in the sixth grade (one female and four males) identified as having EBD. They were between the ages of 11 and 12, were attending self-contained classes, and had behavioral goals included in their Individual Education Plans (IEPs). All students also were able to independently compose at least three legible sentences and to read on at least the second-grade level as assessed by an Informal Reading Inventory (IRI). All participants struggled with specific behaviors and/or social/emotional issues as outlined on their Individualized Education Plans (IEPs), were observed daily by teachers, and had their behaviors recorded on individual student point sheets.

**Participant 1**: Trevor, an 11.7 year-old African American male, was identified as having multiple disabilities. He misread social cues, exhibited pervasive moods, sought attention in
overt ways, and struggled to attend to tasks. The dialogue journal focused on how Trevor could attend to tasks productively, interact with peers appropriately, present himself without overt body gestures, and become aware of positive thinking and maintaining a mood level to match social situations.

Participant 2: Ron, an 11.6 year-old Caucasian male, was identified as a student with EBD and Attention Deficit-Hyperactivity Disorder (ADHD). Ron struggled to interact appropriately with peers and exhibited very immature, egocentric behaviors. The dialogue journal focused on promoting positive interactions, discussing fairness and jealousy, using and evaluating coping strategies when frustrated, and recognizing and assuming responsibility for his behaviors.

Participant 3: May, a 12.4 year-old Hispanic female identified with EBD, generally followed established routines and directions, but she experienced difficulties with interacting with others and with school performance. The dialogue journal focused on maintaining boundaries with the opposite sex, participating in classroom activities sustaining friendships with others, and improving an awareness of her abilities in school.

Participant 4: Ethan, an 11.8 year-old Caucasian male with EBD and very active and boisterous. He experienced difficulties controlling anger, staying on task, sitting, and maintaining positive peer interaction. The dialogue journal focused on handling anger, improving peer interactions, attending to task, and decreasing disruptive behaviors.

Participant 5: Gene, an 11.9 year-old African American male, was diagnosed with EBD, ADHD, and Autism and exhibited difficulties with social skills and communication. He isolated himself from others, perseverated on negative thoughts, was reluctant to initiate contact, and did not use coping skills successfully when frustrated. The dialogue journal focused on
using words for self-expression, maintaining space and boundaries, building an awareness of friendship, having positive thoughts and self-perceptions, and maintaining a topic of conversation with others appropriately.

**Staff:** Staff included a 30-year-old female special education teacher with advanced degrees in special education and eight years of experience teaching students with EBD. In addition, two female graduate interns, who were 27 and 32 years of age and enrolled in advanced degree programs in special education, were part of the class on a daily basis.

Permission from university and district review boards and school, parent, and students were obtained before research began. The students were observed daily across all school settings for the first two months of school, and relevant IEP objectives were noted. A 15-minute block of time for journaling was scheduled Tuesday through Friday. All students were given a 70-page spiral notebook and individual instructions for how to use the journal. Questions were presented in an open-ended format for each student to respond. During the 15-minute journaling period Tuesday through Friday, each student read the traditional prompt and then replied on the lines under the prompt in the spiral notebook. The traditional prompt was clearly written at the top of the lined page in the student’s journaling notebook. During the journaling period, students were observed for attention to task. Once student responses were typed, they were scored for writing length and quality.

For all students, the dialogue journal intervention was implemented four days per week over approximately six weeks. All participants were introduced to the dialogue journal intervention following the completion of the baseline phase, and all sessions were videotaped. Videotapes served as a way to ensure fidelity of treatment and reliability of observations. A list
of expectations for the dialogue journal was presented to students. Each expectation and example was read aloud, and clarifications were made as necessary.

As the dialogue process continued, the teacher responded in writing to any questions. If something written was misinterpreted, the journal entry served to clarify the miscommunication. If there was limited discussion of the initialed target, other behavior relevant to recent observations were initiated in subsequent entries.

The researchers came to the following conclusions. Over the six week period, four of the five participants increased in the mean number of words written from baseline to intervention phase. Students increased the length of their writing by at least 43% and up to 59% during intervention. The overall writing quality also increased with four of the five students as measured by the dialogue journal intervention. Four out of five participants produced functionally relevant, interactive written dialogue on targeted behaviors using their dialogue journals. These four students also increased in length and quality of writing. Over the six weeks, students were provided constant feedback, support, and guidance with all stages of the writing process, unlike the conditions of the intervention phase. Although all participants used the dialogue journal in varying ways, they all perceived the dialogue journal with mild satisfaction. All students found the dialogue journal easy to do and felt that the dialogue journal made them feel that someone cared about them.

The implications of this study suggest that schools need to promote writing, if it may be formal or informal writing. The primary goal of this study was to explore the development of expressive writing among students with EBD using dialogue journals across a multiple-baseline design. All students increased in attention to task with the intervention and overall comprehension. Four of five participants produced more fluent writing responses when writing
in dialogue journals. Students also produced higher-quality responses when writing in dialogue journals. Moreover, the dialogue journal intervention was responsible for an improvement in the amount of quality of writing of students with EBD and overall comprehension, while allowing them an opportunity to consider and discuss their target behaviors.

The findings from Reagan, Mastropieri, & Scruggs’s (2005) study supported the use of written dialogue journals as a means to increase and improve writing, comprehension, and encouragement of positive social skills by promoting individualized written discussions between a teacher and students’ emotional and behavioral needs. In the next study, Foulger and Jimenez-Silva (2007) examined if the use of technology provided English language learners (ELLs) an advantage in developing writing and comprehension skills.

**Enhancing the Writing Development of ELLs using Technology**

The study, “Enhancing the Writing Development of English Language Learners: Teacher Perceptions of Common Technology in Project-Based Learning” conducted by Foulger and Jimenez-Silva (2007) investigated how 14 classroom teachers helped their K-8 English Language Learners (ELLs) work at higher levels of thinking through authentic, project-based activities that relied on writing. Based on the research of Hadaway, Vardell, and Young (2002), those authors recommended the 14 teachers support ELLs by adopting seven instructional design techniques meant to increase the risk-taking behavior needed to become good writers: time and opportunity to write, a real reason for writing, a genuine audience, access to role models, a safe environment, useful feedback, and a sense of community. These 14 teachers understood that by using technology as a cognitive tool to develop students’ critical thinking, may benefit all students and especially ELLs, who frequently face the multilayered challenges of learning new processes and content in a new language.
The participants in this study were 14 teachers. Thirteen of the 14 participants in the study represented a mix of veteran and novice teachers. Five of the 13 teachers had one to three years of prior classroom teaching experience. All of the teachers worked with ELLs in general education classrooms. All the classroom teachers had functional technology skills, while three of the 13 teachers were more or less independent users of technology. The researcher served as a participant-observer in the study. She held a broad understanding of the student population, school culture, and administrative concerns, and an in-depth understanding of each of the individual teachers’ philosophies, talents, and knowledge base.

A collective study approach was used to look at the possibility of technology-related enhancements to help support ELLs’ writing and comprehension development. The 14 teachers documented their classroom activities and provided evidence on how technology tools added support to the writing and comprehension needs of ELLs within their project-based environment. Throughout the yearlong process, this study aimed to:

- Explore student writing opportunities as teachers added technology to project-based curriculum
- Investigate teacher perceptions about common technology tools and their benefits to development of writing skills for ELLs
- Isolate teacher practices and environmental factors specific to technology use that might enhance ELLs writing development (pg. 110).

Prior to the study, the use of technology for these teacher’s students was limited to computer lab access, for approximately one hour per week, using a single classroom computer. The project provided the teachers in the study with classroom-based technology consisting of five multimedia, Internet-connected student computers, and one teacher station connected to a
presentation system. All computers were equipped with common computer technology, such as word processing, PowerPoint, and connection to the Internet. The participating teachers at each site shared digital camera, video camera, scanners, and networked laser printers. The professional developer visited each classroom weekly and served to meet needs as defined by the teacher. In increase the validity for the study, data from teachers were collected three times over the course of the one year. The data was read line-by-line and categorized using the codes from Hadaway, Vardell, and Young’s (2002) research pertaining to the seven techniques that teachers use to support English language learners writes within a project-based environment. Category-based responses were then reread to determine any minor themes per category pertaining to the ways that technology supported each of the seven practices.

The findings of this study were based on teachers’ written reflections, and were reported using the lens of the abovementioned seven teacher practices thought to support the development of ELL writing and comprehension skills but expanded to include technology enhancements. Findings were reported from highest frequency to lowest frequency: sense of community (29%), genuine audience (23%), safe environment (15%), a real reason for writing (12%), useful feedback (9%), access to role models (8%), and time and opportunity to write (4%). The teachers in this study did not view writing as a mechanical process; rather, they embedded it into natural settings that helped create increased levels of interdependency among students.

Overall, all teachers saw that this project-based learning made students think through steps like organization, research, writing, and reading. There was an increased motivation and sense of empowerment for students, as well as students’ increased abilities to take risks and experiment with language. The use of multimedia and technology captured student interest by offering more opportunities for collaboration and interaction among students, allowing for
multiple modes of input and expression. This helped with the development of students’ self-confidence in their abilities to use technology.

Additionally, these implications stem from the findings in the study. The teachers in this investigation created and taught in-depth units of study surrounding topics or issues to which they felt their students would naturally relate. Project-based classrooms integrated technology within an environment where writing development was of concern. This study does not promote the idea that more writing automatically leads to better writing or comprehension. It does suggest, however, that technology may be used effectively as a tool to enhance that process. Environments that provide ELLs with rich opportunities to write in meaningful ways acknowledge the language support that is necessary for them to succeed academically.

The findings of Foulger and Jimenez-Silva (2007) study supported the use of writing as an effective tool to enhance and improve the writing and comprehension of ELLs, while providing opportunities to write and gain confidence in their writing. In the next study, Kostos and Shin (2010) examined if the use of math journals affected second grade students’ communication and comprehension of mathematical thinking.

