THE EFFECTS OF DAILY READING OPPORTUNITIES AND TEACHER
EXPERIENCE ON ADOLESCENTS WITH MODERTATE TO SEVERE
INTELLECTUAL DISABILITY

Penelope Hatch

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Approved by:

Karen Erickson
Lee McLean
Patsy Pierce
Lisa Hammett-Price
David Koppenhaver

ABSTRACT

The Effects of Daily Reading Opportunities and Teacher Experience on Adolescents with

Moderate to Severe Intellectual Disability

The purpose of this study was examine the effect of providing daily access to a

wide variety of age and ability appropriate texts to adolescents with moderate to severe

intellectual disability. Forty-three adolescents were assigned to 2 groups based on their

teachers' exposure to 40 comprehensive literacy lessons used in a previous study.

Literacy gains were measured on an assessment of emergent literacy skills. A

standardized reading measure was also used for 5 of the students who read at an early

conventional reading level. Additionally, the number of different books that students

read throughout the intervention was tracked using a student book log and compared to

performance on a proxy measure of wide reading, a title recognition test.

Paired samples *t-tests* yielded statistically significant gains on the posttest

performance of emergent literacy skills for all students and on a standardized reading

assessment for the 5 students who read at an early conventional level. To further

examine student performance between the 2 groups, effect sizes were calculated. Results

indicated that while both groups achieved a small effect, students whose teachers had

exposure to the comprehensive literacy lessons received nearly twice the effect ($d = .36$)

as students whose teachers had not been exposed to the literacy lessons ($d = .19$).

Furthermore, when students read at an early conventional level and were taught by

teachers who had been exposed to the comprehensive literacy lessons, the effect of the intervention was even greater ($d = .47$).

With regard to the number of different books that students read, results from a simple regression indicated that this variable was not predictive of student performance on the emergent literacy measure nor was it significantly correlated with performance on the title recognition test.

Results of this study suggested that adolescents with moderate to severe intellectual disability benefit from daily access to age and ability appropriate books. When combined with instruction provided by teachers who had experience with comprehensive literacy instruction, the effect was even stronger. Furthermore, students who entered the intervention with early conventional reading skills made the greatest gains.

In memory of Ezra Budiansky, whose love of books continues to inspire me to do my best to make literacy a reality for all individuals, particularly those with disabilities.

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Another group of individuals who made this study possible was the staff at my research site. Due to confidentiality considerations, I cannot mention the site by name, which is unfortunate. Not only would I like to applaud what they do for individuals with moderate to severe intellectual disability each and every day, I would like to publicly thank them for all that they did to make the intervention portion of this study an absolute joy. The entire staff at my research site went out of their way to support this project. They responded to my every request quickly and enthusiastically and made me feel like a member of their family. They were a researcher's dream, and I hope to follow the progress of those students and teachers in the future.

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Although I could have completed this dissertation without his presence in my life, his

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group of people that I would choose as friends and am lucky to have as family.

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Statement of the Problem

The No Child Left Behind Act of 2001 (NCLB) had an impact on public
education in several important ways. The law emphasized that schools must make sure
that *all* children are learning from highly qualified teachers who use scientifically based
methods for their classroom instruction such that all children are reading on grade level
by the end of third grade (U.S, Department of Education, 2004). While the mandate is
admirable, the application to the 1.1 million students in the United States who have
developmental disabilities and associated moderate to severe intellectual disability
(Annual Report to Congress of IDEA 2002) remains problematic.

One reason these students are struggling to learn to read is that very few of their
teachers have the training necessary to teach literacy to students with moderate to severe
intellectual disability (Katims, 2000). When these students also have significant
communication or physical impairments, the instructional challenges are compounded
(Mike, 1995; Erickson, & Koppenhaver, 1995). Often, students with moderate to severe
intellectual disability receive a functional reading approach that emphasizes only one
aspect of literacy, such as sight words, but fails to provide the additional recommended
components of core instruction necessary to acquire conventional reading and writing
skills (Browder & Xin, 1998; National Reading Panel, 2000).

Additional considerations for students with moderate to severe intellectual
disability are the limited technologies, resources, and instructional materials available for

this population, particularly for students whose literacy levels are much lower than expected for their chronological ages. When the requirement of scientifically based teaching methods is added, the limited list of curricular materials shrinks considerably. Not only are teachers limited in their choice of instructional materials, secondary students with moderate to severe intellectual disability typically do not have access to age-appropriate books written at a level they can read. Therefore, they are unable to extend classroom instruction to engage in self-selected reading.

<div align="center">Purpose</div>

This purpose of this study was to investigate the benefits of providing daily reading opportunities to adolescents with moderate to severe intellectual disability. Despite the fact that this practice has been correlated with increased language and literacy skills in children without disabilities, it has not been investigated in the literature for the population of students with severe intellectual disability.

In addition to the fact that teachers have limited training that prepares to address the literacy learning needs of their students, there is a mismatch between the chronological age and reading skills of adolescents with moderate to severe intellectual disability. Typically, these students remain at the most beginning reading levels even as they enter their teens (Katims, 2000). Books that they have the ability to read are often appropriate for much younger children, not adolescents. Conversely, books that address topics of interest for young adults are often too difficult to read. The release of a new library of books by Don Johnston, Incorporated, the *Start-to-Finish® Literacy Starters* (*STFLS*)*,* provided one possible solution to this problem. The books, written at an emergent literacy level, address a wide variety of age appropriate topics such as history,

science, social studies, and geography as well as social concerns such as dating, independence from parents, jobs, and sports. These books were used in the current study.

Additionally, this study explored the influence of comprehensive literacy instruction for adolescents with moderate to severe intellectual disability. A previous investigation conducted at this research site involved 3 of the *STFLS* books used in conjunction with 40 comprehensive literacy lessons (Erickson & Hatch, 2008, January) This study allowed for a comparison in the current study between the literacy gains of students whose teachers who participated in the previous study to students whose teachers did not. Thus, this investigation afforded two practices to students that have been linked to literacy development in children without disabilities, daily reading opportunities and comprehensive instruction, and examined their effect on students with moderate to severe intellectual disability.

<center>Moderate to Severe Intellectual Disability</center>

Approximately 1% of school-aged students in the United States have an intellectual disability (U.S. Department of Education, 2002). This diagnosis is characterized by significant limitations in conceptual, social, and adaptive skills that originate before the age of 18 (American Association of Intellectual and Developmental Disabilities, 2009). Individuals with intellectual disability have challenges in learning, communication, and executing daily living skills, and because this is a developmental disability, the gap in skills increases over time.

Historically, intellectual disability has been known by a variety of names, with the most common being mental retardation (American Association of Intellectual and Developmental Disabilities, 2009). The diagnosis is accompanied by a degree of severity

based on performance on a standardized IQ test. The severity levels of intellectual disability are commonly delineated as mild, moderate, severe and profound. As the degree of severity increases, the predicted potential for learning and eventual independence for the individuals with intellectual disability decreases (American Psychiatric Association, 2000).

Literacy Experiences of and Outcomes for Students with Intellectual Disability

Reports concerning the literacy outcomes for individuals with intellectual disability are dire. It has been estimated that fewer than 10 to 15% of individuals who have significant intellectual disability and communication impairments develop reading and writing skills at the 2nd grade level or higher (Erickson, 2003). While this statistic is sobering, it begs the question of why the outcomes are so poor. Medical, psychological, and educational professionals have often operated from a deficit model, citing limitations in intellectual potential as the cause of limited literacy development in these students (American Psychiatric Association, 2000). However, students with intellectual disability typically receive a different educational approach than students without disabilities. With respect to literacy, this often translates to a functional reading approach that emphasizes only one aspect of literacy, such as sight words (Browder & Xin, 1998; Katims, 2000). Given the contrast between this approach and the recommended broader core instruction that the National Reading Panel (2000) deemed necessary to acquire conventional reading and writing skills, one must consider the influence of diminished instruction on the literacy outcomes of individuals with moderate to severe intellectual disability.

