University Nevada, Reno

Literacy Instruction for Learners with Moderate to Severe Intellectual Disabilities: A Chance for Growth in Reading through Adapted Materials and Evidence-Based Strategies

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Abstract

The purpose of this study was to investigate the effects of adapted materials paired with evidence-based strategies during literacy instruction for high school students with moderate to severe disabilities. Historically, students with severe disabilities have been denied consistent and quality literacy instruction in the educational setting. If reading instruction was provided, it traditionally centered on sight words used throughout a student’s daily life (Browder Ahlgrim-Delzell, Spooner, Mims, & Baker, 2009). No Child Left Behind (NCLB) (2002) and the reauthorization of the Individuals with Disabilities Education Act (IDEA) (2004) mandated that students with moderate to severe intellectual disabilities participate in school accountability through large-scale assessments for annual yearly progress (AYP). Those alternate assessments no longer target daily living skills and functional activities, but instead focus intensely on academic alternate state standards, aligned with the general education state standards/Common Core State Standards for core subjects (English Language Arts and math) that are assessed at designated grade levels (Mims, Hudson, & Browder, 2012). This study focuses on literacy instruction using adapted materials that incorporate photo/line drawing support delivered through systematic instruction to enhance the literacy skills of high school aged students with moderate to severe disabilities.

Key Words: Literacy, reading instruction, vocabulary instruction, functional academics, shared reading, comprehension, constant time delay, adapted materials, photo/line drawing support, moderate to severe disabilities, significant disabilities, high school
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Literacy Instruction for Learners with Moderate to Severe Intellectual Disabilities:

A Chance for Growth

Chapter 1

Introduction

*Literacy is an educational right for all individuals, not a privilege*

~ Lumsford, Molgen & Selvin ~

For more than a decade, No Child Left Behind (NCLB, 2002) set the expectation that all students would show adequate yearly progress (AYP) in reading, writing, math, and science beginning in third grade and continuing through 12th grade. Prior to this law, literacy instruction for students with significant disabilities at the high school level was sporadic, if present at all (Browder, Gibbs, et al., 2009). (High school is defined here as students who are 14 – 22 years old; with moderate to significant intellectual disability defined as scoring under a $55 \pm 5$ standard score on an adaptive behavior assessment scale and having an IQ of between $55 \pm 5$ and $25 \pm 5$; and who have limited speech and language skills, adaptive living skills, and academic skills in comparison with same age peers as aligned with NRS 388.520 (Nevada, 2011). In the current 2016-17 school year, as NCLB dissolves and growth models and Common Core State Standards (CCSS) surface, adequate yearly growth must continue to be shown for all students, including those with moderate to severe disabilities.

Browder, Gibbs, et al. (2009) reports three potential explanations as to why literacy instruction has been disregarded for this population. First, the absence of teaching literacy to students with severe disabilities may originate from cultural denial of competence traditionally associated with this population. “Disability becomes an idea
that precludes the possibility of human development, including, importantly, the
development of a literate presence” (Kliwer, Biklen, & Kasa-Hendrickson, 2006, p.
175). Assuming that students with IQs below a certain benchmark are unable to acquire
the skills necessary to read is an example of such bias.

A second explanation reported by Browder, Gibbs, et al. (2009) regarding the lack
of literacy instruction for learners with severe disabilities at the high school level may be
the belief that this population can learn basic functional sight words only, and are unable
to learn to decode. In support of this explanation is the work from Browder et al. (2006)
indicating that the majority of studies focus solely on sight words, with only a select few
focusing on other components of reading (i.e., phonemic awareness, phonics, fluency,
and comprehension) as outlined by the 2000 National Reading Panel.

The third plausible explanation, according to Browder, Gibbs, et al. (2009), is that
students with significant disabilities may have such severe delays and impairments in
speech and language development that it is thought to preclude literacy instruction. Both
receptive and expressive communication is an integral part of literacy instruction.
Unfortunately, the students’ inability to verbally express themselves is often being
equated with the inability to comprehend literacy instruction.

No Child Left Behind, Common Core, and the pressure on public schools to make
AYP is assisting education in overcoming its lack of literacy instruction for students with
severe disabilities. Literacy instruction for students with severe disabilities has begun to
make some positive changes. Societal norms for the competence of students with
disabilities are beginning to increase (Browder, Gibbs, et al., 2009). “This is the first
time in the history of educating students with significant intellectual disabilities that
schools have been held accountable for this population to meet state standards through alternative assessments” (Browder, Gibbs, et al., 2009, p. 270). A definite step forward for this population.

Additionally, although there has historically been a strong emphasis on teaching little more than sight words to students with severe disabilities, current educational resources are beginning to provide evidenced-based frameworks for literacy (Browder & Spooner, 2006). This broader approach to literacy will assist students in deepening their knowledge base as the sole focus will no longer be on teaching rote sight words.

This study adapts general education literacy instruction for students with moderate to severe disabilities at the high school level by incorporating systematic instruction with specific strategies paired with photo/line drawing support. It takes the basic components of good reading instruction (word study, guided reading, shared reading, locating information in text, and comprehension) and enhances them so that learners who have moderate to severe disabilities can enhance their reading skills. Through systematic literacy instruction students of this population used the adapted materials and evidence-based instructional strategies to enhance and sustain their literacy skills, as well as overcome preconceived notions that they are unable to engage in literacy activities meaningfully.

**Statement of the Problem**

The need to implement systematic adaptive literacy instruction at the high school level for students with moderate to severe intellectual disability is evident by the grossly limited research currently available. Students with moderate to severe intellectual disability are currently assessed in English Language Arts and math using alternate
assessment standards that are aligned to the CCSS grade level standards. For students to “show what they know” through an alternate assessment in academic content areas, they need access to effective daily literacy practices (Mims et al., 2012) at their level of understanding. This study demonstrates that the use of photo/line drawing supports paired with evidence-based instructional strategies can enhance meaningful literacy instruction for this population.

**Rationale for the Study**

The purpose of this experimental study was to investigate the effects of adapted materials paired with evidence-based strategies delivered systematically during literacy instruction for high school students with moderate to severe disabilities. This study provides a framework for literacy instruction by using adapted materials with photo/line drawings that will support the reading and comprehension process for students with moderate to severe disabilities. The study contributes to the paucity of research currently available in the area of literacy instruction for high school students with intellectual disability.

**Research Questions and Hypothesis**

How did the implementation of adapted materials paired with evidence-based strategies delivered through systematic instruction during literacy instruction affect the literacy learning for high school students with moderate to severe intellectual disability? Specifically, did students increase:

1. The number of vocabulary words read aloud correctly through the use of adapted materials paired with evidence-based instructional strategies?
2. Locating information within a text passage through the use of an adapted text paired with evidence-based instructional strategies?

3. Their correct answers to “wh” questions about a text passage read aloud through shared reading using adapted multiple choice questions that incorporated photo/line drawing support paired with evidence-based instructional strategies?

Limitations of the Study

Limitations of this study included the inability to generalize findings across grade levels; the inability to generalize outcomes to those students with higher or lower IQs than the parameters of the study (55 ± 5 to 25 ± 5); the inability to generalize findings to adults of this population (adults being over the age of 22); use of grade level (English I-IV) literacy material. Long-term maintenance and generalization research for the participants will need to be conducted in a follow-up study to examine maintenance and generalization of skills under natural conditions, across settings, and over time.
Chapter II

Literacy Instruction for Learners with Severe Disabilities:

A Review of the Literature

Literacy is a broad term that typically encompasses the ability to read and write. Literacy is often looked at as a continuum of reading and writing abilities that enable people to develop their knowledge and potential and to participate fully within society (United Nations Educational, Scientific and Cultural Organization, (UNESCO) 2004). This literature review focuses on the reading component of literacy for students ages 14-22 with moderate to severe disabilities, and will examine reading literacy as it relates to: basic human rights, global definitions and educational definitions, historical instructional practices, current instructional models, current research for grade level read-alouds and reciprocal teaching, assistive technology, current scientifically based instructional strategies, social impact, and barriers that restrict access to literacy. Understanding how reading literacy for this population has developed and under what conditions is crucial for the advancement and access of future literacy opportunities.

Literacy as a Basic Human Right

In 1966 the United Nations Educational, Scientific and Cultural Organization (UNESCO) founded the Experimental World Literacy Program where literacy was characterized as a being a fundamental human right (UNESCO, 2008). Today, UNESCO states “Literacy is a fundamental human right and the foundation for lifelong learning” (UNESCO, 2014 p. 154). Lunsford, Molgen, and Selvin (1990, p.2) state “literacy is a right and not a privilege: A right that has been denied in an extraordinary number of our citizens.” Those denied include those with severe disabilities. It is deplorable that 50
years later students with moderate to severe disabilities are still being denied access to literacy instruction. Unfortunately, those with severe disabilities have often been thought of as incapable of obtaining literacy skills and hence have been denied access to literacy opportunities or had literacy provided to them in modalities they were not able to comprehend (Copeland & Keefe, 2007).

Only recently has this injustice been as publically recognized as the lack of literacy rights due to those with race, gender, or low economic standing (Kliwer & Bilken, 2007). Keefe and Copeland (2011) acknowledge that people with severe disabilities “represent the last group of people routinely denied opportunities for literacy instruction” (p. 92). They link the lack of opportunities for literacy instruction to the narrow definition of what constitutes literacy as a whole and the profound impact such a definition has on this population.

Definitions

The term literacy is complex and dynamic; thus defining literacy is equally complex and dynamic. Global entities such as UNESCO, United Nations International Children’s Fund (UNICEF), and the National Reading Panel (NRP) have attempted to narrowly define literacy throughout the years as it relates to human rights, development of the whole person within society, and acquisition of reading and writing skillsets. Researchers in the field of moderate to severe disabilities have worked strenuously to include this population within the definition of literacy and to have the unique needs of the population considered when defining literacy.

Global literacy definitions. Literacy may be widely acknowledged as a basic human right, but the definition of what literacy entails is far from clear. UNESCO (2006)
recognizes the complexity of globally defining literacy and segments the terminology so that defining literacy can be better conceptualized. They segment literacy into four sections including (1) literacy as a set of skills encompassing reading, writing, numeracy, and oral skills; (2) literacy as an application in the real world setting including “functional literacy;” (3) literacy as a learning process (building off of constructivist such as Piaget); (4) literacy as text encompassing discourse of text.

The UNICEF Convention on the Rights of the Child (1990) assists with shaping the boundaries for the definition of literacy for those with significant disabilities by stating that the purpose of education should be “the development of the child’s personality, talents, and mental and physical abilities to their fullest potential” (p.9). Article 13 of the same document clarifies further by stating the child has a right to freedom to seek receptive and expressive information through any media of the child’s choice. This is a major milestone in recognizing that not all individuals communicate ideas in the same manner and that multi-modalities should be embraced and valued within society.

Unfortunately, the broad versatile definitions for literacy embraced globally by both UNIFEC and UNESCO are not followed in education. Literacy definitions in education are often narrowed and inappropriately generalized to those with moderate to severe disabilities leading to limited access to appropriate literacy instruction.

**Literacy definition in education: The National Reading Panel (NRP).** For the past decade the NRP has helped to guide and shape literacy practices in education in the United States. In 2006, the NRP launched a meta-analysis on reading instruction. Instead of creating a definition for reading literacy, the NRP (2006) outlined five major
components for instructional focus through the meta-analysis including phonemic awareness instruction, phonics instruction, fluency, vocabulary instruction, and text comprehension instruction. These five major components are what currently define reading literacy through NCLB legislation and outline the funding mandates for schools receiving monies through Reading First (NCLB, 2002).

Keefe and Copeland (2011) point out that tragically, during their synthesis of NRP’s research, they discovered that NRP excluded studies in which students with disabilities were participants. The inability to generalize the NRP’s five targeted reading components and best practices for those without disabilities to those with severe disabilities is of great concern as the same reading instruction is often delivered to each population (Kliwer & Biklen, 2007). Such generalizations for instruction has potential to lead to inappropriate literacy instruction for those with unique needs when in-taking, synthesizing, and/or outputting information or to abandon literacy instruction for this population altogether (Downing, 2005; Keefe & Copeland, 2011; Kliwer & Biklen, 2007; Mirenda, 2003). Important to note here is the fact that the NRP focuses on printed word and does not take in to consideration other symbolic levels of understanding (e.g., object, photo, and line drawing levels) excluding many students with moderate to severe disabilities who often have a need for added support to learn and interpret printed word.

Clearly, the NRP’s definition of literacy creates obstacles for people with severe disabilities who often do not read or write in traditional ways. With such a narrow literacy definition, literacy assessment becomes problematic; the ability to show what you know becomes challenging if not impossible for nontraditional learners. The danger here is that those who do not fit the definition will be assumed illiterate (Keefe & Copeland,
an unfortunate injustice that happens all too often in the public school system. In order to account for all students in the public school system when defining literacy, a broader, more flexible definition is necessary.

**Broadening educational definitions of literacy.** Keefe and Copeland (2011) along with Kliewer et al. (2004) state that the definition of literacy changes over place and time as it exists on a continuum and is constantly developing throughout an individual’s lifetime. Keefe and Copeland proposed that instead of relying on narrow limited definitions for literacy that are skill-centered or functional skill-based, educators look broader at what they define as five *Core Definitional Principles*. These principles include:

1. All people are capable of acquiring literacy;
2. Literacy is a human right;
3. Literacy requires and creates relationships with others;
4. Literacy includes communication and contact with others expecting this is possible for all with potential for empowerment through literacy;
5. Literacy is a collective responsibility for all using various modes of human communication to transmit and receive information (Keefe & Copeland, 2011, p.97).

These principles couch literacy within each individual as well as the collective community while allowing for both traditional and nontraditional acquisition and development of literacy.

**Summary of definitions.** As stated earlier, the task of defining literacy is both complex and dynamic. Global entities, UNESCO, UNICEF, and the NRP, agree on the broader components of literacy including literacy as a basic human right, literacy continues over a lifetime, and literacy encompasses components of reading and writing.
However, there is disconnect in how each entity defines those components and encompassing subpopulations during their research of each component.

As Keefe and Copland (2011) state in order to account for all students, both individually and collectively in the public school system, the education system needs to look for a broad and flexible definition of literacy. Funding, both at the state and federal levels for public schools, needs to be based on research that incorporates all sub-populations so that best practices are used for all students as they access literacy instruction. Just as definitions can limit access to literacy for people with moderate to severe disabilities so too can historical views of how to serve this population.

**Historical Views of and Approaches to Literacy Instruction for People with Severe Disabilities**

Unfortunately, throughout history, access to literacy for people with moderate to severe disabilities was nonexistent as society collectively viewed this population as unable to learn literacy skills. It was not until 1975, when the Education for all Handicapped Children Act (precursor to the Individuals with Disabilities Education Act; IDEA) was passed through Congress, that public education was mandated to provide educational services for people with moderate to severe disabilities. Since 1975, there have been a variety of literacy models and strategies developed for this population including the developmental model, functional models, additive models, self-determination models, and differentiation models. Thankfully, as history progresses, so too does the access and structure of literacy education for people with moderate to severe disabilities.
Historical views in public education. Historically in education it has often been thought that people with severe disabilities lack the ability to acquire literacy skills; therefore, they are not provided opportunities for literacy instruction resulting in a self-fulfilling prophecy (Keefe & Copeland, 2011; Kliwer et al., 2006). This view has often had negative impact in the school setting where students with moderate to severe developmental disabilities have had little focus on literacy. Agran (2011) pointed out that a critical analysis of literacy instruction for those with severe disabilities shows this population is routinely excluded from literacy instruction or is provided with instruction limited in academic, functional, or personal value.

Limited access to literacy for any person will have dire long term effects on one’s functional abilities within society. Browder, Spooner, and Ahlgrim-Delzell (2011) note that most of the reading research for those with severe disabilities focuses on sight words with minimal attention being paid to the five major reading components (phonemic awareness, phonics, reading fluency, vocabulary development, and comprehension) as outlined by the NRP. Similarly, Katims (2003) states that literacy research on educational practice for this population remains firmly entrenched in basic skill-based practices with little emphasis on the broader understandings of literacy.

Traditional literacy instruction is often viewed as occurring in elementary grades for all students. NCLB reinforced this by setting the goal that all children will read by third grade (Keefe & Copeland, 2011) as has the newer legislation Read by Third Grade. In a Canadian study done by Trenholm and Mirenda (2006), 224 parents of students with Down syndrome were surveyed about literacy instruction for their children in the school setting. Parents reported that after age 12 (6th grade) there were fewer opportunities for
their children to gain literacy instruction in the school setting. This research is concerning educationally as researchers have found that adolescents and adults with intellectual disability are more apt to benefit academically from literacy instruction than are younger children of this population (Boudreau, 2002; Browder, Gibbs, et al., 2009). This research indicates a need for a shift from past practices in literacy instruction so that literacy can be provided across all ages.

**Early educational literacy models for people with severe disabilities.**

Beginning in 1975, public schools began to be responsible for educating students with disabilities thanks to the Education for all Handicapped Children Act. Over the next 25 years, a variety of literacy models and approaches were used in the public school setting for students with moderate to severe disabilities including: the developmental model, functional models, and additive models. Literacy models have evolved over time; but unfortunately for those waiting for consistent appropriate access to literacy instruction, change is slow.

**The developmental model.** In 1975, the Education for All Handicapped Children Act established the right for children with disabilities to have a free and appropriate education. In response to the Act, many public schools began to create services and curriculum for students with disabilities. The developmental model encompassed infancy to early childhood curricula and was founded on the premise students with severe disabilities educational instruction should focus on their cognitive developmental level not their age level (Browder et al., 2004). Many skills taught under this model revolved around self-care and Piaget’s cognitive stages of development. During this time period,
regardless of a student’s chronological age, teachers provided instruction at the student’s development level.

During this time other scholars in the field of moderate to severe disabilities were looking for more relevant literacy strategies to educate this population. One educational area of need that surfaced was the need to look across settings so that people with moderate to severe disabilities could be more functional in society. Thus, the functional model arose.

**Functional models.** The term *functional* was originally introduced in 1976 by Brown, Nietupski, and Hamre Nietupski (1976) to refer to a new curriculum model where the focus was on community access by targeting skills necessary for daily life. The term functional has been used in this manner for the past 40 years. In their 1976 chapter, Brown, Nietupski and Hamre Nietupski describe their proposed functional model with four domains including: community, recreation, domestic, and vocational, which became the new content areas of curriculum for people with severe disabilities. Towards the end of the 1980s, professionals in the field of disabilities agreed that functional curriculum should center upon age-appropriate, functional skills for people with severe disabilities (Meyer, Eichenger, & Park-Lee, 1987). This shift was present through the late 1990s as is evident by textbooks and curriculum resources during this era (e.g., Browder, 1993; Cipani & Spooner, 1994; Falvey, 1986; Snell, 1987; Westling & Fox, 2000).

The functional approach to literacy for this population begins to re-open the door of access to literacy opportunities, though in limited form. Functional literacy curriculum encompasses teaching reading of basic pictures, signs, and single words or short phrases one might encounter throughout his or her day in various settings so that they may be
“functional” in society (Baker et al., 2004). Functional approaches are often limiting for people with severe disabilities as they are skill-based with a specific focus and tend to eliminate more meaningful literacy experiences such as texting a family member (Copeland & Keefe, 2007). Reading and writing connections are often minimized with functional approaches to literacy, thus widening the literacy gap for this population.

During this era in traditional classrooms, educators worked from a scope and sequence guide to deliver literacy instruction. These guides did not align with the functional curriculum outlined for use for people with severe disabilities (Browder et al., 2004). The scope and sequence guides were linear with the assumption students would learn and master skills before moving on to the next skill. Functional curriculum guides were created using the four domains (i.e. community, recreation, domestic, vocational) each containing a vast set of sub-skills. The intention was that teachers would individually prioritize student needs when determining which skills to teach (Ford et al., 1989; Giangreco, Cloninger, & Iverson, 1993; Wilcox & Bellamy, 1987).

By the early 1990s, literacy education for those with moderate to severe disabilities was shifting once again. The functional model was about to be enhanced with the hope of creating better literacy opportunities for this population through what are known as additive models.

**Additive models.** By the mid-1990s, it was evident to researchers in the field of moderate to severe disabilities that solely focusing on rote academic and or life skills education for this population was not enough. People with moderate to severe disabilities needed more from public education. Thus, additive models including social, self-determination, and differentiation models arose.
Social inclusion. In the 1990s additional curriculum priorities emerged for people with severe disabilities and became known as additive models. Browder et al. (2004) pointed out that these additive models were in addition to and did not replace the primary functional model. They highlighted one additive model: the social inclusion model. This model was developed around effective inclusion of students in the general education setting with an emphasis on social inclusion (Downing, 1996). The social inclusion model focused more on including students socially rather than academically in school settings. Although the social inclusion model enhanced the lives of students with moderate to severe disabilities, it really did not assist with promoting literacy instruction.

Self-determination model. Another additive model examined by Browder et al. (2004) that emerged during the 1990s was the self-determination model. The self-determination model embraced person-centered planning, daily choice-making for activities, and instruction on goal setting and problem solving in daily life (Wehmeyer, Agran, & Hughes, 1998). Self-determination served as a way to empower people with disabilities. In 1998, Lohrmann-ORourke and Browder published a large body of work on preference assessments for people with severe disabilities. This research was important as it moved away from simple choice of A or B to more informed choice through hands-on experiences and interaction with the choices for people with severe disabilities.

Differentiation model & curriculum overlapping model. As the push for inclusion into the general education setting continued, the focus shifted to finding ways for people with severe disabilities to access the general education curriculum (Downing, 1996). Giangreco et al. (1993) provided the field with two models for adjusting the general
education curriculum so that students with severe disabilities would have access. The first additive model used multi-level curriculum where students learned the same curriculum at different levels of depth (Browder et al., 2004); what today is known as differentiation. The second additive model presented by Giangreco et al. was called curriculum overlapping. This approach entailed students with severe disabilities learning functional or social skills within the context of an academic lesson (Giangreco et al., 1993). Both of these models assisted in opening the door to relevant and meaningful literacy instruction for this population.

The rise of additive models throughout the 1990s gave students with moderate to severe disabilities enhanced access to literacy instruction in the public school system, but still in limited form as change was very slow to take hold. In 2004, the reauthorization of IDEA began to move literacy instruction forward again for people with moderate to severe disabilities. The reauthorization states that to meet the requirements of IDEA 2004, public school systems must consider general education content when planning instruction for students with severe disabilities. This shift was a step forward as educators must now reexamine how and where this population will access literacy instruction (Ruppar, Dymond, & Gaffney, 2011).

**Summary of historical views and approaches to literacy.** Historically, in education it has often been thought that people with moderate to severe disabilities lack the ability to acquire literacy skills (Keefe & Copeland, 2011; Kliewer et al., 2006). In 1975, when Congress passed both the Education for All Handicapped Children Act, doors began to open in the public education system for this population. As time progressed, so did access to literacy for people with moderate to severe disabilities using a variety of
models developed through research. Current research in reading literacy for students with moderate to severe disabilities continues to assist educators as they begin to navigate strategies necessary for reading literacy instruction in the millennium and beyond.

**Current Research in Literacy Education for People with Severe Disabilities**

The 2004 reauthorization of IDEA brought awareness to the need for change regarding access to literacy instruction for people with moderate to severe disabilities. Even with the reauthorization of IDEA in 2004 requiring that all students have access to the general education curriculum in the least restrictive environment, segregation for literacy instruction of those with severe disabilities remains in practice. Resource or comprehensive life-skills classrooms are often designated locations for literacy instruction for students with severe disabilities (Browder, Wakeman, Spooner, Ahlgrim-Delezell, & Algozzine, 2006). The constant use of this practice creates a lack of opportunity for literacy instruction through access to the general education English language arts and reading curriculum (Katims, 2003; Koppenhaven & Erickson, 2003; Mirenda, 2003).

One reason for this is the lack of instructional models used as best practices for implementing literacy instruction in the least restrictive environment for this population. Current research models are being developed and studied to better provide quality literacy instruction as outlined below.

**Current research on literacy models.** Education for students with severe disabilities should directly enhance quality of life (Westling & Fox, 2009). Academic and social gains should have a direct connection to the lives of students with moderate to severe disabilities. According to Browder, Gibbs, et al. (2009), benefits may be viewed
in two ways: immediate and long-term. An example representing an immediate benefit for a student with significant disabilities might be to recognize his or her home phone number. A long-term benefit for the same student may include using photo support to comprehend a sentence. A conceptual model of literacy must also encompass the expectation that all students be provided the opportunity to learn to read (Browder, Gibbs, et al. 2009).

Browder, Gibbs, et al. (2009) examined two conceptual models for literacy. Model one, for students with severe developmental disabilities who are beginning literacy learners at the elementary level, places emphasis on the reading/writing connection, reading instruction, phonics, comprehension, and fluency. Model two, for emphasis of literacy of different age levels and for use from late elementary level through high school, places more emphasis on functional reading in the high school years, with little emphasis on learning to decode words, and incorporates both narrative and informative literature for students with significant disabilities. Browder, Gibbs, et al.’s idea of a conceptual model of literacy can be enhanced by adding that all students should be given the opportunity to read at their symbolic level of understanding.

Vacant from the functional reading model of literacy for this population is reading for purposes other than basic daily functionality (e.g., information, personal interests) and application of literacy skills to other formats in reading (Browder, Gibbs, et al., 2009). There is need for further research to determine if implementation of effective reading strategies will lead to independent reading for students with severe developmental disabilities.
Current research on strategies to teach reading literacy. Multiple studies support that literacy instruction for people with moderate to severe disabilities must encompass a wide variety of evidence-based practices to meet the unique needs of this population. These practices include task analysis, read-alouds, shared reading, systematic instruction, graphic organizers, reciprocal teaching, and time delay methods as well as literacy instruction taking place in an inclusive setting.

Task analysis and read-alouds. Providing literacy-rich experiences for students with significant disabilities can be a challenging task if not equipped with a range of evidence-based techniques such as task analysis and read-alouds. Browder, Trela, and Jimenez (2007) used a multiple probe-across-participants design to examine the outcome of educating teachers to use task analysis to teach story-based literature to middle school students with significant disabilities.

During the study teachers were taught to use a task analysis of 25 steps to teach six students in areas of word study, read-aloud, and comprehension. The reading materials used to instruct students consisted of eight novels (e.g., Call of the Wild, Island of the Blue Dolphins, The Cay). Each novel was adapted to the student’s symbolic level of understanding prior to being introduced to students through symbol support to enhance meaning for the students to whom it was being presented. Through training, teachers followed a specific task analysis for presenting the literature to the students. It was found that all students increased their independence in book awareness, listening comprehension, and other literacy skills typical of middle school-aged students (Browder et al., 2007). The results of this study showed a functional relationship between teacher training on task analysis and student learner outcomes in relation to acquiring literacy
skills. All six participants made gains in comprehension and readability. It is important to note that adapting books alone was not enough to increase student responding, but that students needed specific prompting at each step of a literacy task analysis to become successful (Browder et al., 2007).

This study is valuable on two fronts as it shows that students with moderate to severe disabilities can and do acquire literacy skills when delivered using accessible strategies, as well as the need for appropriate teacher and staff training of said techniques. Other vital implications arise from this study, such as the need to educate students with significant disabilities at their chronological age level with appropriate materials and expectations (e.g., engaging in read-alouds from their desks and not on the floor during circle-time). Further research using these same techniques for literacy instruction for high school students with significant disabilities is merited.

Another study examining read-alouds with grade level appropriate materials was Mims et al. (2012). They conducted a study on middle school students with moderate to severe developmental disabilities that examined the effects of a modified system of least intrusive prompts used during read-alouds with adapted grade level text to increase listening comprehension. They used a single-subject multiple probe design across participants research design in which they examined the listening comprehension of four students having autism and intellectual disability. Five biographies from two 6th grade literacy textbooks were selected and adapted by summarizing pages and adding line drawing representation to key vocabulary words with Writing with Symbols.

The intervention phase of this study, prior to beginning the read-aloud, the participant was given a sequence graphic organizer and a “wh” t-chart. The student was
presented with the adapted biography which was then read aloud with the student.

Eleven comprehension questions were embedded throughout the biography. A system of least intrusive prompts with a 4-second time delay was used for the subject to respond to the comprehension questions. If the participant answered correctly, verbal praise was given; but if they answered incorrectly a prompt was given to use the graphic organizers and charts. For example, the teacher may point to the graphic organizer with picture support for “WHO” and say “When you hear “who” listen for a person’s name” (Mims et al., 2012). The comprehension question was then presented again and the subject’s answer was recorded. A second prompt was then given if necessary in which the teacher re-read the sentence with the correct answer in it.

The outcomes of Mims et al. (2012) are exciting when it comes to promoting access to grade level literacy for students with moderate to severe disabilities. All students improved their listening comprehension and were able to maintain high levels of correct responding two weeks after intervention; three of the four students were also able to generalize these skills to new biographies.

**Shared story reading.** Hudson, Browder, and Waekman (2013) further enhance accessing grade level content by discussing strategies and techniques to assist students with moderate and severe intellectual disabilities so that they may access grade level content during literacy activities. They considered receptive communication, the intake of information, as well as expressive communication, the output of ideas or information. One of the strategies suggested was shared story reading. “When a partner reads text aloud it allows the listener opportunities to interact and demonstrate comprehension, an effective way to make text accessible” (Hudson et al., 2013, p.16).
Hudson et al. (2013) suggested other strategies for this population to access grade level text including: shortening the text, augmenting the text, re-writing the text in summary form, inserting some picture or graphic support, using a predictable structure the student is familiar with, providing options for students to demonstrate comprehension through use of a prompting hierarchy, and using graphic organizers. Incorporating many of these strategies through differentiation will allow access to grade level text across subject for not only students with moderate to severe disabilities, but also non-English language learners and struggling readers.