The study, “Using Math Journals to Enhance Second Graders’ Communication of Mathematical Thinking” conducted by Kostos and Shin (2010) investigated how the use of math journals affected second grade students’ communication and comprehension of mathematical thinking. Data was collected in a large suburb of Chicago, Illinois. Participants in the study were in 2nd grade and were of mixed ability levels. There was data collected on 16 students. The participants were composed of two Asians, one African-American, two Hispanic, and eleven Caucasian students.
In this study, data gathering methods included a pre and post math assessment, students’ math journals, and interviews with students. First, an identical math assessment was administered at the beginning and end of the study. Second, the students’ math journals were collected to examine the students’ progress in developing mathematical communication skills and their mathematical thinking. The journals were completed by the students to record their thoughts and explanations of math concepts. Students wrote in their journals on average three times per week throughout the study. After the study was conducted, the teacher randomly selected eight of the sixteen students to get interviewed about their experience with the math journals. The interviews were used to examine the students’ perceptions of the use of math journals. While conducting interviews, the researcher recorded students’ responses, and they were later used for analysis.

The results of this study showed that there was improvement on students’ mathematical thinking through math communication. On the pre- and post-assessment, students were asked to complete a pattern problem and write an explanation about their work. Of the sixteen students, thirteen increased their overall score from the pre- to the post-assessment, two remained the same and one decreased. Results also showed an increased use of mathematics vocabulary. Students used math vocabulary, such as sum, patterns, equal groups, some, tally marks, least, and greatest in many entries throughout their math journaling. The students’ math journals provided insights into the students’ though process and understanding of mathematical concepts, rather than simply checking the right answers. A review of students’ journals provided information about concepts that needed to be re-taught to individual students, groups of students or the whole class. The students’ journal scores were recorded on a running record, and the running record allowed for a quick review of all students’ scores.
The overall research findings indicated that the use of math journals helped the students communicate their mathematical thinking and use math vocabulary more frequently. In addition, the teacher was able to use the math journals to assess students’ mathematical understanding and thinking.

The findings Kostos and Shin (2010) study supported the use of journal writing as an effective tool to enhance second graders’ communication and comprehension of mathematical thinking. In the next study, Liao and Wong (2010) examined the efficacy of English dialogue journal writing on students’ writing fluency, reflections, anxiety, motivation and overall comprehension.

The study, “Effects of Dialogue Journals on L2 Students’ Writing Fluency, Reflections, Anxiety, and Motivation” conducted by Liao and Wong (2010) examined the efficacy of English dialogue journal writing (DJW) on students’ writing fluency, reflections, anxiety, intrinsic motivation, as well as the students’ responses to journal writing. The study was conducted in Taiwan and 41 tenth grade students participated in this study. Each student was required to write 24 journal entries and two journal entries per week. The data included 984 students’ journal entries, open-ended questions, interviews, and the results of the pre-and post-study questionnaires and the pre- and posttests on writing performance.

During this 14 week study, students were asked to take a pretest in one 50-minute class period before the DJW project would start. The students were given 20 minutes to answer the pre-study questionnaire on their writing reflections, anxiety, and motivation anonymously. Students wrote dialogue journals twice a week, one of which was accomplished at home, free topic writing, and the other in class, situational reading and writing. The students were required to submit the free topic writing on Mondays to ensure that they would have more time to
construct their content on the weekends. Each piece of situational reading and writing held in class was finished within the class period on Mondays. The students were informed that each piece of writing would not be corrected and graded for grammar. After collecting the writings, the teachers responded to both submissions based on what the students wrote by showing empathy, asking questions, providing suggestions, motivating further thinking, or sharing their life experiences. The focuses of the teachers’ comments were on the messages the students conveyed rather than on grammatical errors.

After the DJW project, the students were asked to take a posttest for 50 minutes. Afterwards, 30 minutes were given for them to finish the post-study questionnaire anonymously. The writing scores of the pre- and posttests were compared using a t-test to determine if there were any significant improvements in the students’ writing performance after the DJW project. Word counts of the first two and last two entries were determined and then analyzed using a t-test. In addition, the scores on the five-point scale in both questionnaires were analyzed by a descriptive procedure and a t-test.

Results from this study showed the students’ overall English writing performance and proficiency improved in the aspects of content, organization, and vocabulary after the DJW project. The results also showed that the DJW project has positive influence on the students’ writing fluency. The students’ questionnaires noted that 34 out of 41 students had positive feelings about the effect of the DJW project on their reflective awareness as humans and learners, claiming that the DJW project helped them in their people skills, schoolwork, and relationships with parents and teachers. Nineteen students claimed that through DJW, they reflected more on their people skills and hence strengthened their relationships and oral and written communication skills with others.
Co-Constructive Learning

In the second section of this chapter, three research studies are presented. These studies focused on the importance of a co-constructive learning approach as a means of improving students’ comprehension. The first study, by Cumming, Higgins, Pierce, Miller, Boone, and Tandy (2005), explored the use of multimedia, student-generated social skills lessons coupled with teacher facilitation to improve the social and comprehension skills of middle-school students with emotional disabilities. The second study, by Bowers-Campbell (2011), analyzed the effect of integrating technology into literature discussions as a means to enable authentic reading experiences that honor the voices of all students who have diverse ideas, communication styles, and confidence levels. Finally, the third study, by Larson (2009), investigated how collaborative online learning communities provided students equitable opportunities to share their thoughts and voice their opinions about literature to help improve their comprehension. Overall, these studies demonstrated the importance of using technology and a co-constructive learning approach as a way of enhancing student comprehension.

Multi-media, Student-generated Social Skills

In the study, “Social Skills Instruction for Adolescents with Emotional Disabilities: A Technology-Based Intervention” conducted by Cumming, Higgins, Pierce, Miller, Boone, and Tandy (2005), used an intensive and descriptive approach to develop a teaching sequence designed to enable students, placed in middle-school self-contained classrooms for students with emotional and behavior problems, to create and utilize their own multimedia social skills training modules. The premise was that students should receive a social skills intervention to increase the rate of their appropriate social interactions. The following questions were addressed:
1. Does the combined social skills intervention paired with student multimedia authoring increase the use and maintenance of social skills of students with emotional disabilities more than the use of the traditional social skills intervention?

2. Is students’ knowledge of social skills steps greater after the combined social skills intervention than after the traditional social skills intervention? (pg. 22)

Social skills instruction is the teaching of specific behaviors believed to contribute to the success of interpersonal interactions. The researcher thought that the benefits of grouping mildly withdrawn and aggressive students in elementary and middle school for social skills training together would improve behaviors when working together.

The sample used in this study consisted of three self-contained special education classrooms in three comprehensive middle schools in a large southwestern school district. The schools served students in grades six through eight and had both general education and special education classes. The schools in the region serve a wide range of ethnic, linguistic, familial, and economic groups. The participating classrooms were designated to serve students identified as having emotional disabilities. The main focus of the classrooms was behavior, with social skills training as an integral part of the curriculum. Each teacher decided how social skills would be taught in their classrooms. All these participants completed modified versions of the Student Skillstreaming Checklists (Goldstein and McGinnis, 1997) as pre, post, and maintenance questionnaires during the time allotted for social skills instruction in both the traditional intervention and the combined intervention.

Three special education teachers participated in this study as well and all three delivered traditional and combined interventions after extensive training. Students’ parents were asked to participate in the pre-, post-, and maintenance segments of this study for both interventions.
Before beginning the study, intervention strategy training was provided by a teacher holding a Master’s degree in special education and 15 years teaching experience. The teacher and two individuals were responsible for ensuring that all teachers implemented the social skills intervention as directed throughout the training and lesson protocols. In this 12-week study, the use of student-generated social skills DVDs combined with traditional teacher-led lessons was compared to teacher-led social skills instruction only. While both interventions were designed to increase social skills and comprehension, they were being compared to determine the effects on perception and maintenance of skills over the time to determine the usefulness of the addition of computer-assisted instruction in the form of multimedia authoring.

The students in this study received social skills instruction in their specialized classrooms during five 50-minute social skills training sessions each week. The instruction was based on the *Skillstreaming* (Goldstein and McGinnis, 1997) the Adolescent program. The three special education teachers taught the lessons and a different skill was taught each week.

The traditional lessons lasted four weeks. The social skills lesson for each week (listening, following instructions, dealing with someone else’s anger, and asking permission) began with the teacher reviewing the skill and its steps. During the week, the students participated in different problem-solving, role-playing, class discussion, and journaling activities. To demonstrate proficiency, students role-played the skill and completed daily homework on it. At the end of each week, the students took a quiz, which consisted of listing the skill and its steps. A two-week maintenance period followed the traditional intervention.

The students participating in the study received training on the technology necessary for the combined intervention portion of the study during the maintenance period between the two interventions. During the first training, students learned how to use the camera. The second
training involved teaching students how to transfer video from the camera to the computer. During the third training, students learned how to edit their videos and save them to DVDs. This training helped to minimize the amount of extra class time used during the combined intervention.

For the second four weeks of the study, students received traditional social skills instruction combined with multimedia authoring component. A different skill was learned each week (self-control, keeping out of fights, dealing with group pressure, and concentrating on a task). At the end of each week, each group of students showed their social skills DVD to the class, which gave feedback on each performance. After the DVD presentations, students took a quiz on the skill. The quiz consisted of listing the skills and its steps. A two-week maintenance period followed the combined intervention.

In summary, the study conducted by Cumming, Higgins, Pierce, Miller, Boone, and Tandy (2005) concluded that the findings indicated that the teachers perceived a difference in the effects of the two social skills interventions (traditional and combined) over the course of the study. Also, the results showed that teachers perceived the students’ social skills as being maintained better after the combined intervention. The students did not perceive a difference in the effects of the two interventions on their social skills over the course of the study. The pre- and posttests of students’ social skills knowledge consisted of the teacher writing a list of the eight social skills used in the study on the board and the students writing the steps for each. The data showed the students’ knowledge of social skills increased significantly from pre to post-test. The results of these analyses suggest that the students’ knowledge of social skills improved significantly from pre to post-test with both the traditional intervention and the combined intervention.
The implications of this study suggested that overall both the traditional and combined interventions worked in increasing social skills for students with emotional and behavioral disabilities. It was also seen that students were visibly enthusiastic about working together and using the technology during the combined phase and was evident by the student’s responses while using the technology. Student behavior decreased during the role-playing and when using technology. Because of their inappropriate and sometimes aggressive behavior, students with emotional and behavioral disabilities rarely have the opportunity to use expensive technologies and participate in group-directed learning. The sense of responsibility that the combined intervention provided in this study, may have affected the student’s perceptions of themselves and others. As inclusive environments becomes the preferred method of educating students with disabilities, the needs for social skills instruction becomes even greater. It is essential that students increase their knowledge and use of social skills to improve their chances for success in school and in their adult lives.