Relationship of Emergent and Conventional Literacy

In order to develop conventional literacy skills, the literature shows that children must first have an opportunity to engage in rich emergent literacy experiences (Justice & Kaderavek, 2004). This happens from the time the child is born, long before he or she can actually read with comprehension (Teale & Sulzby, 1992). These experiences include exposure to print within the natural environment and opportunities to discover the functions of reading and writing through models of others as well as active engagement with text (Clay, 2005; Teale & Sulzby, 1992). For a myriad of reasons, emergent literacy opportunities for children with intellectual disability are often limited (Light & McNaughton, 1993). When children remain at emergent literacy levels as they age, the opportunities to engage in emergent literacy experiences further diminish.

Through emergent literacy experiences, children are exposed to the rich and varied language of text, discover how to handle literacy materials such as books and pencils, and benefit from oral language exchanges with parents, caregivers and teachers (Clay, 2005). This provides a strong foundation and springboard for the skills that are necessary to become conventional readers (Justice and Kaderavek, 2004), which include word identification, language comprehension, and the ability to process connected text (Cunningham, 1993).

When students with moderate to severe intellectual disability reach adolescence without developing conventional literacy skills, one instructional response is to focus on a single conventional literacy skill that appears to be within the students' reach (Kaderavek & Rabidoux, 2004), such as sight word acquisition. In this case, time spent engaging in emergent literacy activities must be reallocated to the drill and practice

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approaches typically used in sight word instruction. Given the variety of skills that are required to read, as well the necessity to integrate those skills (Cunningham, 1993), instruction in only one area is not likely to result in overall literacy development. Additionally, the lack of needed emergent literacy opportunities further impacts the ability to develop conventional reading skills (Justice and Kaderavek, 2004).

Instructional Philosophies for Students with Intellectual Disability

The influence of instructional philosophies on literacy outcomes for individuals with intellectual disability cannot be ignored. Since the late 1970's, many teachers and administrators have advocated for a functional life skills approach in Special Education based on age-appropriate activities that would ultimately prepare students for as much independence and productivity in their post-school adult lives as possible (Brown, Branston, Pumpian, Certo, & Gruenwald, 1979). With regard to literacy, this frequently translates to sight word instruction. Although the research clearly shows that students with moderate to severe intellectual disability can successfully learn sight words, it also shows that these words are not used functionally, nor do they generalize (Browder & Xin, 1998). These findings indicate that sight word instruction alone does not meet the philosophical goals of a functional curriculum.

Legal Changes

In 2001, the No Child Left Behind Act (NCLB) had an impact on public education in several important ways. The law emphasized that schools now had to ensure that *all* children were learning from highly qualified teachers who used scientifically based methods for their classroom instruction such that all children could be reading on grade level by the end of third grade (U.S. Department of Education, 2004). This

included students in special education programs. While the mandate was admirable, the application to the students with moderate to severe intellectual disability was and remains challenging, particularly because very few teachers had the training necessary to teach literacy to this population of students (Katims, 2000).

Evidence Supporting Comprehensive Literacy Instruction

Since the mid-1990s, there has been a growing body of evidence documenting the effect of comprehensive literacy instruction for students with intellectual disability (Koppenhaver, Hendrix, Williams, 2007). Studies have included both elementary (Blischak, 1995; Hedrick, Katins, & Carr, 1997; Erickson, Clendon, Abraham, Roy, & Van de Carr, 2005; Erickson, Koppenhaver, Yoder, & Nance, 1997; Katims, 1996) and secondary students with mild, moderate, and severe to profound intellectual disability (Erickson & Hatch, 2008, January). Interestingly, the school-based comprehensive literacy interventions used in these studies were developed and monitored by the researchers but implemented by the instructional staff. In other words, the instruction was taking place in real classrooms and delivered by real teachers. Given the paucity of special education teachers who have been trained in the comprehensive literacy instruction (Katims, 2000) that is available to children without disabilities, the effectiveness of these teachers' ability to implement the interventions was promising.

Wide Text Exposure

With the knowledge that comprehensive literacy instruction has been shown to increase the literacy skills of students with intellectual disability, the next step is to further investigate the various components of instruction. One of these components is the opportunity to engage in self-selected reading (Cunningham, Hall & Sigmond, 1999). In

students without disabilities, self-selected wide reading has been correlated with increased language and literacy skills. Specifically, these include orthographic processing, fluency, word recognition, prosodic reading, vocabulary, and listening comprehension (Cunningham & Stanovich, 1990; Cunningham & Stanovich, 1991; Hedrick & Cunningham, 1995; Kuhn, 2005). However, there is at least one major obstacle to wide reading for adolescents with moderate to severe intellectual disability. Many of these students cannot read at a conventional level, even by the time they reach adolescence. Therefore, they lack access to interesting books that are written on topics of interest.

In 2004, the release of the *STFLS* library by Don Johnston, Incorporated provided a variety of age-appropriate books at an accessible text level for these older beginning readers. Although the 51 books in this collection did not constitute a large enough library for students to engage in wide reading, they did provide an adequate assortment of appropriate and interesting books for students to use for daily self-selected reading. Thus, there were now appropriate materials available to examine the effect of daily reading opportunities on the literacy gains of adolescents with moderate to severe intellectual disability. Although some adolescents would not yet be able to independently read the text in these books, they could be made available for the exploration that emergent readers engage in to develop concepts about print (Clay, 2005). Additionally, both emergent and early conventional readers could participate in shared reading with a partner or in guided listening lessons, since the language used in the books was written at their level.

Summary

In conclusion, despite challenges in learning and communication, students with moderate to severe intellectual disability have been shown to make gains in literacy when provided with comprehensive instruction and when given access to appropriate curricular materials. Although this comprehensive instruction is not prevalent in special education classrooms, nor are most teachers trained to deliver this type of instruction, there is a growing body of evidence to indicate that when given support through lesson plans and curricular materials, teachers can effectively implement appropriate instruction.

This investigation examined the benefits of providing daily access to age and ability appropriate books to adolescents with moderate to severe intellectual disability as well as to their teachers. Teachers were asked to make these books available to students through self-selected reading opportunities, class instruction, or some combination of the 2. The current investigation examined the claim that students with intellectual disability need access to the quality of materials and frequency of access that is afforded to students without disabilities.

CHAPTER 2

Students with Intellectual Disability

In the United States, approximately 1% of school-aged children have an intellectual disability (U.S. Department of Education, 2002) that is "characterized by significant limitations both in intellectual functioning and adaptive behavior as expressed in conceptual, social, and practical adaptive skills" and originates before the age of 18 (American Association of Intellectual and Developmental Disabilities, AAIDD Definition section, para 2). Historically, this disability has been known as mental retardation, and although that term continues to be used in some situations (e.g., a qualifying condition for Individual Education Plans, Diagnostic and Statistical Manual of Psychiatric Disorders Fourth Edition), the current preferred term is *intellectual disability* (American Association of Intellectual and Developmental Disabilities, 2009). In addition to mental retardation, several synonyms for intellectual disability appear throughout the literature, including cognitive disability (Center for Disease Control, 2005), intellectual impairment (State of Queensland Department of Education, 2006), cognitive impairment (Beukelman & Mirenda, 2005), and developmental disability (U.S. Department of Health and Human Services, 2008). For the purposes of this document, the single term, intellectual disability, is used.