Similarly, Roberts and Leko (2013) conducted a multiple baseline single-case study examining the use of shared reading to integrate functional and academic goals into literacy instruction for middle school and high school students with moderate to severe cognitive disabilities. The goal of the study was to deliver authentic grade level text to students through the use of story-based task-analytical lesson planning that incorporated the participant’s functional and academic goals. The intervention consisted of two phases and used adapted text and shared reading. Results were promising as all three participants demonstrated growth in accessing and comprehending grade level material using shared reading. The outcomes of this study support earlier findings that use of evidence-based instructional strategies, such as shared reading and adapted materials, provide students with moderate to severe disabilities access to purposeful and age-appropriate literacy instruction (Roberts & Leko, 2013).

**Systematic instruction and graphic organizers.** Knight, Spooner, Browder, Smith, and Wood (2013) investigated the effects of using systematic instruction paired with graphic organizers to teach science literacy to middle school students with autism
and intellectual disabilities. Knight et al. focused on science vocabulary instruction around the concept of *convection* to better assist with comprehension of the concept. They used a multiple probe design with three students with the independent variable being a “treatment package of the systematic instruction including constant time delay procedure to teach vocabulary words and definitions, instruction of concepts using examples and non-examples, teaching loosely using the graphic organizer, teaching using multiple exemplars of the graphic organizer, and connecting the concepts to the big idea of “Convection” (Knight et al., 2013, p. 117).

The results were promising as they showed a functional relationship between the graphic organizer with systematic instruction and the students’ number of correct steps completed on the task analysis (Knight et al., 2013). Each student reached the criteria for mastery of the concept of convection by the 8th session. This demonstrated that the scope and sequence for teaching meaningful science to students with moderate to severe disabilities begins with the concrete then has potential to advance to conceptual learning (Knight, Browder, Agnello & Lee, 2010). Support for the use of constant time delay as an evidenced-based strategy was established (Knight et al., 2013). Recommendations for practice stemming from this study include the use of graphic organizers paired with other strategies such as constant time delay or multiple exemplars to teach vocabulary as well as comprehension of concepts for this population.

**Reciprocal teaching.** Alfassi, Weiss, and Lifshitz (2009) published a randomized experimental control study where they investigated the effects of reciprocal teaching on reading literacy for 35 participants ages 15-21 in a specialized school for students with mild to moderate intellectual disabilities. Reading strategies were taught to the
experimental control group of 19 participants through all four reciprocal teaching strategies including summarizing, questioning, predicting, and clarifying (Sullivan Palincsar & Brown, 1984), while the control group of 16 participants received traditional remedial reading instruction including direct instruction, give a title, summarizing, completion of sentences, “WH” questions, and identification of difficult words without strategy instruction (Alfassi et al., 2009).

The study consisted of four phases including pre-assessment, intervention, maintenance, and follow-up. Pre-assessment phase included using a combination of two comprehension tests and one reading assessment. Intervention phase lasted for 12 weeks with two 45-minute reading instruction sessions weekly. During instruction sessions students were exposed to text passages between 40-550 words geared toward adult readers with a range of topics in their randomly assigned group. Maintenance consisted of post-intervention with post assessments, and then a follow-up phase was administered 12 weeks later.

Alfassi et al. (2009) reported that the results from all assessment measurements indicated that using reciprocal teaching yielded far better results that did traditional literacy instruction for students with severe disabilities. They stated that these findings “challenge the common perception that literacy is an organic impossibility for people defined as intellectually disabled” (Alfassi et al., p 302). This study further indicates that reading and comprehension instruction in non-traditional forms enables this population to acquire literacy skills.

**Time delay.** Time delay is another strategy to consider when beginning teaching literacy to students with moderate to severe disabilities. Browder, Ahlgrim-Delzell, et
al., (2009) conducted a review of the literature examining 30 experiments between 1975 and 2007 that used time delay to teach literacy to students with developmental disabilities. They discovered that time delay was indeed an evidence-based practice for teaching picture and sight word recognition (Browder, Ahlgrim-Delzell, et al., 2009). Findings further suggested that time delay was a powerful strategy for promoting learning in the general educational setting.

In 2003, Riesen, McDonnell, Johnson, Polychronis, and Jameson conducted an alternating treatment design study that compared the use of constant time delay and simultaneous prompting with embedded instruction to acquire academic skills for students with moderate to severe disabilities in the general education setting. Study results showed that all four participants either read or verbally defined key vocabulary words from text through the use of embedded instruction. The results also indicated that both constant time delay and simultaneous prompting were effective strategies in helping students acquire academic skills. Most importantly, the study indicated that through the use of embedded instruction, constant time delay, and simultaneous prompting students with moderate to severe disabilities were able to generalize target skills to classroom materials in the general education setting such as worksheets, textbooks and graphic organizers (Riesen et al., 2003).

**Strategies for teaching literacy in inclusive environments.** Downing and Eichinger (2011) presented information on strategies for educating students with dual sensory impairments and moderate to profound disabilities in an inclusive environment. They discussed various strategies that facilitated access to literacy in the general education classroom for this population including: heterogeneous grouping of students so
students’ strengths and limitations can be balanced throughout the group, enhancement of visual and auditory stimuli with an emphasis on tactile techniques, small group instruction, cooperative learning, and partial participation (Downing & Eichlinger, 2011).

Partial participation is based on the principle that students with severe disabilities are able to participate in portions of classroom activities/tasks for literacy and learning, but may not be independent throughout the entire activity (Baumgart et al., 1982). Partial participation is an important literacy strategy for students with severe disabilities because it allows them access to literacy activities; access that is often denied to this population due to the assumption that they cannot fully complete grade level general education literacy activities.

**Summary of current research.** As is evident from the current literature, students with moderate to severe disabilities can acquire literacy skills. Through the current research it is apparent that access to grade level text for literacy instruction is both achievable and beneficial for the student when implementing a combination of strategies such as read-alouds, shared story reading, graphic organizers, task analysis, systematic instruction, reciprocal teaching, partial participation, and constant time delay. Further reading literacy research is warranted, especially at the high school level, for this population to help support the empirical data brought forth in the studies presented.

It is important to remember that reading serves a variety of purposes in a person’s life including academic learning, vocational/work opportunities, leisure and recreation, and family/friend connections. Each area is relevant and often carries over into the social aspect of the person’s life. Not only do educators need to provide daily access to reading
instruction using evidenced based practices, they also need to consider how each student will access daily reading literacy instruction.

Once evidence-based literacy strategies are decided upon for students with moderate to severe disabilities, educators also need to assess what mode of communication each student is able to use and at what symbolic level of understanding each student is.

**Accessing Literacy.**

Before beginning reading instruction for students with moderate to severe disabilities, it is important to consider how they will access the literacy instruction. It is necessary for educators to individually consider and assess each student’s level of understanding through symbol assessments. Once these assessments are completed, educators can appropriately consider how to plan for each student’s literacy needs; either through universal design in learning or specialized access through technology.

**Symbol assessments.** Westling and Fox (2009) point out the importance of conducting a symbol assessment prior to selecting symbols to use with each individual student with significant disabilities. These assessments are conducted to decipher the student’s current symbolic level of understanding. The following symbol representations are in progressive order from most concrete to most abstract: tangible symbols (e.g., objects), photos, line drawings, and then written word (Demchak, 2010; Westling & Fox).

The importance of symbol assessments, prior to literacy education, for students with significant disabilities can be demonstrated by the following example. “Amy” has been receiving literacy instruction at the line drawing level of symbolic representation for
the past year in a comprehensive life skills classroom. She shows little interest when presented with these symbols and no understanding, as verified by comprehension checks. The special education teacher conducts a symbol assessment to verify her level of symbolic understanding. To the teacher’s surprise “Amy” shows interest and understanding when presented with objects, to the extent that she is able to show preference and choice through object representation. When presented with other levels of symbolism, “Amy” is unable to demonstrate understanding. Unfortunately, for the past year, the teacher has been presenting literacy instruction to “Amy” at a level of symbolism she was unable to understand, thus severely limiting her literacy development.

Symbol assessments should be done periodically throughout the year, as students’ level of understanding may change due to changing knowledge. Often, students with severe intellectual disability require the use of a combination of symbols (Demchak, 2010; Westling & Fox, 2009). For example, when new material is presented to students they may need photo representation in order to create meaning; however, once meaning is established, the students may be able to use line drawing representation.

**Accessing literacy through universal design (UDL).** Universal design in learning (UDL) is the concept of taking all students’ needs into account when planning and developing academic opportunities to acquire knowledge. Meyer and Rose (2000) describe UDL as designing an egalitarian and accessible content delivery system for all learners. Meyer and Rose (2000) outline three main provisions afforded to students through UDL (a) multiple ways to access information and knowledge, (b) multiple ways to approach strategic tasks, (c) multiple ways of engaging in learning. Blue and Pace (2011) defined UDL as a research-based set of principles that provides a practical
framework for using technology to maximize learning opportunities for all students.

Blue and Pace state access to learning needs to be looked at beginning with the physical environment (this extends from the parking lot to the ability to travel within the library and school setting). Signs should be readable and consideration of font size and use of Braille should be addressed so all students can access the learning environment.

UDL is in everyday public life in forms of sidewalk curb-cuts, automatic doors, automatic soap dispensers, and signs with picture support to name a few. UDL is widely used to access reading literacy in the forms of screen readers, magnifiers, cooperative learning groups, software programs with text to speech and/or speech to text built directly into them, graphics with spoken words, text with picture support (directions or manuals often contain this), and access to multimodality learning through hands on projects to demonstrate knowledge (Michael & Trezek, 2005).

Downing (2006) brought to light that the intent of UDL is to make the content accessible to all students from the onset, rather that adjusting it later as an afterthought for a few students. Furthermore, she indicated that universal supports in the inclusion classroom include the effective utilization of paraprofessionals. Carter and Kennedy (2006) continue this idea by adding the notion of peers as universal natural supports in the school inclusion setting for students with severe disabilities. “Peer support arrangements skills in the areas of communication, language, and social interaction by providing additional practice opportunities and peer modeling, whereby students receive feedback regarding the appropriateness of their social behavior” (Carter & Kennedy 2006, p. 288 ).
**UDL in a high school history class.** Tomasik (2007) reminds us that it can be challenging to provide meaningful learning opportunities for students with severe disabilities in the general high school curriculum. In his 2007 study, he specifically examined inclusion through UDL for two students with multiple disabilities, including blindness. Both girls had experience developing PowerPoint presentations, and both girls refused to participate in Braille reading instruction. These two students were enrolled in a high school general education U.S. history class and were supported by a paraprofessional and a teacher of visual impairments.

The history teacher embraced the UDL in cooperative learning in the inclusion setting and was enthusiastic about the benefits her students would glean from the experience. Throughout the year the students worked in small cooperative learning groups. The two students with severe disabilities were given opportunities to create PowerPoint presentations in conjunction with life skill opportunities (e.g., cooking food from a certain region in the US for the class). The girls were able to participate in an age-appropriate structured curriculum with same age peers and developed an interest in U.S. history (Tomasik, 2007).

Important to note is that this study enabled reciprocal learning to take place. For example, one student noticed that one of the girls sorted her fries before she ate them. The student questioned why she did that and was surprised to learn that, due to her vision impairment, it assisted her in knowing how many fries were left on her plate (Tomasik, 2007). Through the use of UDL in this study, positive relationships among peers with and without disabilities were formed and meaningful core-academic learning took place for all students.
**UDL for reading instruction.** Coyne, Pisha, Dalton, Zeph, and Cook-Smith (2012) investigated the effects of technology-based UDL on reading literacy instruction using Literacy by Design (LBD) for students with moderate to severe disabilities. The LBD approach emphasizes reading for meaning and was paired with UDL scaffolded e-books, and letter/word recognition software for the study. Coyne et al. (2012) used a multivariate analysis of pre-post assessments through an ANCOVA to assess 16 K-2 students with moderate to severe intellectual disability in the areas of letter/word identification, understanding directions, passage comprehension, and word attack, picture vocabulary, oral comprehension, and sound awareness. The study was a controlled format with five classrooms getting the LBD and UDL instruction and four classrooms getting traditional skills-based instruction.

Results suggested LDB and UDL had a strong effect on students’ word attack skills, listening comprehension, and concepts about print. Coyne et al. (2012) noted that reading comprehension is the building block for the LBD approach to literacy. Conclusions also showed that with UDL students with significant disabilities can benefit from evidence-based reading instruction as outlined by the NRP in 2000 (Coyne et al.). Further research with older students is warranted.

**Summary of accessing literacy.** If students with moderate to severe disabilities are going to be provided with meaningful reading literacy, then prior to instruction, each student’s ability to access that instruction is crucial. Consideration for access to literacy instruction needs to include a symbol assessment and physical and motor abilities. It is vital that students are able to access the correct symbolic level of understanding if they are expected to construct meaning from academics (Beukleman & Mirenda, 2013). It is
also crucial that UDL is taken into consideration when planning student access. It is necessary that educators plan for access to literacy; if not, access itself has potential to become a barrier to literacy for those with severe disabilities.

**Five Barriers to Literacy Instruction for People with Severe Disabilities**

Current literature has exposed barriers that need to be addressed to ensure that students with moderate to significant disabilities are given regular access to reading instruction at their level of symbolic understanding. These barriers include, but are not limited to, lack of current research regarding literacy instruction for students with moderate to severe disabilities at the high school level, lack of professional development, absence of funding to provide adequate personnel and resources, lack of knowledge and understanding regarding assistive technology, and lack of evidence-based practices, such as use of adapted materials, constant time delay, task analysis to assist in reading literacy instruction at this level.

When specifically looking at literacy for high school students with moderate to severe disabilities, Browder et al. (2007) inform us that the data are scarce. Browder, Gibbs, et al. (2009) agree, adding that current research on literacy instruction within this population is nonexistent. As pointed out in this literature review, current focus is on the middle school-aged student. The need for further research in reading literacy instruction for students with moderate to significant disabilities at the high school level is a necessity.

Lack of resources must be addressed if students are to be provided with regular access to reading literacy instruction. Students with moderate to severe disabilities need the opportunity to interact daily with text in a variety of ways, such as through shared
readings, read-alouds, book sharing, and repeated readings with supports to interact with text in a meaningful manner (Browder, Gibbs, et al., 2009). Many students in the population will need increased support either through assistive technology or support personnel, to engage in meaningful reading literacy activities. Funding for both will be necessary to adequately provide literacy instruction to these students.

Wehmeyer (2006) discussed concerns that there appears to be limited understanding that the current legislations around literacy actually apply to students with severe disabilities. Another concern of Wehmeyer (2006) revolved around the word “access.” We often hear terms, such as access to general education curriculum, but it is essential to remember that, “access does not ensure progress any more than presence in the general education classroom ensures inclusion” (Wehmeyer, 2006, p. 324). It is simply not enough to provide access to, and inclusion in, the general education setting for students with moderate to severe disabilities; we must go beyond to create meaningful and beneficial educational experiences for all students.

**Summary of barriers.** Current research shows that barriers to literacy for students with moderate to severe disabilities in the public school setting include lack of research, lack of professional development for educators, lack of knowledge regarding assistive technology, lack of evidence-based practices, and absence or misuse of funding. Browder, Gibbs, et al. (2009) reminds us when specifically examining literacy instruction for this population at the high school level, that the current research is minimal; a huge barrier if we are using research to guide best practices. In summary, further research is warranted regarding literacy for people with moderate to severe disabilities.

**Summary**
As highlighted throughout the current literature, literacy instruction for students with moderate to severe disabilities is a complex and multi-modal concept. There is not a simple, single way to successfully define and provide reading instruction for this population, but rather a need to present a wide range of instructional strategies proven effective through the literature.

Historically for this population we have progressed through times of complete denial of education as a basic human right to use of developmental models, functional models, and additive models for access to reading literacy instruction. Current research has investigated numerous evidence-based practices that have proven beneficial for students with moderate to severe disabilities when access literacy instruction, including task analysis, read-alouds, shared story reading, UDL, reciprocal teaching, graphic organizers, systematic instruction, partial participation, and constant time delay. A need to widen the research with applications at various grade levels would be beneficial in supporting these practices.

Evident is also a vast need for further research regarding literacy instruction for students with moderate to severe disabilities, especially at the high school level. As we look to better guide future reading instruction for those with moderate to severe disabilities, it is vital that we collect the data needed to ensure that evidence-based practices guide literacy instruction.
Chapter III

Research Methods: Experiments 1 and 2

This experimental study consisted of two experiments (Experiment 1 and 2). Experiment 1 included two text passages (*The Color Wheel* and *Piñatas*) and Experiment 2 included four text passages (*The Pupfish of Devil’s Hole, Teamwork, Stories in the Stars*, and *Set a World’s Record*). Methods relevant to the entire study (Experiments 1 and 2) will be presented first, followed by procedures unique to Experiment 1, and procedures unique to Experiment 2 presented last.

**Experiments 1 and 2**

**Participants**

In order to be included in the proposed study, participants needed to meet the following criteria:

(1) Have moderate to severe intellectual disability regardless of origin of etiology (moderate to severe disabilities is defined throughout this study as scoring under a $55 \pm 5$ standard score on an adaptive behavior assessment scale, having an IQ between $55 \pm 5$ and $25 \pm 5$, and having limited speech and language skills, adaptive living skills, and academic skills in comparison with same age peers as aligned with NRS 388.520 (Nevada, 2011). The term “moderate to severe disabilities” may be interchangeably used with the term “significant disabilities” throughout this study.

(2) Communicate through spoken words;

(3) Have limited use of independent written expressive communication, as indicated by the adaptive behavior scale scores
(4) Have limited independent reading and understanding of printed word, which is defined as under a 14 reading level (end of 1st grade) on the Developmental Reading Assessment-2 (DRA-2);

(5) Have a symbolic level of understanding at the photo or line drawing level as demonstrated by a symbol assessment;

(6) Have not had direct instruction on how to locate words and phrases in a text passage;

(7) Have regular school attendance (e.g., no more than 10 absences in the past quarter);

(8) Be of high school age (high school age defined throughout this study as 14-22 years of age);

(9) Have a signed Parent Permission Letter for Study on file (developed to meet IRB requirements); and

(10) Have a signed Consent form completed by participant on file (developed to meet IRB requirements).

One girl and two boys ages 14 – 22 years met the selection criteria and were included in the study. Inclusion criteria results and participant demographics are presented in Tables 1 and 2 and discussed below.

**Participant 1.** Eddy is a 21.7 year-old senior Caucasian student with moderate intellectual disability according to his eligibility statement in his current IEP. His Full Scale Intelligence Quotient (FSIQ) is 40 as determined by the Wechsler Intelligence Scale for Children (WISC-IV). His Overall Adaptive Behavior Composite was 55 according to the Vineland Adapted Behavior Scales, Second Edition (Vineland II) completed by his special education teacher. Eddy’s pre-study assessments indicated that he scored a level 1 on the DRA-2, knew five out of 100 of Fry’s First 100 sight words,
understood line drawings for level of symbolic understanding, used spoken language to communicate, and had 30 minutes of literacy instruction three times per week (or less).

Eddy participated in the Comprehensive Life Skills (CLS) program and was included for elective courses (e.g., welding) with paraprofessional support for the past 8 years.

**Participant 2.** Erwin was a 14.7 year old Hispanic freshman with moderate intellectual disability according to his eligibility statement in his current IEP. His Intelligence Quotient (IQ) equivalency score is 54 as determined by the Alpern-Boll Development Profile. His Adaptive Skills Composite was 32 according to the Behavior Assessment System for Children (BASC-2) completed by his special education teacher, and his Overall Adaptive Behavior Composite for the Vineland II was 59 completed by his parent. Erwin’s pre-study assessments indicated that he scored a level 10 on the DRA-2, knew 99 out of 100 of Fry’s First 100 sight words, understood line drawings for level of symbolic understanding, used spoken language to communicate, and participated in English I with supports for one period a day with no explicit reading instruction or instruction on locating information within text.

Erwin participated in the CLS program and was included in the general education setting for English and electives (e.g., ceramics) with paraprofessional support for the past 3 years. Prior to that, Erwin participated fulltime in the CLS program (6 years). Erwin also qualified as an English as a Second Language (EL) student.

**Participant 3.** Jane was a 21.8 year-old senior Caucasian student with severe intellectual disability according to the eligibility statement in her current IEP. Her FSIQ is 40 as determined by the WISC-IV. Her General Adaptive Composite (GAC) score is 51 according to the Adaptive Behavior Assessment System (ABAS-II) completed by her
special education teacher and 43 according to the ABAS-II completed by her parent.

Jane’s pre-study assessments indicated that she scored a level 3 on the DRA-2, knew 22 out of 100 of Fry’s First 100 sight words, understood line drawings for level of symbolic understanding, used spoken language to communicate, and had 30 minutes of literacy instruction three times per week (or less). Jane participated in the CLS program with inclusion for electives (e.g., stage craft) with paraprofessional support for the past 10 years.

**Interventionist**

The investigator, who served as the interventionist for the study and collected the data, was a part-time special education teacher and part-time learning strategist in the public school system. She had 16 years of experience in the public school system working with students with mild to severe intellectual disabilities (5 years teaching early childhood special education, 5 years teaching a CLS program at the high school level, and 6 years at the district level working with teachers who have students Pre-K – 12 with severe problem behaviors and disabilities). She was also a doctoral candidate in special education with an emphasis on severe disabilities.

**Setting**

Participants attended the CLS program at a local public high school in a rural district in the western United States. Individual baseline, intervention, generalization, and maintenance sessions took place in two CLS classrooms at the local public high school. The first classroom is 8 x 9 meters with a full kitchen attachment that is 2.5 x 4 meters, a private bathroom, and a shower that is 4 x 2.5 meters. The second classroom is a traditional classroom.
Baseline, intervention activities, and generalization and maintenance probes were conducted at tables, with the interventionist sitting either next to or across from the participant. Sessions were conducted one-on-one with each participant, with the other participants not present in the room when sessions were occurring. However, other students or staff were present at times.

For baseline, maintenance, and generalization each session was 15-20 minutes in length. During intervention, each session was approximately 30 minutes. All trials took place between the hours of 8:00 a.m. – 3:00 p.m. Mondays through Fridays. Individual data were collected and digitally recorded for each session for all participants.

**Pre-baseline Materials**

Pre-baseline assessment and data collection materials include: pre-study social validity surveys for participants, parents and classroom teacher (Appendix A), symbol assessment line drawings and photos (from Mayer Johnson Boardmaker and online image sites) and record sheets (Appendix B), Fry sight word data sheet (Appendix C), DRA-2 testing kit and scoring sheets, video digital recorder, 40 gig SD cards (one per student), and required data collection forms (i.e., vocabulary forms, locating information in text forms, “wh” questions forms).

**Research Design**

This experimental study used single case research design methodology as it best assisted in answering the research questions by allowing the researcher to evaluate individual data and then compare it to a series of participants within the study through tables and graphs. Single case research designs present sufficient detail in accordance
with the scientific method to allow for replication of the study thus validating the research and contributing to the field (Gast, 2010).

A multiple probe across participants design, a variation of the multiple baseline design, was selected as it is flexible and lends itself well for demonstrating accountability in educational settings (Gast, 2010). Horner and Baer (1978) used the multiple probe design to satisfy the need to collect data intermittently across participants in the pre-intervention phase. An advantage of the multiple probe design is that it does not require a plan for continuous measurement of all target conditions prior to the introduction of the independent variable as does the multiple baseline design. Per the multiple probe design, participants will be probed, but not remain in constant baseline, prior to introducing the intervention condition.

This study used multiple probe across participants in a staggered sequence to establish experimental control and to decrease the threat of learning through prolonged testing and exposure to materials allowing control within and between participants. Baseline probes of text passages were conducted prior to implementation of intervention as indicated in Tables 3 and 4. During baseline all participants were initially probed in a counter-balanced order across passages on vocabulary, locating information in text, and comprehension for the six reading passages. Once baseline was established as stable or descending for all participants through predetermined criteria, the independent variable was introduced to the first participant for the first text passage.

Text passages were presented in a counter-balanced sequence. The order of text passages and related vocabulary varied across participants to control for sequence effects (see Tables 3 and 4). Participants were individually videotaped with data individually
collected for each dependent variable. Data were graphed and displayed individually for each participant in a manner consistent with a multiple probe design.

Multiple probe designs do not have a mandated withdrawal of the intervention requirement and are easy to conceptualize and implement in the educational setting (Gast, 2010). Not requiring withdrawal of the intervention worked well for this study as most academic skills are irreversible or may be ethically inappropriate to reverse.

**Dependent Variables and Data Collection**

**Dependent variables.** The dependent variables for Experiments 1 and 2 were:

1. The percentage of vocabulary words read correctly out of 10 per passage;
2. The percentage of correct locations of text information out of five per passage;
3. The percentage of “wh” questions out of five answered correctly per passage.

**Data collection.** Data for the dependent variables were collected through event recording using data collection sheets. Event recording was the best method for data collection in this study as the dependent variables have clear beginnings and endings and the frequency was low enough so that the behaviors were easy to record. For each dependent variable the researcher immediately recorded the participant response on the data sheet as the behavior was performed. All 15-30 minute sessions were digitally video-recorded so that the dependent and independent variables could be reviewed for inter-observer reliability and procedural integrity.

**Inter-observer reliability.** The investigator was the primary data collector throughout the entirety of the study for each session with each participant. A second observer independently collected data on the dependent variables for a minimum of 25% of the sessions across each condition for each participant. Prior to collecting data, the
second observer was trained on data collection procedures to a minimum of 90% accuracy. Subsequent to this training, the observer then scored participant performance and the two observers compared responses point-by-point. Inter-observer reliability was calculated by the number of agreements divided by the number of agreements plus disagreements and multiplying by 100 to yield a percentage. If inter-observer agreement dropped below 80% at any time, the observers discussed the discrepancies to enhance agreement moving forward. Table 5 provides inter-rater reliability results for both Experiments 1 and 2 for each participant and for each condition.

**Procedural Integrity**

The purpose of procedural integrity is to ensure that all procedures are implemented as described for each condition of the study across each participant. Procedural integrity is vital to believing whether the independent variable under investigation is responsible for observed changes (Vollmer, Sloman, & Pipkin, 2008). While viewing the videos, the second observer, using the checklists in Appendices D and E, scored a minimum of 25% of sessions across each condition and across each participant for procedural integrity. The percentage of procedural reliability was calculated using the number of observed behaviors divided by the number of planned behaviors multiplied by 100. The procedural reliability for Experiments 1 and 2 is presented in Table 6.

**Procedures: Pre-Baseline**

**Pre-study social validity survey.** A social validity survey was given prior to the beginning of the study to assess each participant’s, his or her parent’s, and his or her classroom teacher’s views on the participant’s reading skills (see Appendix A). The
Participant survey was read to each participant individually by the investigator. The survey was given to each participant’s parent and classroom teacher to complete independently and return to the investigator.

**Symbol assessment.** Prior to the beginning of the study (i.e., prior to both Experiments 1 and 2), all participants were given a symbol assessment, so that symbolic representation was verified for each. Symbol assessments followed the procedure delineated by Beukelman and Mirenda (2013) and were conducted individually by the investigator using the following systematic procedure:

1. Investigator gathered 10 familiar functional items including pencil, book, fork, magazine, cell phone, comb, belt, backpack, pen, and Kleenex.

2. Investigator gathered 10 colored photos (one colored photo from an on-line imaging resource to pair with each object) paired with written word.

3. Investigator gathered 10 line drawings (one line drawing from Boardmaker® by Mayer Johnson to pair with each object) paired with written word.

4. Investigator showed each object one at-a-time to each participant and said “show me what to do with this object” and then recorded the participant’s response on the data collection sheet.

5. Investigator presented each participant with three of the preselected colored photos and said “point to the _____”, then recorded the participant’s response on the data sheet. This was repeated three times with the last group having four colored photos in it for each participant.

6. Investigator presented each participant with three of the preselected line drawings and said “point to the _____”, then recorded the participant’s response on the data sheet.
This was repeated three times with the last group having four line drawings in it for each participant.

(7) The investigator tallied the points for each section and determined the participant’s symbolic level of understanding by selecting the highest level on the continuum (object, color photo, line drawing) that the participant achieved 80% or better. Symbolic level of understanding was recorded by the investigator in Tables 1 and 2.

(8) Investigator repeated the symbol assessment for each participant in the study (see Appendix B).

**Sight word assessment.** Each participant was assessed for sight word recognition from Fry’s First 100 word list (see Appendix C). Data are presented in the demographics table for participants (see Table 2). The sight word assessment was conducted individually by the investigator using the following systematic procedure:

(1) Investigator printed and cut out Fry’s First 100 Sight Words flash cards.

(2) Investigator separated the first 100 words into four groups of 25.

(3) Investigator presented each participant with the first 25 words in flashcard format giving 3 seconds for the participant to say the correct word. Investigator instructed the participant to say “skip” if they did not know the word.

(4) Investigator created two piles of words (one for words known in 3 seconds and one for unknown words).

(5) Investigator gave a 5 minute break to the participant between the four sets of 25 flashcards.

(6) Known words were circled on the Fry’s First 100 Words list by the investigator and the total number known out of 100 were recorded (see Appendix C).
Student data were recorded by the investigator in Table 2.