The findings from Cumming, Higgins, Pierce, Miller, Boone, and Tandy’s (2005) study supported the use of a co-constructive learning environment for all students, especially those with emotional and behavioral disabilities as a means to increase and improve social skills and comprehension. In the next study, Bowers-Campbell (2011) examined how having students work together doing virtual literature circles increases student motivation and comprehension about text.

**Integrating Technology into Virtual Literature Discussions**

The study, “Take It Out of Class: Exploring Virtual Literature Circles” conducted by Bowers-Campbell (2011), used a transactional theory of reading as a means to explore the impact of integration of technology with literature circles and ways participants engage with
each other and shared texts through online threaded discussion boards. According to Bowers-Campbell (2011), “Virtual literature circles are ways to enable students to make choices about their readings and explore their ideas in small, peer-led discussions” (pg. 557). The transactional theory is a unique experience in which the reader and text continuously act and are acted upon by each other. The purpose of this study is to see if integrating technology with literature circles affects group dynamics, student’s reading responses, and overall comprehension.

Bowers-Campbell (2011) collected data from three groups of graduate students who were either pre-service or early career teachers enrolled in a summer session class called Creating Literate Communities. Bowers-Campbell’s role in the class was a researcher for her doctoral degree. She used online literature circles in the community college where she taught and collaborated with her doctoral professor to create a hybrid approach with a mixture of face-to-face and online delivery literature circles.

Because this study re-analyzed data from Rosenblatt’s (1995) transactional theory of reading as a lens, Bowers-Campbell examined discussion board transcripts generated from group discussions to explore ways the merger affected students’ engagement and comprehension with their self-selected texts and with each other as members of reading club.

Over the course of study, Bowers-Campbell collected the majority of her data from groups’ discussion threads around self-selected texts, field notes from in-class discussions, and interviews with students individually through email regarding their experiences with virtual literature circles. All three groups chose at least one book that also had a film version to watch together, two groups chose to read two novels while one group picked three texts. Bowers-Campbell examined complete discussion threads from one novel for each group. She examined *Stardust* by Neil Gaiman (1999) from Group 1, *Towelhead* by Alicia Erian (2005) from Group 2,
and *The Secret Life of Bees* by Sue Monk Kidd (2002) from Group 3. The professor of the course allowed all groups the freedom to operate in manners that respected their classmates and themselves. Bowers-Campbell used initial line-by-line coding that focused on understanding relationships that existed within and between groups’ responses. She used the code GH (group harmony) for posts that were centered on creating group harmony, NM (negotiated text meanings), TS (text-to-self), TT (text-to-text), and TW (text-to-world) while examining all the groups’ online discussions.

The findings from this study suggested that groups actively promoted socially constructed membership and posts demonstrated engaged reading processes. The participants’ discussions established descriptions of personal connections with their books and their evaluations and judgments of characters, scenes, and contemporary issues. Participants’ demonstrated highly engaged and sophisticated reading practices. Bowers-Campbell’s data revealed that virtual literature circles facilitated socially constructed learning opportunities. All three virtual literature circles involved nearly equal participation among members. All participants validated their peers’ ideas before co-constructing an agreed upon interpretation of events in their literature circle.

Educators have worried that moving away from face-to-face interactions to online discussions might isolate their students and strip classrooms of their collaborative atmospheres. Virtual discussions from these participants suggested this worry is mostly unfounded. Many posts demonstrated students’ overt efforts to connect with each other personally while also offering diverse ideas about their chosen texts; not one topic thread was cold or mechanical. Bowers-Campbell’s findings illustrate the importance of virtual literature circles for reaching
Rosenblatt’s (1995) goal for natural and sophisticated discussion around text. The findings also suggest that virtual literature circles facilitate socially constructed learning opportunities.

The implications of this study suggested that as schools continue to push for more technology integration in schools, educators should embrace the use of new literacy instruction, such as virtual literature circles. Virtual literature circles reward student independence, encourages responsible active learning, and provides meaning to discussions. Incorporating technology into the classroom helps in promoting collaboration among students and engages students deeply within a text to help with comprehension.

The findings from Bowers-Campbell’s (2011) study supported the use of integrating a co-constructive learning method by means of virtual literature circles in hopes that it would affect group dynamics, student’s reading responses, and overall comprehension. This is similar in the next study where Larson (2009) examined the use of collaborative online literature circles and how they empower students’ voices about literature as they work together.

**Collaborative Online Learning Communities**

The study, “Reader Response Meets New Literacies: Empowering Readers in Online Learning Communities” conducted by Larson (2009), took a transactional theory of reader response through a theoretical foundation of a classroom-based study of fifth grade students’ responses to literature using technology with online message boards. At the center of this theory is the interaction of the reader and the text as each reader gives life to the text through personal meaning making and prior experiences. This study examined collaborative online learning communities and how they provide students with equitable opportunities to share their thoughts and voice their opinions about literature using e-books on laptop computers and other technology while promoting comprehension to all students.
Participants in this study were in a fifth grade public school in the Midwest of the United States in a K-12 school district. Larson (2009) observed ten of Mrs. Stitt’s fifth-graders in this study. Mrs. Stitt identified the ten participants based on criteria of being communicative in writing or verbally and willing to work hard. Also these students came from diverse backgrounds, had multiple reading levels, and had varying range of technology skills. Mrs. Stitt selected historical fiction as the desired genre for the online discussions. The two books were *Bud, Not Buddy* (Curtis, 1999) and *The Watsons Go to Birmingham* (Curtis, 1995). Mrs. Stitt and Larson took student choice into consideration and five of the participants read *Bud, Not Buddy* (Curtis, 1999), while the remaining five read *The Watsons Go to Birmingham* (Curtis, 1995).

Over the course of a semester-long qualitative case study, Larson analyzed how fifth graders socially constructed learning while interacting with and responding to literature when using online message boards. Throughout the study, Larson took extensive field notes and used a digital voice recorder to depict the sounds of the classroom as well as individual interviews with students and their teacher. Numerous documents and artifacts, including students’ electronic journals and online message board transcripts were collected and analyzed. The two groups each spent 15 sessions reading their stories while sharing their personal thoughts and feelings about the literature and the e-book reading experience in an electronic response journal. After reading, the students logged on to the online message board to discuss and respond to the literature. Since the e-books, e-journals, and online message boards were accessed through the students’ laptops, the transition between reading and responding was smooth and efficient. Student interviews revealed that none of the ten participants had previously engaged in electronic message board discussions, although all students reported prior knowledge about communicating
online via e-mail or in chat rooms. Recognizing that the majority of the participants frequently “chat” online with their friends after school, Mrs. Stitt emphasized that this was a school-related activity in which students were expected to stay on topic and use appropriate language. Using a projector, screen, and laptop computer, one teacher demonstrated the log-in procedures and explained how to reply to the initial prompt. Relevant vocabulary was also introduced and explained. During a typical session, students read and responded to their e-journals for approximately 30 minutes, followed by 15-20 minutes on the message boards. In addition, students often accessed the message board at other times during the school day.

The initial message board prompt included several sub questions, to which each student was asked to respond before reading and replying to group members’ responses. The students spent two sessions reading and responding to the initial prompt and subsequent posts from their peers. Mrs. Stitt recognized that the students wanted to assume leadership roles within their own learning communities and, as a result, surpassed the traditional teacher driven discourse in the classroom. Mrs. Stitt and Larson adjusted the plans by conducting a mini-lesson on what constituted a “good” prompt, explaining that effective discussion prompts should be open-ended, spark interest, and often begin with why, tell me about, or explain. Students were taught how to post a prompt on the message board. A handout with instructions for writing a prompt was also distributed. For the duration of the study, the students initiated the literature conversations by creating and posting their own prompts with very little teacher interaction or interference.

To assess the progress and analyze the findings of the online literature discussions, Larson used two helpful message board tools: statistical summaries regarding the frequency and length of students’ contributions and message boards that generated printable transcripts of the online discussions. Larson used a coding system when looking at the response prompts. She
coded the transcripts under the following categories: experiential prompts, aesthetic prompts, cognitive prompts, interpretive prompts, and clarification prompts. The experiential prompts focused on what the reader brought to the reading experience through prior personal experience and prior knowledge. Aesthetic prompts were the heartfelt and heated discussions among group members. Cognitive prompts were threads where group members encouraged each other to make predictions, solve problems, and make inferences regarding the play or characters in the story. Interpretive prompts were those that called for higher level reasoning and encouraged readers to contemplate personal consideration of morals or values. Lastly, clarification prompts were indicating confusion or lack of understanding.

Using the coding system, Larson found that there were 55 student created threads during this process. There were several differences between the two groups of students. First, the readers of *Bud, Not Buddy* (Curtis, 1999) (group 1) posted six experiential prompts compared to only one prompt produced by the *Watsons Go to Birmingham* (Curtis, 1995) (group 2) group. Larson suggested that this was because many of the fifth graders in group one could relate to Bud and use personal experience during their discussions. Larson also found that group 2 produced more aesthetic prompts due to the fact that their book’s themes were about segregation and discrimination which triggered emotional responses within the group.

Students were not given specific guidelines regarding the length or content of their prompts and replies, there were clear expectations for appropriate conduct and contents on the message boards. Students frequently thanked each other for replying to their prompts and offered praise and compliments to peers who posted interesting ideas or alternative viewpoints.

Larson (2009) also noted that analysis of the discussion transcripts further revealed that students’ responses were conversational and interactive. Larson and Mrs. Stitt realized that
students participating in face-to-face literature discussions often used informal oral language, supported by hand gestures, body languages, and facial expressions. Similarly, they also determined that students’ creative use of emoticons, abbreviations, acronyms, capitalizations and punctuation marks, and numbers/letter substitutions enhanced their conversations by adding voice and expression to their message board threads. These same communicative tools could and should be available when communicating online. Larson suggested that the use of symbols, icons, and placement of text and images help communicate the message in an electronic literacy environment.

Overall, the students’ communicated on the message boards and carefully read and contemplated the opinions of others before submitting a thoughtful reply. By having the students construct their own prompts, the fifth graders took on many roles as the facilitator and participants in the online literature discussions. The findings of this study suggested that students’ engagement in online literature discussion promoted socially constructed learning and better comprehension of the text.