Intellectual disability is the most common developmental disorder, and estimates of the number of children affected in the United States range from 7.8 to 16 per 1,000 (Center for Disease Control, 2005). Causes of this disability may be known, as in the

case of children born with Down syndrome, Fragile X, or fetal alcohol syndrome, or children who experience anoxia, certain infections, head injury, or stroke (Beukelman & Mirenda, 2005; Center for Disease Control, 2005), but it also possible that intellectual disability can occur without a known cause. Children with intellectual disability represent at least 9.9% of all students served in Special Education in the United States; however, given that intellectual disability may co-occur with other disabilities such as a communication impairment, autism, orthopedic impairment, sensory deficits, and traumatic brain injury, the 9.9% estimate is likely conservative (US Department of Education, 2002).

Like all children, students with intellectual disability can learn and gain new skills, but the rate of learning and acquisition is slower and/or more uneven than their peers with average intelligence and adaptive skills (Center for Disease Control, 2005). Consequently, as children age, the achievement gap between children with intellectual disability and their peers without disabilities increases. Additionally, there are different degrees of intellectual disability that affect the rate of learning and acquisition of adaptive skills. As with the label of this disability, the terms used to describe the various degrees of intellectual disability and the manner in which those degrees are defined have changed over time. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) (American Psychiatric Association, 2000) relies on IQ scores to determine the severity levels of intellectual disability. Specifically, these levels are: (a) mild or educable, as indicated by an IQ level of 50-55 to approximately 70; (b) moderate or trainable, indicated by an IQ level of 35-40 to 50-55; (c) severe, as indicated by an IQ level of 20-25 to 35-40; and (d) profound, indicated by an IQ level below 20 or 25 (American

Psychiatric Association, 2000). A more recent classification of the degree of intellectual disability focuses on the level of support that an individual requires rather than the person's IQ level (Luckasson et al., 2002). The range of support includes intermittent, limited, extensive, and pervasive.

The students who were the target of the current investigation are adolescents with moderate to severe/profound intellectual disability who require extensive or pervasive support. Because intellectual disability co-occurs with other disabilities, the students in the current study, like the population of students with intellectual disability, also have accompanying communication impairments, motor impairments, sensory deficits, and/or additional diagnoses such as autism spectrum disorders.

Reading Instruction for Adolescents with Moderate to Severe Intellectual Disability

Constructs Underlying Successful Silent Reading Comprehension

Prior to reviewing the types of reading instruction adolescents with moderate to severe intellectual disability typically receive, it seems necessary to first describe the skills and understandings required to read with comprehension and to review the recommended instructional practices for students without disabilities. Although there are many views and models outlining the primary skills required to read with comprehension, the model of reference used here is the Whole-to-Part (WTP) Model of Silent Reading Comprehension (Cunningham, 1993). The WTP model identifies three key constructs that underlie successful silent reading with comprehension: word identification, language comprehension, and whole-text print processing beyond word identification. It was selected as a conceptual framework for the current study because it is an inclusive model of silent reading comprehension in that it applies equally to individuals without

disabilities as well as those with a variety of disabilities including intellectual disability (Erickson, Koppenhaver & Cunningham, 2006).

Word identification is the cognitive process of translating print to associated sounds resulting in the pronunciation of written words (Adams, 1990). This involves knowledge of letter-sound relationships, the ability to invoke strategies to decipher unfamiliar words, and automatic and accurate recognition of familiar words (Ehri & McCormick, 2004; Spear-Swerling, 2004). In the context of the WTP model, word identification refers exclusively to the use of print cues to read words and occurs either automatically, as in the case of effortlessly recognizing sight words, or through mediation using strategies such as decoding or analogy (Cunningham, 1993; Ehri & McCormick, 2004; Erickson, Koppenhaver, & Cunningham, 2006). The fact that word identification can occur orally or silently is important in applying the WTP model to individuals with intellectual disability.

The language comprehension construct in the WTP model represents the ability to understand written language whether an individual reads something independently or listens to someone else read it. This requires both knowledge of the world and knowledge of text structures (Erickson, Koppenhaver, & Cunningham, 2006). It also requires the integration of these two abilities.

Knowledge of text structures is important to reading comprehension because even though oral and written forms of the same alphabetic language share sounds, vocabulary, grammar, and pragmatic rules, there are basic differences because the writer is not usually accessible to his or her reader(s) to clarify information. The various genres of text are designed to convey different types of information, and this is signaled to the

reader through both structure and word choice. Specifically, knowledge of text structures refers to the reader's understanding of the way in which a text is organized both semantically and syntactically (Literacy Matters, n.d.; National Education Association, n.d.). While fictional texts often have similar patterns of organization, expository texts can be quite varied. For example, texts that present an argument may either present the information in a chain, or they may compare and contrast two or more points of view. Other examples of text structures include providing a list for description, describing an event and the reason it occurred, and writing about a sequence of steps or events leading to an outcome. Each one of these text structures contains transition words and phrases (e.g., *in particular*, *as a result*, *in contrast*, *next*) that guide the reader through the text and aid in comprehension. Therefore, the written system of language contains various conventions and cues that the reader must learn through wide exposure to text and opportunities to interact with more literate others around text.

Knowledge of the world refers to background information or experiences that readers use to understand, learn from, and remember ideas and information in text (Anderson, 2004). The reader may use his or her knowledge of the world to assimilate text information, make inferences, decide what is critical to attend to in the text, summarize information, and reconstruct information despite forgetting some of the details (Anderson, 2004).

Knowledge of the world also encompasses a reader's understanding of oral language. Children typically develop oral language naturally through exposure to other speakers. They use the rules of phonology, morphology, semantics, syntax, and pragmatics well before they are aware of what they are doing. However, Snow and

Tabors (1993) argue that it is the emergence of a child's metalinguistic awareness in each

of those 5 domains of language that bridges the gap between oral and written language.

For example, the development of metalinguistic awareness allows the child to develop an

appreciation for the semantic and spelling differences between homophones, the function

of various punctuation marks, and an understanding of the morphological clues within

written words that influence meaning and syntactic functions. Stated simply, interpreting

text requires an individual to use what is known about oral language and to expand that

knowledge to learn the system of written language (Snow & Tabors, 1993). Individuals

with intellectual disability have, by definition, difficulties developing oral language

(American Association of Intellectual and Developmental Disabilities, AAIDD

Definition section, para 4) and metalinguistic awareness (Boudreau, 2002); however,

appropriate intervention can help them develop sufficient knowledge of the world to

comprehend written language (Hedrick, Katims, & Carr, 1999; Katims, 1996).

Erickson, Koppenhaver, Cunningham (2006) describe the third construct of print

processing beyond the word identification level as including the skills necessary to read

silently with comprehension that are not encompassed by the word identification and

language comprehension constructs. These include controlling eye movements

metacognitively, using inner speech to phonologically recode written words, making

print-to-meaning links words rather than first recoding to speech, projecting prosody to

increase comprehension, and simultaneously integrating these skills while continuing to

identify words and comprehend the language of text. Recognition of print processing

beyond the word identification level is a unique feature of the WTP model and is

especially helpful in explaining why many individuals with intellectual disability,

including those with motor and sensory impairments and those with complex communication needs, may be able to successfully read single words and comprehend written language when others read it to them, yet fail to independently read silently with comprehension (Erickson, Koppenhaver & Cunningham, 2006).