Investigator repeated the sight word assessment for each participant in the study.

**DRA-2 assessment.** The DRA-2 assessment was given to each participant by the investigator to determine each participant’s reading ability. Data are presented in the demographics table for participants (see Table 2). The DRA-2 reading assessment was conducted individually by the investigator using the following systematic procedure:

1. Investigator chose a starting level based on the participant’s score from the Fry’s First 100 sight word assessment.
2. The investigator followed the protocol for administering the DRA-2 according to the directions per level for each participant individually.
3. The investigator determined each participant’s independent reading level based on the protocol for the level in the DRA-2.
4. Student data were recorded by the investigator in Table 2.
5. Participants needed to score a level 14 or lower to be included in the study.
6. Investigator repeated the sight word assessment for each participant in the study.

**Experience with literacy check.** Each participant’s experience with literacy was coded by the investigator in the following manner:

1. Limited = 30 minutes or less of access to literacy instruction daily without explicit instruction at the participant’s reading level or on how to locate information in a text passage
2. Average = one period daily of 45-60 minutes of literacy instruction such as English I without explicit instruction at the participant’s reading level or on how to locate information in a text passage
(3) Excelled = one period (45-60 minutes) or more of daily of literacy instruction such as English I that included explicit instruction at the participant’s reading level and/or how to locate information in a text passage.

(4) Participants needed to be coded as limited or average to be included in the study.

(5) Student data were recorded by the investigator in Table 2.

**Attendance check.** Each participant’s attendance was checked prior to the beginning of the study. Students needed to have no more than 10 days absent in the previous quarter to be included in the study. Student data were recorded by the investigator in Table 2.

**Age check.** Participants needed to be ages 14-22 years to be included in the study. Student data were recorded by the investigator in Table 2.

**Signed permissions.** Participants needed to have the following consents signed prior to the start of the pre-baseline assessments to be included in the study: parent permission to participate, consent to participate by the student, assent, release of confidential records, and photo/video consent. Student data were recorded by the investigator in Table 1.

**Evaluation of pre-baseline assessment results.** At the conclusion of pre-baseline assessments the investigator and the principal investigator evaluated each participant’s data to ensure they were within the parameters of the study and were eligible to participate. Each participant met the inclusion requirements of the study.

**Methods: Experiment 1**

**Materials**
Text Passages. Six baseline text passages from Katherine Hall’s (2002) *Reading Stories for Comprehension Success* were used in this study: Text 1 – *The Color Wheel*, Text 2 – *Piñatas*, Text 3 – *Stories in the Stars*, Text 4 – *Teamwork*, Text 5 – *Set a World’s Record*, and Text 6 – *The Pupfish of Devil’s Hole*. The text passages were presented for baseline and intervention in a varying order by participant due to the counter-balanced nature of implementation. Table 3 provides the order in which passages were presented to each participant for baseline and Experiment 1 intervention. (Appendix F includes the expository texts in printed word only while Appendix G includes the adapted text passages.)

Word Study Materials. Vocabulary flashcards were presented on 5 x 2.5 cm rectangles dependent upon the picture used for both baseline and intervention phases. Vocabulary words were stored in a 3-ring binder with tabs to divide each text passage. Individual vocabulary words on each page were in random order (i.e., they were not alphabetical nor as they sequentially appeared in a text passage).

Vocabulary matching sheets were created for both baseline and intervention phases with baseline having printed word only and intervention phase adapted with photos/line drawings paired with written word. For baseline and intervention per each text the following were also created for use: random vocabulary lists, vocabulary mat for data collection, and vocabulary data sheets (see Appendices F and G).

Shared Reading Materials. In baseline, text passages were presented in printed word only. For intervention phase, a title talk and cover walk sheet was created for each text passage as well as text questions for discussion while reading. For baseline and
intervention phase, five specific questions were developed along with data sheets for locating information in text for each text passage (see Appendices F and G).

**Comprehension Materials.** For baseline and intervention phase, five “wh” questions were developed and presented. For intervention a visual cue card was created to assist with answering “wh” questions. A data sheet for each text passage was also created (see Appendices F and G) along with a procedural checklist for baseline and intervention (see Appendix D).

**Independent Variables**

The independent variables for Experiment 1 were presented as a two-part, sequential intervention package. The first phase consisted of adapted materials only (as specified in materials section above); the second phase consisted of adapted materials paired with evidence-based instructional strategies. Evidence-based strategies were comprised of a passage walk that occurred prior to shared reading where the interventionist discussed the passage title and what it meant, cued the student to look at the passage cover picture, asked the participant to think what the text passage might be about, asked the participant to make a prediction about the story or inference based on the title and picture, and activated prior knowledge by making personal connections to the title and picture. Constant time delay was used for specific components of intervention and consisted of the initial trial at 0-second delay followed by another trial at a 3-second delay interval. Shared reading was used as an interactive reading strategy to guide the participant as they read aloud with the interventionist while the interventionist explicitly modeled proficient reading skills including fluency, expression, and print concepts. Systematic instruction was embedded through error correction as described below in
procedures. Lastly, specific positive verbal praise was given to each participant when they correctly and independently answered for each area including word study, locating information in text, and comprehension.

**Procedure**

**Overview.** Experiment 1 targeted the following three literacy behaviors: reading vocabulary words, locating information in text, and answering “wh” comprehension questions. The duration of Experiment 1 was 8 weeks with data being collected five times weekly for the dependent variables. Study conditions included baseline where participants were exposed to six passages in written text format only and flash cards with printed word only presented using standard reading instruction strategies (read to self, reread text to locate information, verbally answer “wh” questions without prompting or visual cues) and two phases of intervention. The first intervention phase, introduced in a staggered manner as shown in Table 3, consisted of adapted materials only; neither instruction nor positive verbal praise was given. Finally, the second intervention phase consisted of the adapted materials from intervention phase 1 paired with evidence-based instructional strategies and positive verbal praise for correct independent answers.

**Baseline.** The investigator was present Monday - Friday for three 15-20 minute sessions per each participant in the mornings from approximately 8:30 a.m. – 10:00 a.m. Baseline was established for each participant in staggered sequence consistent with a multiple probe across participants design. Baseline order of text passages were presented in a counter-balanced format (see Table 3).

During word study the participant was given 10 printed word flashcards from pre-selected vocabulary for each text passage to read through one time to self. Second, the
participant was asked to match printed word to printed word for all 10 words. Third, the participant was presented with each flashcard and asked to “see it say it” within 3 seconds or to say “skip” if the word was unknown. Data were collected on vocabulary data sheet for each trial (see Appendix F).

Shared reading followed word study; the interventionist gave the participant the text passage in written word only and asked the participant to read the story to self for the next 3-5 minutes (or less if the participant indicated being finished with the passage). The interventionist then asked five pre-selected questions (one at-a-time) and asked the participant to locate the answer in the text passage by putting his/her finger on the answer. The participant was instructed to say “skip” if the answer was unknown. Participant answers were recorded on the locating information in text data sheets (see Appendix F).

Comprehension immediately followed guided reading; the interventionist verbally asked the participant (one at-a-time) five pre-selected “wh” comprehension questions about the text passage. The participant verbally answered and answers were recorded on the data collection sheet for “wh” comprehension questions (see Appendix F). Participants were instructed to say “skip” if they did not know the answers.

Baseline data were collected for each trial for each participant using event recording procedures (see Appendix F for recording sheets) and video recording. The criterion for introducing the intervention was baseline data being stable or descending.

**Intervention.** Once baseline was established, the intervention was introduced in a staggered start as dictated by baseline conditions per participant. The independent variable was a two-part, sequential intervention package consisting of adapted materials
and evidence-based strategies for reading instruction delivered systematically. The independent variable was introduced in two phases during intervention. The first phase consisted of adapted materials without using evidence-based instructional strategies, and the second phase consisted of adapted materials paired with evidence-based instructional strategies delivered systematically (see Table 3 for order of passage presentation for each participant).

**Intervention Phase 1.** During word study each participant was given 10 photos/line drawings paired with printed word flash cards for pre-selected vocabulary for text passage and asked to read though one time to self. Second, the participant was asked to match photo/line drawing paired with printed word flashcards for all 10 words. Third, the participant was presented with each photo/line drawing paired with printed word flashcards and asked to “see it say it” within 3 seconds. The interventionist instructed the participant to say “skip” if a word was unknown. Data were collected on the vocabulary data sheet (see Appendix G).

Shared reading followed word study; the interventionist gave the participant the adapted text passage (text passage was adapted by inserting pre-selected photos/line drawings above the word for the 10 pre-selected vocabulary words) and asked the participant to read the story to self. The participant was given 3-5 minutes to read the text passage (or less if participant indicated being finished with passage). The interventionist then asked five pre-selected comprehension questions (one at-a-time) and asked the participant to locate the answer in the text passage by pointing to the answer. The participant was instructed to say “skip” if an answer was unknown. Participant answers were recorded on the locating information in text data sheets (see Appendix G).
Comprehension immediately followed the guided reading; the interventionist gave the participant the “wh” visual cue card and then verbally asked the participant (one at-a-time) five pre-selected “wh” comprehension questions about the text passage. The participant verbally answered and answers were recorded on the data collection sheet for “wh” comprehension questions (see Appendix G). The participant was instructed to say “skip” if an answer was unknown.

Once intervention phase 1 data were stable, intervention phase two began in the staggered manner per participant as outlined in Table 3.

**Intervention Phase 2.** During word study each participant used the adapted materials as described above for phase I paired with additional teaching strategies. Each participant was given 10 photos/line drawings paired with printed word flash cards for pre-selected vocabulary for text passage. Systematic instruction consisted of the verbal prompt from the interventionist, “match pictures, say your vocabulary word.” Error correction procedure was to cue the participant with “Look at the picture” while the interventionist pointed to the word and then said the word without pause. One trial of all 10 cards was completed, then the participant moved to the word search strategy.

Using one of the random vocabulary lists, the interventionist implemented a word search procedure. She randomly pointed to each of the 10 adapted vocabulary words on the matching sheet and told the participant to “see it say it.” A 0-second constant time delay for the first trial and a 3-second constant time delay for the second trial were used. Error correction procedure was to cue participant with “Look at the picture,” then the interventionist pointed to the word and said the word without pause.
Finally, the interventionist presented each adapted flashcard to the participant using 3-second constant time delay. A flashcard mat was used to separate answers as read prior to prompt, read after prompt, or error (i.e., read incorrectly). Immediate specific verbal praise was given for each correct answer, “Great you read the word____.” Data were collected on the vocabulary data sheet (see Appendix G).

Following word study, the interventionist gave the participant the adapted text passage (text passage was adapted by inserting pre-selected photos/line drawings of the 10 pre-selected vocabulary words above the word). A passage walk of adapted text was conducted prior to shared reading. The interventionist discussed the passage title and what it meant, cued the student to look at the passage picture and think what the story might be about, asked the student to make a prediction about the story or inference from the picture, and asked the participant to make personal connections to the passage title and passage picture.

Subsequent to the discussion of the title and passage picture, the interventionist asked the participant to read the story with her in a shared reading format and verbally prompted the participant paired with a model to track each word by pointing as they read. Shared reading was used as an interactive reading strategy to guide the participant as the participant read aloud with the interventionist. The interventionist used shared reading to explicitly model proficient reading skills such as fluency, expression, and print concepts. The interventionist stopped after page 1 and after page 2 to discuss what happened in the text by asking the participant predetermined questions about each page (see Appendix G).

Upon completion of shared reading, the interventionist asked five pre-selected questions (one at-a-time) that required the participant to locate the answer in the text
passage by pointing to the answer. The participant was verbally prompted to use the photo/line drawing cues in the adapted text. Constant time delay consisted of the initial trial at 0-second delay followed by a second trial at a 3-second delay. Immediate specific verbal praise was given for correct answers, “Nice job locating _____ in the text passage” for each independent answer during the 3-second delay trial. Participant answers for the 3-second trials were recorded on the locating information in text data sheets (see Appendix G).

Immediately following the guided reading, the interventionist gave the participant the “wh” visual cue card. The interventionist then reviewed the “wh” cue card with the participant without linking it to the story questions. For example, “When you hear a why question, you listen for…).” The interventionist then asked the participant to re-read silently the adapted text to self-thinking about the what, who, why, etc. The “wh” cue card remained in front of the participant while re-reading the text. At the end of each text page, the interventionist asked the participant to point to an example of who, what, where, when, or why on the text page and would say (as an example) “that is an example of a why from the story.”

The interventionist then verbally asked the participant (one at-a-time) five pre-selected “wh” comprehension questions about the text passage. The participant was verbally prompted to use the “wh” visual cue card (e.g., Interventionist pointed to “what” and verbally prompted “for What questions – think of a thing”). The interventionist used a least-to-most 3 prompt hierarchy consisting of these prompts: (1) “what does a ___question ask you to think about?”, (2) “A ___question asks you to think about a ___ question. Show me on the card.”, and (3) “A ___question asks you to think about a ___
question. Let me show you” then interventionist pointed to the correct cue on the card. The participant was instructed to say “skip” if they did not know the answer and immediate specific verbal praise was given for correct answers, “Great answering___.” The participants verbally answered and answers were recorded on the data collection sheet for “wh” comprehension questions (see Appendix G).

**Methods: Experiment 2**

After careful review of the data by the investigator and the principal investigator, Experiment 1 was discontinued after two texts, *The Color Wheel* and *Piñatas*. Both investigators determined having two phases of intervention was ineffective as data showed that intervention phase 1 with adapted materials only created minimal change from baseline and was causing frustration for participants due to lengthy duration. An ethical decision was made to merge the phases in order to use adapted materials and evidence-based strategies together for the remaining four texts. This change in procedures necessitated moving to Experiment 2, and was also used to review and modify vocabulary selection per text to ensure the most appropriate terms and icons were selected to assist the participant with text comprehension. Selecting new vocabulary also necessitated modifying the adapted texts to reflect the appropriate vocabulary. Finally, a review of the questions for locating information in text were reviewed to ensure the questions were most appropriate and were asking participants to locate key information.

Data also showed that participants were confused when answering the comprehension questions with use of the cue card and so the decision was made to exclude the visual cue card. Additionally, use of such a cue card was originally researched for answering questions from text with the text present (Mims et al., 2012)
and changing its use to answer comprehension questions without text present appeared to be a mismatch for that behavior. Use of the cue card was replaced with providing definitions for vocabulary words during word study and multiple choice questions with answers adapted with photo/line drawing support during comprehension. Using multiple choice questions appeared to be a more typical means of assessing comprehension of text passages.

Materials

**Text Passages.** Four baseline text passages from Katherine Hall’s (2002) *Reading Stories for Comprehension Success* were used in Experiment 2: Text 1 - *The Pupfish of Devil’s Hole*, Text 2 – *Teamwork*, Text 3 – *Stories in the Stars*, and Text 4 – *Set a World’s Record*. The text passages were presented for baseline and intervention in a varying order by participant due to the counter-balanced nature of implementation. Please see Table 4 for the order in which passages were presented to each participant for baseline and intervention. See Appendix H for copies of expository texts in printed word only and Appendix I for copies of text adapted with photos and line drawings.

**Word Study Materials.** Vocabulary flashcards were presented on 5 x 2.5 cm rectangles for both baseline and intervention phases. Vocabulary words were stored in a 3-ring binder with tabs to divide each text passage. Individual vocabulary words on each page were in random order (i.e., they were not alphabetical nor as they sequentially appeared in the text passage).

Vocabulary matching sheets were created for both baseline and intervention phases with baseline having printed word only and intervention phase adapted with photos/line drawings paired with printed word. Vocabulary definition sheets were also
created for intervention phase for each text. For baseline and intervention per each text
the following were also created for use: random vocabulary lists, vocabulary mat for data
collection, and vocabulary data sheets (see Appendices J and K).

**Shared Reading Materials.** For baseline, text passages were presented in
printed word only. For intervention phase, text passages were presented in adapted
format with the vocabulary words inserted as photos/line drawings above the printed
word. A title/cover walk sheet was created for each text passage that specified the
questions to be asked and types of comments to be made. Similarly, questions for
discussion to ask at the end of pages 1 and 2 while reading were specified. For baseline
and intervention phases, five specific questions were developed along with data sheets for
locating information in text for each text passage (see Appendices J and L).

**Comprehension Materials.** For baseline and intervention phases, five “wh”
questions were developed and presented through multiple choice formats. For baseline
the multiple choice questions were presented in printed word only. For intervention the
multiple choice questions were in printed word with the answers being adapted with
photos/line drawings paired with printed word. A highlighter was also used during the
error correction process. A data sheet for each text passage was created (see Appendices
J and M).

**Independent Variables**

The independent variable for Experiment 2 consisted of adapted materials as
specified in the Materials section above paired with evidence-based instructional
strategies. In order to provide embedded feedback, definitions were given for each
vocabulary word during matching, during 0-second trial for word search, and within error
correction during comprehension multiple choice questions. Prior to shared reading the
interventionist discussed the passage title and what it meant, cued the participant to look
at the picture included as part of the passage, asked each to think what the text passage
might be about, asked each to make a prediction about the story or inference based on the
title and picture, and activated prior knowledge by making personal connections to the
title and picture. Constant time delay was used for various aspects of intervention and
consisted of the initial trial at 0-second delay followed by one trial at a 3-second delay
interval. Shared reading was used as an interactive reading strategy to guide the
participant as each read aloud with the interventionist. The interventionist used shared
reading to explicitly model proficient reading skills such as fluency, expression, and print
concepts. Instruction was also paired with a systematic error correction procedure
(described below in Procedures). Finally, specific positive verbal praise was given to
each participant when each answered correctly and independently for all areas including
word study, locating information in text, and comprehension.

Procedure

This study targeted the following three literacy behaviors: reading/understanding
vocabulary words, locating information in text, and answering “wh” comprehension
questions. The duration of Experiment 2 was 10 weeks with data being collected five
times weekly in the areas of word study, locating information in text, and comprehension.
Study phases included the baseline phase, which included exposure to four passages of
written text only and flash cards with printed word only presented to all participants using
standard reading instruction strategies (read to self, reread text to locate information,
verbally answer “wh” questions without prompting or visual cues). An intervention,
introduced in a staggered manner as shown in Table 4, consisted of adapted materials paired with evidence-based instructional strategies and positive verbal praise for correct independent answers. Maintenance probes were conducted for each participant after he or she completed intervention for the four text passages. Maintenance probes consisted of returning to previously taught text passages and used adapted materials, but excluded any teaching or verbal praise. Maintenance probes were conducted for the four text passages for each participant in the order specified in Table 4. Generalization probes were conducted after maintenance probes for the four text passages for each participant. Generalization probes consisted of a return to baseline procedures to determine if participants transferred acquired skills from the adapted materials to printed word only.

**Baseline.** The investigator was present Monday – Friday, for three 15-20 minute sessions per each participant in the mornings from approximately 8:30 a.m. – 10:00 a.m. Baseline was established for each participant in staggered sequence consistent with a multiple probe across participants design. Baseline order of text passages was presented in a counter-balanced format (see Table 4). Baseline procedures began with word study with the participant given 10 printed word flashcards from pre-selected vocabulary for each text passage to read through one time to self. Second, the participant was asked to match printed word to printed word for all 10 words. Third, the participant was presented with each flashcard and asked to “see it say it” within 3 seconds. The participant was instructed by the interventionist to say “skip” if the word was unknown. Data were collected on vocabulary data sheet for each trial (see Appendix J).

Following word study, the interventionist gave the participant the text passage in written word only and asked the participant to read the story to self for the next 3-5
minutes (or less if the participant indicated being finished). The interventionist then asked five pre-selected questions (one at-a-time) and asked the participant to locate the answer in the text passage by pointing to the answer. Participants were instructed to say “skip” if they did not know the answer. Participant answers were recorded on the locating information in text data sheets (see Appendix J).

Immediately following guided reading, the interventionist read five pre-selected “wh” comprehension questions (one-at-a-time) to the participant. Participants were verbally asked to listen to the multiple choice questions along with the answers. They were then asked to circle the correct answer. Answers were recorded on the data collection sheet for “wh” comprehension questions (see Appendix J).

Baseline data were collected for each trial for each participant using event recording procedures (see Appendix J for recording sheets) and video recording. The criterion for introducing the intervention was baseline data being stable or descending.

**Intervention.** Once baseline was established the intervention was introduced in a staggered start as dictated by baseline conditions per participant. Intervention consisted of adapted materials paired with evidence-based instructional strategies delivered systematically (see Table 4 for order of passage presentation for each participant). The focus was on the printed word. The intervention procedures began with word study. Participants were given 10 photos/line drawings paired with printed word flash cards for pre-selected vocabulary for the text passage and asked to “match the picture and say the word.” Once the participant matched the vocabulary word the interventionist gave the definition. The error correction procedure was to cue the participant with “Look at the picture,” then the interventionist pointed to the word and said the word without pause.
along with the definition. Positive verbal praise was given for words matched independently prior to the definition. One trial of all 10 cards was competed and then the participant moved to the word search. Using the random vocabulary lists, the interventionist randomly pointed to each of the 10 adapted vocabulary words on the matching sheet and told the participant to “see it, say it.” Once the vocabulary word was read, the interventionist then read the definition for the word from a pre-determined definition list. A 0-second constant time delay for the first trial and a 3-second constant time delay strategy for the second trial were used. Specific verbal praise was given to the participant on the 3-second trial if he or she read the word correctly prior to giving the definition. For example, “That’s right you read shore. A shore is the land or area along the edge of a river, lake or ocean.” Error correction procedure was to cue participant with “Look at the picture;” then the interventionist pointed to the word and said the word without pause along with the definition. The final component of word study involved the presentation of each adapted flashcard to the participant using 3-second constant time delay. A flashcard mat was used to separate answers given into read prior to prompt, read after prompt, or read incorrectly. Immediate specific verbal praise was given for independent correct answers, “Great you read the word____.” Data were collected on vocabulary data sheet (see Appendix K for all word study intervention materials).

Following word study the interventionist gave the participant the adapted text passage (text passage was adapted by inserting pre-selected photos/line drawings of the 10 pre-selected vocabulary words per text above the word). Prior to shared reading, the interventionist discussed the passage title and what it meant, cued the student to look at the passage picture and think what the story might be about, asked the student to make a
prediction about the story or inference from the picture, and asked the participant to make personal connections to the passage title and passage picture. The interventionist then asked the participant to read the story with her in a shared reading format and verbally prompted the participant along with a model prompt to track each word by pointing as they read. The interventionist stopped after page 1 and page 2 to discuss key points from the text by asking the participant predetermined questions about each page (see Appendix K). Finally, the interventionist then asked five pre-selected questions (one at-a-time) and asked the participant to locate the answer in the text passage by pointing. Participants were verbally prompted to use the photo/line drawing cues in the adapted text. Constant time delay consisted of an initial trial at 0-second delay followed by a second trial at a 3-second delay interval. Immediate specific verbal praise was given for correct answers, “Nice job locating _____ in the text passage” for answers independently answered correctly during the 3-second trial. Participant answers for the 3-second trial were recorded on the locating information in text data sheets (see Appendix L for all shared reading intervention materials).

Immediately following the shared reading section the interventionist gave the participant the adapted multiple choice questions. The interventionist then read the five pre-determined “wh” comprehension questions about the text passage to the participant (one at-a-time) and read the adapted answers. Participants were instructed to wait until the interventionist read the question and answers before circling an answer. Immediate specific verbal praise was given for independent correct answers, “Great answering___.” Error correction for answers circled incorrectly consisted of the interventionist telling the participant that “_____ is not correct. A _____ means____” (give definition).” The
interventionist then re-read the question using a highlighter to draw participant attention to key terms in the question. For example, “who” and “use the water” would be highlighted from the question “Who wanted to use the water from the Devil’s Hole?” The interventionist then re-read the answers excluding the incorrect answer originally selected by the participant. This error correction process continued if needed until only one choice remained where the interventionist said, “The answer is ___” and then gave the definition for the correct answer. The participant’s answers were recorded on the data collection sheet for “wh” comprehension questions (see Appendix M for all comprehension intervention materials).

**Maintenance Probes**

Each participant was given a maintenance probe for each of the four text passages upon completion of intervention in the order specified in Table 4. Maintenance probes were conducted prior to generalization probes and consisted of adapted materials without any teaching or praising for correct answers. Data were collected for each trial in all three areas (word study, guided reading, and comprehension) for each participant.

**Word study.** The interventionist presented the participant with the 10 adapted flashcards (i.e., printed word and photo/line drawing) for vocabulary to read through words one time to self. The interventionist asked the participant to match the 10 adapted flashcards. The interventionist presented the flashcards randomly and instructed the participant to “see it say it” in 3 seconds or say “skip” if the word was unknown as flashcards were randomly presented. No positive verbal praise was given for independent correct answers. The participant’s answers were recorded on the vocabulary data collection sheet (see Appendix K).
**Guided Reading.** Following word study the interventionist gave the participant the adapted text passage and asked the participant to read the adapted text passage to self in 3-5 minutes (or less if the participant indicated being finished). The interventionist then asked five pre-selected questions (one at-a-time) and asked the participant to locate the answer in the text passage by pointing to the answer. No positive verbal praise was given for independent correct answers. The participant’s answers were recorded on the locating answer data collection sheet (see Appendix L).

**Comprehension.** Immediately following the shared reading section the interventionist gave the participant the adapted multiple choice questions. The interventionist then read the five pre-determined “wh” comprehension questions about the text passage to the participant (one at-a-time). The adapted answers were not read to the participant. Participants were instructed to wait until the interventionist read the question before circling the correct answer. No positive verbal praise was given for independent correct answers. The participant’s answers were recorded on the comprehension data collection sheet (see Appendix M).

**Generalization Probes**

Each participant was given a generalization probe for each of the four text passages once the maintenance probe for a text was completed. (See Table 4 for order). Generalization probes were conducted without any adapted materials, teaching, or praising for correct answers. Data were collected for each trial in all three areas (word study, guided reading, and comprehension) for each participant.

**Word Study.** The interventionist presented the participant with 10 flashcards with printed word and asked the participant to read through words one time to self. The
interventionist then asked the participant to match the 10 printed word flashcards. The interventionist presented the printed flashcards randomly and instructed the participant to “see it, say it” in 3 seconds or say “skip” if the word was unknown. The participant’s answers were recorded on the vocabulary data collection sheet (see Appendix J).

**Guided Reading.** Following word study the interventionist gave the participant the printed word text passage. The interventionist asked the participant to read the text passage to self in 3-5 minutes (or less if the participant indicated being finished). The interventionist then asked five pre-selected questions (one at-a-time) and asked the participant to locate the answer in the text passage by pointing to the answer. The participant’s answers were recorded on the locating answer data collection sheet (see Appendix J).

**Comprehension.** Immediately following the shared reading section the interventionist gave the participant the printed word multiple choice questions. The interventionist then read the five pre-determined “wh” comprehension questions about the text passage to the participant (one at-a-time). The answers were not read to the participant. Participants were instructed to wait until the interventionist read the question before circling an answer. The participant’s answers were recorded on the comprehension data collection sheet (see Appendix J).

**Post-Study Social Validity Survey**

Social validity was again addressed through a post-study survey orally given to all participants and given in writing to their parents and classroom teacher (see Appendix A). The post-study survey for the participant and parent included the pre-baseline social validity questions with the addition of specific questions about adapted materials,
strategies taught, and overall view of self as a reader when using strategies within the intervention package.

The teacher survey included the original pre-study survey questions with additional questions regarding the ease of implementing the procedures, materials, strategies and continued use of them following the study. A discussion of pre- and post-study social validity responses from participants, parents, and teachers follows in the results chapter.
Chapter IV

Results

Data Analysis

During baseline, intervention, maintenance, and generalization, the percentage of correct, unprompted responses was graphed for three dependent variables (word study, locating information in text, and comprehension) for each participant for each text passage. Graphed data for each condition were visually analyzed to identify trend, level, and variability to determine if a functional relationship between the dependent and independent variables existed. Results will be presented in the following order: Experiment 1, Experiment 2, and social validity.

Experiment 1

Each participant had an opportunity to read 10 vocabulary words, locate five answers to questions in text, and answer five “wh” questions across six texts in the baseline phase. Texts 1 and 2 were introduced to Jane for intervention. Text 2 was introduced to Eddy for intervention. Participant performance data for Experiment 1 are presented in Figure 1. Mean and range of data for each condition (vocabulary, locating information in text, and comprehension) per participant are displayed in Tables 7, 8, and 9. For each participant and dependent variable, the baseline mean was computed by calculating the total percentage of correct unprompted responses across six texts divided by the total number of texts (6). For each participant and dependent variable, the intervention means for phases 1 and 2 were calculated by totaling the correct percentage of unprompted responses across all trials per text divided by the total number of trials. A comparison of the baseline mean and the means for intervention phases 1 and 2 is
provided for Jane for Texts 1 and 2 and for Eddy for Text 2. Erwin remained in baseline during Experiment 1.
Figure 1. Percent of correct student responses for each text passage in the areas of vocabulary, locating information in text, and comprehension for each session.
Jane

Jane: Vocabulary. For vocabulary, during baseline Jane displayed a range of 10-50% reading vocabulary words correctly per text with a mean of 24% and a decreasing trend with some variability. During Text 1 intervention phase 1 her mean showed an increase to 53% words read correctly with a range of 50-60% and a stable trend with low variability. For Text 1, Jane showed an immediate abrupt change from intervention phase 1 to intervention phase 2. Jane’s mean increased by 21% (74% mean) during intervention phase 2 from phase 1 and showed an overall increase in mean change from intervention 1 to intervention 2 of 23%. One hundred percent of the data from baseline to intervention phase 1 is non-overlapping. From intervention phase 1 to intervention phase 2 there was a slight therapeutic change in level from intervention with 86% of data non-overlapping.