The implications found in this study suggested that students’ engagements in online literature discussions promoted socially constructed learning. On the message board, the fifth graders’ discussions were based on their previous knowledge of face-to-face literature discussions, classroom expectations, and informal social interactions online. Collaboratively, the students skillfully co-created hybrid means of communications that reflected prior experiences in both real and virtual environments. In-depth conversations with Mrs. Stitt further revealed an unwavering commitment to fostering a true community of learners. The asynchronous online message board format provided students equitable opportunities to share their thoughts and voice their opinions about the book. In a traditional literature circle, students who are shy, struggling
as readers, or linguistically diverse may hesitate to share ideas in group settings. The asynchronous message board discussions allowed for extra thinking time before formulating and posting responses. Finally, this study also implies that within a technology-rich environment, the student-constructed prompts elicited insightful and heartfelt responses and invited group members to think more deeply about the literature.

These three studies all recognized the importance of having students collaborate together in student-led discussions about literature. In all of these studies, students increased their social skills, comprehension, and motivation to reading literature.

**Technology Enhances Comprehension**

In the third section of Chapter two, five research studies are presented. These studies focus on the importance of the use of technology to enhance comprehension skills of students. The first study, by Brackenreed (2008), investigates the impact of selected types of adaptive and assistive technology on the learning gains and academic achievement levels of a female student with mild disabilities in the sixth grade. The second study, by Douglas, Ayres, Langone, and Bramlett (2011) evaluates the effects of a computer-based instructional program to assist three students with mild to moderate intellectual disabilities in using pictorial graphic organizers as aids for increasing comprehension of electronic text-based recipes. The third study, by Pearman (2008) explores the use of CD-ROM storybooks in helping to aid comprehension by providing a multisensory reading experience. The fourth study by Twyman and Tindal (2006) investigates the comprehension and problem-solving skills of students with disabilities in social studies using a conceptually framed, computer-adapted history text. Finally, the last study by Boon, Burke, Fore, and Spencer (2006) investigate the impact of cognitive organizers, with the integration of technology, Inspiration 6 software, compared to a traditional textbook instruction format on
content-area learning in high school inclusive social studies classes. Overall, these studies demonstrate the importance of using technology as a way of enhancing student comprehension in the classroom.

**Assistive Technology as an Accommodation**

In the study, “Assistive Technology as an Accommodation for a Student with Mild Disabilities: A Case of Alex” conducted by Brackenreed (2008), took an intensive and descriptive approach which emphasized individual participants, variations in data collection, and an analysis of non-manipulation of naturally occurring research contexts that were adopted in the study to form the case study of Alex. This view of learning was built upon understanding change as a dynamic and transformational process.

This study used a mentoring program of a pre-service teacher through a community service learning program to help mentor a student with mild disabilities. First, the mentor would provide one-on-one instruction and support in learning how to use assistive technology as an accommodation for mild disabilities. Next, the training in the use of assistive technology by a pre-service teacher was designed to positively impact the academic achievement levels and the self-concept of the student with the mild disability. The overall purpose of this study was for a pre-service teacher to get to know and understand a student experiencing a mild disability and to teach them different forms of assistive technology from which the student could choose the best options to accommodate their needs and prove how the use of assistive technology would affect their overall academic performance and comprehension.

Brackenreed (2008) used Alex as the selected participant for this case study. This study took place when Alex was in the sixth and seventh grades. Alex was 11 years and 2 months old.
at the start of this study and had not failed a grade in school. Alex attended a Catholic public school in northeastern Ontario at the time of the student’s completion of this research.

Alex had experienced developmental delays in visual recognition memory, visual processing, and slower cognitive processing on tasks of executive functions such as organization and planning. Alex demonstrated memory deficits, such as being unable to remember what she had just seen or heard and poor sight vocabulary, spelling, and limited receptive and expressive language skills. Difficulties with academic skills were noted in the areas of reading and writing. Overall, it was determined that she was functioning between the 1st and 2nd percentiles. Alex was two or more years delayed in letter and word recognition, phonological processing, and reading comprehension. These results revealed close to two standard deviations of discrepancy between her reading skill development and intellectual potential. This is consistent with characteristics of a reading and writing disability. Learning disability screening data indicated visuo-perceptual difficulties such as Alex’s tendency to erase her work excessively, reverse letters, complain about blurred print, and lose her place frequently while reading.

At the beginning of this process, Alex was receiving assistance from a resource teacher and educational assistant for 30-60 minutes a day, however, during this study; Alex did not receive extra help from the resource teacher or educational assistant. The difficulty with the recommendation for assistive technology was that none of the professionals involved with Alex’s educational experiences appeared capable of understanding or teaching the applications to Alex prior to the study.

A pre-service teacher was assigned to work with Alex during the months of May and June of 2005. The teacher candidate, Mandy, was a highly energetic and positive individual who had just completed her Special Education/Educational Psychology class during her Bachelor of
Education program. Alex and her mother were taught the following assistive technology programs: Dragon Naturally Speaking (Williams, 2008), Kurzweil 3000 (Kurzweil, 2000), and TextHelp! Read and Write (Kennedy, 2009) based on the Occupational Therapist’s recommendations.

In the initial meeting in year one of the study during May and June, Mandy assisted Alex in understanding the difficulties that she experienced when reading and writing. Alex identified common difficulties that she experienced when reading and writing and described the different strategies that she had tried and an indication of her perceptions of lack of success in using them.

During the second meeting, Mandy introduced Dragon Naturally Speaking (Williams, 2008) to Alex, modeled its use, and assisted Alex in training the program to recognize her voice. The training took 20 minutes to complete and required assistance due to the student’s reading disability because the passage required her to read a passage above their reading level. The pre-service teacher had been taught to whisper the passage, chunked appropriately, into Alex’s ear for her to repeat aloud.

The third session, Alex started to use Dragon Naturally Speaking (Williams, 2008) for some of her schoolwork and said that she liked using it. Alex and Mandy spent the session and others going through the writing process and used Dragon Naturally Speaking (Williams, 2008) to write composition assignments from school. Mandy introduced TextHelp! Read and Write (Kennedy, 2009) and Kurzweil 3000 (Kurzweil, 2000) as well and Alex began using these for her schoolwork.

During the remaining sessions, Alex’s mother was involved in learning and assisting Alex while she used her assistive technology. Involving Alex’s mother in the sessions facilitated the transfer of accommodations for reading and writing from the pre-service teacher sessions to
the school environment. Alex’s mother was able to take the information she learned and in turn bring it back to the school and discuss further options for Alex. Alex became very confident in her use of assistive technology and began teaching her classmates and teachers how to use it in the classroom.

Several conclusions resulted from this study. A collection of all the data suggested that the use of assistive technology had resulted in increased student achievement levels, perceptions of capability, and student self-advocacy. Prior to the introduction of assistive technology, Alex made numerous spelling errors in her daily assignments and classroom assessments. On average, she incorrectly spelled every third word wrong. When using the assistive technology, her spelling errors decreased by an average of 80% which indicated that a large intervention too effect. When Mandy, the pre-service teacher interviewed Alex at regular intervals, she discovered that positive changes in Alex’s attitude toward writing. Alex expressed more interest in writing and considered it easier with the use of assistive technology. It also was very advantageous to Alex due to her low vision, for Alex could hear the words as well as see them. Alex’s mother noticed a decrease in Alex’s anxiety levels after using the assistive technology. After Alex successfully completed all the sessions learning and using the assistive technology, she was asked to show her school teacher all the programs and started to encourage other students to use them. Teaching Alex how to use assistive technology as a tool to accommodate her learning needs improved her academic achievement levels and fostered a positive self-concept with respect to her academic abilities.

The implications of this study suggested that schools need to continue to promote assistive technology in their classrooms. Not only does it benefit a student with special needs, but it will also promote a positive learning environment for all students in the classroom.
Incorporating technology into the classroom helps in promoting collaboration among students and engages students deeply within a text.

The findings from Brackenreed’s (2008) study supported the use of integrating technology as a means to increase comprehension and academic achievement for a student with mild intellectual disabilities. Similar to the next study, Douglas, Ayres, Langone, and Bramlett (2011) examined how using electronic text and pictorial graphic organizers improved comprehension related to functional skills while working with students with intellectual disabilities.

**Effectiveness of Electronic Text and Pictorial Graphic Organizers**

In a study, “The Effectiveness of Electronic Text and Pictorial Graphic Organizers to Improve Comprehension Related to Functional Skills” conducted by Douglas, Ayres, Langone, and Bramlett (2011), investigated the opportunities for individuals with cognitive disabilities to participate in a variety of literacy activities, as they became more involved in general education classes. Students with intellectual disabilities exhibit severe learning problems that create barriers to acquiring many literacy-related skills. The purpose of this study tested the combination of picture prompts and graphic organizers to help students comprehend food recipes presented through e-text and supplemented with text-to-speech. Recipes were selected as the reading material, since they provided a source of functional text that individuals with intellectual disabilities come in contact with on a regular basis. The specific research questions addressed were:

1. Will students learn to use a pictorial graphic organizer independently through computer-based instruction?
2. Will a pictorial graphic organizer increase the percentage of information students can recall?

3. Will the pictorial graphic organizers enable students to correctly follow a text-based recipe in a natural setting? (pg. 44)

Three students with intellectual disabilities participated in the study. Donte, Brent, and Addie attended a rural public middle school and received special education services in a self-contained classroom setting for the majority of the day. Students were invited to participate in the study based on their age, disability, and reading and daily living goals in their Individual Education Program (IEP). All three students had a sight word vocabulary, but screening showed they could not identify words presented in the recipes. The students could navigate computer hardware and software successfully using a mouse, and they often opted to play education games during their free time. All students had experience with e-text and literacy activities presented in PowerPoint formats.

Prior to participating in the study, all students demonstrated the following prerequisite skills: visual ability to see the computer screen, auditory ability within normal range, motor ability to make selections on the computer screen using a mouse or touch pad, ability to maintain attention to a task for 15 minutes (estimated session length), motor imitation for making a recipe, motor ability to pick up laminated pictures and make a recipe, and verbal ability to retell recipe steps and items needed. All sessions took place at a kidney-shaped table located in the front of the students’ classroom. The investigation included two primary sets of instructional materials: e-text and pictorial graphic organizers. The e-text and the training for how to use the pictorial graphic organizer were provided via a PowerPoint presentation. The graphic organizer was created on poster board so students could place photos as they used the PowerPoint slides.
After screening for prerequisite skills, a generalization pretest was administered. Each student was required to read the e-text and create a banana milkshake. Baseline computer-based reading included access to the graphic organizer and photographs, but there was no instruction on their use. After all students completed the graphic organizer training on the computer, they developed graphic organizers on their own, using just the e-text and audio supports.