While the WTP model provides a clear description of the skills necessary to read, the instructional methods required to develop these skills have long been debated and investigated. In response to a Congressional mandate to identify the key skills and methods critical for reading achievement, the National Reading Panel (NRP) released a report in April of 2000. The NRP's report included a meta analysis of the extant literature on reading instruction in five areas the panel deemed important in early reading which resulted in some general recommendations for instruction. The areas included in the meta-analyses were phonemic awareness, phonics, fluency, vocabulary, and comprehension, and *all* were found to be critical in order for an individual to learn to read (National Reading Panel, 2000). While the debate continues over the NRP's recommendations and the methods used to determine them (Cunningham, 2001), it is fair to say that most researchers and professionals would agree this list is a necessary if not sufficient representation of instructional requirements for literacy achievement, with some potentially important instructional practices omitted because research regarding them did not meet the NRP's criteria of being scientifically-based (Cunningham, 2001; Krashen, 2001). The fact that the five areas of instruction map directly onto the WTP model but do not reflect all of the constructs in the model supports this point of view.

Emergent Literacy

Long before children begin to demonstrate skills in the three areas of the WTP model, in fact from the time they are born, children learn about literacy through exposure to print within their natural environment and seeing models of others using print (Teale & Sulzby, 1992). They also learn the functions of reading and writing through active engagement and interaction with the adults in their world (Clay, 2005). This phase of development is known as *emergent literacy* (Teale & Sulzby, 1986) and represents a viewpoint that is in direct contrast with previously embraced notions of reading readiness, which were based on the belief that children needed to demonstrate certain prerequisite skills to benefit from formal reading instruction (Teale & Sulzby, 1992; Yaden, Rowe & MacGillivray, 2000).

The emergent literacy perspective grew from Marie Clay's observations of the early reading and writing attempts of young children in the 1960s (Teale & Sulzby, 1992). Clay felt that the readiness concept was unnecessary because *all* children were ready to learn more than they currently knew (Clay, 2005). Whether children demonstrated readiness skills or not, their varied backgrounds meant that they arrived at school with more or less literacy experience, and as a result, children typically began their literacy journey from different starting points (Clay, 2005). In addition to starting at different places, despite generalized stages of early literacy learning, there was also a great deal of developmental variation due to the fact that reading and writing were emerging rather than acquired skills (Clay, 2005; Teale & Sulzby, 1992). Clay (2005) noted that learning to read did not happen in an orderly way, and it would not happen at all unless children had opportunities to participate in language and literacy activities.

Rather than being the passive recipients of instruction, children at emergent literacy levels are active and involved learners who benefit from opportunities to explore and interact with print (Senechal, LeFerve, Smith-Chant, & Colton, 2001). They attempt unconventional and/or unsophisticated writing and reading behaviors such as scribbling, flipping through the pages of a book, or retelling a story to a stuffed animal as they apply their own "primitive hypotheses" (Clay, 2005, p. 9), resulting in discovery and learning. To summarize, emergent literacy "comprises all of the actions, understandings and misunderstandings of learners engaged in experiences that involve print creation or use" (Koppenhaver & Erickson, 2003, p. 283), and these experiences are not only necessary but "intimately tied to later literacy achievements" (Justice and Kaderavek, 2004, p. 231)

A Comparison of the Literacy Experiences of Students with and Without Disabilities

An examination of the literacy experiences and outcomes for individuals with intellectual disability is both shocking and sobering. Unfortunately, it has been estimated that only about 10 to 15% of individuals who have significant intellectual disability and communication impairments develop reading and writing skills at the 2nd grade level or higher (Erickson, 2003). In 2000, Katims wrote that virtually every review of the literature found individuals with intellectual disability read well below not only their chronological age, but also their mental age. He attributed this to "a serious lack of literacy optimism" (p.12) for individuals with intellectual disability, resulting in instruction focused on functional rather than academic content and targeting the mastery of an isolated set of subskills through decontextualized drill and practice. This approach is a far cry from the NRP's recommended instruction in the five areas of phonemic awareness, phonics, fluency, vocabulary, and comprehension. Given the low

expectations for the literacy outcomes of individuals with moderate to severe intellectual disability, one must consider the possibility that these expectations actually contribute to the poor outcomes and result in a self-fulfilling prophecy (Kliewer & Biklen, 2001).

Conversely, an emphasis on the importance of high expectations, good instructional practices, and frequent opportunities to engage in reading and writing is found in a retrospective study of adults with severe disabilities including congenital speech and physical impairments (Koppenhaver, Evans, & Yoder, 1991). These individuals beat the odds by developing conventional literacy skills, and they attributed their literacy success to high parent and teacher expectations, educational opportunities that were similar to their nondisabled peers, and their own determination. It seems reasonable to suspect that the teacher's and parents' attitudes as well as educational opportunities conveyed a message to these individuals that becoming literate was not only a possibility but an expectation, resulting in the self-efficacy and determination necessary to accomplish that goal (Good & Brophy, 1984).

Two critical questions that arise from these contrasting literacy experiences are: (a) how such low literacy expectations for individuals with moderate to severe intellectual disability developed, and (b) how they continue to be maintained. One possibility is the information that parents of children with moderate to severe intellectual disability receive from medical, psychological, and educational professionals (Kliewer, Biklen, & Kasa-Hendrickson, 2006). Consider the description of severity levels of individuals with moderate to severe mental retardation, the term used by the psychological and medical community for intellectual disability, found in the DSM-IV (American Psychiatric Association, 2000). Only one severity level, mild, mentions the

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expectation of acquiring any academic skills. Historically, individuals at this severity level were referred to as "educable" as contrasted with the descriptive label of "trainable" which was used for individuals with a moderate severity rating (American Psychiatric Association, 2000). Expectations listed for individuals at a moderate severity level include the ability to develop some vocational and personal care skills, but with regard to academics, the DSM-IV (2000) states that progress beyond a second grade level is unlikely. Expectations listed in the DSM-IV (2000) for individuals in the severe category include familiarity with the alphabet, simple counting, and learning how to sight read some survival words. Clearly, these descriptions do not convey an expectation of conventional literacy for most individuals with moderate to severe intellectual disability, and are arguably socially imposed rather than based on biological limitations (Kliewer et al., 2006).

Additionally, parents of young children with moderate to severe intellectual disability may have few opportunities to meet or interact with literate adults with the same disability, making it difficult to envision this as a realistic expectation. An unintentional side effect of low parent expectations is that the child may perceive these feelings, resulting in decreased confidence and motivation to learn (Light & McNaughton, 1993).

Another concern is that the care demands of children with moderate to severe intellectual disability are often intense and make it difficult to find the time and energy for literacy activities. When compared to self-help, communication, and medical needs, literacy has been ranked as low priority by the parents and teachers of children with moderate to severe disabilities including intellectual disability, cerebral palsy, and severe

speech and language impairment (Light & McNaughton, 1993). Based on information

provided by professionals and personal perceptions, parents may view literacy as an

unrealistic goal for their children and a poor use of their time and energy. This

perception then impacts the frequency and quality of literacy learning activities (Light &

McNaughton, 1993). If children receive less exposure to literacy materials and

experiences, they have fewer chances to benefit from the early interactions necessary to

foster emergent literacy behaviors and less opportunity to develop conventional literacy

skills (Sturm, 2005). Thus, the self-fulfilling prophecy of poor literacy outcomes is

reinforced and maintained.

Barriers to Successful Literacy Learning

As previously described, individuals with moderate to severe intellectual

disability face many challenges that their peers without disabilities do not face. These

challenges can be categorized and described with reference to Beukelman and Mirenda's

(2005) Participation Model, which identifies several access and opportunity barriers that

prohibit successful participation in communication-related activities such as literacy.

Some access challenges are intrinsic and a product of the capabilities of the individual.