For Text 2, Jane’s baseline probe for vocabulary immediately preceding intervention was 10%, a stable trend with her initial baseline probe for Text 2. Data for intervention phase 1 showed an immediate increase in level from 10% to 20%. The trend was therapeutic and improving within intervention phase 1 and 100% of the data were non-overlapping from baseline to intervention phase 1. Once intervention phase 2 was introduced, Jane’s reading of vocabulary words showed an immediate increase in level by 30% and demonstrated an increasing trend. One hundred percent of the data were non-overlapping form intervention phase 1 to intervention phase 2.

Jane: Locating Information in Text. For locating, during baseline Jane displayed a mean of 0%, a stable trend with low variability for all six texts. During Text 1 intervention phase 1 her mean increased minimally to 10% with a range of 0-10% and a
stable trend with low variability. Fifty percent of the data were non-overlapping between baseline and intervention phase 1. During intervention phase 2 for Text 1, Jane’s behavior showed an immediate change in level with an increase in mean to 66%. Although there is an increasing trend evident in the data for Text 1 intervention phase 2, there is also variability present. One hundred percent of the data were non-overlapping between intervention phase 1 and phase 2.

For Text 2, both of Jane’s baseline probes for locating information in text were at 0%. Intervention phase 1 data showed an immediate change in level (from 0% to 40%) with some variability in performance evident across the 6 trials (a range of 0-40%). Eighty percent of the data were non-overlapping between baseline and intervention phase 1. When intervention phase 2 was introduced, Jane’s performance in locating information in text showed an immediate and abrupt change in level to 80%. Although there is an increasing trend evident in the data for Text 2 intervention phase 2, there is also variability present. One hundred percent of the data is non-overlapping between intervention phase 1 and phase 2.

Jane: Comprehension. For comprehension, during baseline Jane displayed variability in her range at (0-20) in answering “wh” questions, with a mean of 10%. During Text 1 intervention phase 1 her mean decreased to 0% correctly answered “wh” questions and displayed a zero-celerating trend with low variability. For Text 1, during intervention phase 2, Jane’s mean increased by 22% (22% mean with a range of 0-60%) in comparison to intervention phase 1; data were variable with a slight increasing trend with 43% of the data non-overlapping from intervention phase 1 to intervention phase 2.
For Text 2, Jane’s second baseline probe for comprehension was 40%, a 20% increase from her initial baseline probe for that text. Her intervention phase 1 data were stable for six trials at 40%. When intervention phase 2 was introduced, Jane’s performance in answering “wh” questions remained stable at 40% with no change in level or mean; 43% of the data were non-overlapping between intervention phase 1 and intervention phase 2.

Jane: Summary. Baseline means for Jane per behavior were: vocabulary 24%, locating information in text 0%, and comprehension 14%. Jane showed minimal growth from baseline to intervention phase 1 for Texts 1 and 2 with a mean for each behavior of: vocabulary 14%, locating 19%, and comprehension 13%. Jane showed noticeable growth through overall mean change from intervention phase 1 to intervention 2 in locating information in text (48%), but showed less growth in vocabulary (23%) and comprehension (22%).

Eddy

Eddy: Vocabulary. For vocabulary, during baseline, Eddy displayed a range of 0-10% in reading vocabulary words correctly per text with a mean of 06% and a slight decelerating trend with variability. During Text 2 intervention phase 1 Eddy’s performance demonstrated an immediate change in level to 40% with a mean increase to 48% (42% increase from baseline) in reading words correctly with a range of 40-50%; his performance was stable with low variability. One hundred percent of the data were non-overlapping between baseline probes and intervention phase 1. For Text 2, during intervention phase 2, Eddy’s showed an immediate abrupt change in level with an
increase to 90% and a mean of 90% with data stable across all 3 trials. One hundred percent of the data were non-overlapping between intervention phase 1 and phase 2.

**Eddy: Locating Information in Text.** For locating information in text, during baseline Eddy displayed a mean of 06% with a range of 0-20%, and a decelerating trend with slight variability across the six texts. During Text 2 intervention phase 1, his performance showed an immediate increase in level with an increase in mean level of performance to 60%; data were stable at 60% with low variability. One hundred percent of the data were non-overlapping between baseline probe and intervention phase 1. For Text 2, during intervention phase 2, Eddy’s performance for locating information in text did not show a change in level until the third intervention trial; the mean increase in performance from intervention phase 1 to intervention phase 2 was minimal at only 07% (range 60-67). Thirty-three percent of the data were non-overlapping between intervention phase 1 and phase 2.

**Eddy: Comprehension.** For comprehension, during baseline Eddy’s behavior showed variability with a range from 0-40% in answering “wh” questions, and a mean of 17%. During Text 2 intervention phase 1, there was no change in the level of his performance from his last baseline data; the mean increased to 40% correctly answered “wh” questions displaying a stable trend with low variability. There was 0% of non-overlapping data between baseline and intervention phase 1. For Text 2, during intervention phase 2, Eddy’s performance again did not show any change in level nor any change in mean, which remained at 40%. Zero percent of data were non-overlapping between intervention phases 1 and 2 for comprehension.
**Eddy: Summary.** Baseline means for Eddy per behavior were: reading vocabulary words 06%, locating information in text 06%, and comprehension 17%. Eddy’s performance from baseline to intervention phase 1 in vocabulary showed a 42% increase in levels, a 54% increase in locating, but only a 23% increase in comprehension. From intervention phase 1 to intervention phase 2 his overall change means showed an increase of 23% for vocabulary and 48% for locating. He showed no growth from intervention phase 1 to intervention phase 2 in comprehension.

**Erwin**

**Erwin: Vocabulary, Locating Information in Text, and Comprehension.** Erwin remained in baseline throughout Experiment 1. Baseline means for Erwin for each behavior were: vocabulary 93% (range 90 -100%), locating information in text 34% (range 0-60%), and comprehension 37% (range 0-80%) for all 6 texts. For reading vocabulary words, Erwin’s range was minimal and his performance decreased slightly for the last four texts from 100% to 90%. For locating information in text, Erwin’s trend showed as decreasing with variability present in the data. For comprehension, Erwin’s baseline data showed large variability with two texts at 80%, two at 40% and two at 0% and an increasing trend.

**Experiment 2**

Each participant had an opportunity to read 10 vocabulary words, locate five answers in text, and answer five “wh” multiple choice questions across four texts across all study conditions including: baseline, intervention, maintenance, and generalization. Participant performance data are presented in Figure 2. Mean and range data for each dependent variable (vocabulary, locating information in text, and comprehension) by
percent per participant are displayed in Table 10, 11, and 12. For each participant for each dependent variable, the baseline mean was computed by calculating the total percentage of correct unprompted responses across four texts divided by the total number of texts (4). For each participant and dependent variable, the intervention mean was calculated by totaling the correct percentage of unprompted responses across all trials per text divided by the total number of trials.

A comparison of the baseline mean and the mean for intervention was calculated across all three dependent variables (vocabulary, locating, and comprehension) per participant by totaling the percent from baseline to intervention for each trial per text divided by four (number of texts).
### Experiment 2

#### Baseline vs. Int TX 1 vs. Int TX 2 vs. Int TX 3 vs. Int TX 4 vs. M TX 1-4 vs. Gen TX 1-4

<table>
<thead>
<tr>
<th>Percent of correct Student Responses</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
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<th>100</th>
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<td>Erwin</td>
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<td>Jane</td>
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#### Sessions

- **Text 1** = 
- **Text 2** = 
- **Text 3** = 
- **Text 4** = 

#### Key

- **Vocabulary (1)**
- **Locating (2)**
- **Comprehension (3)**
Figure 2. Percent of correct student responses for each text passage in the areas of vocabulary, locating information in text, and comprehension for all study phases. Note: Int = Intervention, BL = Baseline, TX = Text, Gen = Generalize, M = Maintenance.

Eddy

**Eddy: Vocabulary.** During baseline, Eddy’s performance for reading vocabulary words demonstrated stability with a low degree of variability and a mean of 03% (range 0-10%). In intervention phase for Text 1, Eddy’s performance for reading vocabulary words showed an immediate and abrupt change in level to 80%, his mean increased to 75% correct reading of words (range of 60-80%), and stable data with minimal variability. One hundred percent of the data were non-overlapping from baseline to intervention Text 1. For Text 2, Eddy’s performance again showed a marked increase in performance level as compared to the immediately preceding data point; the mean was stable at 75% (range of 60-80%) with 100% of the data non-overlapping form baseline probe to Text 2.

In Text 3, Eddy similarly showed an immediate change in level, with a mean of 60% (range 40-80%), with an accelerating trend. Although there was an accelerating trend evident in the data for Text 3, there was also variability present. One hundred percent of the data were non-overlapping from baseline probe to intervention Text 3. When presented with Text 4, Eddy again showed an immediate increase in level of performance in comparison to the immediately preceding probe with minimal variability. His mean performance was 68% (range 60-80%) with 100% of the data non-overlapping between the baseline probe and Text 4.

Eddy’s performance for reading vocabulary words was stable or increasing after four trials in all four texts. One hundred percent of the data were non-overlapping from
baseline to intervention for Texts 1, 2, 3, and 4. Eddy’s reading of vocabulary words improved noticeably from baseline to intervention for all four text passages.

**Eddy: Locating Information in Text.** Throughout baseline, data were stable with a low degree of variability, with a mean of 03% (range 0-20%). In intervention phase for Text 1, there was an immediate increase in level with the mean increasing to 75% correct answers located in text and a range of 60-80% with an increasing trend. For Text 2, Eddy showed a marked change in level, with the mean increasing to 60% (range 40-80%) with an increasing trend. Eddy improved in locating information in text for Texts 1 and 2 from baseline with 100% of the data non-overlapping.

In Text 3 Eddy showed an immediate change in level, with a mean of 40% (range 20-60%) demonstrating a therapeutic level change. Although there was an increasing trend evident in the data for Text 3, there was also variability present. Eddy’s trial 3 and 4 data were stable at 40%. Seventy-five percent of the data were non-overlapping between the baseline probe and intervention Text 3. During Text 4, Eddy similarly showed an immediate change in level, with a mean of 66% (range 60-80%), with an increasing trend. There was slight variability for intervention Text 4 with 75% of the data non-overlapping from baseline probe to intervention Text 4.

Eddy’s performance for locating information in text was stable after 4 trials in Texts 1 and 3 and slightly decelerating after four trials in Texts 2 and 4. During intervention for Text 1 and 2 data showed as minimally variable, Text 3 showed variability and Text four showed low variability. One hundred percent of the data were non-overlapping for Text 1, 2, and 4 with 75% of the data non-overlapping for Text 3 between baseline and intervention. Eddy’s ability to locate information in text improved
noticeably from baseline to intervention. Eddy’s overall locating information in text change mean from baseline to intervention was 57% with a range of 20-80%.

**Eddy: Comprehension.** During baseline, Eddy’s performance for answering comprehension questions demonstrated a mean of 30% (range 20-60%) with a low degree of variability. In intervention phase for Text 1, his performance showed an immediate increase in level with the mean increased notably to 95% of “wh” multiple choice questions answered correctly and a range of 80-100%. One hundred percent of the data were non-overlapping from baseline to intervention Text 1. For Text 2, Eddy’s performance again showed an abrupt increase in level with a mean of 60% with some variability (range of 40-80%). Seventy-five percent of the data were non-overlapping between baseline probe and intervention Text 2. In Text 3, Eddy’s performance similarly showed marked change in level from the immediately preceding baseline probe with a mean of 60% with low variability; no data overlapped. During Text 4 intervention, Eddy again showed an immediate increase in level with a mean of 75% (range 60-80). Eddy demonstrated minimal variability in Text 4 intervention with a slight decreasing trend; 75% of the data were non-overlapping from baseline probe to intervention Text 4.

Eddy’s comprehension data were stable or increasing after four trials in all four texts. One hundred percent of the data were non-overlapping from baseline to intervention for Text 1, 75% of the data were non-overlapping from baseline to intervention for Text 2 and 4, and no data overlapped for intervention Text 3. Eddy’s ability to correctly answer “wh” comprehension questions in multiple-choice format improved noticeably from baseline to intervention. Eddy’s overall comprehension change mean from baseline to intervention was 43% with a range of 40-100.
**Eddy: Maintenance.** Once all intervention trials were completed for Texts 1-4, maintenance probes were conducted consisting of adapted materials from intervention without teaching or specific positive verbal praise for independent correct answers for all four texts for all behaviors (reading vocabulary words correctly, locating information in text, and answering “wh” comprehension questions). For Text 1, Eddy’s vocabulary intervention mean was 75% and his maintenance probe was 60%; Text 2 vocabulary intervention mean again was 75% and his maintenance probe was 80%; Text 3, Eddy’s vocabulary intervention mean was 60% with his maintenance probe at 40%; Text 4, his intervention mean was 80% with his maintenance probe at 40%. Maintenance probes demonstrated a 15% decrease from his intervention vocabulary mean for Text 1, a 05% increase in Text 2, a 20% decrease from Text 3, and a 40% decrease for Text 4. For reading vocabulary words correctly, Eddy showed the highest retention for Text 2 at 80%, with Text 1 at 60% and Texts 3 and 4 at 40%.

Eddy’s maintenance probes for locating information in text were lower than his maintenance probes for correctly reading vocabulary words and correctly answering comprehension questions. For Text 1, Eddy’s locating information intervention mean was 75% and his maintenance probe was 60%; Text 2 locating information intervention mean was 60% and his maintenance probe was 40%; Text 3, Eddy’s locating information intervention mean was 40% with his maintenance probe at 60%; Text 4, his intervention mean was 65% with his maintenance probe at 60%. Maintenance probes demonstrated a 15% decrease from his intervention vocabulary mean for Text 1, a 20% decrease in Text 2, a 20% increase from Text 3, and a 05% decrease for Text 4. In locating information in
text, Eddy showed 60% retention for maintenance in Texts 1, 3 and 4, with Text 2 at 40%.

Maintenance probes for answering comprehension questions were notably higher than his maintenance means for vocabulary and locating information in text. For Text 1, Eddy’s answering comprehension questions intervention mean was 95% and his maintenance probe was 60%; Text 2 answering comprehension questions intervention mean was 60% and his maintenance probe was 80%; Text 3, Eddy’s answering comprehension questions intervention mean and his maintenance probe were at 60%; Text 4, his intervention mean was 75% with his maintenance probe at 100%. Eddy’s maintenance probes demonstrated a 35% decrease from his intervention locating information mean for Text 1, a 20 % decrease in Text 2, as stable at 60% for Text 3, and a 25% increase for Text 4. For answering comprehension questions, Eddy showed the highest retention for Text 4 at 100% correct independent answers given, with Text 2 at 80% and Texts 3 and 4 at 60%.

**Eddy: Generalization.** Generalization probes were conducted after maintenance probes for each text and consisted of a baseline probe for each of the four texts (without adapted materials, teaching, or specific positive verbal praise for independent correct answers) for all three behaviors. In reading vocabulary words correctly for generalization, Eddy showed an immediate change in levels with a decreasing trend present from intervention phase to generalization phase for all four texts with no overlapping data. Eddy’s vocabulary mean during generalization was 08% with a range of 0-20%. Eddy’s performance for generalization probes were Texts 1 and 3 at 0%, Text 2 at 20%, and Text 4 at 10%.
Eddy’s generalization probes for locating information in text similarly demonstrated an immediate change in levels with a decreasing trend between intervention phase and generalization phase with no overlapping data for all four texts. Eddy’s locating information in text generalization mean was 05% with a range of 0-20%. Eddy’s generalization performance for locating information in text was at 20% for Text 1 and at 0% for Texts 2, 3, and 4.

Eddy’s generalization probes for answering comprehension questions yielded a mean of 30% with a range of 0-60%; the highest of the three targeted behaviors by 25%. Eddy’s generalization performance for comprehension was Text 1 at 20%, Text 2 at 60%, Text 3 at 0%, and Text 4 at 40%. Sixty-nine % of the data were non-overlapping between intervention phase for all four texts and generalization phase.

**Erwin**

**Erwin: Vocabulary.** During baseline, Erwin’s performance for correctly reading vocabulary words there was a low degree of variability and a mean of 95% (range 90-100%) with a stable trend. For Texts 2, 3, & 4 Erwin’s performance again showed a minor increase in performance level as compared to the immediately preceding baseline data point; the mean was stable at 100% (range of 100%) across the three texts. In intervention phase for Text 1, Erwin’s performance for reading vocabulary words showed a slight change in level, his mean increased to 98% correct reading of words (range of 90-100%), and stable data with low variability.

Erwin’s performance for reading vocabulary words was stable or increasing after four trials in all four texts. All data overlapped from baseline to intervention for Texts 2, 3, 4 and 1 as the ranges for each were 90-100. Erwin’s vocabulary data were stable or
increasing after four trials in all four texts. Erwin’s overall vocabulary change mean from baseline to intervention was a minimal increase of 06% due to the range of correct responses being 90-100%.

**Erwin: Locating Information in Text.** Throughout baseline for locating information in text, Erwin’s performance demonstrated a low degree of variability, with a mean of 15% (range 0-20%). In intervention phase for Text 2, Erwin’s performance for locating information in text showed an immediate and abrupt change in level to 40%, his locating information in text mean increased to 85% (range of 40-100%), and stable data with minimal variability. One hundred percent of the data were non-overlapping from baseline to intervention Text 2. For Text 3, Erwin’s performance again showed a marked increase in performance level as compared to the immediately preceding data point; the mean was stable at 100% with 100% of the data non-overlapping from baseline probe to intervention Text 3.

In Text 4 Erwin similarly showed an immediate change in level, with a mean of 95% (range 80-100%) and low variability with an accelerating trend. One hundred percent of the data were non-overlapping from baseline probe to intervention Text 4. When presented with Text 1, Erwin showed an immediate increase in level of performance in comparison to the immediately preceding probe with low variability. His mean performance was 100% with 100% of the data non-overlapping between the baseline probe and Text 1. Erwin improved in locating information in text for Texts 2, 3, 4 and 1 from baseline with no overlapping data.

**Erwin: Comprehension.** During baseline, Erwin’s performance for correctly answering “wh” questions there was a low degree of variability, with a mean of 58%
(range 40-80%). For intervention phase for Text 2, Erwin demonstrated an immediate and abrupt change in levels to 80%, his mean increased to 90% correct locating of information in text (range 80-100%). Fifty percent of the data were non-overlapping from baseline to intervention Text 2. In Text 3 Erwin similarly showed an immediate change in level, with a mean of 95% (range 80-100%), with a slightly decreasing trend. Seventy-five percent of the data were non-overlapping from baseline probe to intervention Text 3.

During Text 4, Erwin showed a marked change in levels as compared to the immediately preceding data point to 60%. His mean decreased to 45% correct answering of “wh” questions (range of 20-80%), variability. Twenty-five percent of the data were non-overlapping from baseline to intervention Text 4. When presented with Text 1, Erwin showed an immediate increase in level of performance in comparison to the immediately preceding probe with slight variability. His mean performance was 80% (range 60-100%) with 100% of the data non-overlapping between the baseline probe and Text 1.

Erwin’s comprehension data were stable or increasing after four trials in all four texts. Erwin’s performance in answering comprehension questions in multiple choice format improved from baseline to intervention with his overall increased in the comprehension mean from baseline to intervention being 20% (20-100% range) with some variability.

**Erwin: Maintenance.** Once all intervention trials were completed for Texts 1-4, maintenance probes were conducted consisting of adapted materials from intervention without teaching or specific positive verbal praise for independent correct answers for all four texts for all three behaviors (i.e. vocabulary, locating information, and
comprehension). Erwin’s maintenance probes were conducted according to the counterbalance chart: Text 2, Text 3, Text 4, and Text 1. Erwin demonstrated maintenance across all four texts with his vocabulary knowledge with adapted materials only. Erwin’s maintenance for vocabulary was a mean of 98% with a range of 90-100%. This was a decrease of 2% from intervention phase for Texts 2, 3, and 4, and stable with his intervention vocabulary mean for Text 1. Erwin’s data were stable at 100% across Texts 2, 3, and 1 with Text 4 at 90%.

Erwin’s performance for maintenance of locating information in text was a mean of 80% with a range of 60-100%. This is a 5% decrease from intervention mean for locating information in text for Text 2, a 20% decrease for Texts 3 and 1, and a 15% decrease for Text 4. In locating information in text, Erwin showed 80% retention for Text 2 and 3, 100% retention with Text 4, and 60% for retention for Text 1.

Erwin’s maintenance of answering comprehension questions was a mean of 80% with a range of 40-100%. This is a 10 % decrease from his intervention comprehension mean for Text 2, a 15% decrease for Text 3, a 35% increase for Text 4, and stable with his intervention comprehension mean for Text 1. For comprehension, Erwin showed the highest retention for Texts 2, 4, and 1 at 100% correct independent answers given, with Text 3 at 40%.

**Erwin: Generalization.** Generalization probes were conducted after maintenance probes for each text and consisted of a baseline probe for each of the four texts without adapted materials, teaching, or specific positive verbal praise for independent correct answers for all three behaviors. Erwin’s generalization probes were conducted according to the counterbalance chart: Text 2, Text 3, Text 4, and Text 1. In
correctly reading vocabulary words for generalization Erwin’s mean was 100% which is consistent with his intervention data. Erwin’s performance for generalization probes were all four Texts at 100%.

Erwin’s generalization probes for locating information in text similarly demonstrated his generalization between intervention phase and generalization phase for all four Texts. Erwin’s locating information in text generalization mean was 75% with a range of 40-100%. Eddy’s generalization performance for locating information in text was at 80% for Text 2, 40% for Text 3, 100% for Text 4, and 60% for Text 1. Erwin’s generalization probes demonstrated a 10% decrease from his intervention locating information mean for Text 2, a 25% decrease in Text 3, a 20% decrease for Text 4, and a 25% decrease for Text 1. Erwin’s highest generalization was with Text 3.

Erwin’s generalization probes for answering comprehension questions yielded a mean of 85% with a range of 60 - 100%. Erwin’s generalization performance for comprehension was Texts 1 and 4 at 100%, and Text 3 at 60% and Text 4 at 80%. Erwin’s generalization probes demonstrated a 5% decrease from his intervention answering comprehension questions mean for Text 2, a 10% decrease in Text 3, a 40% increase for Text 4, and a 5% increase for Text 1.

Jane

**Jane: Vocabulary.** Jane’s baseline performance for reading vocabulary words was a mean of 25% (range 10-40%) with low variability. For intervention for Text 3 Jane’s performance showed an immediate increase in performance level as compared to the immediately preceding data point; Text 3 mean was 78% (range 70-80%) with slight variability. One hundred percent of the data were non-overlapping from baseline to
intervention Text 3. For intervention for Text 4, Jane similarly showed an immediate increase in performance from the preceding baseline probe (mean 80%) with slight variability with 100% of the data as non-overlapping from baseline to intervention Text 4. In Text 1, Jane showed a minimal change in level, with a mean of 30% (range 20-40%), with variability and a flat trend. Seventy-five percent of the data were non-overlapping from baseline probe to intervention Text 1. When presented with Text 2, Jane demonstrated an immediate increase in level of performance in comparison to the immediately preceding probe with minimal variability. Her mean performance was 67% (range 50-80%) with 100% of the data non-overlapping between the baseline probe and Text 2.

Jane’s performance in reading vocabulary words was stable or increasing after four trials in all four texts. Jane’s reading of vocabulary words improved noticeably from baseline to intervention with an overall mean change in performance of 36% with a range of 20-80%.

**Jane: Locating Information in Text.** Throughout baseline Jane’s performance for locating information in text there was a degree of variability, with a mean of 10% (range 0-20%). During intervention for Text 3, Jane’s performance showed variability with a mean of 65% (range 0-60%) with 60% of the data non-overlapping between baseline and intervention. During Text 4 intervention, Jane showed an increase from the immediately preceding baseline probe with a mean of 50% (range 40-60%) with variability. One hundred percent of the data were non-overlapping from baseline to intervention Text 4. In intervention phase for Text 1, Jane’s performance immediately increased from the previous baseline probe demonstrating variability with a slight
decreasing trend. Her mean was 65% correct answers located in text (range of 60-80%) with 100% of the data were non-overlapping between baseline and intervention Text 1.

For Text 2, Jane’s performance for locating information in text showed an immediate increase with a mean of 44% (range 20-60%) with variability and a decreasing trend. Eighty-three percent of the data were non-overlapping from baseline to intervention Text 2.

Jane’s performance in locating information in text improved noticeably from baseline to intervention. Jane’s overall locating change mean from baseline to intervention was 40% with a range of 20-80%.

**Jane: Comprehension.** During baseline, Jane’s performance for answering comprehension questions demonstrated a mean of 33% with low variability (range 20-60%). In intervention phase for Text 3, Jane showed immediate increase in level with the mean notably rising to 76% with low variability and 80% of the data non-overlapping with baseline. For Text 4, Jane’s mean was 50% with low variability (range 40-60). Jane demonstrated no change in level from baseline to Text 4 with a zero-celerating trend with 0% of the data non-overlapping.

For Text 1, Jane showed no change from the previous baseline probe (mean of 65% and range of 20-80%), and 80% of her data were non-overlapping from baseline to intervention. Her trend throughout Text 1 shows as slightly increasing (increasing from trial 1 to trial 2 then stable) with slight variability. For Text 2, Jane showed an immediate increase from the previous baseline probe (0% to 80%). Jane’s intervention performance mean was 67% with some variability (range of 40-80%). Her trend from her baseline probe to intervention was accelerating with 50% non-overlapping.
Jane’s comprehension range varied largely throughout Texts 1-4. Jane’s answering of “wh” comprehension questions in multiple-choice format improved noticeably from baseline to intervention with overall comprehension change mean from baseline to intervention of 34% (range of 20-100%). This change mean was consistent with vocabulary change mean (34%) and locating change mean (40%).

**Jane: Maintenance.** Once all intervention trials were completed for Texts 1-4, maintenance probes were conducted consisting of adapted materials from intervention without teaching or specific positive verbal praise for independent correct answers for all four texts for all three behaviors (i.e. vocabulary, locating information, and comprehension). Jane’s maintenance probes were conducted according to the counterbalance chart: Text 3, Text 4, Text 1, and Text 2. Jane’s maintenance vocabulary mean was 60% with a range of 30-80%. For Text 3, Jane’s vocabulary intervention mean was 78% and her maintenance probe was 30%; Text 4 vocabulary intervention mean again was 80% and her maintenance probe was 60%; Text 1, Jane’s vocabulary intervention mean was 30% with her maintenance probe at 70%; Text 2, her intervention mean was 67% with her maintenance probe at 80%. This was a 48% decrease from her intervention vocabulary mean for Text 3, a 20% decrease from Text 4, a 40% increase from Text 1, and a 13% increase from Text 2. For vocabulary, Jane showed the highest retention in Text 2 at 80% known vocabulary words.

Jane’s maintenance probes for locating information in text were lower than her maintenance probes for correctly reading vocabulary words and correctly answering comprehension questions. Jane’s maintenance performance for locating information in text showed a mean of 20% with a range of 0-40%. This was a 20% decrease from her
intervention locating information in text mean for Text 3, a 30% decrease from Text 4, a 45% decrease from Text 1, and a 24% decrease from Text 2. In locating information in text, Jane showed 0% retention for Text 3, 40% retention for Text 4 and 2, and 20% retention for Text 1.

Jane’s maintenance comprehension mean was notably higher than her maintenance means for locating information in text at 65% (a 40% increase from locating) (range of 40-100%). This was a 07% decrease from her intervention locating information in text mean for Text 3, a 15% increase from Text 4, Stable trend with Text 1, and a 01% increase from Text 2. For comprehension, Jane showed the highest retention for Text 3 at 100% correct independent answers given, with Texts 2 and 4 at 40% and Text 1 at 80%.

Jane: Generalization. Generalization probes were conducted after maintenance probes for each text, and consisted of a baseline probe for each of the four texts without adapted materials, teaching, or specific positive verbal praise for independent correct answers for all three behaviors. Jane’s generalization probes were conducted according to the counterbalance chart in the following order: Text 3, Text 4, Text 1, and Text 2. In vocabulary for generalization Jane’s mean was 58% with a range of 30-80%. Jane’s performance for generalization probes were Text 3 at 30%, Text 4 at 80%, Text 1 at 70% and Text 2 at 50%.

Jane’s generalization probes for locating information in text similarly demonstrated an immediate change in levels with a decelerating trend between intervention phase and generalization. Jane’s locating information in text generalization mean was 10% with a range of 0-20%. Jane’s generalization performance for locating
information in text was at 20% for Texts 3, 4 and 2, with Text 1 at 0%. This is a 20% decrease from her intervention mean for Text 3, a 30% decrease in Text 4, a 65% decrease for Text 1, and a 24% decrease for Text 2.

Generalization probes for answering comprehension questions yielded a mean of 50% with a range of 20-80%. Jane’s generalization performance for comprehension was Text 3 at 80%, Text 4 at 20%, Text 1 at 40%, and Text 2 at 20%. Jane’s generalization probes demonstrated a 08% increase from her intervention answering comprehension questions mean for Text 3, a 30% decrease in Text 4, a 25% decrease for Text 1, and a 44% decrease for Text 2.