A total of 12 recipes were created and presented via individual PowerPoint presentations. Sessions began with the researcher asking the student to, “Read the recipe on the computer and answer the questions to help fill in your graphic organizer.” Click the arrows at the bottom of the screen to move to the next slide.” Each recipe consisted of ten steps, and required students to gather and portion ingredients and to manipulate ingredients and appliance or utensils. The PowerPoint slides displaced the text of each recipe step with one step per slide. Each step included an audio recording that was creating using the sound recorder included with PowerPoint. The video recording of each session facilitated the collection of reliability data and allowed the researcher to focus on fidelity of implementation rather than scoring student responses as they occurred.

The results of this study demonstrated that Donte initially responded correctly to 60% of the steps on the task analysis for making a banana milkshake. While responding correctly to some of the steps, he made errors of omission, sequence, and addition. After the intervention, his performance increased to 90% correct with and without the computer-based instruction on how to construct the pictorial graphic organizer.

Brent initially responded correctly to 30% of the steps for making a banana milkshake, making the same types of errors as Donte. Brent’s responses ranged between 0%-10% correct.
during baseline and then increased to 90% or above when presented with computer-based instruction for creating a pictorial graphic organizer.

Addie initially performed 30% of the task analysis steps correctly during the pretest. She also made the same types of errors and Donte and Brent. Her baseline data ranged between 0%-20% correct without any picture support. During the computer-based sessions, she retold 90% of the steps correctly for three consecutive sessions. Overall, this data suggested that computer-based instruction is an effective tool for teaching acquisition skills to students with intellectual disabilities.

The implications found in this study suggested that research continues to demonstrate that computer-based instruction is an effective tool for teaching acquisition skills to students with intellectual disabilities. The students in this study used computer-based instruction to learn how to use a pictorial graphic organizer as a visual prompt, and they were able to generalize this and follow a text-based recipe. This study implies that pictures paired with words may facilitate reading skills and comprehension as student exposure to the picture and text increases. As students with intellectual disabilities continue to access the general education curriculum, they will need more instruction accommodations such as the pictorial graphic organizer to reinforce what they are learning. The pictorial graphic organizer may help not only with comprehension and retell, but also with gestural and written expression. Students could point to the pictures when answering questions or arrange the pictures as a form of written response.

The findings from Douglas, Ayres, Langone, and Bramlett (2011) supported the use of electronic text and pictorial graphic organizers to help students comprehend functional tasks. This use of technology improved reading comprehension for students with moderate intellectual disabilities. In the next study, Pearman (2007) studied if using technology in the form of CD-
ROMs would increase students’ reading comprehension verses the traditional format of reading from a text book.

CD-ROM Storybooks: Measuring Comprehension

The study “Independent Reading of CD-ROM Storybooks: Measuring Comprehension with Oral Retellings” by Pearman (2008), investigated whether young students with varying degrees of reading proficiency would score higher on an oral retelling when provided with text at their reading level presented via CD-ROM storybook format, rather than a traditional print format. As technology brings changes and advances in the way text is presented, it is necessary to determine the effects of the different presentation modes on readers’ comprehension.

The participants in this study were second-grade students from an elementary school in a large rural school district in southern United States. Twenty-five of the 94 students were receiving services from the school’s English Language Learner (ELL) program. It was noted that language might be a barrier to any measurement of reading comprehension for these students. Because this study focused on independent reading, supports such as vocabulary instruction and prior knowledge activation were not primary components. Therefore, this study was delimited to students who were not receiving services from the school’s ELL program.

Of the 94 second graders, 69 were eligible to be considered for this study, but only 54 students returned signed permission letters from their parents. This sample consisted of 29 males and 25 females. By ethnicity, 32 were white, one was black, 21 were Hispanic, and 0 were classified as other. All students who regularly attended the selected elementary school had been exposed to the use of computers primarily for skill building and vocabulary practice a minimum of once a week during lab time since kindergarten.
Each student read a traditional print text and a CD-ROM storybook at their developmental reading level. The order of the text medium presentation was randomized independently for each student. Randomization was accomplished by having the even-numbered students on the master list of students in each developmental reading group read the traditional print text first. Odd-numbered students read the CD-ROM storybook first. Sessions were separated by two to five days with the majority of students having an interval of three days. As well, the students did not have access to either the print or electronic versions of the stories unless the teacher was present. All students were audio-taped during their oral retelling of both text formats.

The title of the story was discussed for a few minutes in order to build rapport. Students were told they would read and then retell the story. This meant they would retell what the story was about and what they remembered from the story. Students read the traditional print text either silently or aloud depending on their personal preference. Because this study was concerned with independent reading, students were encouraged to read the text in the manner they would actually read them during personal use. Upon completion of the reading, students performed an oral retelling following the cues of “Tell me about the story: or “Can you tell me the story that you just read?” Students who read aloud were prompted with “pretend you are telling this story to your friend that has never read it before. What will you tell them?”

Students were asked whether they had access to a computer outside of school and were questioned about personal computer use to determine how experienced they were at manipulating the hypertext environment. Before students read the story, the teacher demonstrated how one click of the mouse would provide the pronunciation of a word and how highlighting words would enable them to heard sentences or phrases. The teacher showed the
students how to turn the pages of the book by using the mouse and how to activate animations and sound effects. Students were asked if the directions were clear; if necessary, directions were repeated. Following the same pattern as used for traditional texts, the title of the story was discussed to build rapport and students were told they would read, and then retell the story. Prompts were also used to help students.

Data was collected over a period of 20 days. The order in which the two reading treatments were presented was randomized independently for each student, and the order of the text titles and text formats was alternated within each reading level. Each session lasted approximately 15 to 30 minutes, and field notes were taken to record student behaviors during the reading of both text formats. Student retellings were audio taped for later scoring by independent raters.

The author found that the retelling scores were significantly higher for students after reading electronic texts. The study was concerned with whether there was a difference in independent reading comprehension for electronic and traditional text formats. Students were instructed to read the texts, both electronic and traditional, in the manner they were accustomed to reading when they were reading on their own. Pearman (2008) found that students were interested in the illustrations and story in both text formats and that rich, detailed illustrations present in both formats may have made it possible for students to retell the story with some degree of accuracy through the illustrations. However, the electronic text format may have proven more engaging for some students. One student was identified as having attention-deficit hyperactive disorder. One student was identified as a member of the high reading group, one was a member of the medium reading group, and two were part of the low reading group. When these students were reading the traditional print text, they often flipped backward and forward in
the book, looked around the room for long periods of time, traced pictures with their fingers, and
tried to hold conversations with the teacher. This same group of students was more engaged
when reading CD-ROM storybooks. They clicked on words and pictures but kept their attention
on the text instead of looking around the room. They often followed the text with a cursor as
they read and swirled the cursor around as they moved it down to turn the page.

Evidence from this study implies that interactive, CD-ROM storybooks may facilitate
reading comprehension for second-grade students who are struggling with developing reading
skills and strategies. Therefore, the use of CD-ROM storybooks in the classroom as part of a
reading instruction program, literacy center, or for independent reading time could be beneficial
for young readers or struggling readers. CD-ROM storybooks decrease or eliminate the need for
students to focus on decoding, allowing them to concentrate on constructing meaning from text.
In addition to word pronunciations, the CD-ROM storybooks provided contextual definitions of
words in the story and afford students more control over their learning environment. Students
can individualize their reading definitions with which they need assistance. The use of
technology helped these students with their comprehension and retelling skills.

**Computer-Adapted, Conceptually Based History Text**

The study “Using a Computer-Adapted, Conceptually Based History Text to Increase
Comprehension and Problem-Solving Skills of Students with Disabilities” by Ywyman and
Tindal (2006), investigated how the use of computer-adapted, conceptually based history text
would help improve the overall comprehension and problem-solving skills of students with
disabilities in social studies classes. Despite unprecedented growth of technology in the
marketplace, the field of education has been slow in realizing the benefits that technology can
have on the teaching and learning of content for students with disabilities.
The purpose of Twyman and Tindal’s (2006) study was to improve the comprehension and problem-solving skills of students with disabilities in social studies using a conceptually framed, computer-adapted history text.

The study was conducted at a rural high school in the Pacific Northwest. All students who participated in this study were educationally classified by the school district as having a learning disability. Students also had IEPs that included goals in reading and writing. All students were in the participating teacher’s classes, which were randomly assigned to conditions. This resulted in two intact groups of 27 students across two mixed 11th and 12th grade classes. The majorities of participants in both groups were male and were identified with reading and writing disabilities.

During the three weeks of the study, all instruction was conducted during students’ regular social studies class time, during the same periods. Time devoted to social studies was approximately the equivalent of one 40-50 minute period per day.

Students in the experimental group received content regarding the Industrial Revolution via a conceptually framed, computer-adapted text, while students in the control group were taught the same content using the district adopted textbook. Two curriculum-based measured were used to measure comprehension and an extended-response essay was used to measure problem-solving performance.

Results from this study showed that although there was no statistical difference between the groups in the area of comprehension, the computer-adapted text was effective in improving vocabulary acquisition. It appeared from the results that using a computer as a medium of concept-based instruction at the very least improved vocabulary and learning concepts. The
results from the problem-solving essays showed that students in the experimental group statistically outperformed students in the control group on the extended-response essay.

**Impact of Cognitive Organizers and Technology-Based Practices**

The study “The Impact of Cognitive organizers and Technology-Based Practices on Student Success in Secondary Social Studies Classrooms” by Boon, Burke, Fore, and Spencer (2006), investigated the impact of cognitive organizers, with the integration of technology, Inspiration 6 software, compared to a traditional textbook instruction format on content-area learning in high school inclusive social studies classes.

The purpose of Boon, Burke, Fore, and Spencer’s (2006) study investigated the impact of cognitive organizers, with the integration of technology, Inspiration 6 Software (Helfgott, 2012), compared to a traditional textbook instruction format on content-area learning in high school inclusive social studies classes. The primary research question focused on examining the relationship between cognitive organizers and traditional textbook instruction to facilitate declarative social studies knowledge.

A total of 29 tenth-grade students in general education and 20 students with learning disabilities were involved in this study. The high school was located in a suburban area within a large metropolitan region in the Southeast. The total school population was 1,875 students.