Examples might include problems with cognitive functioning, communication, motor,

and/or sensory impairments. These challenges exist because of the nature of the

individual's disability and can often be addressed through adaptations and/or

modifications of curriculum and instructional materials as well as the use of assistive

technology (AT) and augmentative communication (AAC). Unfortunately, individuals

with moderate to severe intellectual disability also encounter numerous extrinsic

challenges that are created and maintained by others. These include policy, practice,

knowledge, skill, and attitude barriers that can be extremely difficult to eliminate and result in direct consequences to an individual's access to quality instruction (Beukelman & Mirenda, 2005).

Policy Barriers. Two policy barriers that affect students with moderate to severe intellectual disability are access to AT, including AAC devices, and access to the general education curriculum (Zascavage & Keefe, 2004). Assistive technology can be helpful for students with cognitive, communication, sensory, and/or motor challenges because it can provide independent computer access to electronic books, alternative keyboards for writing, and a means of expressive language (Erickson & Koppenhaver, 1995). Although the Individuals with Disabilities Education Act (IDEA) has mandated screening for AT for every student with a disability since 1997, the federal government has not provided the funding to ensure compliance with this mandate (Zascavage & Keefe, 2004). Consequently, students can be placed in a position where they must prove that they can successfully use and benefit from technology before funding agencies are willing to purchase it. Without the benefit of instruction and practice, this can be an impossible demand for any child, let alone students with moderate to severe intellectual disability, and an immovable barrier in the path of literacy acquisition.

Another potential policy barrier involves access to the general education curriculum. When policies support placement in segregated special education settings, students with moderate to severe intellectual disability are in danger of being in a minimally literate environment with reduced instructional time (Kliewer et al., 2006; Mike, 1995; Zascavage & Keefe, 2004). Literacy instruction in segregated settings is typically based on a personalized curriculum reflective of the beliefs of the Special

Education staff rather than the comprehensive approaches available to students in general education (Katims, 2000; Sturm, 2005). However, inclusion in the general education setting may also be problematic because once students with moderate to severe intellectual disability reach the upper grades, there is typically a mismatch between their literacy levels and those of their peers without disabilities. In order to provide rather than obstruct opportunities for students with moderate to severe intellectual disability, policies must address the need for comprehensive instruction at a literacy level that is accessible for older emergent readers and helps each student progress toward and ultimately acquire conventional literacy skills without dramatically reducing instructional time as is currently the practice in special education settings.

Practice Barriers. Practice barriers are procedures or conventions that are assumed by families, school personnel, or society to be legislated policy when they actually are not (Beukelman & Mirenda, 2005). Examples of practice barriers that affect the literacy learning opportunities of individuals with moderate to severe intellectual disability include the myth that students need to demonstrate a set of reading readiness behaviors before they are ready for formal reading instruction; the accepted use of literacy instructional time used for transitions, personal care, social activities, or therapies (Koppenhaver & Yoder, 1993; Mike, 1995); services such as speech and language and occupational therapy that target nonacademic goals (Mike, 1995); and focus on a life skills or functional curriculum rather than comprehensive literacy instruction (Katims, 2000; Zascavage & Keefe, 2004). Due to the erroneous perception that these practices are legislated, they are often accepted without question and compound the literacy learning challenges faced by students with moderate to severe intellectual disability.

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Knowledge Barriers. A monumental obstacle to literacy acquisition for students with moderate to severe intellectual disability is limited knowledge about effective literacy instruction for this population (Katims, 2000). Even when policies such as the No Child Left Behind Act of 2001 (U.S. Department of Education, 2004) are put into place, and practice barriers such as demonstrating readiness skills are eliminated, knowledgeable teachers are always a necessary component in delivering effective literacy instruction. While many questions remain about the best practices for this population of students, there is a growing body of evidence-based literacy interventions for individuals with moderate to severe disabilities, including intellectual disability (Koppenhaver, Hendrix, & Williams, 2007). Of concern, however, is whether this information is being taught to preservice teachers. In 2000, Katims completed an analysis of contemporary professional textbooks written for general and special education teacher preparation. He found that the majority of the textbooks recommended decontextualized and functional approaches to literacy instruction with only minimal suggestions for integrated or comprehensive instruction.

Although some newer textbooks claim to describe comprehensive literacy instructional practices for students with severe disabilities (Ward, DeMark, & Ryndak, 2006), closer inspection may reveal that students are placed in environments where comprehensive instruction exists, but expectations for student achievement remain low. For example, rather than requiring students to complete tasks that demonstrate literacy acquisition, students are merely expected to participate. Examples include use of a recorded message to call on classmates who complete the literacy-related activity instead of supporting the students with disabilities in doing so. Other examples of continued low

expectations include working exclusively on a limited list of sight words and choosing

pictures to express a message in the absence of opportunities to engage in spelling and/or

writing. While placing students in a comprehensive instructional environment is a good

start, well-intentioned efforts to support successful participation by completing low-level

tasks may inadvertently continue to prohibit students from having the chance to engage in

literacy learning opportunities and truly acquire literacy skills. Thus, the ultimate goal of

making meaning from text remains elusive.

Skill Barriers. As previously mentioned, access to AT and AAC can be a barrier

for students with moderate to severe intellectual disability. However, even when students

have access to technology, many teachers feel ill prepared to manage it (Stoner, Parette,

Watts, Wojcik, & Fogal 2008; Zascavage & Keefe, 2004). When this problem is due to

insufficient training, it is a knowledge barrier, but when teachers and staff continue to

have difficulty implementing the use of AT or AAC even after receiving education and

training, this becomes a skill barrier (Beukelman & Mirenda, 2005). Because technology

changes rapidly and individuals have varying levels of expertise and comfort in this area,

classroom teachers and staff often need ongoing support (Stoner et al., 2008). When

support is unavailable to bolster the skill levels of teachers and staff, this can result in

classrooms that actually have AT and/or AAC devices, but this equipment is often

minimally or never used. For students with moderate to severe intellectual disability, this

could mean the reduction or elimination of independent access to books, writing, and/or

expressive communication.

Attitude Barriers. The final type of opportunity barrier to literacy learning for

individuals with moderate to severe intellectual disability is an attitude barrier. This may

be the most "subtle and insidious" (Beukelman & Mirenda, 2005, p. 144) type of barrier because even when people believe that students with moderate to severe intellectual disability either do not need or are not capable of benefiting from comprehensive literacy instruction, they may not express those views because they are considered socially unacceptable (Beukelman, & Mirenda, 2005; Zascavage & Keefe, 2004). These views can be held by professionals, administrators, teachers and/or parents, and affect the educational settings for students, curriculum choices, and the scope and intensity of literacy instruction (Kliewer et al., 2006; Zascavage & Keefe, 2004). Given that children without disabilities receive years of comprehensive instruction to accomplish the goals of independent reading and writing, attitude barriers may represent at least a partial explanation for the reason we provide less comprehensive and intensive instruction to children who have more challenges.

Progression of Instructional Philosophies

During the 1970's, the Developmental Model was a popular instructional approach for students with intellectual disability (U.S. Office of Special Education Programs, 2006). The Developmental Model was based on the premise that all individuals progress through the same developmental sequence, but that students with intellectual disability reached developmental milestones more slowly or not at all (Brown, Branston, Pumpian, Certo, & Gruenwald, 1979). According to this model, teachers used the student's mental age to plan educational programs with no regard for chronological age. Therefore, one might see an adolescent student receiving instruction reflective of a preschool curriculum with minor adaptations (U.S. Office of Special Education Programs, 2006), resulting in the use of precious instructional time for

nonfunctional, artificial, and age-inappropriate activities (Brown et al., 1979) that had no impact on the student's ability to eventually lead an independent or productive adult life.