**Vocabulary Terms Analyzed for Parts of Speech**

**Vocabulary.** There were a total of 40 vocabulary terms selected through the four text passages. Thirty-one of those terms were nouns, eight were verbs, and one was an adjective. Data analyzed were derived from the baseline probe immediately preceding the intervention phase of each text and the last intervention trial of each text per participant. See Table 13.

Eddy did not correctly read any nouns or adjectives in baseline, but did correctly read one verb. During intervention, Eddy excelled at reading nouns with the exception of Text 4: Text 1 (7/8), Text 2 (5/7), Text 3 (7/9), and Text 4 (2/7). During intervention, he also demonstrated reading verbs in all four texts: Text 1 (1/2), Text 2 (3/3), Text 3 (1/1), and Text 4 (2/2). Eddy further demonstrated he could read the one adjective in Text 4 through intervention. In the maintenance phase, Eddy correctly read 18/31 nouns, 4/8 verbs, and 1/1 adjectives. In the generalization phase, Eddy correctly read only 2/31 nouns, one adjective and did not correctly read any verbs.
In baseline, Erwin correctly read 29 nouns, eight verbs, and one adjective. During intervention, Erwin maintained his reading of nouns, verbs, and adjectives. During the maintenance and generalization phases, Erwin increased his reading of nouns by one to 30/31, while remaining stable with reading verbs and adjectives.

Jane correctly read seven nouns, three verbs, and no adjectives in baseline. During intervention, Jane excelled at reading of nouns with Text 3 (7/9) and Text 4 (6/7), while struggled with Text 1 (2/8) and Text 2 (4/7). During intervention, she also demonstrated some reading of verbs in all four texts: Text 3 (1/1), Text 4 (1/2), Text 1 (1/2), and Text 2 (3/3). Jane further demonstrated she could read the one adjective in Text 4 through intervention. In maintenance phase, Jane correctly read 17/31 nouns, 6/8 verbs, and 1/1 adjectives. In generalization phase, Jane also correctly read 15/31 nouns, 7/8 verbs, but not the adjective.

“Wh” Questions Analyzed

“Wh” Questions. There were a total of 40 “wh” aided questions developed for locating information in text and “wh” comprehension questions throughout the four text passages. Seven of those questions were who questions, 23 were what questions, six were where questions, one was a when questions, and three were how questions. Why questions were not asked as relevant why questions often need more than a one word answer using a specific vocabulary term as was required in this study. Data analyzed were derived from the baseline probe immediately preceding the intervention phase of each text and the last intervention trial of each text per participant. See Table 14.

Eddy did not correctly answer where, when or how questions in baseline, but did correctly answer one who question and six what questions. During intervention, Eddy
exceeded at correctly answering *what* questions with the exception of Text 3: Text 1 (6/7), Text 2 (3/5), Text 3 (1/5), and Text 4 (5/6). During intervention, he also correctly answered *who* questions in all four texts: Text 1 (2/2), Text 2 (1/1), Text 3 (2/2), and Text 4 (1/1). Eddy further correctly answered *where* questions during intervention in all four texts by not missing any. Eddy did not correctly answer the one *when* question and only correctly answered the *how* questions in Text 3 and Text 4.

In the maintenance phase, Eddy correctly answered 4/7 *who* questions, 13/23 *what* questions, 6/6 *where* questions, and 1/3 *how* questions. He did not correctly answer the *when* question in either maintenance or generalization phases. In the generalization phase, Eddy correctly answered only 3/7 *who* questions, 4/23 *what* questions, and 1/6 *where* questions. He did not correctly answer any *how* questions in the generalization phase.

In the baseline phase, Erwin correctly answered 5/7 *who* questions, 3/23 *what* questions, 3/6 *where* questions, 1/1 *when* question, and 1/3 *how* questions. During intervention, Erwin excelled at correctly answering all presented “wh” questions, missing only one what question (Text 4) throughout all four texts. In the maintenance phase, Erwin correctly answered 7/7 *who* questions, 17/23 *what* questions, 5/6 *where* questions, 1/1 *when* question, and 2/3 *how* questions. Data showed that in the generalization phase, Erwin correctly answered 6/7 *who* questions, 15/23 *what* questions (an increase from maintenance phase by 2), 5/6 *where* questions, 1/1 *when* question, and 2/3 *how* questions.

Jane did not correctly answer any *how* questions in baseline, but did correctly answer one *who* question, five *what* questions, and one *where* and *when* question. During intervention, Jane demonstrated increased correct answering *what* questions: Text 3 (3/5),
Text 4 (3/6), Text 1 (6/7), and Text 2 (2/5). During intervention, she also demonstrated correctly answering *who* questions in all four texts: Text 3 (1/2), Text 4 (1/1), Text 1 (2/2), and Text 2 (1/2). Jane further demonstrated she correctly answered all *where* questions during intervention in Texts 4, 1, and 2 by missing only one question in Text 2. Jane correctly answered the one *when* question, but only correctly answered 1/3 *how* questions.

In the maintenance phase, Jane correctly answered 7/7 *who* questions, 8/23 *what* questions, 3/6 *where* questions, and 1/3 *how* questions. She did not correctly answer the *when* question in either maintenance or generalization phases. In the generalization phase, Jane only correctly answered 5/7 *who* questions, 4/23 *what* questions, and 3/6 *where* questions. She did not correctly answer any *how* questions in generalization phase.

**Social Validity: Experiments 1 and 2**

**Participants.** Participants completed a social validity survey (pre/post experiment) that was read to them by the investigator. The survey used a rubric scale created by the investigator using the following measurements: 1 = Undecided 2 = Nervous or Upset 3 = Ok/Needs Supports 4 = Good/Sometimes 5 = Great/Always. The answers to the questions were paired with a visual icon to assist with participant understanding. Participants indicated their answers verbally and/or by pointing to the icon on the page and the investigator circled the indicated answer. Statements measured student perceptions of self as a reader (e.g. *How do I rate myself as a reader?*) and study outcomes (e.g. *Can I locate and point to the answers to test questions in the reading passage?*). See table 15.
Eddy and Erwin rated themselves as having increased their skills in reading in the classroom by themselves and as a reader overall. In the post-survey, Eddy stated that he improved to a rating of a 5 “when I read pictures!” Jane rated herself as decreased in how she felt about reading in the classroom by herself. When probed by the investigator, Jane said that she did not feel good about reading by herself without pictures. Erwin and Jane reported increases in how they felt about reading out loud in class and Eddy stayed the same in his rating. Jane rated her view of her performance as increasing from a rating of 2 to a rating 5 saying “if I have pictures to help me.” Jane and Eddy reported a one point improvement in how they felt about answering questions, while Erwin provided a lower rating. When probed, Erwin stated he liked it best when he could see the answers with pictures, but that “English (I) doesn’t have pictures.” When asked about locating information in text, Eddy and Erwin rated their behavior the same from pre- to post-study while Jane reported a one point increase from a rating of 3 to 4.

During the post-study survey, all participants referenced that they understood better when they could use pictures. All participants demonstrated enjoyment during intervention procedures for Experiment 2, and stated they liked working with the interventionist. See Table 13 for participant, teacher, and parent responses.

**Teachers.** The classroom teacher independently completed a social validity survey (pre/post experiment) for each participant. The survey for the teacher used the same rubric outlined in the participant section above for the first five questions. There were two added questions (pre/post-study) inquiring about supports each participant needed for success when reading, and reading strategies each participant currently used when reading by self in the pre-study survey. In the post-study survey, there were five
additional questions addressing study implications on reading in the classroom. Statements measured teacher perceptions of each participant as a reader (e.g. “How does your student feel when having to read out loud in class?”), study outcomes (e.g., “Can your student answer “wh” questions about what was just read in class without supports?”), and structure of future reading instruction (e.g., “Do you feel it is important for your student to continue to receive reading instruction in the school setting?”).

When the teacher was initially asked about her perceptions regarding her students’ abilities to read out loud in the classroom, she rated Erwin and Jane with a four and Eddy with a two. In the post-study survey the teacher rated Eddy and Erwin as increasing by one and Jane remaining at a four. She stated in the pre-study survey that Eddy really struggled to read and recall vocabulary words, but in the post-study survey noted he can functionally read with cues. The teacher rated all three participants as increasing one point when asked to rate her students as readers in comparison to peers with Eddy ending at a two, Erwin a four and Jane a three.

The teacher rated Erwin and Jane as four for pre/post-study surveys when inquired about how each participant feels about reading out loud in class without help. She rated Eddy as increasing by two points with an increase from a two to a four stating that after he learned to use the pictures as cues for words she saw his confidence and willingness to read out loud increase. When asked about her students being able to answer “wh” questions about the text that was just read, Eddy and Erwin were rated with a score of four for both pre/post-study surveys, while Jane increased from a three to a four. The teacher qualified Eddy’s score by noting he needed to hear the information auditorily, and stated that for Erwin it depended on his familiarity with the genre of the
text. Additionally, she reported that all of her students could locate information at a level four both pre/post-study.

The teacher was then asked about what types of strategies she perceived her students needing to be successful readers. For the pre/post-study social validity surveys, the teacher indicated that Eric needed multiple re-reads, guided reading, picture supports, phonics instruction, and less text per page. For Erwin the teacher noted in the pre/post-study surveys he needed phonics instruction, re-reading; in the post-study survey she also noted picture supports as she saw improvement in some of his reading skills. The teacher indicated Jane needed phonics instruction, chunking, re-reading, and comparing words in text for successful strategies in reading. Post-study survey she also listed picture cues for comprehension and retention for Jane.

In the pre-study survey, the teacher stated that she observed all three participants using the following strategies while reading in class: sounding out words, picture cues, and re-reading. Erwin also used looking for known chunks in unknown words. Post-study she indicated that all three participants used the added strategies of making self-connections to the text and making relevant predictions about the text.

In the post-study survey questions, the teacher stated that the participants had not talked to her about their reading skills nor asked her to read with them since the start of the study. The teacher also noted that she has observed all three participants using picture cues to solve words and to make meaning from text, and that she thought all three would benefit from reading instruction in the school setting. She further indicated that thought each participant grew as a reader over the past semester; Eddy through confidence in his own ability and in use of picture cues to make meaning of his reading;
Erwin in his fluency as he reads and in his comprehension; and Jane in her skills to read unknown words and comprehend.

**Parents.** One parent for each participant completed a (pre/post-study) social validity survey for each participant (the same parent completed surveys pre- and post-study). The survey for the parent used the same rubric outline in the participant section above. The pre-study social validity survey used the same seven questions from the teacher survey (worded for parent perspective) and the post-study social validity survey used the extended questions as outlined in the teacher section above. Statements measured parent perceptions of their child as a reader (e.g., “How do I rate my child as a reader?”), study outcomes (e.g., “Can my child locate and point to the answers to test questions in the reading passage?”) and reflections on future reading instruction (e.g., “Do you feel it is important for your child to continue to receive reading instruction in the school setting?”).

When parents were asked how they felt about their child reading out loud in the classroom, Eddy’s and Jane’s mothers rated them as having a one point increase (Eddy from a two to a three and Jane from a three to a four) Erwin’s mother rated him a 3 for both pre/post-study surveys. When rating their children overall as readers, all three parents rated their children with a one point increase from a one to a two on the rubric. Next, parents were asked about how they felt when their child had to read out loud in class without help. Eddy’s mother felt he increased his skills and showed a one point increase from a two to a three. Erwin’s mother showed a one point decrease from a three to a two and Jane’s mother rated her as a four both pre/post-study.
Parents were then asked if they think their children can answer “wh” questions about what they just read. Eddy’s mother rated him a three for both pre/post-study; Erwin’s mother rated a one-point decrease from a four to a three, and Jane’s mother rated her a four both pre-post-study. Finally, parents were asked if their child could locate information in text without help to answer questions. Both Erwin and Jane’s mothers rated them the same from pre- to post-study at a three and two, while Eddy’s mother noted an increase by one point from a two to a three.

When parents were asked how they felt their child best understands when reading, all three mothers indicated they thought their child best understands when someone reads with them. Next, parents were asked what types of reading strategies their child uses to read independently. Eddy’s mother indicated that he sounds out words and uses picture cues; Erwin’s mother stated he visualizes it in his head; and Jane’s’ mother said she sounds out the word. Then each parent was asked if their child has talked to them about their reading class (i.e., the study). Eddy’s mother noted yes, that Eddy said Mrs. Molina is coming to help him read each day and that it is fun. Erwin’s mother indicated yes, and that Erwin said he really likes to see the pictures. Jane’s mother also indicated yes, and that Jane said the pictures have really been helping her read. Jane’s mother reported she also said it was stressful sometimes because she really wants to get all the answers right.

On the post-study social validity survey, all three parents indicated that their children have each asked to use pictures to read with at home, and that they have all asked their parent to read with them. They also all indicated that they thought their child needed continuous reading instruction in the school setting. Jane’s mom said she is
worried Jane will lose the gains she has made if she does not receive regular reading instruction.

Finally, parents were asked what types of reading supports their child needed to be a successful reader. Eddy’s parent replied that he needed picture cues and work with “wh” questions to build comprehension; Erwin’s mother stated she thought he needed pictures and someone to read one-on-one with him; and Jane’s mother indicated her daughter needed pictures to help create meaning from her reading. At the conclusion of the study Eddy’s mother noted that his comprehension and speaking skills were better since the study began. She stated “he answers questions when I ask him about things we read together. I see him trying to make connections and really think about what we read.”
Chapter V

Discussion

Historically, students with moderate to severe disabilities have had little focus on literacy in the educational setting. When given access, it was often in the form of rote learning basic sight words relating to functional living skills without accessing meaningful content (Browder, Gibbs, et al., 2009). With the changes in legislation over the past 15 years (e.g., AYP, State Standards, Reauthorization of IDEA, CCSS), current practices in literacy instruction for students with moderate to severe intellectual disabilities are slowly beginning to evolve. Current educational resources are beginning to provide evidenced-based frameworks for literacy (Browder & Spooner, 2006) and cultural expectations that students with disabilities be literate are increasing (Browder, Gibbs, et al., 2009).

Much of the current literature for literacy instruction for students with moderate to severe disabilities targets elementary and middle school-aged students. This current experimental study contributes to the literature by focusing on literacy instruction for high school students (ages 14-22 years) with moderate to severe disabilities. It takes the basic components of balanced Tier-1 reading instruction (NRP, 2006) (i.e., word study, guided reading, shared reading, locating information in text, and comprehension) and enhances them so that learners who have moderate to severe disabilities can access literacy in a meaningful way. Through systematic literacy instruction students of this population used the adapted materials and evidence-based instructional strategies to enhance and sustain their literacy skills, as well as overcome preconceived notions that they are unable to engage in literacy activities meaningfully.
The purpose for this experimental study was to investigate the effects of adapted materials paired with evidence-based strategies delivered systematically during literacy instruction for high school students with moderate to severe disabilities. Specifically, both Experiment 1 and Experiment 2 aimed to answer: (1) did students increase the number of vocabulary words they correctly read aloud through the use of adapted materials paired with evidence-based instructional strategies, (2) did students increase their locating information within a text passage through the use of adapted materials paired with evidence-based instructional strategies, and (3) did students increase their correct answers to “wh” questions about a text passage read aloud through shared reading using adapted multiple choice questions that incorporated photo/line drawing support paired with evidence-based instructional strategies? Discussion of results from Experiment 1 will be first, followed by discussion of Experiment 2, and ending with an overall, general discussion.

Experiment 1

Question 1: Did students increase the number of vocabulary words they could correctly read aloud through the use of adapted materials paired with evidence-based instructional strategies? All participants demonstrated stable or decreasing levels of correct unprompted responses during baseline. Jane had the largest variability during baseline in her range when compared with Eddy and Erwin across all six texts. Erwin read the majority of all vocabulary words in baseline for all texts. He remained in baseline for Experiment 1.

When introduced to intervention phase 1 for Text 1 Jane demonstrated a slight increase in trend in comparison with her baseline. When intervention phase 2 was
introduced, Jane’s levels abruptly increased in correct unprompted responses over the seven trials. In Text 2, Jane showed only a minor increase in correct unprompted vocabulary words read from baseline to intervention phase 1, while Eddy showed a larger stable increase over the six trials. This may be in part because Jane had a high level of correct reading of vocabulary words in baseline than did Eddy.

Texts 1 and 2 demonstrated minimal change in levels from baseline to intervention phase 1, which prompted the investigators to evaluate the value of conducting intervention in two phases instead of only one. The outcomes for intervention phase 2 may suggest that the purposeful use of the evidence-based instructional strategies paired with adapted materials have a positive effect on reading literacy for the number of correct unprompted vocabulary words read aloud and intervention phase 2, but further research is warranted as replication across three or more participants was not demonstrated.

**Question 2: Did students increase locating information within a text passage through the use of adapted materials paired with evidence-based instructional strategies?** All participants demonstrated stable or decreasing levels of correct unprompted responses during baseline. Erwin demonstrated the greatest variability during baseline in comparison to Jane and Eddy who were not able to locate information in text in baseline phase. This difference in performance is potentially explained by the data showing that Erwin had higher literacy skills than did Jane and Eddy for printed word.

When Jane was introduced to intervention phase 1 in Texts 1 and 2, her percentage of correct unprompted response increased minimally from baseline
demonstrating a lack of meaningful effect of adapted materials only for locating information in text. In comparison, Eddy’s performance for Text 2 intervention phase 1 increased substantially. This may be due to adapted materials helping to create understanding for Eddy, but further research and replication is needed to consider any correlation. Although Eddy demonstrated increased ability to locate information in text with adapted materials only, he was still only able to locate just over half of the correct answers intervention phase 1.

When both participants were introduced to intervention phase 2 for locating information in text, they demonstrated minimal improved performance from intervention phase 1. Jane and Eddy also expressed frustration with the length of time they spent with each phase of intervention by verbally making statements or groaning when presented with the same materials day after day. Such variability between participants for interventions phase 1 and phase 2 paired with participant frustrations prompted the investigators to evaluate the value of conducting intervention in two phases instead of only one.

**Question 3:** Did students increase their correct answers to “wh” questions about a text passage read aloud through shared reading using adapted multiple choice questions that incorporate photo/line drawing support paired with evidence-based instructional strategies? Out of the three research dependent variables, verbally answering “wh” questions to demonstrate comprehension presented as the most problematic for participants throughout all phases. All participants demonstrated variability in their correct unprompted verbal responses to “wh” questions during
baseline. Erwin demonstrated the greatest variability during baseline in comparison to
Eddy and Jane. During baseline, Eddy and Erwin did the best on Text 5.

For intervention phase one Text 1, Jane remained stable for unprompted responses
and only showed a minor increase to intervention phase 2. For both Jane and Eddy for
Text 2 intervention phase 1 and 2 held stable across all trials. During comprehension for
intervention phase 2 for Texts 1 and 2, Jane routinely attempted to give the answer from
the cue card not from the story (e.g. When does the candy fall out of the piñata? “A
time” would be her response). Jane also verbally expressed frustration when the same
materials were continually presented after trial 3 in intervention phase 1 and after trial 4
in intervention phase 2.

During comprehension for intervention phase 2 for Text 2, Eddy was unable to
use the visual cue card to increase answering “wh” questions. He appeared confused by
the cue card, and also verbally expressed frustration when the same materials were
continually presented after trial 5 in intervention phase 1. The results for both Jane and
Eddy may suggest a lack of functional relationship between intervention phase 1 or 2 and
number of correct unprompted responses demonstrating the need to examine strategies
being used, but further replication across participants and texts is warranted.

**Summary Experiment 1**

After careful review of the data by the investigator and the principal investigator,
Experiment 1 was discontinued after two texts, *The Color Wheel* and *Piñatas*. Both
investigators felt having two phases of intervention was ineffective as data showed that
intervention phase 1 with adapted materials only created minimal change from baseline to
intervention phase 1 and was causing frustration for participants due to lengthy duration.
Data showed that for Text 1 intervention phase 1 consisted of 4 trials with 6 trials for phase 2 totaling 10 trials. For Text 2 data showed that intervention phase 1 consisted of 6 trials with 3 trials phase 2 totaling 9 trials. Participants also verbally demonstrated frustration to the investigator during intervention phase 1.

The decision was made to merge the phases together and exclude intervention phase 1 (adapted materials only) for the remaining 4 texts. Findings here also support the current literature noting that adapting books alone is not enough to increase student responding (Browder et al., 2007), rather adapted materials must be paired with evidence-based strategies to create sustainable meaning.

Data also showed that participants were struggling with the comprehension questions, and that there was not a functional relationship between the intervention package and the number of correct unprompted responses. In comprehension for Text 1, data show that Jane had only a 17% increase from intervention phase 1 to phase 2. For comprehension Text 2, data showed that Jane and Eddy remained stable in intervention phases 1 and 2. Data showed the overall change from intervention phase 1 to intervention phase 2 for comprehension was minimal for both participants.

After reviewing the data, investigators decided to revise the comprehension component to exclude the visual cue card as it appeared to cause confusion for the participants. It was replaced with providing definitions for vocabulary words during vocabulary matching, word study, and multiple choice questions within error correction. Comprehension questions were also developed into multiple choice questions with the answers adapted with photo/line drawing support during intervention. The remaining
four texts were used for Experiment 2 along with the changes in systematic instruction and evidence-based strategies.

**Experiment 2**

**Question 1.** All participants demonstrated stable levels of correct unprompted responses during baseline and all participants’ correct unprompted responses increased after intervention; indicating a possible functional relationship between the intervention package and the number of correct vocabulary words read aloud. This improved performance supports previous findings that adapting text to a student’s symbolic level of understanding increases students’ ability to access and create meaning from literacy instruction in a meaningful way (Beukleman & Mirenda, 2013; Browder et al., 2007; Demchak, 2010; Hudson et al., 2013; Knight et al., 2013; Michael & Trezek, 2005; Mims et al., 2012; Roberts & Leko, 2013; Westling & Fox, 2009). These findings also contribute and support the current literature in the use of constant time delay as an evidence-based practice for students with moderate to severe disabilities (Browder, Ahlgrim-Delzell, et al., 2009; Knight et al., 2013; Riesen et al., 2003).

In looking at each participant’s change mean from baseline to intervention, Erwin’s data shows minimal improvement, but that is due to having 93% of words known in baseline and growing to 100% across all four texts through intervention. It is important to note that only correct reading of vocabulary words was measured, not comprehension of the definition of the vocabulary word.

In baseline, Eddy often stated the initial sound of the vocabulary term instead of reading the entire word. For example if the word was school Eddy would say the “s” sound. Eddy demonstrated the largest change mean of the three participants for correct
unprompted reading of vocabulary words overall and his range showed little variability. When Eddy read the vocabulary word incorrectly during intervention, the word he gave would relate to the icon used to represent the word (e.g., Eddy would say “sick” for “illness”). Eddy also struggled with putting the “s” on the end of a word, which was marked as an error (e.g., Eddy would say “net” instead of “nets”). Nine out of the 40 vocabulary words had a plural “s” at the end and one more had a possessive “s” as an ending which may have limited Eddy’s increased levels.

Jane demonstrated the greatest variability in vocabulary. In baseline, Jane tried to sound out many of the words she did not know, but needed more processing time than the 3 seconds allowed. In baseline, Jane would often point to a known word and read the word out loud to provide an answer to the question rather than saying “skip.” Jane’s more moderate growth in comparison to Eddy can be partially attributed to her baseline mean being higher in comparison to Eddy’s. During intervention, Jane often stated that she was trying very hard and that she was sorry when she got a word wrong. At times, when Jane said words incorrectly, it appeared to delay processing of the next vocabulary word. This may possibly have contributed to the variability Jane demonstrated throughout the four texts.

Perhaps most compelling are Eddy and Jane’s maintenance and generalization probe results. Eddy demonstrated maintenance with support from adapted materials only across all four texts, but did not show generalization to printed word only. Jane’s data in her maintenance phase might indicate that she is able to make meaning from adapted materials to continuously access the vocabulary words and that during generalization some transfer to printed word only did occur. Although Jane showed possible transfer of
skills from adapted text to printed word, without replication across participants that
generalization cannot be substantiated. Erwin was stable throughout maintenance and
generalization probes for reading vocabulary words as was anticipated.

**Question 2.** All three participants demonstrated low and steady levels of correct
unprompted responses for locating information in text during baseline and all
participants’ correct unprompted responses increased after intervention. A functional
relationship between the intervention and the dependent variable was demonstrated, and
the increase in performance was replicated across all four text passages and all
participants. The outcomes for locating correct unprompted information in text supports
the established literature that read alouds are an effective evidenced-based strategy for
creating meaning when reading text (Browder et al., 2007; Mims et al., 2012) and that
shared reading as an evidenced-based instructional strategy allows for access to literacy
instruction for students with moderate to severe disabilities (Hudson et al., 2013; Roberts
& Leko, 2013). This study also contributed to this component of literature by
demonstrating that through adaption of a minimal quantity (e.g. 10) of vocabulary words
for a text passage, selected with specific purpose of creating meaning, students could
enhance their comprehension of the text.

This study extended the research by demonstrating that when shared reading and
read alouds are used as part of an intervention package they had a positive impact in
student’s performance in locating information in text for students at the high school level
(14-22 years of age). Further, the outcomes for locating information in text provide
insight that the intervention package (including evidenced-based strategies of activating
prior knowledge through picture cues and discussion of passage title, making personal
connections to text prior to reading, making predictions about the text passage, and text discussion questions during reading) delivered in a systematic fashion support literacy learning for students with moderate to severe disabilities at the high school level.

In baseline for locating information in text, all participants were within a 10% range of each other with Ewin having the highest baseline mean. Text 1 for all three participants demonstrated the highest levels of correct unprompted responses during intervention. In turn, Jane and Eddy showed the least amount of increased levels during Text 3, while for Erwin it was Text 2. The decreases in Text 3 for Eddy and Jane may be partially attributed to graduation practice and activities started this week as both students graduated, while Erwin was just a freshman. Erwin demonstrated the largest amount of change during intervention, for locating information in text.

During maintenance and generalization probes for locating information in text, Erwin demonstrated the highest maintained and generalized performance. Erwin’s generalization probes demonstrated possible transfer of skills from the intervention package to printed word only in correctly locating information in text. Further generalization probes are needed to determine if a functional relationship between the intervention package and number of correct unprompted answers for locating information in text can be replicated.

Jane appeared to struggle in the maintenance and generalization phases more than Eddy or Erwin. While Eddy demonstrated some sustained skills in the maintenance probes, his levels decreased during generalization probes to levels consistent with his baseline performance. Possible contributing factors to decreased performance during maintenance and generalization for Jane and Eddy include graduation practice activities
and end of year senior activities that created lots of shifting emotions for both students during the last 2 weeks of the study.

**Question 3.** All participants demonstrated increased levels of correct unprompted responses for answering “wh” through multiple choice questions after intervention; a functional relationship between the intervention and the number of correct unprompted responses was demonstrated. The increase in performance was replicated across all four text passages and all participants with the exception of Text 4 for Erwin. The outcomes for correct unprompted responses for comprehension questions support the findings in the literature as previously stated for adapting materials. The outcomes also support and contribute to the literature for use of systematic instruction as an evidence-based practice for students with moderate to severe disabilities (Browder et al., 2007; Knight et al., 2010; Knight et al., 2013) at the high school level.

When comparing intervention means, Eddy’s most successful text was Text 1 when answering comprehension questions, while Jane and Erwin were most successful with Text 3. Text 4 was the least successful for Jane and Erwin. For Text 4 Erwin’s mean dropped lower than Eddy and Jane; the only time that Erwin’s performance was lower than Eddy and Jane’s throughout the study.

During maintenance probes all participants showed sustained performance with means of 65% or better for correct unprompted comprehension questions; the highest of the three dependent variables. Generalization probes for Erwin showed a slight increase from his maintenance probes. This demonstrates possible transfer knowledge learned through intervention to printed word, though further replication is needed. Out of the three dependent variables, Jane and Eddy also had the most increased levels for
generalization for correct unprompted for comprehension questions, though Eddy’s mean was consistent with his baseline mean.

**Summary of Outcomes**

Overall outcomes may indicate that adapted materials paired with selected evidence-based strategies taught systematically to students with moderate to severe disabilities have a positive impact on literacy in the areas of reading vocabulary words, locating information in text, and answering comprehension questions. Vocabulary and comprehension demonstrated the most growth across participants and maintained improvements, while locating information in text appeared to be the most difficult. Data may also indicate that for students with more severe disabilities transfer of skills to printed word only may not be realistic. Further studies should be conducted to evaluate if transfer of skills to printed word for students with more moderate intellectual disabilities may occur.

**Limitations and Future Research**

There are several limitations to this study. First, the intervention was conducted by a member of the research team, when ultimately the interventions need to be delivered by the classroom teacher (Mims et al., 2012). This is a limitation because it is necessary to develop interventions that can be readily used within the classroom by the classroom teacher. A researcher does not have the same daily responsibilities as a classroom teacher, which may alter the abilities of the teacher during implementation. A second limitation of this study included the inability to generalize findings to other grade levels; to those students with higher or lower IQs than the parameters of the study (55 ± 5 to 25 ± 5); to adults of this population (adults being over the age of 22); to grade level (e.g.,
high school English) literacy material. For future studies, high school English material may want to be considered. The text passages also may have presented a third limitation as they may not have all been of equal difficulty for vocabulary selected, balance of types of vocabulary selected (i.e., nouns, verbs, adjectives), difficulty of comprehension questions, and balance across types of questions (i.e., who, what, where, when, how).

A fourth limitation is the use of only aided questions during both locating information in text and comprehension questions as they did not require participants to make inferences or draw conclusions about the text passage. Future research may want to include a mix of aided and unaided questions.