A pretest/posttest group design was used to examine the effects of cognitive organizers versus traditional textbook instruction on students’ ability to comprehend social studies content information. Two inclusive classrooms containing both general and special education students were taught one chapter of social studies information. Students in the cognitive organizer condition served as the experimental group, while the students in the traditional textbook instruction condition served as the control group.
During both instructional conditions, the social studies classrooms were team-taught, and both the general education teacher and special education teacher were responsible for teaching the content material.

The procedures for both instructional conditions from pre- to posttest measures were conducted over three weeks and consisted of four 90-minute block periods. In addition, lesson plans in both conditions included teacher effectiveness variables, which consisted of a daily review, statement of the purpose, presentation of information, guided practice, independent practice, and a formative evaluation of the social studies content-area information.

Both groups were given a 35-item production pretest on the first day of starting the unit on the Cold War. Following the pretest, the cognitive organizer group was provided a paper-and-pencil cognitive organizer to fill in during the teacher presentation. The cognitive organizer contained the title of the chapter and nine attributes to be discussed pertaining to the Cold War. During the presentation, the teacher displayed and completed the same cognitive organizer using the overhead projector. Throughout the presentation, the teacher reviewed the content and asked students questions regarding specific attributes of the Cold War. Students continued to complete their pencil-and-paper cognitive organizer for the remaining sections of the chapter. After completion of the chapter, the students met in the high school computer lab and inserted the content material from the pencil-and-paper cognitive organizer worksheet to the outline template of the Inspiration 6 software (Helfgott, 20120). After completing the electronic outline, the students selected the diagram function and converted their outlines into cognitive organizers.

The traditional textbook instruction group consisted of a teacher presentation, teacher questions, oral reading, silent reading, cooperative learning activities, video presentations, and a guided reading worksheet.
The same methods of scoring were used on all pre- and posttest measures, whereby points from zero to two were awarded on each item. A score of zero was assigned no credit, a score of one was assigned partial credit, and a score of two was assigned full credit.

Results from this study indicated that students in the cognitive organizer group performed significantly better than students in the traditional textbook group from pre- to post-test and at post-test for declarative social studies knowledge. Overall, the study demonstrated the effectiveness of using cognitive organizers in content-area inclusive social studies classrooms. Cognitive organized had a significant impact on the acquisition of declarative social studies knowledge for both students with and without disabilities in inclusive secondary social studies classes and the overall academic achievement of students with disabilities.

These five studies all recognized the importance of integrating technology into the classroom as a means of improving students’ comprehension and academic skills. In all of these studies, different types of technology were used; assistive technology, CD-ROMs, and e-texts and pictorial graphic organizers. The exposure to different types of technology enables students to become more familiar and increases student interest and motivation in the classroom.

**Conclusion**

In this chapter, I summarized studies that focused on three essential components of effective and best practices in the education of students with disabilities. Fortunately, these practices also work for and will benefit all students. Equally as important when considering these best practices are the realization that none of them are impossible or too costly. Chapter two gave a background to effective writing instruction, co-constructive learning practices, and incorporating technology into the classroom to improve comprehension for all students; especially those that have special needs. In the first section, two studies focusing on effective
writing instruction were reviewed. In the second section, three studies were reviewed which established the importance of having student-led conversations about literature and the importance of a co-constructive learning model. Lastly, in the third section of chapter two, three studies focused on the importance of incorporating technology in the classroom as a way to improve comprehension and academic skills for students. These studies created a solid foundation for the current study analyzing the use of journaling in a co-constructive learning environment while incorporating technology as a means of improving comprehension skills for students with cognitive disabilities. The next chapter will explain the sample population, describe the study procedures, and explain the data collection methods used for the research study.
CHAPTER THREE

Procedures

This chapter details the procedures used with the target students in an effort to increase their oral and written comprehension using technology, a co-constructive learning environment, and journaling. This chapter has three sections. The first section includes this study’s setting and sample population. The second section provides the various forms of data that I collected during my study. The third section provides an overview of the procedures used during the course of the study.

Sample Population

This study was conducted in a suburban public high school in the Midwest. The school offers special education services to qualified students until the age of 21, on the job training, functional skill building, foreign language classes, many elective courses, and extracurricular activities students may choose to join in ninth through twelfth grades. The intervention described in this study took place in a special education transition classroom with students who are cognitively disabled.

Four students were selected to be part of the intervention as these students all have a cognitive disability and are involved in the community transition class. One student was in her sixth year of high school, two students were in their second year of high school, and one student was in their first year of high school. Of the four students, three were female and one was male. All four of these students receive special education services, speech and language, and are in both self-contained and general education classes. All students had written consent from their parents to participate in the study.
The first student, Student one, was 20 years and 6 months old at the time of the study. She has a cognitive disability along with a diagnosis of epilepsy and anxiety. Additionally, this student is bilingual and communicates in Spanish at home and during her community work experiences. English is primarily only spoken at school. This student has an Individualized Education Plan (IEP) and received specialized instruction in all academic areas (reading and math).

Performance on the Wechsler Adult Intelligence Scale--Third Edition (WAIS—III, 2010) indicated intellectual functioning in the Extremely Low range and less than the first percentile (i.e., .2 percentile; she performed as well as or better than .2% of her same-age peers). Her full scale IQ was 57. Index scores suggest a relative strength in the area of Processing Speed, which is measured in the Borderline range. This reveals that student one performs relatively well on simple visual-motor tasks (e.g., coding).

Performance on the WIDA ACCESS English Language Proficiency test (2012) indicated an overall composite score of a proficiency score of a 1.9. This means that student one is at an emergent reading, writing, listening and speaking level.

Student two was 18 years and 3 months old at the time of the study. This student has Down’s syndrome and receives speech and language services. English is this student’s primary language. This student has an Individualized Education Plan (IEP) and received specialized 1:1 instruction in all academic areas (reading and math) due to behavior problems. The student has a behavior intervention plan (BIP) that all teachers and school staff follow. Due to this student’s erratic and unpredictable behaviors at times, all teachers have to be very consistent while speaking to this student and talk in a very slow and soft voice.
Performance on the Wechsler Intelligence Scale for Children--Fourth Edition (WISC-IV, 2010) suggested intellectual functioning in the Extremely Low range and below the first percentile (e.g., he performed as well as or better than less than 1% of children his age in the normative sample). Abilities appear relatively evenly developed. This student’s full scale IQ was a 40 with the highest areas in processing speed and working memory.

Performance on the Wisconsin Alternative Assessment (WAA) indicated that student two was proficient in reading and math, advanced proficient in science, basic performance in language arts, and minimal performance in writing and social studies among all 10th grade students in the state taking the Wisconsin Alternative Assessment.

Student three was 16 years and 6 month old at the time of the study. This student has a cognitive disability and receives speech and language services for articulation and receptive and expressive language deficits. Her primary language is English. This student received specialized instruction for reading and math.

Performance on the Woodcock-Johnson III-Tests of Achievement-Form A (2011) indicated that student three was very low in the areas of reading and math. The student scored a standard score of a 57 in basic reading. When asked to read individual words from a list, student three was accurate to the beginning third grade level. When presented with a word she did not recognize, the student often attempted to decode the word. Her word attack skills for single syllable words were quite good, but she had difficulty decoding multi-syllable words. In the area of reading comprehension, the student received a standard score of 48. When asked to read individual words and provide a synonym, antonym, or word analogy, student 3 was accurate to the mid-second grade level. Her passage comprehension skills are developed to the same level. Finally, in the area of math calculation, this student received a standard score of a 70. When
expected to solve paper/pencil math computations, student three was accurate to the mid-fourth grade level. She was able to add and subtract whole numbers, as well as adding/subtracting fractions with like denominators. Math reasoning skills are everyday math skills. Student three received a standard score of a 66 which placed her at the upper-third grade level. She is able to count money, but she had difficulty figuring change, particularly when two-steps were involved. Student 3 used visual cues in order to help her solve problems.

Performance on the Wisconsin Alternative Assessment (WAA) indicated that student three was advanced proficient in reading, math and science and basic performance in writing, social studies, and language arts among all 10th grade students in the state taking the Wisconsin Alternative Assessment.

Finally, student four was 16 years and 2 month old at the time of the study. This student has a cognitive disability, Attention-deficit hyperactivity disorder (ADHD), and receives speech and language services for receptive and expressive language deficits. Her primary language is English. This student received specialized instruction for reading and math.

Performance on the Wechsler Intelligence Scale for Children--Fourth Edition (WISC-IV, 2010) suggested that student four appeared to be functioning within the Extremely Low range and less then the 1st percentile (i.e., she performed as well as or better than less than 1% of children her age within the normative sample). Student four presents with a scattered profile. Verbal Comprehension and Perceptual Reasoning are measured at the 1st percentile. A relative strength in Processing Speed (Borderline range, 4th percentile) and a weakness in Working Memory (Extremely Low range, <.1 percentile) were revealed. The student’s full scale IQ was a 54.
Performance on the Woodcock-Johnson III-Tests of Achievement-Form A (2011) indicated that student four currently measured as very low for her age with a standard score of 62 in the area of reading. When asked to read individual words from a list, student 4 was accurate to the mid-third grade level. Comprehension skills were measured as less well developed and at the 2nd grade level. While student four was able to read the words in the comprehension passages, she appeared to not understand the vocabulary used in the passages, and therefore, she was unable to respond correctly. In the area of writing, student four’s skills were currently measured as very low for her age with a standard score of a 69. Spelling is an area of strength for her; she spelled accurately to the ending-fourth grade level. When given a visual or verbal prompt and asked to write meaningful sentences, student four’s sentences were at a second grade level. She used legible manuscript writing and ending punctuation. However, beginning capitalization was not consistently used and her sentences were very short and basic. In the area of math, skills were measured as very low for her age with a standard score of 44. Paper/pencil math calculations, without the benefit of a calculator, were very difficult for her. Student 4 was able to perform basic addition and subtraction facts, but she did not attempt any other problems on the page. When solving applied math problems, student four was able to solve single-step problems that included a visual, but when only words were given, she was unable to solve the problem. Student 4 was able to count money (sometimes using paper/pencil to add), but she was not able to correctly figure change.