The introduction of the functional skills curriculum was a direct response to the unproductive and inefficient developmental approach for students with intellectual disability. In contrast to moving through a prescribed developmental sequence and working on bottom up activities, the functional skills approach was based on students engaging in age-appropriate activities that would ultimately prepare them for as much independence and productivity in their post-school adult lives as possible (Brown. et al, 1979). Brown and his colleagues (1979) defined these functional skills as actions that would need to be performed by another person if the person with disabilities were unable to do them. The premise was that the more functional skills a person had, the more privacy, independence and control over choices that individual would have as an adult. Functional curricula addressed vocational, home, community, and leisure skills (U.S. Office of Special Education Programs, 2006) as well as the acquisition and use of those skills in the natural environment to ensure generalization (Brown et al., 1979). With regard to literacy instruction, this was often interpreted as working on sight reading of signs and labels and filling out written forms (Joseph & Seery, 2004; Zascavage & Keefe, 2004) rather than the comprehensive instructional approach recommended for students without disabilities.

While the concept of a functional curriculum altered the approach to Special Education in the late 1970s, federal legislation beginning in the late 1990's radically changed the access and accountability standards for Special Education students (Browder, Wakeman, Flowers, Rickelman, Pugalee, & Karvonen, 2007), and therefore

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had a profound influence on a functional approach. For example, the reauthorization of the IDEA in 1997 required that Special Education students participate and progress in the general curriculum (Wehmeyer, Lattin, Lapp-Rincker, & Agran, 2003). The purpose of this mandate was to ensure that Special Education students had access to a challenging curriculum and to include these students in assessment measures so that they were held to high academic expectations (Wehmeyer et al. 2003).

High standards and accountability were again addressed by the No Child Left Behind (NCLB) Act of 2001, which, as previously stated, required states to demonstrate achievement of *all* students in reading, math, and science through assessment based on state standards (Browder et al., 2007). Up to 1% of the state's general population could be assessed on alternate achievement standards, but those standards had to be aligned with the state's academic content, promote access to the general rather than a specialized curriculum, and reflect the highest achievement possible (Browder et al., 2007).

The importance of access to the general curriculum for students in Special Education was further emphasized in the latest reauthorization of the IDEA, the Individuals with Disabilities Educational Improvement Act (IDEIA) 2004 (U.S. Office of Special Education Programs, 2006). Although all Special Education students did not have to be placed in general education classrooms, they were required to have access to the content of the general curriculum, receive instruction from teachers who were highly qualified to teach that academic content in any classroom, and participate in alternate assessments based on grade-level content standards (Browder et al., 2007).

With the current demand for teaching evidence-based, academic content from the general education curriculum and participation in state-wide assessment measures, some

special educators question how they will be able to find the time to work on functional skills to prepare their students for post-school life (Browder et al., 2007; Patton, Polloway, & Smith, 2000). However, according to the Office of Special Education Programs (2006), "there is functionality in academic skills" (p. 3). When one considers that literacy is made up of a set of skills that allows individuals with disabilities to participate and function more fully and independently in educational as well as vocational, home, community, and leisure activities (Ward et al., 2006), it fits within both an academic and functional educational program. Additionally, comprehensive literacy instruction for students with intellectual disability meets the specifications outlined in NCLB, IDEIA, and the recommendations outlined in the NRP report.

Certainly, providing evidence-based instruction has been of increasing concern since the adoption of NCLB; however in the field of Special Education, the evidence base is limited. One category of teaching approaches that has been investigated involves "reductionist interventions" (Katims, 2000, p. 4) that use sequenced, hierarchical drill and practice type instruction focused on isolated skills such as learning the alphabet, letter sounds, word decoding, or sight words. Although it is important to determine whether these interventions effectively improve the target skill, it is equally important to consider their effect on overall literacy development and acquisition. For example, one meta-analysis investigated sight word instruction for students with moderate and severe disabilities (Browder & Xin, 1998). Findings indicated that sight word instruction was highly effective in teaching students to recognize a small vocabulary, but there was insufficient evidence to demonstrate that this information generalized beyond the words that were taught directly or that this information was used functionally. These findings

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highlight the fact that one must question the use of instructional time spent on an activity that does not lead to learning beyond the task. In addition, there is no guarantee that the sight words teachers choose to teach actually help to prepare a student for post-school life (Patton et al., 2000).

Evidence to Support Comprehensive Literacy Instruction

The following studies provide evidence that when given appropriate, systematic, and comprehensive instruction with accessible materials, students with intellectual disability can improve their literacy skills. The common goal in the following studies was to provide participants with comprehensive instruction combined with meaningful literacy experiences and rich communicative interactions. This contrasts with the practice of teaching mastery of one isolated skill (e.g., memorization of the alphabet or a list of sight words) to slowly progressing emergent readers in the hope that they might appear more age-appropriate (Kaderavek & Rabidoux, 2004). When compared to the limited use of sight words, the literacy skills acquired by the participants in these studies not only increased, but those gains have the potential to move emergent readers and writers with intellectual disability toward more conventional literacy.

In 1996, Katims conducted a study that included 4 elementary students with a mean IQ of 65. Katims believed that these students would demonstrate more conventional reading and writing behaviors if they were immersed "in an authentic and natural literacy-rich environment with the use of contextualized skills instruction" (p. 154). Students had an opportunity to participate in oral language activities, guided storytelling, reading environmental print on a logo poster, access to a class library for self-selected reading, and daily opportunities to write letters and messages that they later

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shared by reading aloud. Participants were in this environment for an entire school year and demonstrated gains in their concepts about print and word decoding as measured by the Test of Early Reading Ability-2 (Reid, Hresko, & Hammill, 1989), story retellings as measured by a system developed by Leslie Morrow, and writing skills that evolved from scribbling into more conventional forms of printing and invented spelling (Katims, 1996).

Students with more severe intellectual disability participated in a number of other studies of literacy development. One such study involved 9 elementary students with a mean chronological age of 9 years, 8 months and IQ scores ranging from 40 to 76 (Hedrick, Katims, & Carr, 1999). These students spent a year in a self-contained classroom that used the Four Blocks (Cunningham, Hall, & Sigmon, 1999) approach to literacy instruction, an approach that has been effective for literacy development in general education students. The Four Blocks approach provided students with daily, guided reading and phonics instruction directed by the teacher as well as writing process instruction and opportunities for self-selected reading, which were more child-directed activities. When posttest results were examined, all students, even those with the label of moderate intellectual disability, made gains in their ability to recognize and understand the concepts and functions of print, retell a story, decode unknown words, use invented spelling, and read words in isolation. Although many of those skills are examples of emergent literacy behaviors, the difference between them and sight word recognition is that emergent literacy behaviors involve active learning and problem solving that lead to more conventional reading and writing (Kaderavek & Rabidoux, 2004; Teale & Sulzby, 1992).

Evidence of literacy gains for students with intellectual disability ranging from moderate to severe and profound levels can be found in a study conducted by Erickson and her colleagues (Erickson, Clendon, Abraham, Roy, & Van de Carr, 2005). They compared student pretest and posttest performance on a variety of emergent literacy tasks to measure gains following 8 weeks of instruction using the commercial language and literacy program, *MEville to WEville* (AbleNet, Inc., 2004). The investigation included 23 students between the ages of 5 and 12 years in three different classrooms. In addition to intellectual disability, 16 of these children had complex communication needs and 9 used wheelchairs for mobility.

In Erickson et al.'s (2005) study, there was no specific implementation protocol for the intervention. Instead, teachers received the *MEville to WEville* curriculum materials and were asked to use them for at least 30-minutes every day as they felt appropriate for their students. *MEville to WEville* was designed for students with significant disabilities in grades K-6 and included lessons targeting language development, reading and listening comprehension, writing development, reading development, and literacy experiences that were extensions of activities in each of the previously mentioned categories. Rather than using repeated trials to achieve mastery of a limited set of skills, *MEville to WEville* used repetition of skills across a variety of activities. Skills reappeared in different contexts with increased expectations for independent use over time. The goal was for students to be able to apply what they had learned as new opportunities arose.