Using constant time delay for locating information in text may have been a fifth limitation as it was difficult to tell if the participants learned the location of the answer during the 0-second trial or if they learned the actual answer. That is, the participants may have simply imitated the gesture from the interventionist rather than locating answers in a new location on the same or different page of the text. Future researchers may also contemplate the use a different method of systematically teaching how to locate information in text so that data can better measure the dependent variable. In the current study, further analysis of the videos might provide evidence regarding whether participants were imitating the gesture of the interventionist or actually locating the answer in text. Anecdotally, it was noted that participants did at times locate the answer in a location different from that gestured to by the interventionist.

A sixth limitation is that only data on reading of the vocabulary words was collected and analyzed, rather than also collecting data on knowledge of definitions of the
targeted words. For future research, data might be collected on both variables to better support the comprehension component of the intervention package.

Allowing participants only 3 seconds to respond in order for the answers to be counted as correct is a seventh limitation of this study. Due to processing delays and other influencing factors for students with moderate to severe disabilities, 3 seconds may not have been enough time; 5 seconds may have provided better opportunity for participants to answer correctly. Restricting participants to answering within 3 seconds may also be a limitation as the 3 seconds may not have always been consistent across all participants for all trials.

An eighth limitation is that the generalization probes were limited during this study as they looked only at transfer of skills from adapted materials to printed word within the four text passages used for the study. Generalization probes could have targeted new text passages, to which the participants had not been exposed, using the same adapted vocabulary on which they received direct instruction. Also, by conducting extended generalization probes that examined both printed word only and adapted format using visual cues from other text passages, perhaps data would have shown generalized performance to the adapted symbols participants acquired during intervention.

A ninth limitation is that results are not able to be extended to high school students with moderate to severe disabilities that are at the object level of symbolic understanding or to those who use voice output devices for communication. Future research may include replication using participants at object level of understanding and/or who use voice output devices.
A tenth limitation is that these results should only be extended to students with minimal literacy instruction in the past. High school students with moderate to severe disabilities that have had consistent reading instruction at their reading level through guided reading and direct instruction should not be generalized here. Theoretically, through new legislation and as balanced reading instruction for all students becomes more mandated, literacy instruction for students with moderate to severe disabilities has the potential to be implemented at earlier ages using student’s symbolic level of understanding, adapted materials and systematic evidenced-based practices. In turn, high school literacy instruction may perhaps be very different with more focus on advanced literacy skills.

Another limitation may also be the low expectation of quality reading instruction for this population by parents of possible participants. Potentially, three other participants qualified for this study through inclusion data, but parents denied participation once seeing the outline of the study. All three of the parents verbally indicated that the instruction would be too intense and they felt the learning expectations were too high for their child.

The final limitation of this study related to the timing of the study during the school year, high school graduation taking place, and school ending for the year. Two of the participants graduated from high school upon completion of the school year and so the last 3 weeks of school were filled with multiple activities and practices for them. Trial times were not always able to be consistent due to this factor. A wide range of emotions (e.g., sadness, happiness, fear, nervousness, etc.) related to graduating for both students may have influenced/limited trial outcomes.
Implications

Results from this study can be used to demonstrate that students with moderate to severe disabilities have the potential to acquire reading skills and knowledge when provided with adapted materials paired with evidence-based strategies delivered systematically. The use of adapted materials and evidenced-based strategies such as shared reading, constant time delay, and read alouds to provide literacy instruction is supported by the work done by Mims et al. (2012); Hudson et al. (2013); Browder et al. (2007); Roberts & Leko (2013); Knight et al. (2013); Browder, Ahlgrim-Delzell, et al. (2009); Riesen et al. (2003); & Knight et al. (2013).

One implication for educators that this study provides is the use of adapting minimal amounts of words within text. Text passages used in this study were three to four paragraphs in length with only 10 vocabulary words being adapted throughout to create meaning. Adapting key vocabulary words may make adapting materials at the high school level more accessible to educators and paraprofessionals as the time required is minimal.

Another implication of this study for educators is that vocabulary selection based on creating meaning throughout the text may contribute more to literacy comprehension than selecting sight-word-based vocabulary for adaptation. For example, participants learned the vocabulary word “Big Dipper” and demonstrated comprehension of it through answering ‘wh’ questions which created more meaning throughout the text than if the adapted word was “see.” Further research is needed to specifically investigate vocabulary selection, and may benefit from specifically selecting a balanced proportion
of parts of speech including nouns, verbs, and adjectives as vocabulary terms to enhance comprehension and readability of text.

Additionally, an implication for educators is that students with moderate to severe disabilities can be taught to locate specific information within a text passage. Teaching students to listen to the question and then use the adapted text to help them locate the answer in text, demonstrates that students with moderate to severe disabilities have capacity to support their answers using evidence from text. Further research is needed to determine which evidence-based strategies will best support students in this area.

A final implication of this study is the use of aided versus unaided questions when locating information in text and answering “wh” comprehension questions. Future research may want to include a variety of each type of question to determine which type of question creates the optimal comprehension for students with moderate to severe disabilities while reading a text passage.

**Conclusion**

In conclusion, the results of this experimental study suggest that students with moderate to severe disabilities are capable of learning and acquiring literacy skills in the area of reading if presented with the opportunity using adapted materials paired with evidence-based strategies taught systematically. More importantly this study suggests that adaptations to text can be moderate in quantity when focusing on meaning for vocabulary. This study also provides educators with strategies for literacy instruction by using adapted materials with photo/line drawings that will support the reading and comprehension process for students with moderate to severe disabilities as well as
contributes to the research currently available in the area of literacy instruction for high school students with intellectual disabilities.
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indicators in educational services for students with severe disabilities. The
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Educational Leadership, 58, 39-44.


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<td><strong>Experience with Literacy Check</strong></td>
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### Table 2

**Student Demographics**

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<th>Student 2 - Erwin</th>
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<td>Line Drawing</td>
<td>Line Drawing/Printed Word</td>
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<td>Limited 30 minutes in CLS</td>
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¹ = Composite on the Wechsler Intelligence Scale for Children (WISC-IV) IQ Assessment (Wechsler, 2005)
Table 3

*Counterbalanced Presentation of Text Passages for Experiment 1*

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<tr>
<th>Participant</th>
<th>Baseline: Order of Text Passages</th>
<th>Intervention: Phase 1</th>
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Table 4

Counterbalanced Presentation of Text Passages for Experiment 2

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<th>Baseline Probe</th>
<th>Intervention</th>
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<th>Intervention</th>
<th>Baseline Probe or Maintenance (M) Probes &amp; Generalization (G)</th>
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Table 5

Inter-Rater Reliability

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**Vocabulary**

- **Eddy**
  - 100% 100% sessions
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Procedural Reliability

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Table 7

Mean Percent of Correct Unprompted Vocabulary Words Read across Study Phases

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Table 8

Mean Percent of Correct Unprompted Participant Responses for Locating Information back in Text across Study Phases

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Table 9

*Mean Percent of Correct Unprompted Student Responses to “wh” Comprehension Questions across Study Phases*

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Table 10

*Mean Percent of Correct Unprompted Vocabulary Words Read across Study Phases*

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Table 11

*Mean Percent of Correct Unprompted Participant Responses for Locating Information in Text across Study Phases*

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Table 12

*Mean Percent of Correct Unprompted Student Responses to “wh” Comprehension Questions across Study Phases*

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<th>Int Text 4 M</th>
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</table>

*BL = Baseline, TX = Text, Main = Maintenance, Gen = Generalization, ---- = No Opportunity*
Table 14.
Number of Correctly Answered “Wh” Questions from Locating Information in Text and Comprehension Questions by Specific Questions

<table>
<thead>
<tr>
<th>Student/Opportunity</th>
<th>BL</th>
<th>TX1</th>
<th>TX2</th>
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<td>0/3</td>
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</tbody>
</table>

*BL = Baseline, TX = Text, Main = Maintenance, Gen = Generalization, ---- = No Opportunity*
Table 15  
Social Validity Results

1 = Undecided  2 = Nervous or upset  3 = Ok/needs supports  4 = Good/Sometimes  5 = Great/Always

<table>
<thead>
<tr>
<th>Questions Rated 1-5</th>
<th>Pre/Post</th>
<th>Participant Rating</th>
<th>How do I feel about reading by myself in the classroom?</th>
<th>How do I rate myself as a reader?</th>
<th>How do I feel when reading out loud in class without help?</th>
<th>How well do I feel I answer questions my teacher asks about what I just read?</th>
<th>Can I locate and point to the answers to test questions in the reading passage?</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Questions Rated 1-5</th>
<th>Pre/Post</th>
<th>Teacher Rating</th>
<th>How do you feel about your student reading out loud in the classroom?</th>
<th>How do you rate your student as a reader compared with typical developing peers?</th>
<th>How do you think your student feels about having to read out loud in class without help?</th>
<th>Can you students answer “wh” questions about what they just read?</th>
<th>Can you student locate information in text without help?</th>
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<table>
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<th>Parent Rating</th>
<th>How do you feel about your child reading out loud in the classroom?</th>
<th>How do you rate your child as a reader?</th>
<th>How do you feel about your child having to read out loud in class without help?</th>
<th>Do you think your child answer “wh” questions about what they just read?</th>
<th>Can you child locate information in text without help?</th>
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Appendix A

Social Validity Surveys Pre- and Post-Study Student/Parent/Teacher

Pre-Study Social Validity Assessment for Participant

Name:_______________________________________________________
Date:________________________________________________________

1. How do you feel about reading by yourself in the classroom?

<table>
<thead>
<tr>
<th>Great – I can read most of the words and understand them</th>
<th>Good – I can read most words and understand some of what I read</th>
<th>Ok – I can read some words, but need help understanding what I read</th>
<th>Nervous or upset – I can’t read or understand words by myself</th>
<th>Undecided</th>
</tr>
</thead>
<tbody>
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</table>

2. How do you rate yourself as a reader?

<table>
<thead>
<tr>
<th>I read great by myself!</th>
<th>I read ok by myself.</th>
<th>I read poorly by myself.</th>
<th>I can’t read at all by myself.</th>
<th>Undecided</th>
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</tbody>
</table>

3. How do you feel when you have to read out loud in class without help?

<table>
<thead>
<tr>
<th>Great – I love to read out loud in class</th>
<th>Good – I can read many of the words by myself out loud in class</th>
<th>Ok – I don’t know all the words</th>
<th>Nervous or upset – reading is very hard for me</th>
<th>Undecided</th>
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</thead>
<tbody>
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</tbody>
</table>
4. How do you feel about how you can answer questions your teacher asks about what you just read in class?

<table>
<thead>
<tr>
<th>Great – I can always answer the questions about what I read</th>
<th>Good – Sometimes I can answer questions my teacher asks about what I read</th>
<th>Ok – I can answer one or two questions about what I read</th>
<th>Nervous or upset – I can’t answer any questions about what I read</th>
<th>Undecided</th>
</tr>
</thead>
</table>

5. Can you find and point to the answers to questions in the reading passage by yourself?

<table>
<thead>
<tr>
<th>Yes – always</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>No</th>
<th>Undecided</th>
</tr>
</thead>
</table>

Pre-Study Social Validity Assessment for Parent

Parent/Guardian Name:______________________________________________

Student Participating:______________________________________________

Date:____________________________________________________________

1. How do you feel about your child having to reading by himself or herself in the classroom?
   - Great – he or she is a good reader
   - Good – He or she can read many words on their own
   - OK – he or she can read books with pictures for supports
   - Nervous or upset – He or she can’t read well independently
   - Undecided

2. How do you rate your child as a reader from 1-4 with 1 meaning he or she doesn’t read well independently and 4 meaning he or she can read great independently?

3. How do you feel when you think about your child having to read out loud in class without help?
   - Great – He or she loves to read out loud in class
   - OK – he or she can functionally read
   - Scared or nervous – He or she doesn’t know very many words
   - Nervous or upset – reading is very hard for my student
   - Undecided

4. Do you think your child can answer questions the teacher asks about what he or she just read in class?
   - He or she can always answer the questions about what was read
   - Sometimes he or she can answer questions about what was read
   - With supports he or she can answer questions about what was read
   - He or she can’t answer most questions about what was read
   - Undecided

5. Can your child find the answers to questions in the reading passage without help?
   - Yes - 5 out of 5 times
   - Sometimes - 3 out of 5 times
   - Rarely - 1 out of 5 times
   - No – 0 out of 5 times
   - Unsure
6. I think my child can best understand when:
   - He or she reads alone
   - Someone reads with my student
   - My child can listen to someone else read
   - My child can’t understand reading material
   - Unsure

7. What reading strategies does your child use when he or she reads independently?
   - Sound a word out
   - Picture cues
   - Re-read
   - Look for sound chunks I know
   - Visualize or picture it in my head
   - Make connections to the reading passage
   - Think about the who, what, where, when, and why while I am reading
   - Make a prediction about the reading passage
   - Unsure
Pre-Study Social Validity Assessment for Classroom Teacher

Teacher name:__________________________________________________________

Student name:________________________________________________________

Date:_______________________________________________________________

1. How do you feel about your student having to read independently in the classroom?
   - Great – he or she is a good reader
   - Good – He or she can read many words on their own
   - OK – he or she can functionally read
   - Nervous or upset – He or she can’t read well by themselves
   - Undecided

2. How do you rate your student as a reader in comparison with peers using a scale of 1-5 with 1 meaning the student doesn’t read well independently and 5 meaning they can read as well as peers independently?

3. How does your student feel when having to read aloud in class without help?
   - Great – He or she loves to read out loud in class
   - OK – he or she can functionally read
   - Scared or nervous – He or she doesn’t know very many words
   - Nervous or upset – reading is very hard for my student
   - Undecided

4. Can your student answer “wh” questions about what was just read in class without supports?
   - He or she can always answer the questions about what was read
   - Sometimes he or she can answer questions about what was read
   - With supports he or she can answer questions about what was read
   - He or she can’t answer most questions about what was read
   - Undecided

5. Can your student find the answers to questions in the reading passage without help?
   - Yes - 5 out of 5 times
   - Sometimes - 3 out of 5 times
   - Rarely - 1 out of 5 times
   - No – 0 out of 5 times
   - Unsure

6. What supports and strategies does your student need to be a successful reader?
7. What reading strategies does your student use when they read by themselves?
   - Sound a word out
   - Picture cues
   - Re-read
   - Look for sound chunks I know
   - Visualize or picture it in my head
   - Make connections to the reading passage
   - Think about the who, what, where, when, and why while I am reading
   - Make a prediction about the reading passage
Post-Study Social Validity Assessment for Participant

Name:__________________________________________________________________

Date:__________________________________________________________________

1. How do you feel about reading by yourself in the classroom?

| Great – I can read most of the words and understand them | Good – I can read most words and understand some of what I read | Ok – I can read some words, but need help understanding what I read | Nervous or upset – I can’t read or understand words by myself | Undecided |

2. How do you rate yourself as a reader?

| I read great by myself! | I read ok by myself. | I read poorly by myself. | I can’t read at all by myself. | Undecided |

3. How do you feel when you have to read out loud in class without help?

| Great – I love to read out loud in class | Good – I can read many of the words by myself out loud in class | Ok – I don’t know all the words | Nervous or upset – reading is very hard for me | Undecided |
4. How do you feel about how you can answer questions your teacher asks about what you just read in class?

<table>
<thead>
<tr>
<th>Smiley</th>
<th>Sad</th>
<th>Question</th>
<th>Nervous or Upset</th>
<th>Undecided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great – I can always answer the questions about what I read</td>
<td>Sometimes I can answer questions my teacher asks about what I read</td>
<td>Ok – I can answer one or two questions about what I read</td>
<td>Nervous or upset – I can’t answer any questions about what I read</td>
<td>Undecided</td>
</tr>
</tbody>
</table>

5. Can you find and point to the answers to questions in the reading passage by yourself?

<table>
<thead>
<tr>
<th>Smiley</th>
<th>Sad</th>
<th>Question</th>
<th>Rarely</th>
<th>No</th>
<th>Undecided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes – always</td>
<td>Sometimes</td>
<td>Rarely</td>
<td>No</td>
<td>Undecided</td>
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</tr>
</tbody>
</table>
Post-Study Social Validity Assessment for Parent

Name: ________________________________________________________

Student Participating: ___________________________________________

Date: ________________________________

1. How do you feel about your child having to reading by himself or herself in the classroom?
   - Great – he or she is a good reader
   - Good – He or she can read many words on their own
   - OK – he or she can read with pictures for supports
   - Nervous or upset – He or she can’t read well independently
   - Undecided

2. How do you rate your child as a reader from 1-4 with 1 meaning he or she doesn’t read well independently and 4 meaning he or she can read great independently?

3. How do you feel when you think about your child having to read out loud in class without help?
   - Great – He or she loves to read out loud in class
   - OK – he or she can functionally read
   - Scared or nervous – He or she doesn’t know very many words
   - Nervous or upset – reading is very hard for my student
   - Undecided

4. Do you think your child can answer questions the teacher asks about what he or she just read in class?
   - He or she can always answer the questions about what was read
   - Sometimes he or she can answer questions about what was read
   - With supports he or she can answer questions about what was read
   - He or she can’t answer most questions about what was read
   - Undecided

5. Can your child find the answers to questions in the reading passage without help?
   - Yes - 5 out of 5 times
   - Sometimes - 3 out of 5 times
   - Rarely - 1 out of 5 times
   - No – 0 out of 5 times
   - Unsure
6. I think my child can best understand when:
   - He or she reads alone
   - Someone reads with my student
   - My child can listen to someone else read
   - My child can’t understand reading material
   - Unsure

7. What reading strategies does your child use when he or she reads independently?
   - Sound a word out
   - Picture cues
   - Re-read
   - Look for sound chunks I know
   - Visualize or picture it I my head
   - Make connections to the reading passage
   - Think about the who, what, where, when, and why while I am reading
   - Make a prediction about the reading passage
   - Unsure

8. Has your child talked to you about their reading class at school? If so what have they mentioned?

9. Has your child tried to use photo cues at home while trying to read?

10. Has your child asked you to read with them at home?

11. Do you feel it is important for your child to continue to get reading instruction in the school setting? Why or why not?

12. What supports do you think your child needs to be a successful reader?
Post-Study Social Validity Assessment for Classroom Teacher

Teacher Name:________________________________________________

Student Name:________________________________________________

Date:________________________________________________________

1. How do you feel about your student having to read independently in the classroom?
   - Great – he or she is a good reader
   - Good – He or she can read many words on their own
   - OK – he or she can functionally read
   - Nervous or upset – He or she can’t read well by themselves
   - Undecided

2. How do you rate your student as a reader in comparison with peers using a scale of 1-5 with 1 meaning the student doesn’t read well independently and 5 meaning they can read as well as peers independently?

3. How does your student feel when having to read aloud in class without help?
   - Great – He or she loves to read out loud in class
   - OK – he or she can functionally read
   - Scared or nervous – He or she doesn’t know very many words
   - Nervous or upset – reading is very hard for my student
   - Undecided

4. Can your student answer “wh” questions about what was just read in class without supports?
   - He or she can always answer the questions about what was read
   - Sometimes he or she can answer questions about what was read
   - With supports he or she can answer questions about what was read
   - He or she can’t answer most questions about what was read
   - Undecided

5. Can your student find the answers to questions in the reading passage without help?
   - Yes - 5 out of 5 times
   - Sometimes - 3 out of 5 times
   - Rarely - 1 out of 5 times
   - No – 0 out of 5 times
   - Unsure
6. What supports and strategies does your student need to be a successful reader?

7. What reading strategies does your student use when they read by themselves?
   - Sound a word out
   - Picture cues
   - Re-read
   - Look for sound chunks I know
   - Visualize or picture it in my head
   - Make connections to the reading passage
   - Think about the who, what, where, when, and why while I am reading
   - Make a prediction about the reading passage

8. Has your student talked to you about their reading class at school? If so what have they mentioned?

9. Has your student tried to use photo cues during your class time with them while trying to read?

10. Has your student asked you to read with them during the day?

11. Do you feel it is important for your student to continue to get reading instruction in the school setting? Why or why not?

12. What supports do you think your student needs to be a successful reader?
Appendix B

Symbol Assessment

Student: ___________________________ Date: __________________

10 Familiar functional items: Pencil, book, glass, fork, magazine, cell phone, comb, belt, backpack, Kleenex

Symbols gathered to represent items: Colored photos of each object paired with written word, line drawing of each object paired with written word

1. Teachers says “Show me what to do with this object” and places objects one at-a-time in front of student. Check appropriate box below.

<table>
<thead>
<tr>
<th>Object</th>
<th>Uses Appropriately</th>
<th>Uses Inappropriately</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pencil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Book</td>
<td></td>
<td></td>
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<tr>
<td>Fork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magazine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell Phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backpack</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kleenex</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Assess colored photos first by presenting 3 symbols (colored photos) representing the items and ask “point to the ____. Place a check mark by the items that the student correctly points to.

<table>
<thead>
<tr>
<th>Object</th>
<th>Points to Correct Colored Photo</th>
<th>Points to Correct Line Drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pencil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Book</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
<td></td>
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<tr>
<td>Magazine</td>
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<tr>
<td>Cell Phone</td>
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<tr>
<td>Comb</td>
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<td>Belt</td>
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<tr>
<td>Backpack</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kleenex</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Symbolic level of understanding of familiar objects is ____________________________.
Appendix C

Participant Name: ____________________________________________
Date: _______________________________________________________

Fry’s First 100 Word List

1. the  21. at  41. there  61. some  81. my
2. of   22. be   42. use   62. her   82. than
3. and  23. this  43. an    63. would  83. first
4. a    24. have  44. each  64. make  84. water
5. to   25. from  45. which  65. like  85. been
6. in   26. or    46. she   66. him   86. called
7. is   27. one   47. do    67. into  87. who
8. you  28. had   48. how   68. time  88. am
9. that 29. by    49. their  69. has   89. its
10. it   30. words 50. if    70. look  90. now
11. he   31. but   51. will  71. two   91. find
12. was  32. not   52. up    72. more  92. long
13. for  33. what  53. other 73. write  93. down
14. on   34. all   54. about 74. go    94. day
15. are  35. were  55. out   75. see   95. did
16. as   36. we    56. many  76. number 96. get
17. with 37. when 57. then  77. no    97. come
18. his  38. your  58. them  78. way   98. made
19. they 39. can  59. these  79. could  99. may
20. I    40. said  60. so    80. people 100. Part

**Circled words mean the participant got the word correct within 3 seconds**
Appendix D
Procedural Checklist Experiment 1
Texts The Color Wheel & Piñatas

*Literacy Instruction for Learners with Moderate to Severe Intellectual Disabilities: A Chance for Growth Using a Personal Dictionary with Photo/Line Drawing Support.*

Procedural Checklist

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Baseline</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Moderate to Severe Disability Check</td>
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<tr>
<td>Adaptive Behavior Scale Check</td>
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<tr>
<td>Dictionary Use Check</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fry’s First 100 Sight Words</td>
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<tr>
<td>Symbol Assessment</td>
<td></td>
<td></td>
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<tr>
<td>DRA – 2 Assessment</td>
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<tr>
<td>Attendance Check</td>
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<tr>
<td>Age Check</td>
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</tr>
<tr>
<td>Signed Parent Permission to Participate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signed Consent to Participate by Student</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with Literacy Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Social Validity Survey Completed by Participant, Parent, &amp; Teacher</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials Check per Participant</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binder with 6 Sections tabbed by Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Vocabulary Cards Text Only per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Vocabulary Cards Adapted with Visual Symbol per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary Text Only Matching Page per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary Visual Symbol Matching Page per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Text Passages Text Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Text Passages Text Paired with Visual Symbol Support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>“Wh” Visual Cue Card</strong></td>
<td></td>
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<tr>
<td>--------------------------</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Baseline**

**Word Study**

1. Ask participant to read through the 10 printed word flashcards to self
2. Ask participant to match the 10 printed word flashcards
3. Ask participant to “see it say it” in 3 seconds or say “skip” if they don’t know the printed word when interventionist points randomly the flash card with printed word only
4. Record data on vocabulary event recording sheet

**Shared Reading**

(Immediately following the vocabulary section)

1. Give text passage to participant in written word only
2. Ask participant to read text passage to self in 3-5 minutes
3. Ask the participant the 5 pre-selected comprehension questions (one at-a-time) and ask the participant to locate the answer in the text passage by putting their finger on the answer
4. Inform the participant to say “skip” if they don’t know the answer.
5. Record data on locating information in text event recording sheet

**Comprehension**

(Immediately following the shared reading section)
1. Verbally ask the participant (one at-a-time) 5 pre-selected “wh” comprehension questions about the text passage

2. Instruct the participant to verbally answer the “wh” questions

3. Instruct the participant to say “skip” if they don’t know the answer.

4. Record data on answering “wh” questions event recording sheet

**Intervention Phase I (after baseline shows as stable or descending per participant)**

**Word Study**

1. Ask participant to read through the 10 printed word & visual symbol flashcards to self

2. Ask participant to match the 10 printed word & visual symbol flashcards

3. Ask participant to “see it say it” in 3 seconds or say “skip” if they don’t know the printed word when interventionist points randomly to the flashcard with printed word & visual symbol

4. Record data on vocabulary event recording sheet

**Shared Reading**

(Immediately following the vocabulary section)

1. Give text passage to participant in written word paired with visual symbols

2. Ask participant to read text passage to self in 3-5 minutes
3. Ask the participant the 5 pre-selected comprehension questions (one at-a-time) and ask the participant to locate the answer in the text passage by putting their finger on the answer.

4. Inform the participant to say “skip” if they don’t know the answer.

5. Record data on locating information in text event recording sheet

**Comprehension**
(Immediately following the shared reading section)

1. Verbally ask the participant (one at-a-time) 5 pre-selected “wh” comprehension questions about the text passage

2. Instruct the participant to verbally answer the “wh” questions

3. Instruct the participant to say “skip” if they don’t know the answer.

4. Record data on answering “wh” questions event recording sheet

**Intervention Phase II**
(after intervention phase I shows as stable or descending per participant)

**Word Study**

1. Ask participant to match the 10 printed word & visual symbol flashcards and whisper read word as they match it
   - Verbal Cue is "match pictures, say your vocabulary word"
   - 1 trial of 10 words
   - Error Correction:
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| - Cue with “Look at the picture”  
- Interventionist point to side of word and say word without pause |  |  |
| 2. Word Search:  
• Interventionist randomly points to side of each vocabulary word on matching sheet. See random list for each day.  
• Cue participant to “see it say it”  
• First trial 0 second constant time delay  
• Second trial 3 second constant time delay – Positive verbal praise for correct independent answer “great reading____”  
• Error Correction:  
  - Cue with “Look at the picture”  
  - Interventionist point to side of word and say word without pause |  |  |
| 3. Ask participant to “see it say it” when interventionist points randomly to the flashcard with printed word & visual  
  • 3-second constant time delay.  
  • Use flashcard mat to put word in correct pile once read by participant. |  |  |
| 4. Record data on vocabulary event recording sheet - Immediate specific verbal praise will be given for independent correct |  |  |
answers, “Great you read the word ____”.

<table>
<thead>
<tr>
<th><strong>Shared Reading</strong>&lt;br&gt;Immediately following the vocabulary section</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Give text passage to participant in written word paired with visual symbols</td>
<td></td>
</tr>
<tr>
<td>2. Interventionist guides passage walk of adapted text:</td>
<td></td>
</tr>
<tr>
<td>• Discuss the passage title and what it means</td>
<td></td>
</tr>
<tr>
<td>• Cue the student to look at the passage picture and think what the story might be about</td>
<td></td>
</tr>
<tr>
<td>• Ask the student to make a prediction about the story or inference from the picture</td>
<td></td>
</tr>
<tr>
<td>• Ask the participant to make a personal connection to the passage title and passage picture - prompt with question (i.e. have you ever mixed colors in Art class?)</td>
<td></td>
</tr>
<tr>
<td>• See title walk &amp; cover page questions to be asked for each participant.</td>
<td></td>
</tr>
<tr>
<td>3. Interventionist asks the participant to read the story with her in a shared reading format:</td>
<td></td>
</tr>
<tr>
<td>• Verbally prompt the participant to track each word by pointing as they read.</td>
<td></td>
</tr>
</tbody>
</table>
- Tell participant to use their picture cues in text if they don’t know a word.
- The interventionist will use shared reading to explicitly model proficient reading skills such as fluency, expression, and print concepts.
- The interventionist will stop two times per text and discuss what happened in the text. See text discussion questions to be asked for each participant.

<table>
<thead>
<tr>
<th>4. Ask the participant the 5 pre-selected comprehension questions (one at-a-time) and ask the participant to locate the answer in the text passage by putting their finger on the answer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Participants will be verbally prompted to use their picture cues in the adapted text.</td>
</tr>
<tr>
<td>- Initial trial at 0-second constant time delay.</td>
</tr>
<tr>
<td>- Interventionist turns pages for initial trial.</td>
</tr>
<tr>
<td>- Trial 2 is a 3-second constant time delay – data taken off this trial.</td>
</tr>
<tr>
<td>- Participant turns pages for this trial.</td>
</tr>
<tr>
<td>- 3 seconds start once page is turned by participant.</td>
</tr>
</tbody>
</table>
5. Give immediate specific verbal praise for correct answers, “Nice job locating _____ in the text passage”

6. Record data on locating information in text event recording sheet for second trial and after

**Comprehension**
(Immediately following the shared reading section)

1. The interventionist will give the participant the “wh” visual cue card and tell them that they will be asking them what, where, etc. questions about the story and you want them to know what to listen for.
   - Review the entire cue card with them without linking it to story questions
     (When you hear a why question, you listen for …. Etc.).
   - Interventionist then asks the participant to reread the text passage quietly or silently to self, thinking about the what, who, etc. and keep the “wh” cue card in front of them.