Data Collection

Data collection began prior to the beginning of this eight-week intervention and continued throughout the study. Each of the four students was individually administered a pre-test. Each student was asked the question, “Tell me what you did over the weekend?” The
student responded both orally and in written journal format. The teacher explained to the student not to worry about spelling, just get their thoughts down on paper. The teacher was looking for each student to be able to answer the –WH questions (who, what, where, when, why) when speaking and writing. The teacher recorded the student’s oral responses using a tape recorder to be able to effectively evaluate their responses. (See example A in appendix) Each student was evaluated on both their written and oral skills without any prompting from the teacher. The teacher was looking to see if the students were able to answer the who, what, where, when, why questions throughout their responses. At the end of the eight week intervention, the students were given the same type of assessment to assess progress.

Informal data was collected throughout the study as well. Graphic organizers and journal sentence starters were completed by the students and were used as a gauge for comprehension throughout the 8 week student. (See example B in appendix) Notes were also taken by teacher when students were collaboratively working together to fill out their graphic organizers and while students were seen answering the –WH questions correctly outside of the intervention time.

**Procedures**

This eight-week study took place during the second semester of the 2011-2012 school year. The intervention occurred during the scheduled community transition special education time for the students. The community transition class is a self-contained special education class for students with cognitive disabilities. This class focuses on functional skills, life skills, and on the job skills. Community transition class is the last three hours of the school day for 150 minutes each day.
Each day of the eight week study, students worked on different skills and tasks. Each new skill or task were explicitly modeled and taught by the teacher while answering the –WH questions of who, what, where, when, and why. After the teacher modeled the skill or task, the students would then perform the same skill. During the first four weeks of the study the teacher was very hand’s on and explicitly modeled appropriate responses in both oral and written format. Once the teacher felt as though the students understood what was asked of them, the teacher faded the modeling and made it more student-driven. Pictures or videos were taken of the students performing the different skills or tasks. This use of technology was used to help aid the student’s to review the skill or task in which they had just performed. The pictures or videos were projected using the Smartboard® as a visual reference when completing their graphic organizers. Students worked collaboratively, discussing and answering the –WH questions by filling out their own graphic organizers. Using the completed graphic organizer, students wrote a narrative summary of the activity they had just completed. Spelling, grammar, and punctuation were not evaluated. After each student completed their journal entry, the teacher called each individual student back to orally retell and assess the students’ expressive and receptive comprehension skills.

To assess their receptive and expressive comprehension, a checklist was used. (See example C-in appendix) The checklist consisted of the –WH words (who, what, where, when, and why) on the left-hand column of the rubric and the words independently, participatory, and fully-supported were on top row of the rubric. Students received a check mark under the appropriate category based on their responses. A checkmark under fully-supported received a score of a zero, a checkmark under participatory received a score of a one, and a checkmark under independent received a score of a two. To receive an independent score on the checklist,
the student needed to recall and orally restate the information and answer the specific –WH question. If the student was unable to independently retell the information, the teacher would gesture or prompt the student with a sentence starter. The student would then receive a checkmark under the participatory column. If a student was unable to orally recall any of the information, the teacher modeled an appropriate answer and the student would receive a checkmark under the fully-supported column. The same type of rubric was used to assess the student’s written responses.

**Conclusion**

This chapter detailed the procedures used to increase both oral and written comprehension skills of students with cognitive disabilities by using technology, a co-constructive learning approach, and technology. First the setting and sample population were described, next detailed descriptions of the data collection methods were explained, and finally overviews of the eight week study procedures were outlined.

In the next chapter, the results of the data collected during the intervention will be described.
CHAPTER FOUR

Results

The purpose of this study was to investigate the effects of incorporating technology, a co-constructive learning environment, and writing practices into my classroom as a means to promote better oral and written comprehension for my students with cognitive disabilities. The writer wished to explore if and to what extent explicitly modeling of appropriate ways to answer questions in both oral and written form would help with the students’ overall comprehension.

Pre-Test Results

Data was collected prior to the start of the study. All four students were given a two part assessment. Students were asked to tell the teacher about their weekend with no further explanation. After each student orally told the teacher about their weekends while the teacher recorded their responses, the teacher then asked each student to write down in their journals exactly what they had just said. For scoring purposes, a check mark was made on a scoring rubric for both the oral and written indicating if the student touched on any of the –WH words (who, what, where, when, and why) while speaking and writing. Students were evaluated based on three categories: fully independent, participatory, and fully-supported. The results of the pre-test data for oral and written responses are shown on Tables 4.1 and 4.2.

4.1

PRE-TEST RESULTS-Oral Responses

<table>
<thead>
<tr>
<th></th>
<th>Who</th>
<th>What</th>
<th>Where</th>
<th>When</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>FS</td>
<td>P</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
</tr>
<tr>
<td>Student 2</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
</tr>
<tr>
<td>Student 3</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>FS</td>
<td>FS</td>
</tr>
<tr>
<td>Student 4</td>
<td>I</td>
<td>I</td>
<td>P</td>
<td>FS</td>
<td>FS</td>
</tr>
</tbody>
</table>

Key: I-Independent, P-Participatory, FS-Fully-Supported
4.2

PRE-TEST RESULTS-Written Responses

<table>
<thead>
<tr>
<th></th>
<th>Who</th>
<th>What</th>
<th>Where</th>
<th>When</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
</tr>
<tr>
<td>Student 2</td>
<td>P</td>
<td>P</td>
<td>FS</td>
<td>FS</td>
<td>FS</td>
</tr>
<tr>
<td>Student 3</td>
<td>P</td>
<td>I</td>
<td>P</td>
<td>FS</td>
<td>FS</td>
</tr>
<tr>
<td>Student 4</td>
<td>I</td>
<td>I</td>
<td>P</td>
<td>FS</td>
<td>FS</td>
</tr>
</tbody>
</table>

Key: I-Independent, P-Participatory, FS-Fully-Supported

Analyses of individual performances show that students had mixed responses when asked about their weekends for their oral and written responses during the pre-assessment. Student one was fully supported in all categories for the oral and written responses except she was participatory when answering the “what” question. Student one was able to describe what she did over the weekend with little support. Student two was also fully supported in all categories for the oral and written responses except he was participatory when asked to write about his weekend. Student two was able to answer who and what were involved in his weekend with little support. Student three did very well on the pre-assessment. She was participatory in three of the five question areas and was fully supported when answering the when and why question on the oral pre-assessment. She also did fairly well on the pre-written assessment. She was participatory on two of the five question areas, was independent when answering the what question, and was fully supported was also fully supported while answering the when and why questions during the written assessment. Finally, student four also did very well during the pre-assessment. She was fully independent in two of the five question areas. Student four was participatory when answering the “where” question and needed full support when answering the “when” and “why” questions in both the oral and written pre-assessments.
Intervention Data

Upon completion of the pre-assessments, the teacher explicitly started modeling how to answer –WH questions if/when someone was to ask them of the students. During the first two weeks of the intervention, the teacher led all oral and written responses. The teacher modeled appropriate oral and written responses by using think-alouds, demonstrated how to fill out and complete the graphic organizer in a co-constructive way by working with the students, and practiced journal writing on the Smartboard® with the students. Illustration 4.1 displays an example of the graphic organizer that students used while working together in a co-constructive environment.

Illustration 4.1

During the third and fourth weeks of the intervention, the teacher faded explicit instruction with the “who and what” questions and had the student’s work collaboratively together filling out their graphic organizers on the Smartboard®. The students also were writing on their own with the use of sentence starters. The students felt comfortable with this as they knew that they were not being evaluated on their spelling or punctuation, just their thoughts.
Illustration 4.2 gives an example of the sentence starters that the students used during the intervention.

**Illustration 4.2**

```
Today we
__________________________

__________________________ with__________________________ and

__________________________ did__________________________ at

__________________________

because__________________________.
```

During the last four weeks of the intervention, the teacher initiated the conversations around activities and was around for help and assistance, but the students led all oral and written conversations. The students took the lead by filling out their graphic organizers and used their sentence starters to help guide the conversation. At this point of the intervention, the students were in a routine and were asking the teacher if they could be the leader and write on the Smartboard® during their journaling time.

For example, during a cooking lesson, the teacher would take pictures or film the students performing all of their tasks in the kitchen. After the cooking lesson was over, the students would go back to their classroom and the teacher would project the video or pictures of the students cooking on the Smartboard® for the students to watch. The teacher would then ask the question, “What did you do this afternoon?” The students would take out their binders with their graphic organizers and sentence starters, sit together at a large table and talk about each of their roles while cooking. After the discussion, one student would ask the –WH questions and fill out the graphic organizer up at the board while working together. After the graphic organizer was
complete, the teacher would call back each individual student and have them orally explain about their activity answering all the –WH questions. This is where the teacher would be able to assess if the students were independent, participatory, or fully-supported with their expressive and receptive oral comprehension. After each student orally explained about the activity, they would then write in their journals about the activity as well. The students were able to use their graphic organizers to help with their journal writing.

Picture 4.1 is an example of a student leading the group discussion and answering the –WH questions after a completed activity.

**Picture 4.1**

At the end of each week, the teacher would tally and record all of the student’s oral and written response rubrics to give an overall mean score. A separate mean score of independent, participatory, or fully-supported was given for each –WH word for both of the student’s oral and written responses.

**Post-assessment Results**

The post-intervention assessment was identical to the pre-intervention assessment administered. As a result of the eight week intervention all four students showed an increase in both oral and written comprehension. As seen in charts 4.3 and 4.4, student one increased in both oral and written responses. Student one went from being fully-supported in four of the five
question areas in the pre-oral assessment, to being fully independent in three of the five question areas after the post-oral assessment. In addition, student one went from being fully-supported in all question areas during the pre-written assessment to being fully independent in two of the five question areas during the post-written assessment.

Chart 4.3
As seen in charts 4.5 and 4.6, student two went from being full-supported in all five question areas in the pre-oral assessment, to being fully independent in two of the five question areas during the post-oral assessment. Student two also increased her written comprehension from being fully-supported in three of the five question areas in the pre-written assessment, to being fully independent in three of the five question areas during the post-written assessment.
Likewise, student three also increased in both oral and written comprehension. As seen in charts 4.7 and 4.8, student three went from being fully-supported in two of the five question areas during the pre-oral assessment, to being fully independent in two of the five question areas and was participatory when asked direct question from the teacher in two of the five areas during
the post-oral assessment. Moreover, student three went from being fully-supported in two of the five question areas during the pre-written assessment, to being fully independent in three of the five question areas during the post-written assessment.