Although the outcomes from this study did not reveal a statistically significant difference between pretest and posttest scores, the mean overall posttest scores were

higher across 6 of the 7 skills measured. Students showed increases in emergent writing, identification of both upper and lower case letters, concepts about print, rhyme recognition, and phoneme blending. Another interesting outcome of this study was the increase in the number of students who were unable to complete the pretest but did complete the posttest. Children with significant disabilities are not often asked to participate in formal assessments, especially with a completely unfamiliar adult such as a researcher. The increase in posttest completion is not only important because of the diagnostic information it yields, it also suggests that the participants may have developed a better understanding of their role in performing the tasks and a willingness to actively participate. Given that these outcomes for students with significant challenges followed a relatively short, 8-week intervention, the gains have an important "practical significance" (Erickson et al., 2005, p. 53).

Although reading instruction is part of a typical early elementary curriculum, once students advance to the upper elementary grades and to secondary school, the reading focus shifts from acquiring and honing the skill to using reading to learn new material in core subjects. Many upper elementary and secondary students with learning disabilities continue to receive reading intervention in early skills such as phonics and decoding through resource programs, but this is not typically available in the general education classroom. In Special Education, it is often the case that teachers assume that if their students have not yet developed some level of conventional literacy by early adolescence, it is not realistic to expect they will in the future. Teachers and IEP teams may decide to work on one or two conventional literacy skills such as the alphabet or sight words so that the student appears more age-appropriate or functional. Unfortunately, because the

student is still at an emergent literacy level, these isolated conventional tasks are meaningless (Kaderavek & Rabidoux, 2004). As the Browder and Xin (1998) sight word meta-analysis showed, students with intellectual disability could learn the words they were taught directly, but they were unable to transfer that skill to new words or use the learned words in new situations. Therefore, the utility of teaching isolated conventional literacy skills to older students who are still at an emergent literacy level is questionable.

Several case studies describe comprehensive rather than functional literacy programs implemented with older emergent readers, even adults, with moderate to severe intellectual disability. One literacy program developed for Jordan, an 11-year-old boy, was described during his 4th and 5th grade school years (Erickson, Koppenhaver, Yoder, & Nance, 1997). Jordan had spastic cerebral palsy, and severe speech and physical impairments in addition to moderate to severe intellectual disability. Over a 2-year period, his literacy program included word-level instruction using the Making Words approach (Cunningham & Cunningham, 1992), writing with invented spelling, and self-selected silent reading. Additionally, Jordan gained access to a dynamic display communication device, the Dynavox (Dynavox Technologies: Pittsburgh, PA), which gave him the opportunity to generate speech by selecting preprogrammed phrases, single words, and/or using the alphabet to spell. Jordan used the Dynavox to actively participate with peers in academic portions of the day and wrote using invented spelling during class writing activities, but he completed his word instruction independently while the rest of his class worked on spelling. Word and phonics instruction were not part of the 4th and 5th grade curriculum, yet Jordan still needed to develop and improve this area of reading. In Jordan's case, the integration of reading, writing, and language instruction resulted in

improved spelling, increased writing, active engagement with books, and an increased ability to use his Dynavox for communication. Because Jordan could not use speech to communicate, his improved spelling and writing skills affected more than just literacy and academic tasks. They allowed Jordan greater flexibility and independence to compose messages on his Dynavox, one of his primary means of self-expression.

Another case study describing use of a comprehensive but somewhat eclectic approach to teach literacy to an adult was reported by Pershey and Gilbert (2002). They described the literacy gains of a 35-year-old woman named Christine over a 7-year period. Christine was born with a severe heart defect and moderate intellectual disability. Her parents were told that there were no school programs for their daughter, so they kept her at home and focused on teaching self-care and appropriate social interaction. At the age of 35, Christine told a supervisor at her sheltered workplace that she wanted to learn to read and write, and instruction began with one of the therapists at her care center. Rather than having Christine memorize decontextualized letter-sound correspondences or a list of survival words, her teacher created literacy activities using authentic, connected texts. Instruction included reading in unison, echo reading, language-experience stories that Christine dictated, decoding, writing to dictation, and use of invented spelling for communication. As Christine's literacy skills improved, she became a more active participant in her own learning by expressing preferences and making choices about her literacy learning goals. Through informal assessment and work samples, she demonstrated improved word recognition and spelling, and to a lesser extent, improved comprehension of sentence and paragraph level texts. When explaining how an adult with moderate intellectual disability at a preoperational Piagetian level could benefit from

comprehensive literacy instruction, the authors stated that Christine "made gains in spite of her abilities as documented by testing" (Pershey & Gilbert, 2002, p. 227), and suggested that traditional measures such as IQ scores may not be the best predictors of the potential to acquire literacy.

Foley and Staples, (2003) conducted a study that provides a powerful example of the benefits of literacy instruction for a group of adults with moderate to severe intellectual disability. These researchers worked with 5 adults between the ages of 22 and 35 who had IQ scores ranging from 35 to 57. Pretest results indicated that 2 of the participants had emergent literacy skills, 2 had some beginning reading skills, and 1 was in the process of transitioning to conventional reading and spelling.

One interesting twist to this study was that communication and literacy interventions took place at a sheltered workplace rather than a school or clinic setting. The researchers provided participants with a comprehensive program that included direct instruction in guided reading and listening to improve comprehension strategies and working with words activities to improve phonics and spelling for approximately 2 hours during the course of each week. During work breaks, the researchers added high interest and appropriate books and writing materials to the lounge, and the staff encouraged participants to select a book or engage in writing. Additionally, the researchers added appropriate print exposure to the work place and trained the staff to capitalize on opportunities to help participants engage in literacy and communication activities.

Each of the participants in this study made gains in both literacy and communication skills. In addition, the supervising staff at the workplace noticed this development and began to expand the vocational choices for each of the participants

including working in the community rather than in a sheltered environment. All 5 participants were reportedly "highly motivated" (Foley & Staples, 2003, p. 340) to participate in the literacy lessons and began to engage in more spontaneous literacy activities. By using a balanced and comprehensive literacy curriculum that included relevant topics and systematic instruction, adults with moderate to severe intellectual disability made meaningful progress towards becoming conventional readers and writers. Assuming these adults can continue to access interesting reading materials that are appropriate for their text level, their motivation to engage in literacy activities will likely continue and result in even greater improvement in their literacy skills (Cunningham & Stanovich, 1997).

The Impact of Comprehensive Instruction Combined with Age-Appropriate, Accessible Materials for Adolescents

In 2004, the Center for Literacy and Disability Studies (CLDS) at the University of North Carolina at Chapel Hill, in collaboration with 2 companies, AbleNet, Incorporated and Don Johnston, Incorporated (DJI), embarked on *Project Converge.* One goal of the project was to create a set of comprehensive literacy lesson plans for teachers to use with older emergent readers based on AbleNet's successful *MEville to WEville* (AbleNet, Inc., 2004) curriculum. Because *MEville to WEville* was created for students aged 6-12 years, the new curriculum needed to include books and activities that were still at emergent reading and writing levels but targeted topics of interest for adolescents. To meet this goal, DJI authored 3 new sets of books for their *Start-to-Finish*® *Literacy Starters (STFLS)* that built upon the content in the *MEville to WEville* curriculum.