2. Once the participant rereads then:
   - Instruct the participant to verbally answer the “wh” questions and to use their cue card if they need help.
   - The interventionist then asks the 5 “wh”
1. Text only data probes will be conducted for each component of the literacy block (vocabulary, guided reading/locating information in text, & “wh” comprehension questions)

2. Record text only data for each probe as above

**Post-Intervention**

Pre-Social Validity Survey Completed by Participant, Parent, & Teacher
| Compile data into tables, graphs & write summary |   |   |
# Appendix E

## Experiment 2

### Procedural Checklist

*Literacy Instruction for Learners with Moderate to Severe Intellectual Disabilities: A Chance for Growth in Reading through Adapted Materials and Evidence-Based Strategies*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Baseline</strong></td>
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<tr>
<td>Moderate to Severe Disability Check</td>
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<td></td>
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<tr>
<td>Adaptive Behavior Scale Check</td>
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<tr>
<td>Dictionary Use Check</td>
<td></td>
<td></td>
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<tr>
<td>Fry’s First 100 Sight Words</td>
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<tr>
<td>Symbol Assessment</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DRA – 2 Assessment</td>
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<tr>
<td>Experience with Literacy Check</td>
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<tr>
<td>Attendance Check</td>
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<tr>
<td>Age Check</td>
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</tr>
<tr>
<td>Signed Parent Permission to Participate</td>
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<td></td>
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<tr>
<td>Signed Consent to Participate by Student</td>
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<td>Assent Consent</td>
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<tr>
<td>Photo/Video Release</td>
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<tr>
<td>Experience with Literacy Check</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Social Validity Survey Completed by Participant, Parent, &amp; Teacher</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials Check per Participant</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binder with 4 Sections tabbed by Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Vocabulary Cards Text Only per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Vocabulary Cards Adapated with Visual Symbol per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary Text Only Matching Page per Text Passage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary Visual Symbol Matching Page per Text Passage</td>
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<tr>
<td>--------------------------------------------------------</td>
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<tr>
<td>Vocabulary data mat</td>
<td></td>
<td></td>
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<tr>
<td>4 Text Passages Text Only</td>
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<td></td>
<td></td>
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<tr>
<td>4 Text Passages Text Paired with Visual Symbol Support</td>
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<td></td>
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</tr>
<tr>
<td>Shared reading questions and Cover page walk questions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>WH (5) multiple choice questions text only set of 5 per text</td>
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<tr>
<td>WH (5) multiple choice questions with adapted text set of 5 per text</td>
<td></td>
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</tr>
</tbody>
</table>

**Baseline**

**Word Study**

1. Ask participant to read through the 10 printed word flashcards to self
2. Ask participant to match the 10 printed word flashcards
3. Ask participant to “see it say it” in 3 seconds or say “skip” if they don’t know the printed word when interventionist points randomly the flash card with printed word only
4. Record data on vocabulary event recording sheet

**Shared Reading**

(Immediately following the vocabulary section)

1. Give text passage to participant in written word only
2. Ask participant to read text passage to self in 3-5 minutes
3. Ask the participant the 5 pre-selected comprehension questions (one at-a-time) and
ask the participant to locate the answer in the text passage by putting their finger on the answer

4. Inform the participant to say “skip” if they don’t know the answer.

5. Record data on locating information in text event recording sheet

**Comprehension**
(Immediately following the shared reading section)

1. Verbally read questions to the participant (one at-a-time) 5 pre-selected “wh” comprehension questions about the text passage

2. Instruct the participant to circle the correct answer the “wh” question. Do NOT read the answers to the participant.

3. Record data on answering “wh” questions event recording sheet

**Intervention Phase (after baseline shows as stable or descending per participant)**

**Word Study**

1. Ask participant to match the 10 printed word & visual symbol flashcards and read the word as they match it
   - Verbal Cue is "match pictures, say your vocabulary word"
   - 1 trial of 10 words
   - Error Correction:
     - Cue with “Look at the picture”
     - Interventionist point to side of word and say word without pause & give definition
2. If participant says word correctly give praise and then give the definition. For example, “that’s right. The word is ‘shore.’ A ‘shore’ is the land or area along the edge of a lake or river or ocean.”

3. Word Search:
   - Interventionist randomly points to side of each vocabulary word on matching sheet. See random list for each day.
   - Cue participant to “see it say it”
   - First trial 0 second constant time delay
   - At first 0 second time delay also give definition. For example, “shore. A ‘shore’ is the land or area along the edge of a lake or river or ocean.”
   - Second trial 3 second constant time delay – Positive verbal praise for correct independent answer “great reading_____”
   - Error Correction:
     - Cue with “Look at the picture”
     - Interventionist point to side of word and say word without pause & give definition

3. Ask participant to “see it say it” when interventionist points randomly to the flashcard with printed word & visual
- 3-second constant time delay.
  Use flashcard mat to put word in correct pile once read by participant.

4. Immediate specific verbal praise will be given for independent correct answers, “Great you read the word____”.
5. Record data on vocabulary event recording sheet.

**Shared Reading**
(Immediately following the vocabulary section)

1. Give text passage to participant in written word paired with visual symbols

2. Interventionist guides passage walk of adapted text:
   - Discuss the passage title and what it means
   - Cue the student to look at the passage picture and think what the story might be about
   - Ask the student to make a prediction about the story or inference from the picture
   - Ask the participant to make a personal connection to the passage title and passage picture - prompt with questions from shared reading cover walk page for each story.
   - See title/cover walk set questions for each
<table>
<thead>
<tr>
<th>text to ask participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Interventionist asks the participant to read the story with her in a shared reading format:</td>
</tr>
<tr>
<td>• Verbally prompt the participant to track each word by pointing as they read.</td>
</tr>
<tr>
<td>• Tell participant to use their picture cues in text if they don’t know a word.</td>
</tr>
<tr>
<td>• The interventionist will use shared reading to explicitly model proficient reading skills such as fluency, expression, and print concepts.</td>
</tr>
<tr>
<td>• The interventionist will stop after page one and ask set questions about the text that was read and discuss what happened in the text.</td>
</tr>
<tr>
<td>• The interventionist will stop after page two and ask set questions about the text that was read and discuss what happened in the text.</td>
</tr>
<tr>
<td>• See text discussion questions to be asked for each participant.</td>
</tr>
<tr>
<td>4. Ask the participant the 5 pre-selected wh questions (one at-a-time) and ask the participant to locate the answer in the text passage by putting their finger on the answer.</td>
</tr>
</tbody>
</table>
- Participants will be verbally prompted to use their picture cues in the adapted text.
- Initial trial at 0-second constant time delay.
- Interventionist turns pages for initial trial.
- Trial 2 is a 3-second constant time delay – data taken off this trial.
- Participant turns pages for this trial. 3 seconds start once page is turned by participant.

5. Give immediate specific verbal praise for independent correct answers, “Nice job locating _____ in the text passage”
   - Give credit for locating word not picture

6. Record data on locating information in text event recording sheet for second trial.

**Comprehension** (Immediately following the shared reading section)

1. Interventionist will ask the participant 5 WH multiple choice questions with adapted text one at a time
   - Interventionist reads answers while pointing to side of each one
   - Participant circles correct answer

2. Error Correction:
   - First say the word they circled and that is not right then give
the definition – i.e. sky is not right. A sky has clouds and is what you see when you look up

- Then re-read the question and highlight key words
- Reread answers except wrong answer
- If answer is wrong again repeat - First say the word they circled and that is not right then give the definition
- Then re-read the question and highlighted key words
- Reread answers except 2 wrong answers
- If wrong third time forced choice – Say ___ is not right and give definition
- Say----is the answer and relate it back to the story for definition

3. Give immediate specific verbal praise for independent correct answers “Great answering ____”
   - Credit given for first try independent only

4. Record data on answering “wh” questions event recording sheet.

**Generalized Text Probes**
- with adapted materials but no teaching
- Done before Maintenance Probes

**Word Study**
1. Ask participant to read through the 10 adapted flashcards to self
2. Ask participant to match the 10 adapted flashcards
3. Ask participant to “see it say it” in 3 seconds or say “skip” if they don’t know the printed word when interventionist points randomly at the flash card with adapted text
4. Record data on vocabulary event recording sheet

**Shared Reading**
(Immediately following the vocabulary section)
1. Give adapted text passage to participant
2. Ask participant to read adapted text passage to self in 3-5 minutes
3. Ask the participant the 5 pre-selected comprehension questions (one at-a-time) and ask the participant to locate the answer in the adapted text passage by putting their finger on the answer
4. Inform the participant to say “skip” if they don’t know the answer.
5. Record data on locating information in text event recording sheet

**Comprehension**
(Immediately following the shared reading section)
1. Verbally read questions to the participant (one at-a-time) 5 pre-selected “wh” comprehension questions about the text passage with adapted multiple choice.
2. Instruct the participant to circle the correct answer to the “wh” question. Do NOT read the answers to the participant.

3. Record data on answering “wh” questions event recording sheet

### Maintenance Text Probes

#### Word Study
1. Ask participant to read through the 10 printed word flashcards to self
2. Ask participant to match the 10 printed word flashcards
3. Ask participant to “see it say it” in 3 seconds or say “skip” if they don’t know the printed word when interventionist points randomly the flash card with printed word only
4. Record data on vocabulary event recording sheet

#### Shared Reading
(Immediately following the vocabulary section)
1. Give text passage to participant in written word only
2. Ask participant to read text passage to self in 3-5 minutes
3. Ask the participant the 5 pre-selected comprehension questions (one at-a-time) and ask the participant to locate the answer in the text passage by putting their finger on the answer
4. Inform the participant to say “skip” if they don’t know the answer.

5. Record data on locating information in text event recording sheet

**Comprehension**
(Immediately following the shared reading section)

1. Verbally read questions to the participant (one at-a-time) 5 pre-selected “wh” comprehension questions about the text passage

2. Instruct the participant to circle the correct answer the “wh” question. Do NOT read the answers to the participant.

3. Record data on answering “wh” questions event recording sheet

Post-Social Validity Survey Completed by Participant, Parent, & Teacher

Compile data into tables, graphs & write summary
Appendix F
Experiment 1 Baseline Text & Materials
The Color Wheel & Piñatas
The Color Wheel
THE COLOR WHEEL

Painting is fun. You can paint a rainbow if you have many colors. You can make any color you want if you know how.

Painters make their own paint colors. They get just a few colors. Then they mix the paint to make the color they need.

If you need paint, you can just get red, blue, and yellow. Painters use color wheels to help them make colors.

Look at the color wheel. It tells you to mix red and blue to make purple. If you mix yellow and blue, you get green. What color do you make if you mix yellow and red?

With the colors red, blue, and yellow you can make any color you want. Someday your teacher will say, “You may have only three paint colors.” What colors will you ask for?
Piñatas
PIÑATAS

Have you been to a party and played with a piñata? Some piñatas are paper bulls filled with candy. Children hit the bull with sticks. The bull breaks and the children run for the falling candy.

The paper bull was a piñata. Piñatas are very old toys.

In Spain, children played with piñatas at Christmas. The Christmas piñata looked like a star. The star had three points. They said each point was one of the Three Wise Men who visited Jesus. The candies in each point were like the gifts the Three Wise Men took to Jesus.

When people from Spain came to Mexico they brought piñatas. The people of Mexico liked the toys. They made them for their children.

The children of Mexico have played with piñatas for many years. Today you can find piñata animals, people, and stars.

You can play with a piñata, too. First, cover your eyes and hold a stick. Next, turn around three times. Last, hit the piñata three times. When it breaks, everyone shares the candy that falls from Mexico’s piñata.
blue

color wheel

green

painter

red

painting
colors

purple

rainbow

yellow
piñatas

bull

Christmas

candy

Mexico

stick
children

played

star

cover
Vocabulary Text Passage: The Color Wheel

Student Name: ________________________________
Date: ______________________________________

Circle: PROBE BASELINE INTERVENTION I INTERVENTION II

Directions:
1. Vocabulary checks are done daily – see vocabulary instruction sheet.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate = or -)</th>
<th>Intervention I</th>
<th>Intervention II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>blue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>color wheel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>green</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>painter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>red</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>painting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>colors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>purple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rainbow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Vocabulary Text Passage: Piñatas

Student Name:_________________________________________________________________
Date:___________________________________________________________________

Circle: PROBE  BASELINE  INTERVENTION I  INTERVENTION II

Directions:
1. Vocabulary checks are done daily – see vocabulary instruction sheet.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate = or -)</th>
<th>Intervention I</th>
<th>Intervention II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>piñatas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Christmas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>candy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>stick</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>star</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Locating Information in Text Questions & Data Sheets

Text Passage: Color Wheel

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________

Date:__________________________________________________________________

Adapted Text Passage Name:____________________________________________

Circle: PROBE     BASELINE     INTERVENTION I     INTERVENTION II

Directions:
1. Locating information in text checks are done daily.
2. Mark + for correct and O for incorrect. Student must point to correct answer to get point. Please see correct answer below the question.

Text Passage: Color Wheel

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct = +</th>
<th>Incorrect = O</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Point to who uses a color wheel to help them mix colors. (answer: painters)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. what is the first color the story teaches you to make? (answer: purple)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What can you paint with many colors? (answer: rainbow)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What color do you get if you mix yellow and blue? (answer: green)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. What can you use to help you make colors? (answer: color wheel)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________
Text Passage: Piñatas

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name: ______________________________________________________________

Date: ____________________________________________________________________

Expository Text Passage Name: ______________________________________________

Circle: PROBE     BASELINE     INTERVENTION I     INTERVENTION II

Directions:
1. Locating information in adapted text checks are done daily.
2. Mark + for correct and O for incorrect. Please see acceptable answers below each question. Student must point to correct answer to get a point.

Text Passage: Piñatas

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct = +</th>
<th>Incorrect = O</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What do children hit the piñatas with?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: stick)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What did the Christmas piñata look like?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: star)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What do you do to your eyes before you get to hit the piñata?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: cover)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What is inside the piñatas?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: candy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. When did they play with piñatas in Spain?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: Christmas)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5: ______________________________________________________
**Text Passage: Color Wheel**

“WH” Questions & Data Sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________

Date:__________________________________________________________________

Expository Text Passage Name:____________________________________________

Circle: PROBE   BASELINE   INTERVENTION I   INTERVENTION II

Directions:
1. Comprehension checks are done daily.
2. Mark + for correct and O for incorrect. Please see acceptable answers below each question.

**Text Passage: Color Wheel**

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct = +</th>
<th>Incorrect = O</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Who uses a color wheel to help them make colors? (answer: painters)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What three colors do you need to make any color you want? (answer: red, blue, yellow)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Why is the picture in the story called a color wheel? (answer: different colors are in it &amp; shaped like a wheel – need both)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. When would you need to use a color wheel? (answer: when you want to mix colors)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. When might you use a color wheel? (answer: when painting, in art class, when mixing paints – any are correct)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________
Text Passage: Piñatas

“WH” Questions & Data Sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________

Date:__________________________________________________________________

Expository Text Passage Name:____________________________________________

Circle: PROBE   BASELINE INTERVENTION I   INTERVENTION II

Directions:
1. Comprehension checks are done daily.
2. Mark + for correct and O for incorrect. Please see acceptable answers below each question.

Text Passage: Piñatas

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct = +</th>
<th>Incorrect = O</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are piñatas filled with?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: candy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. When does the candy fall out of the piñata?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: when the piñata is broken by the stick)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Where did children play with piñatas at Christmas?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: Spain)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Why do you cover your eyes when you play with a piñata?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: to make it harder to hit the piñata)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Who gets to share the candy when the piñata breaks?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: everyone who is playing)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________
Appendix G
Experiment 1 Intervention Phase 1 & 2 Adapted Text & Materials
The Color Wheel & Piñatas

The Color Wheel
Painting is fun. You can paint a rainbow if you have many colors. You can make any color you want if you know how.

Painters make their own paint colors. They get just a few colors. Then they mix the paint to make the color they need.
If you need paint, you can just get red, blue, and yellow. Painters use color wheels to help them make colors.

Look at the color wheel. It tells you to mix red, and blue to make purple. If you mix yellow and blue, you get green. What colors do you make if you mix yellow and red?
With the colors red, blue, and yellow you can make any color you want. Someday your teacher will say “You may only have three paint colors”. What colors will you ask for?
Piñatas
Piñatas

Have you been to a party and played with a piñata?

Some piñatas are paper bulls filled with candy. Children hit the bull with sticks. The bull breaks and the children run for the falling candy.

The paper bull was a piñata. Piñatas are very old toys.
In Spain, children played with piñatas at Christmas.

The Christmas piñata looked like a star. The star had three points. They said each point was one of the Three Wise Men who visited Jesus. The candies in each point were like the gifts the Three Wise Men took to Jesus.

When people from Spain came to Mexico they brought piñatas. The people of Mexico liked the toys.

They made them for their children. The children of Mexico have played with piñatas for many years. Today
you can find piñata animals, people, and stars.

You can play with a piñata, too. First, cover your eyes and hold a stick. Next, turn around three times.

Last, hit the piñata three times. When it breaks, everyone shares the candy that falls from Mexico’s piñata.
Adapted Vocabulary Flashcards and Matching

The Color Wheel

- painting
- painter
- color wheel
- blue
- rainbow
- green
red

purple

Yellow

colors
Piñatas

bull

played

piñata

Christmas

candy

children
stick
Mexico

star

cover
Intervention Phase 1 & 2 Random Vocabulary Lists

Color Wheel Random Vocabulary Lists for Word Search

List 1
1. Blue
2. Color Wheel
3. Green
4. Painter
5. Red
6. Painting
7. Colors
8. Purple
9. Rainbow
10. Yellow

List 2
1. Green
2. Painter
3. Rainbow
4. Yellow
5. Red
6. Color Wheel
7. Blue
8. Painting
9. Purple
10. Colors

List 3
1. Colors
2. Blue
3. Rainbow
4. Color Wheel
5. Purple
6. Green
7. Painting
8. Red
9. Painter
10. Yellow

List 4
1. Yellow
2. Red
3. Colors
4. Rainbow
5. Painter
6. Green
7. Purple
8. Color wheel
9. Painting
10. Blue
Piñatas Random Vocabulary Lists for Word Search

List 1
1. piñatas
2. bull
3. Christmas
4. candy
5. Mexico
6. stick
7. children
8. played
9. star
10. cover

List 2
1. cover
2. star
3. played
4. children
5. stick
6. Mexico
7. candy
8. Christmas
9. bull
10. piñatas

List 3
1. Mexico
2. Christmas
3. children
4. bull
5. star
6. played
7. cover
8. candy
9. piñatas
10. stick

List 4
1. piñatas
2. bull
3. candy
4. stick
5. children
6. played
7. star
8. cover
9. Mexico
10. Christmas
<table>
<thead>
<tr>
<th>Vocabulary Mat Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent (before prompt)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>After Prompt</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Error</th>
</tr>
</thead>
</table>
Shared Reading Title Walk and Discussion Questions

The Color Wheel Shared Reading Questions

Title & Cover Page:
1. Let’s read the title. What do you think of when you hear the words Color Wheel?
2. Let’s look at the picture. What is the color wheel making you think about? (prompt – art class, coloring or drawing, painting, stage craft)
3. Have you ever used a color wheel before in art class, painting, or stage craft?
4. The title and cover page are to get you thinking about the text you are going to read. Looking at them, what do you think the text is going to be about?

During Reading Discussion:
1. Say “this page is talking about painting and how people can make their own paint colors if they know how”. Have you ever mixed paint colors?
2. Say “this page tells you how to use a color wheel. Let’s look at the cover. Put your pointers on yellow and red. Now move them together. What color do they make if you mix them?”

The Piñatas Shared Reading Questions

Title & Cover Page:
5. Let’s read the title. What do you think of when you hear the word Piñatas?
6. Let’s look at the picture. What is the piñata making you think about? (prompt – parties where you got to hit the piñata, different kinds of piñatas)
7. Have you ever played with a piñata before at a birthday party or family gathering?
8. The title and cover page are to get you thinking about the text you are going to read. Looking at them, what do you think the text is going to be about?

During Reading Discussion:
3. Say “this page is talking about how to play with a piñata”. Have you ever played with a piñata before?
4. Say “this page tells you about the piñatas from Spain. Let’s look at the page. At the bottom it talks about when people from Spain came to Mexico they brought piñatas and the people of Mexico like the toys so they made them for their children. What “toy” are they talking about?”
Intervention Phase 1 & 2 Visual Cue Card Comprehension Questions

When you hear:

?  What  Think of a thing.

?  Why  Think of a “because”.

?  Who  Think of a person or animal.

?  When  Think of a time something is done.

?  Where  Think of a place.
Appendix H

Experiment 2

Expository Text Passages Printed Word Text 1-4

The Pupfish of Devil’s Hole
The Pupfish of Devil’s Hole Text 1

In Nevada, there is a pond named Devil’s Hole. Tiny fish called pupfish live in the water.

Pupfish are only one inch long. About 200 pupfish live in Devil’s Hole. Pupfish don’t live anywhere else in the world.

A rock sits just under the water in Devil’s Hole. Water plants grow on this rock. The plants are the pupfishes’ only food. If the water drops below this rock, the water plants will dry up and die.

Ranchers in Nevada also need the water. They use the water to grow plants.
Some people don’t want the ranchers to use the water from Devil’s Hole. They want to save the pupfish. Devil’s hole is the only place ranchers can get water. Who do you think is right?

In June 1976, the Supreme Court saved the water in Devil’s Hole for the pupfish. However, they said the ranchers can use the water, too. It is the ranchers’ responsibility to see that the water stays high enough to cover the rock where the water plants grow.
Fish are an important part of our diet. You have seen people fishing with nets and poles. Have you ever seen people fish with dolphins?

There is a tribe of people who fish with dolphins. When the time is right, the men stand on the shore. They beat the ocean water with heavy sticks.

Far off shore, the dolphins hear the beating sticks, and answer the call. Like swimming cowboys, the dolphins round up schools of fish. The dolphins herd the fish toward the beating sound.
From the shore, the men see hundreds of fish coming toward them. They quickly run out in the water with their nets. The dolphins drive the fish into the nets. When the fishing is over, the tribe has fish to last for months. What do the dolphins get for their work? They get an easy meal of their favorite food, fish.
Stories in the Stars

Atmosphere of Betelgeuse
- Alpha Orionis

Hubble Space Telescope, Faint Object Camera

Size of Jupiter's Orbit

Size of Earth's Orbit

Size of Star
Stories in the Stars Text 3

Long ago, people looked at the stars and saw pictures of animals, people, and things. They even gave these big dot-to-dot star pictures names. At night, they told stories about the pictures in the sky.

The Big Dipper is easy to find. It looks like a large pot. Sailors use the Big Dipper to find their way at night. The two end stars point north.

The Seven Sisters is a small group of stars. A story tells us that these stars were seven beautiful sisters. The Gods turned the sisters into stars and set them in the sky.

The Bull is a large group of stars. The eye of the Bull is a red star. It makes the Bull look mad.

The stories about the stars are very old. Read more about the Hunter, the Swan, or the Dragon.
People use these stories today to help find their way in the stars.
Set a World’s Record
Set a World’s Record Text 4

In 1994, Noureddine Morceli set a world’s record in running. Can you run as fast as Morceli?

If you would like to know, give yourself a simple test. First, you must be healthy. Don’t run if you have an illness that gets worse if you exercise.

Next, go to a track. Many schools have tracks that go around a football field. Take a watch that counts seconds with you. Ask a friend to time you.

Run around the track one time. Write down how many minutes and seconds it took you to run, then multiply that number by four. One mile equals four trips around the track.
How fast do you think you can run? Morceli ran one mile in 3 minutes and 44.39 seconds.

If you did not run as fast as Morceli, work at it. Run every day around the track. Every few weeks, time yourself again. Some day you might set a new world’s record.
Appendix I
Experiment 2 Intervention Expository Text Passages Adapted Texts 1-4

Text 1

The Pupfish of Devil’s Hole

In Nevada, there is a pond named Devil’s Hole.

Tiny fish called pupfish live in the water.

Pupfish are only one inch long. About 200 pupfish live in Devil’s Hole. Pupfish don’t live anywhere else in the world.

A rock sits just under the water in Devil’s Hole.
Water plants grow on this rock. The plants are the pupfishes’ only food. If the water drops below this rock, the water plants will dry up and die.

Ranchers in Nevada also need the water. They use the water to grow plants.

Some people don’t want the ranchers to use the
water from Devil’s Hole. They want to save the pupfish.

Devil’s hole is the only place ranchers can get water. Who do you think is right?

In June 1976, the Supreme Court saved the water in Devil’s Hole for the pupfish. However, they said the ranchers can use the water, too. It is the ranchers’ responsibility to see that the water stays
high enough to cover the rock where the water
plants grow.
Text 2

Teamwork

Fish are an important part of our diet. You have seen people fishing with nets and poles. Have you ever seen people fish with dolphins?

There is a tribe of people who fish with dolphins.

When the time is right, the men stand on the shore. They beat the ocean water with heavy sticks.

Far off shore, the dolphins hear the beating sticks, and answer the call. Like swimming cowboys,
the dolphins round up schools of fish. The dolphins herd the fish toward the beating sound.

From the shore, the men see hundreds of fish coming toward them. They quickly run out in the water with their nets. The dolphins drive the fish into the nets.

When the fishing is over, the tribe has fish to last for months. What do the dolphins get for their work?

They get an easy meal of their favorite food, fish.
Stories in the Stars

Long ago, people looked at the stars and saw pictures of animals, people, and things. They even gave these big dot-to-dot star pictures names. At night, they told stories about the pictures in the sky.

The Big Dipper is easy to find. It looks like a large pot. Sailors used the Big Dipper to find their
way at night. The two end stars point north.

The Seven Sisters is a small group of stars. A story tells us that these stars were the beautiful seven sisters. The Gods turned the sisters into stars and set them in the sky. The Bull is a large group of stars. The eye of the bull is a red star. It makes the bull look mad.
The stories about the stars are very old. Read more about the Hunter, the Swan, or the Dragon. People use these stories today to help find their way in the stars.
In 1994, Noureddine Morceli set a world’s record in running. Can you run as fast as Morceli?

If you would like to know, give yourself a simple test. First, you must be healthy. Don’t run if you have an illness that gets worse if you exercise.

Next, go to a track. Many schools have tracks...
that go around a football field. Take a watch that

counts seconds with you. Ask a friend to time you.

Run around the track one time. Write down how

many minutes and seconds it took you to run, then

multiply that by four. One mile equals four trips

around the track.

How fast do you think you can run? Morceli ran

one mile in 3 minutes and 44.39 seconds.

If you did not run as fast as Morceli, work at it.
Run every day around the track. Every few weeks, time yourself again. Some day you might set a new world’s record.
Appendix J
Experiment 2
Baseline Materials for Word Study, Guided Reading, & Comprehension Texts 1-4

Matching and Flashcards
Text 1 - The PupFish of Devil’s Hole Vocabulary

Nevada
pupfish
ranchers
water
Devil’s Hole
plants

grow

rock

live

Supreme Court
Text 2 - Teamwork

fish

dolphins

tribe

men

shore
ocean

hear

beat

nets

see
Text 3 - Stories in the Stars

stars

people

pictures

sky

stories
Big Dipper

Seven Sisters

night

mad

eye
Text 4 - Set a World’s Record

run

track

schools

watch

fast
World’s illness test time friend
### Vocabulary Text Passage: The Pupfish of Devil’s Hole

**Student Name:**

**Date:**

---

**Circle:**

- **BASELINE**
- **TEXT PROBE**
- **INTERVENTION**

**Directions:**
1. Vocabulary checks are done daily – see vocabulary instruction sheet.
2. Mark + for correct and – for incorrect for baseline or text probes.
3. Mark + in correct Intervention column.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate + or -)</th>
<th>Intervention</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Nevada</td>
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<tr>
<td></td>
<td>pupfish</td>
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<td></td>
<td>ranchers</td>
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<td></td>
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<td></td>
<td>water</td>
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<td></td>
<td>Devil’s Hole</td>
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<td></td>
<td>plants</td>
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<td>grow</td>
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<td></td>
<td>rock</td>
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<td></td>
<td>live</td>
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<td></td>
<td>Supreme Court</td>
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</tr>
</tbody>
</table>
Text 2
Vocabulary Text Passage: Teamwork

Student
Name: ____________________________________________________________
Date: __________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION
Directions:
1. Vocabulary checks are done daily – see vocabulary instruction sheet.
2. Mark + for correct and – for incorrect for baseline or text probes.
3. Mark + in correct Intervention column.

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<th>Intervention</th>
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<td>Before Prompt After Prompt Error</td>
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<tr>
<td></td>
<td>fish</td>
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<td>dolphins</td>
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<td></td>
<td>tribe</td>
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<td></td>
<td>men</td>
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<td>shore</td>
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<td>ocean</td>
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<td>hear</td>
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<td>beat</td>
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<td>nets</td>
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<td></td>
<td>see</td>
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</tbody>
</table>
Text 3
Vocabulary Text Passage: Stories in the Stars

Student
Name: ____________________________________________________________
Date: ____________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Vocabulary checks are done daily – see vocabulary instruction sheet.
2. Mark + for correct and – for incorrect for baseline or text probes.
3. Mark + in correct Intervention column.