*Chart 4.7*

**Student 3- Oral Responses**

*Chart 4.8*

**Student 3- Written Responses**
Finally, as seen in charts 4.9 and 4.10, student four also made gains during the eight week intervention. Student four went from being fully-supported in two of the five question areas during the pre-oral and written assessments, to being fully independent in four of the five question areas during the post-oral and written assessments.

Chart 4.9
Conclusion

In conclusion, data indicated that explicitly modeling appropriate ways to answer questions in both oral and written form while incorporating technology into a co-constructive learning environment positively impacted both the oral and written comprehension of four students with cognitive disabilities. In the next chapter, an explanation of the results as well as the strengths and limitations of the study will be addressed.
CHAPTER FIVE

Conclusions

The purpose of this study was to investigate the effects of incorporating technology, a co-constructive learning environment, and writing practices into a classroom as a means to promote better oral and written comprehension for students with cognitive disabilities. As previously noted, it was hypothesized that explicit instruction would expand and improve students with cognitive disabilities’ communication skills and comprehension through simultaneously using technology, a co-constructive learning approach, and different writing strategies. This chapter is divided into four sections. The first section, Connections to Existing Research and the Common Core State Standards (CCSS), connects current research results to existing research seen in Chapter Two. The second section, Explanation of Results, examines the data from the study and what the results mean. The third section, Strengths and Limitations, explores this study’s strengths and limitations. The final section, Recommendations for Future Research, provides recommendations to future researchers.

Connections to Existing Data

Many factors influence the oral and written comprehension skills of students with special education needs. Research has shown that by increasing technology use in the classroom, along with collaborative work time with student peers and journal writing have improved and helped with increasing comprehension skills for all students; especially those with special education needs.

Current research as seen in this study supports the findings of Regan, Mastropieri, and Scruggs’s (2005) research. Regan et al. (2005) found that the overall writing quality of students with special education needs increased with the use of journal writing as an intervention of
increasing comprehension. This study also supported journal writing as a means to increase and improve writing, comprehension, and encouragement of positive social skills by promoting individualized written discussions between the teacher and students. The students involved in the current research study showed an increase in their written comprehension skills after explicit instruction of how to write in their dialogue journals and how to answer the –WH questions was taught. This study also connected with the Common Core Standards (2010) for English Language Arts and Reading. The knowledge and use of precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters, met the Writing skill for ninth through twelfth grade. This skill suggests that students should be able to use the correct words or phrases to answer questions and convey their message to their audiences while writing. In accordance to the CCSS in Literature, ninth through twelfth grade students should produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

The research by Foulger and Jimenez-Silva (2007) also implied that through authentic and project-based journal writing activities, students' overall comprehension increased in the classroom. Also, teachers saw that this authentic journal writing made students think through steps like organization, research, writing, and reading. Increased motivation and sense of empowerment of students also improved as a means of the authentic and project-based journal writing. Students involved in this study used picture graphic organizers, sentence starters, and the interactive Smartboard® activities to aid in their writing and organization, along with helping the students gain confidence in classroom activities.

The goal of the current research study was to increase both the oral and written comprehension skills of students with cognitive disabilities. In Bowers-Campbell’s (2011)
study, researchers investigated how the use of literature circles as a way to participate and engage all students in collaboration enabled students to make choices about their readings and activities and explore their ideas in small, peer-led discussions. The study from Bowers-Campbell’s (2011) study was consistent with current data. Bowers-Campbell’s (2011) study revealed that working together in small groups promoted socially constructed membership and engagement of all participants. All students involved in the current study have cognitive disabilities and struggle to socialize and communicate among each other and also adults in the building; however having the students collaborate and share their ideas and feelings with one another improved their communication and thought processes to answer the –WH questions. This study also connected with the Common Core State Standards (2010) for Speaking and Listening. Students should initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-lead) with diverse partners.

In addition to Bowers-Campbell’s (2011) research, Larson (2009) examined collaborative online learning communicates and how they provided students with equitable opportunities to share their thoughts and voice their opinions which suggested that students’ engagement promoted socially constructed learning and better comprehension. Students in the current study collaborated on a daily basis with each other to answer the –WH questions after they participated in an activity. Being able to talk with each other and share their thoughts and views helped each student to communicate in both oral and written form. These results are similar to the data collected in the present study.

Douglas, Ayres, Langone, and Bramlett’s (2011) study supported to the use of technology using picture prompts and graphic organizers as a means to promote better comprehension skills. Data suggested that computer-based instruction was an effective tool for
teaching acquisition skills to students with cognitive disabilities. Much like the present study, students were exposed to different types of technology such as digital pictures, graphic organizers, and interactive SmartBoard activities in hopes to help aid in their overall comprehension skills.

Comprehension skills are vital when it comes to communication skills. Boon, Burke, Fore, and Spencer (2006) conducted research that investigated the impact of graphic organizers, with the integration of technology and different computer software as a means to improve comprehension skills. Overall, the study demonstrated the effectiveness of using graphic organizers in content-area classrooms to help with comprehension skills. This study is comparable to the present study as the students used technology and graphic organizers and in both studies, students gained better understandings of concepts presented.

This section served to connect the current study to past research, as well as the Common Core State Standards concerning students with cognitive disabilities’ overall acquisition and comprehension skills. As seen in Chapter Four, students involved in the present study demonstrated an improvement in their comprehension skills using dialogue journals, technology, and a co-constructive learning environment. Students were starting to feel more confident in answering the –WH questions in both oral and written format. The subsequent sections will discuss the strengths and limitations of the study and give suggestions for future researchers.

**Strengths of the Study**

Learning how to communicate effectively and being able to answer –WH questions is a skill that will help people throughout one’s life. In compliance with the No Child Left Behind Act (2001), all children are expected to read, write, and communicate at grade level by the time they graduate from high school. Special education students typically read and write below grade
level and must make significant gains for this to be possible. As the classroom teacher of the students involved in this study, I am aware of the many needs of each student. I knew that with upcoming Wisconsin Knowledge Concept Exam (Wisconsin Department of Public Instruction, 2012) that my students would need every opportunity to increase their reading, writing, and comprehension skills. Although the small class size is a limitation, it is also a strength of this study. It is a strength because I have established a good rapport with these students and their families. I have gained their trust and am able to advocate for their needs in regular education classes. Working with such a small group of children, I was able to differentiate activities and use reading, writing, and comprehension strategies for special education students.

Special education students benefit from pictures and visuals while learning. This study incorporated pictures, drawings and graphic organizers. Students watched actual video footage of themselves while performing tasks as well to help aid in their comprehension. The visual and hands on nature of this study was beneficial to the special education students.

Limitations of the Study

Although this study had many strengths supporting the needs of the special education students, it also had several limitations. As mentioned before, the small population size could be considered a limitation. The amount of data and how it is perceived could be misleading with such a small number of students. Having a small class size meant that these students stayed with me the majority of the day. On a daily basis, I am the teacher, disciplinarian, mentor, friend, and pseudo-parent to all of these students. Being this close to these students daily was beneficial but also could be seen as biased. I knew when to push them to do more and when to pull back when students were frustrated.
Additionally, the short length of the study was a limitation. This study was conducted the last eight weeks of the school year and I felt like if the research would have been conducted more in the beginning of the year, the students could have continued to practice working together and journaling answering the –WH questions throughout the entire school year. By this research being conducted so late in the school year, I felt like the students would not retain and carry over any of the information learned during the eight week period to the following school year.

**Recommendations for Future Researchers**

Researchers who plan to collect data on the oral and written comprehension of students with disabilities can recreate this study. However, there are a few suggestions that I would offer. In this study, student did make gains with their oral and written comprehension. Throughout the eight weeks, students were assessed across multiple areas throughout the week. For example, after each activity that the students performed, they were asked to collaboratively work together to talk and complete their graphic organizers answering the –WH questions about the activity that has just taken place. The students performed many activities such as grocery shopping, cooking, art therapy lessons, adaptive fitness lessons at the YMCA, and sorting and delivering mail to their teachers. For future researchers, I would recommend that the researcher focus on one area to assess such as grocery shopping at a time. By focusing and assessing one activity at a time, the students would become familiar with the procedures and routines necessary to complete both oral and written activities and gain the necessary vocabulary to complete those activities.

Moreover, a delayed posttest could help to add validity to the research. A delayed posttest would be valuable in showing if the intervention strategies were successful and whether or not students would retain the new strategies learned over an extended period of time.
Conclusion

This chapter connected the present study to previous research conducted on the importance of incorporating technology, a co-constructive learning environment, and journal writing as a means to enhance the oral and written comprehension skills of students with cognitive disabilities. Results of the present study showed that explicit instruction of how to answer –WH questions with the use of technology visuals and graphic organizers was effective practice of learning and comprehending what was being taught. Next, the strengths of this study were presented and limitations were discussed. Finally, recommendations for future research studies were proposed. As seen in research, learning strategies to help with comprehension skills are vital for both academics and life successes for students with special education needs.

As a result of this research project, I have a greater appreciation for teaching students with cognitive disabilities. After completing this study, I am more diligent about explicitly teaching and modeling for my students in both oral and written forms. I understand that knowing how to answer the –WH questions is an ongoing process and how important these life skills are for my students’ future. For the data, I know that explicit instruction is successful and beneficial for students with cognitive disabilities.
References


Wisconsin Department of Public Instruction (2011). *Wisconsin knowledge and concepts examination (WKCE)*. Retrieved from [http://dpi.state.wi.us/oea/wkce.html](http://dpi.state.wi.us/oea/wkce.html)

## APPENDIX A

### ORAL RESPONSE RUBRIC

<table>
<thead>
<tr>
<th>Skill</th>
<th>Independent</th>
<th>Participatory</th>
<th>Fully Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Able to answer all the <em>who</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>what</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>where</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>when</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>why</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WRITTEN RESPONSE RUBRIC

<table>
<thead>
<tr>
<th>Skill</th>
<th>Independent</th>
<th>Participatory</th>
<th>Fully Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Able to answer all the <em>who</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>what</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>where</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>when</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Able to answer the <em>why</em> question</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

SENTENCE STARTERS

Today we

___________________________________________

__________________________________________

with__________________________________________

and did

___________________________________________

___________ at

___________________________________________

____________________

because______________________________________

______________.

APPENDIX C

VISUAL CHECKLIST OF –WH WORDS

Who
What
Where
When
Why