<table>
<thead>
<tr>
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<th>Intervention</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>stars</td>
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<td></td>
<td>people</td>
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<td></td>
<td>pictures</td>
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<td></td>
<td>sky</td>
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<td></td>
<td>stories</td>
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<td></td>
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<tr>
<td></td>
<td>Big Dipper</td>
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<td></td>
<td>Seven Sisters</td>
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</tr>
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<td></td>
<td>night</td>
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<td>mad</td>
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<td></td>
<td>eye</td>
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</tbody>
</table>
Text 4
Vocabulary Text Passage: Set a World’s Record

Student Name: ________________________________________________________________
Date: ______________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Vocabulary checks are done daily – see vocabulary instruction sheet.
2. Mark + for correct and – for incorrect for baseline or text probes.
3. Mark + in correct Intervention column.

<table>
<thead>
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<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate + or -)</th>
<th>Intervention</th>
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</thead>
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<tr>
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<td>illness</td>
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<td>test</td>
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<td>friend</td>
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<td>run</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>track</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>schools</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>watch</td>
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</tr>
<tr>
<td></td>
<td>fast</td>
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</tr>
</tbody>
</table>
Baseline Locating Information in Text Questions & Data Sheets Texts 1-4
Text 1 - Text Passage: The Pupfish of Devil’s Hole

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________
Date:_______________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
3. Locating information in text checks are done daily.
4. Put + mark in correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What do the tiny pupfish do in the water of Devil’s Hole? (answer: live)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What sits just under the water in the Devil’s Hole? (answer: rock)</td>
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</tr>
<tr>
<td>3. What do the pupfish eat that grows on the rock? (answer: plants)</td>
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</tr>
<tr>
<td>4. What do the ranchers use from the devil’s Hole to grow plants? (answer: water)</td>
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</tr>
<tr>
<td>5. What do the water plants do on the rock in Devil’s Hole? (answer: grow)</td>
<td></td>
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</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________
**Text 2 - Text Passage: Teamwork**

Locating information in adapted text score sheet for 5 Questions per Expository Text

**Student Name:** ____________________________________________________________

**Date:** __________________________________________________________________

**Circle:** BASELINE TEXT PROBE INTERVENTION

**Directions:**
1. Locating information in text checks are done daily.
2. Put + mark in correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the tribe using the dolphins to catch? (answer: fish)</td>
<td></td>
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<tr>
<td>2. What do the men do to the hundreds of fish from shore? (answer: see them)</td>
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<tr>
<td>3. Who has fish to last for months when the fishing is over? (answer: tribe)</td>
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<tr>
<td>4. How do the dolphins know the men are beating the sticks on the ocean waters? (answer: hear them)</td>
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</tr>
<tr>
<td>5. Where do the dolphins swim like cowboys? (answer: ocean)</td>
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</tr>
</tbody>
</table>

**Total Credit out of 5:** ______________________________________________________
Text 3 - Text Passage: Stories in the stars

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name:____________________________________________________________

Date:____________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Locating information in text checks are done daily.
2. Put + mark in correct column for each question. Credit given only to those in the independent column.

Text Passage: Stories in the Stars

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What were the pictures in the sky made of? (answer: stars)</td>
<td></td>
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</tr>
<tr>
<td>2. How does the red eye of the Bull make it look? (answer: mad)</td>
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<tr>
<td>3. What does the group of stars make in the sky that people tell stories about? (answer: pictures)</td>
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<tr>
<td>4. What part of the Bull is red? (answer: eye)</td>
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<tr>
<td>5. What did the people tell about the pictures in the sky? (answer: stories)</td>
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</tbody>
</table>

Total Credit out of 5:________________________________________________________
Text 4 - Text Passage: Set a World’s Record

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________

Date:__________________________________________________________________

Circle: BASLINE TEXT PROBE INTERVENTION

Directions:
1. Locating information in text checks are done daily.
2. Put + mark in correct column for each question. Credit given only to those in the independent column.

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<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What should you take to time yourself with? (answer: watch)</td>
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<tr>
<td>2. What do you do to yourself with a watch that counts seconds? (answer: time)</td>
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<tr>
<td>3. What do you need to do every day to be able to run fast like Morceli? (answer: run)</td>
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<tr>
<td>4. How did Morceli run to set the World’s record? (answer: fast)</td>
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<tr>
<td>5. What might get worse for you if you exercise? (answer: illness)</td>
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</tr>
</tbody>
</table>

Total Credit out of 5:_______________________________________________
Baseline Multiple Choice Questions Texts 1-4 Text 1 - The Pupfish of Devil’s Hole

Wh Multiple Choice Comprehension Questions

1. What is the name of the pond the pupfish lived in??
   A Nevada
   B Water
   C Devil’s Hole
   D Plants

2. Where is the Devil’s Hole located?
   A Pupfish
   B Rock
   C Supreme Court
   D Nevada

3. Who wants to use the water from the Devil’s Hole?
   A Ranchers
   B Live
   C Water
   D Devil’s Hole

4. What animal lives in the Devil’s Hole?
   A Grow
   B Pupfish
   C Plants
   D Live

5. Who saved the water in the Devil’s Hold for the pupfish in June of 1976?
   A Rock
   B Ranchers
   C Grow
   D Supreme Court
Text 2 - Teamwork

Wh Multiple Choice Comprehension Questions

1. What does the tribe in the story fish with?
   A Nets
   B Men
   C Dolphins
   D Hear

2. Where do the men stand to call the dolphins?
   A Shore
   B Ocean
   C See
   D Fish

3. What do the men do to the water with heavy sticks?
   A Hear
   B See
   C Nets
   D Beat

4. What do the dolphins drive the fish into?
   A Nets
   B Shore
   C Tribe
   D Men

5. Who sees hundreds of fish coming towards them from shore?
   A Dolphins
   B Men
   C See
   D Tribe
Text 3 - Stories in the Stars

Wh Multiple Choice Comprehension Questions

1. What star picture has two end stars that point north?
   A  Stars
   B  Night
   C  Big Dipper
   D  Seven Sisters

2. Who did the Gods turn into beautiful stars?
   A  Seven Sisters
   B  People
   C  Pictures
   D  Eye

3. When did the sailors use the Big Dipper to find their way?
   A  Mad
   B  Big Dipper
   C  Sky
   D  Night

4. Who uses the stories today to help find their way in the stars?
   A  Eye
   B  Stories
   C  People
   D  Sky

5. Where did the Gods put the Seven Sisters after they turned them into stars?
   A  Stories
   B  Sky
   C  Pictures
   D  Mad
Text 4 - Set a World’s Record

Wh Multiple Choice Comprehension Questions

1. What kind of record did Morcil set in running?
   A  World’s
   B  Illness
   C  Track
   D  Schools

2. Where should you run around once and time yourself?
   A  Time
   B  Fast
   C  Watch
   D  Track

3. What can you give yourself to see if you can run as fast as Morceli?
   A  Run
   B  Test
   C  Watch
   D  Illness

4. Where can you find a track to run on?
   A  Friend
   B  World’s
   C  Schools
   D  Test

5. Who should you ask to time you?
   A  Friend
   B  Fast
   C  Time
   D  Run
Text 1 - Text Passage: The Pupfish of Devil’s Hole

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

Student Name:__________________________________________________________

Date:__________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
3. Comprehension checks are done daily.
4. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

<table>
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<tr>
<th>Question</th>
<th>Independent (before the prompt)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the name of the pond the pupfish lived in? (answer: Devil’s Hole)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Where is the devil’s Hole located? (answer: Nevada)</td>
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<tr>
<td>3. Who wants to use the water from the Devil’s Hole? (answer: ranchers)</td>
<td></td>
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<tr>
<td>4. What animal lives in the Devil’s Hole? (answer: pupfish)</td>
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</tr>
<tr>
<td>5. Who saved the water in the Devil’s Hold for the pupfish in June of 1976? (answer: Supreme Court)</td>
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</tbody>
</table>
## Text 2 - Text Passage: Teamwork

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

Student Name: ________________________________

Date: ________________________________

Circle:  BASELINE  TEXT PROBE  INTERVENTION

Directions:

5. Comprehension checks are done daily.

6. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

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<tr>
<th>Question</th>
<th>Independent Baseline (before the prompt)</th>
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<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What does the tribe in the story fish with? (answer: dolphins)</td>
<td></td>
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</tr>
<tr>
<td>2. Where do the men stand to call the dolphins? (answer: shore)</td>
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<td></td>
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</tr>
<tr>
<td>3. What do the men do to the water with heavy sticks? (answer: beat)</td>
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<tr>
<td>4. What do the dolphins drive the fish into? (answer: nets)</td>
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</tr>
<tr>
<td>5. Who sees hundreds of fish coming towards them from shore? (answer: men)</td>
<td></td>
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</table>

Total Credit out of 5: ________________________________
Text 3 - Text Passage: Stories in the stars

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

Student Name:__________________________________________________________

Date:_________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Comprehension checks are done daily.
2. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
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<th>Independent Baseline (before the prompt Intervention)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What star picture has two end stars that point north (answer: Big Dipper)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Who did the Gods turn into beautiful stars? (answer: Seven Sisters)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. When did the sailors use the Big Dipper to find their way? (answer: Night)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Who uses the stories today to help find their way in the stars? (answer: people)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Where did the Gods put the Seven Sisters after they turned them into stars? (answer: sky)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________
## Text 4 - Text Passage: Set a World’s Record

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

**Student Name:** __________________________________________________________

**Date:** __________________________________________________________________

**Circle:**  BASELINE  TEXT PROBE  INTERVENTION

**Directions:**
1. Comprehension checks are done daily.
2. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent Baseline (before the prompt Intervention)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What kind of record did Morceli set in running? (answer: World’s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Where should you run around once and time yourself? (answer: track)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What can you give yourself to see if you can run as fast as Morceli? (answer: test)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Where can you find a track to run on? (answer: schools)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Who should you ask to time you? (answer: friend)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5: ______________________________________________________
Appendix K
Experiment 2 Intervention Materials for Word Study 1-4
Flashcards and Matching Texts 1-4
Text 1 - The Pupfish of Devil’s Hole

Nevada

pupfish

ranchers

water

Devil’s Hole
plants

grow

rock

live

Supreme Court
Text 2 – Teamwork

fish

dolphins

tribe

men

Shore
ocean

hear

beat

nets

see
Text 3 - Stories in the Stars

Stories

stars

people

pictures

Sky
Big Dipper

Seven Sisters

Night

Eye

mad
Text 4 - Set a World’s Record

World’s

illness

test

time

friend
run

track

schools

watch

fast
Text 1 Pupfish of Devil’s Hole

Nevada – is the state we live in.

Pupfish – tiny one inch fish that only live in the Devil’s Hole.

Ranchers – farmers that raise cattle and crops like cows and hay

Water – liquid found in rain, lakes, and ponds like the Devil’s Hole used for drinking from plants, animals, and people

Devil’s Hole – a pond in Nevada that the pupfish live in and that ranchers use for water

Plants – a small herb or vegetable growth that people, animals, and fish can eat

Grow – to get bigger in size

Rock – a hard mass of stone
Live — to be alive eating, drinking, and breathing

Supreme Court — Our highest federal court that rules on our laws

Text 2 — Teamwork

fish — swimming animals that live in water and have gills, fins, and scales

dolphins — large fishlike animals with heads like a beak who live in warm ocean waters

tribe — a group of people with set ways of living

men — an adult male/boy

shore — land along the edge of a lake, pond or ocean

ocean — a large body of salt water that fish, dolphins, and other sea animals live in
**hear** — to listen to

**beat** — to hit forcefully over and over again

**nets** — meshed fabric used to catch fish, birds or other animals in

**see** — to look at with your eyes

**Text 3 – Stories in the Stars**

**Stars** — light points up in the sky you can see at night

**People** — a group of human beings or persons

**Pictures** — photographs or images you can see

**Sky** — clouds and upper air above the Earth

**Stories** — tales people tell that are true or made up
Big Dipper — a group of stars that look like a pot

Seven Sisters — a small group of stars said to be beautiful sisters turned into stars by the Gods

Night — a period of darkness after the sun goes down

Mad - angry

Eye — what people and animals use to see with

Text 4 — Set a World’s Record

run — to go quickly with your legs much faster than walking

track — a path made to be followed like during a race

schools — a place where people learn

watch — a device worn on your wrist to tell time
fast – to move quick

World’s – our whole Earth with all people in it

Illness – being sick or not healthy

Test – a way to measure something to see how good it is or well it does

Time – a way to measure how long something takes

Friend – a person you like and support

Random Vocabulary Lists for Word Search Texts 1-4

Text 1 - Random Vocabulary List The Pupfish of Devil’s Hole
1. Supreme Court
2. Nevada
3. Live
4. Rock
5. Pupfish
6. Grow
7. Ranchers
8. Water
9. Devil’s Hole
10. Plants
11. Nevada
12. Devil’s Hole
13. Live
14. Supreme Court
15. Pupfish
16. Ranchers
17. Plants
18. Rock
19. Water
20. Grow

21. Devil’s Hole
22. Ranchers
23. Rock
24. Grow
25. Supreme Court
26. Water
27. Nevada
28. Plants
29. Live
30. Pupfish

31. Rock
32. Grow
33. Nevada
34. Live
35. Supreme Court
36. Devil’s Hole
37. Plants
38. Pupfish
39. Ranchers
40. Water

Text 2 - Random Vocabulary List
Teamwork
1. Fish
2. See
3. Dolphins
4. Nets
5. Tribe
6. Hear
7. Men
8. Ocean
9. Shore
10. Beat

11. Tribe
12. Men
13. Nets
14. See
15. Fish
16. Beat
17. Hear
18. Dolphins
19. Shore
20. Ocean

21. Shore
22. Men
23. Dolphins
24. See
25. Tribe
26. Beat
27. Ocean
28. Nets
29. Hear
30. Fish

31. Beat
32. Nets
33. Fish
34. See
35. Shore
36. Ocean
37. Tribe
38. Men
39. Hear
40. Dolphins

Text 3 - Random Vocabulary Lists Stories in the Stars
1. Stories
2. Mad
3. Stars
4. Eye
5. People
6. Night
7. Pictures
8. Seven Sisters
9. Sky
10. Big Dipper

11. Mad
12. Seven Sisters
13. Sky
14. Stories
15. Big dipper
16. Stars
17. Pictures
18. Night
19. Eye
20. People

21. Night
22. People
23. Big Dipper
24. Sky
25. Seven Sisters
26. Stars
27. Stories
28. Eye
29. Pictures
30. Mad

31. Sky
32. Story
33. Big dipper
34. Mad
35. Seven sisters
36. Pictures
37. Night
38. People
39. Eye
40. Stars

Text 4 - Random Vocabulary Lists set a World’s Record
1. Fast
2. Illness
3. Test
4. Watch
5. Time
6. Friend
7. Schools
8. Run
9. Track
10. World’s

11. Fast
12. World’s
13. Watch
14. Illness
15. Schools
16. Test
17. track
18. Time
19. Run
20. Friend

21. Friend
22. Test
23. Illness
24. Run
25. fast
26. schools
27. track
28. World’s
29. Time
30. Watch

31. Schools
32. Track
33. World’s
34. Fast
35. Run
36. Illness
37. Friend
38. Test
39. Watch
40. time
Vocabulary Data Mat for “See it Say it” within 3 Seconds

<table>
<thead>
<tr>
<th>Vocabulary Mat Data Collection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent (before prompt)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>After Prompt</th>
<th></th>
</tr>
</thead>
</table>

| Error |  |
**Intervention Vocabulary Data Collection Text 1-4**

**Text 1**
Vocabulary Text Passage: The Pupfish of Devil’s Hole

**Student Name:**

**Date:**

---

**Circle:**  BASELINE  TEXT PROBE  INTERVENTION

**Directions:**
4. Vocabulary checks are done daily – see vocabulary instruction sheet.
5. Mark + for correct and – for incorrect for baseline or text probes.
6. Mark + in correct Intervention column.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate + or -)</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nevada</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pupfish</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ranchers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>water</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Devil’s Hole</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>grow</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rock</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>live</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supreme Court</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Text 2
Vocabulary Text Passage: Teamwork

Student Name: ____________________________________________________________
Date: __________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
4. Vocabulary checks are done daily – see vocabulary instruction sheet.
5. Mark + for correct and – for incorrect for baseline or text probes.
6. Mark + in correct Intervention column.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate + or -)</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before Prompt</td>
<td>After Prompt</td>
</tr>
<tr>
<td>fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dolphins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tribe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>men</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>shore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ocean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>beat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>see</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Text 3
Vocabulary Text Passage: Stories in the Stars

Student
Name:_________________________________________________________________
Date:___________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION
Directions:
4. Vocabulary checks are done daily – see vocabulary instruction sheet.
5. Mark + for correct and – for incorrect for baseline or text probes.
6. Mark + in correct Intervention column.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate + or -)</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before Prompt</td>
<td>After Prompt</td>
</tr>
<tr>
<td>stars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pictures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big Dipper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seven Sisters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>night</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eye</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Text 4
Vocabulary Text Passage: Set a World’s Record

Student Name: __________________________________________________________
Date: ________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
4. Vocabulary checks are done daily – see vocabulary instruction sheet.
5. Mark + for correct and – for incorrect for baseline or text probes.
6. Mark + in correct Intervention column.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vocabulary Word</th>
<th>Baseline/Text Probe (Indicate + or -)</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>World’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>friend</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>run</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>track</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>schools</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>watch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fast</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix L
Experiment 2 Intervention Shared Reading Materials Texts 1-4

Questions & Data Collection for Locating Information back in Text Texts 1-4

Text 1 - Text Passage: The Pupfish of Devil’s Hole
Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name: __________________________________________________________

Date: __________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
3. Locating information in text checks are done daily.
4. Put + mark in correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What do the tiny pupfish do in the water of Devil’s Hole? (answer: live)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What sits just under the water in the Devil’s Hole? (answer: rock)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What do the pupfish eat that grows on the rock? (answer: plants)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What do the ranchers use from the devil’s Hole to grow plants? (answer: water)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. What do the water plants do on the rock in Devil’s Hole? (answer: grow)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5: __________________________________________________________
### Text 2 - Text Passage: Teamwork
Locating information in adapted text score sheet for 5 Questions per Expository Text

**Student Name:** __________________________________________________________

**Date:** __________________________________________________________________

**Circle:** BASELINE TEXT PROBE INTERVENTION

**Directions:**
1. Locating information in text checks are done daily.
2. Put + mark in correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the tribe using the dolphins to catch? (answer: fish)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What do the men do to the hundreds of fish from shore? (answer: see them)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Who has fish to last for months when the fishing is over? (answer: tribe)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How do the dolphins know the men are beating the sticks on the ocean waters? (answer: hear them)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Where do the dolphins swim like cowboys? (answer: ocean)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit out of 5:** __________________________________________________________
Text 3 - Text Passage: Stories in the stars

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________

Date:__________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Locating information in text checks are done daily.
2. Put + mark in correct column for each question. Credit given only to those in the independent column.

Text Passage: Stories in the Stars

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What were the pictures in the sky mad of? (answer: stars)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How does the red eye of the Bull make it look? (answer: mad)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What does the group of stars make in the sky that people tell stories about? (answer: pictures)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What part of the Bull is red? (answer: eye)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. What did the people tell about the pictures in the sky? (answer: stories)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________
### Text 4 - Text Passage: Set a World’s Record

Locating information in adapted text score sheet for 5 Questions per Expository Text

Student Name:__________________________________________________________

Date:______________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Locating information in text checks are done daily.
2. Put + mark in correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before prompt)</th>
<th>With 3 second prompt</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What should you take to time yourself with?(answer: watch)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What do you do to yourself with a watch that counts seconds?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: time)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What do you need to do every day to be able to run fast like Morceli?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: run)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How did Morceli run to set the World’s record?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: fast)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. What might get worse for you if you exercise?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(answer: illness)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5:____________________________________________________________
Intervention Phase - Title Talk/Cover Walk/Shared Reading Questions Texts 1-4

Text 1 - The Pupfish of Devil’s Hole Shared Reading Questions
Title & Cover Page:
9. Let’s read the title. What do you think of when you hear the words The Pupfish of Devil’s Hole?
10. Let’s look at the picture. What do you see in this picture? (prompt – tell me more, what else, fish, pond/lake)
11. Have you ever been to the pond called The Devil’s Hole? What about another pond with small minnows - What was it like/might it be like? What do you know about ponds?
12. The title and cover page are to get you thinking about the text you are going to read. Looking at them, what do you think the text is going to be about?

During Reading Discussion:
5. Say “this page is talking about that in Nevada there is a pond named The Devil’s Hole with tiny pupfish in it. The pupfish are only found in the Devil’s Hole – not anywhere else in the world. How big does it say the pupfish are? (prompt by rereading 3rd sentence in text)
6. Say “this page tells you about a rock that is in Devil’s Hold under the water that plants grow on for the pupfish to eat. Can you tell me what the story says will happen to the plants if the water drops below the rock? (Prompt by rereading the 3rd sentence. Then ask the question again)

Text 2 - Teamwork Shared Reading Questions
Title & Cover Page:
13. Let’s read the title. What do you think of when you hear the words Teamwork?
14. Let’s look at the picture. What do you see in this picture? (prompt – tell me more, what else, a dolphin, ocean)
15. Have you ever seen a dolphin in real life? Where did/might you? What do you know about dolphins?
16. The title and cover page are to get you thinking about the text you are going to read. Looking at them, what do you think the text is going to be about?

During Reading Discussion:
7. Say “this page is talking about fish being an important part of our diet and how some people fish with nets and poles. There is also a tribe of people who fish with something else…what is it? (prompt by rereading 1st sentence in paragraph 2)
8. Say “this page tells you about how the men fish for dolphins by beating the ocean with sticks and when the dolphins hear it the answer the call. Can you tell me what the story says the dolphins do to answer the call of the beating sticks? (Prompt by rereading the 2nd and 3rd sentences in the 1st paragraph. Then ask the question again)
Text 3 - Stories in the Stars Shared Reading Questions

Title & Cover Page:
17. Let’s read the title. What do you think of when you hear the words Stories in the Stars?
18. Let’s look at the picture. What do you see in this picture? (prompt – tell me more, what else, a kite - lines)
19. Have you ever looked up at the stars at night? What did you see? What do you know about stars?
20. The title and cover page are to get you thinking about the text you are going to read. Looking at them, what do you think the text is going to be about?

During Reading Discussion:
9. Say “this page is talking about how long ago people looked up at the stars and saw pictures? What kind of pictures did they see? (prompt by rereading 1st sentence in text)
10. Say “this page tells you about certain pictures in the stars like the Seven Sisters and The Bull. Can you tell me what the story says about one of them? (Prompt by having them pick either Seven Sisters or Bull then rereading the section of the page to the student and have them listen. Then ask the question again)

Text 4 - Set a World’s Record Shared Reading Questions

Title & Cover Page:
21. Let’s read the title. What do you think of when you hear the words Set a World’s Record?
22. Let’s look at the picture. What do you see in this picture? (prompt – tell me more, what else, a track, running a race)
23. Have you ever run in a race around a track? What was it like – win or lose? What do you know about racing on tracks?
24. The title and cover page are to get you thinking about the text you are going to read. Looking at them, what do you think the text is going to be about?

During Reading Discussion:
11. Say “this page is talking about how in 1994 Morceli set a world’s record in running and how you could run like Morceli. What does it say you must be in order to give yourself a running test ? (prompt by rereading 2nd sentence in text)
12. Say “this page tells you about how to time yourself running around the track. Can you tell me what the story says you should do after you run around the track one time? (Prompt by rereading the middle paragraph section of the page to the student and have them listen. Then ask the question again)
Appendix M
Experiment 2 Intervention Comprehension Questions Text 1-4

Adapted Multiple Choice Questions & Data Collection Sheets for Texts 1 - 4

Text 1 - Text Passage: The Pupfish of Devil’s Hole

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

Student Name: ____________________________________________________________

Date: __________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
3. Comprehension checks are done daily.
4. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent (before the prompt)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the name of the pond the pupfish lived in? (answer: Devil’s Hole)</td>
<td></td>
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<tr>
<td>2. Where is the devil’s Hole located? (answer: Nevada)</td>
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<tr>
<td>3. Who wants to use the water from the Devil’s Hole? (answer: ranchers)</td>
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<tr>
<td>4. What animal lives in the Devil’s Hole? (answer: pupfish)</td>
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</tr>
<tr>
<td>5. Who saved the water in the Devil’s Hold for the pupfish in June of 1976? (answer: Supreme Court)</td>
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<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5: ______________________________________________________
**Text 2 - Text Passage: Teamwork**

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

**Student Name:**__________________________________________________________

**Date:**________________________________________________________________

**Circle:**  
BASELINE  
TEXT PROBE  
INTERVENTION

**Directions:**

1. Comprehension checks are done daily.
2. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent Baseline (before the prompt)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What does the tribe in the story fish with? (answer: dolphins)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Where do the men stand to call the dolphins? (answer: shore)</td>
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<tr>
<td>3. What do the men do to the water with heavy sticks? (answer: beat)</td>
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<tr>
<td>4. What do the dolphins drive the fish into? (answer: nets)</td>
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</tr>
<tr>
<td>5. Who sees hundreds of fish coming towards them from shore? (answer: men)</td>
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</tr>
</tbody>
</table>

**Total Credit out of 5:**_________________________________________________
Text 3 - Text Passage: Stories in the stars

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

Student Name: ________________________________________________________________

Date: ________________________________________________________________

Circle: BASELINE TEXT PROBE INTERVENTION

Directions:
1. Comprehension checks are done daily.
2. Put a + mark in the correct column for each question. Credit given only to those in the independent column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent Baseline (before the prompt Intervention)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What star picture has two end stars that point north? (answer: Big Dipper)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Who did the Gods turn into beautiful stars? (answer: Seven Sisters)</td>
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</tr>
<tr>
<td>3. When did the sailors use the Big Dipper to find their way? (answer: Night)</td>
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</tr>
<tr>
<td>4. Who uses the stories today to help find their way in the stars? (answer: people)</td>
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</tr>
<tr>
<td>5. Where did the Gods put the Seven Sisters after they turned them into stars? (answer: sky)</td>
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</tbody>
</table>

Total Credit out of 5: _________________________________________________________
**Text 4 - Text Passage: Set a World’s Record**

“WH” Score Sheet for 5 Questions per Expository Text using Multiple Choice

<table>
<thead>
<tr>
<th>Question</th>
<th>Independent Baseline (before the prompt Intervention)</th>
<th>First Prompt Intervention</th>
<th>Second Prompt Intervention</th>
<th>Third Prompt Intervention</th>
<th>Error Intervention &amp; Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What kind of record did Morceli set in running? (answer: World’s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Where should you run around once and time yourself? (answer: track)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What can you give yourself to see if you can run as fast as Morceli? (answer: test)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Where can you find a track to run on? (answer: schools)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Who should you ask to time you? (answer: friend)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credit out of 5: ____________________________
Text 1 - The Pupfish of Devil’s Hole

Wh Multiple Choice Comprehension Questions Adapted Text

1. What is the name of the pond the pupfish lived in??

A Nevada

B Water

C Devil’s Hole

D Plants
2. Where is the Devil’s Hole located?

A Pupfish

B Rock

C Supreme Court

D Nevada
3. Who wants to use the water from the Devil’s Hole?

A  Ranchers

B  Live

C  Water

D  Devil’s Hole
4. What animal lives in the Devil’s Hole?

A  Grow

B  Pupfish

C  Plants

D  Live
5. Who saved the water in the Devil’s Hole for the pupfish in June of 1976?

A  Rock

B  Ranchers

C  Grow

D  Supreme Court
Text 2 - Teamwork

Adapted Wh Multiple Choice Comprehension Questions

1. What does the tribe in the story fish with?

A nets

B men

C dolphins

D hear
2. Where do the men stand to call the dolphins?

A. shore

B. ocean

C. see

D. fish
3. What do the men do to the water with heavy sticks?

A hear

B see

C nets

D beat
4. What do the dolphins drive the fish into?

A. nets

B. shore

C. tribe

D. men
5. Who sees hundreds of fish coming towards them from shore?

A. dolphins

B. men

C. see

D. tribe
Text 3 - Stories in the Stars

Adapted Wh Multiple Choice Comprehension Questions

1. What star pictures has two end stars that point north?

A stars

B night

C Big Dipper

D Seven Sisters
2. Who did the Gods turn into beautiful stars?

A. Seven Sisters
B. people
C. pictures
D. eye
3. When did the sailors use the Big Dipper to find their way?

A  mad

B  Big Dipper

C  sky

D  night
4. Who uses the stories today to help them find their way in the stars?

A  eye

B  stories

C  people

D  sky
5. Where did the Gods put the Seven Sisters after they turned them into stars?

A. Stories

B. Sky

C. Pictures

D. mad
Text 4 - Set a World’s Record

Adapted Wh Multiple Choice Comprehension Questions

1. What kind of record did Morceli set in running?

A  world’s

B  illness

C  track

D  schools
2. Where should you run around once and time yourself?

A  
\[\text{time}\]

B  
\[\text{fast}\]

C  
\[\text{watch}\]

D  
\[\text{track}\]
3. What can you give yourself to see if you can run as fast as Morceli?

A run

B test

C watch

D Illness
4. Where can you find a track to run on?

A  friend

B  World’s

C  schools

D  test
5. Who should you ask to time you?

A  friend

B  fast

C  time

D  run