The *STFLS* books were a natural choice for this project for numerous reasons. They are universally accessible electronic and paperback books written at an emergent literacy level about topics of interest to older readers. A partial list of *STFLS* topics includes books about science, history, geography, sports, and adapted versions of works by classic authors. The *STFLS* library also includes books about social concerns such as dating, employment, and independence from parents (see Appendix A for a complete list of *STFLS* titles). The *STFLS* authors pay careful attention to the specific vocabulary used as well as the complexity and variability of sentence structures. This library of commercially available books fills a void that exists for older emergent readers by providing them with books that they have the ability to read and books about topics of interest.

The lessons created for *Project Converge* targeted comprehensive instruction through the use of word study (i.e., word wall, vocabulary), comprehension, and writing activities (see Appendix B for examples of each lesson type). For each set of 3 books, there were a total of 45 lessons (5 word study, 5 comprehension, and 5 writing) each designed to last 30-45 minutes. As with *MEville to WEville*, the *Project Converge* lessons did not focus on mastery. Instead, they required students to use the skills they were learning in a variety of contexts with increased independence expected over time.

The materials developed in *Project Converge* were evaluated in an 8-10 week intervention study. The investigation included 53 students in Florida and North Carolina between the ages of 15 and 22. All students attended one of two public, segregated special education schools and had a diagnosis of moderate to severe intellectual disability. Many students had additional challenges including motor and/or sensory

impairments, complex communication needs, and disabilities such as autism, cerebral palsy, and Down syndrome.

This component of *Project Converge* employed a single group, pretest/posttest design. Prior to the intervention, a researcher administered the Universally Accessible Emergent Literacy Battery (Erickson et al., 2005) to each student. This assessment was comprised of tasks addressing emergent literacy behaviors such as concepts about print, writing, letter identification, blending individual sounds to identify a pictured word, and identifying pictures of words with the same initial sound and words that rhymed. Because many of the participants in this study were unable to verbalize their answers, acceptable responses included pointing to a picture, giving a yes or no response to a variety of choices, or exhibiting a discrete response behavior during partner assisted scanning. This assessment was repeated for each student at the conclusion of the intervention with progress measured by an increase in posttest scores. As with the previously mentioned *MEville to WEville* study, some students exhibited progress simply by being able to complete the assessment at posttest when they were unable to complete the pretest.

The outcomes of *Project Converge* revealed a significant increase in posttest scores, $t(52) = -2.915$ $p = .005$, and a Cohen's *d* of .14, indicating a small effect from the intervention (Erickson & Hatch, 2008, January). Given the level of challenges that these students faced, their history of extremely limited literacy progress, and the short intervention period, a small effect represented a meaningful gain. In addition to the quantitative gains, teachers of the participants reported qualitative changes in both their students' enjoyment of the literacy lessons and in their own increased expectations of

their students' capabilities (Erickson & Hatch, 2008, January). Some of the teachers' comments about the study included, "It gave me a new insight into teaching reading," "It was fun to see the excitement on their (students') faces," "It taught skills that I thought were very important to kids," and "You just don't think about kids getting into reading … but they really did."

Throughout the course of the study, it was interesting to note the increased engagement of students during the literacy lessons and the growing enthusiasm of their teachers. After 2-3 weeks of intervention, teachers began to proudly display student work in the school hallways and consistently sought out researchers to report stories of student progress and contributions to class lessons. Many students also pulled a researcher aside to point out their work and/or to share a favorite *STFLS* book. Clearly, there were significant changes in both teachers and students following 40 literacy lessons focused on a library of 3 books. Given the impact of access to three books, what would happen if classrooms had access to entire libraries of age and ability appropriate books for both instruction and independent reading?

Observation from *Project Converge* revealed a variety of classroom library scenarios, all of which showed an overall lack of appropriate reading material for both instruction and independent, self-selected reading. Classrooms had either no books available for students to read in their leisure time, books that were written for much younger students, books that had interesting pictures but text that was too difficult for the reading level of the students, or some combination of the above. Without interesting and appropriate books, teachers lacked the materials they required to develop their own lessons when *Project Converge* ended, and students were in danger of not being able to

maintain or expand their newly developed literacy skills as a result of comprehensive instruction or by engaging in independent, self-selected reading.

While the outcomes of *Project Converge* were encouraging, they led to other obvious questions. Would the gains these students achieved during the study be maintained and perhaps even increased over time? Would teachers be able to support their students in making progress when they were required to teach without the benefit of the prepared lessons provided in *Project Converge*? Since those lessons were effective with their students, it was hoped that the teachers could integrate what they learned into their own instruction and somehow find appropriate books for instruction and independent, self-selected reading. The aim of the current study was to address several questions that arose from *Project Converge* by providing students with intellectual disability with daily exposure to a library of age and ability appropriate reading materials.

The Benefits of Wide Exposure to Text

Wide Reading

When the National Reading Panel (NRP) released its review of the available research and recommendations for reading instruction in April, 2000 (National Reading Panel, 2000), several leading researchers were disconcerted by the omission of the practice of wide, independent, or self-selected reading (Cunningham, 2001; Krashen, 2001). The NRP (2000) evaluated independent reading as a possible contributor to reading fluency and concluded that research "has not yet confirmed whether independent silent reading with minimal guidance or feedback improves reading achievement and fluency" (p. 25). The NRP used stringent criteria to determine research that was eligible for inclusion in their analysis, and this caused controversy since some researchers felt the

NRP's criteria were arbitrary (Cunningham, 2001). Others felt that wide reading studies included in the NRP review were misinterpreted (Krashen, 2001) and certainly, it was reasonable to question whether fluency was the only or most appropriate reading skill that wide independent, or self-selected reading might influence.

The practice of wide independent, or self-selected reading is defined as an individual's exposure to a variety of texts by self-selecting the materials. In some studies this practice is referred to as print exposure (Cunningham & Stanovich, 1990; Cunningham & Stanovich, 1991) or independent reading (Applebee, 1988). Additionally, various studies differentiate between self-selected reading during school hours, as in the case of allocated class time for sustained silent reading, and reading that students engage in outside of school (Anderson, Wilson, Fielding, 1988; Taylor, Frye, & Maruyama, 1990). Because these distinctions are not consistent in the literature, unless otherwise noted, all wide independent or self-selected reading, whether it occurs during or after school hours, is referred to as wide reading throughout this manuscript.

Wide Reading and the Relationship to Language and Reading Skills

Time spent in wide reading has long been considered worthwhile, but throughout history, there has been a tendency to over interpret the positive effects wide reading has had on society (Cipielewski & Stanovich, 1992). For example, there is a link between national levels of literacy and economic development, but is literacy the cause of economic development or a consequence of it (Cipielewski & Stanovich, 1992)? A similar question arises when one considers the fact that avid readers, those who engage in the greatest amount of wide reading, tend to be good at reading comprehension. Do avid

readers engage in wide reading because they are good at it, or are they good at reading because they do so much of it (Cunningham & Stanovich, 1998)?

In the field of cognitive psychology, the cognitive correlates approach has been a dominant theory in efforts to address these questions (Stanovich, West, Cunningham, Cipielewski, & Siddiqui, 1996). This theory views cognitive processes as a determinant or cause of reading ability. Yet, it could be argued that reading actually develops cognitive ability because it exposes an individual to a much richer vocabulary than speech (Cunningham & Stanovich, 1998) as well as providing contextual clues to decipher the meaning of unfamiliar words (Snow & Tabors, 1993). Texts also contain information that expands the knowledge bases of the reader, and reading provides the opportunity to develop automatic word recognition through extensive practice (Cunningham & Stanovich, 1990). In a summary of their studies, Cunningham and Stanovich (1998) report that in all of their investigations, engaging in wide reading has shown significant results for *all* children, even those with limited reading and comprehension skills. Thus, it appears that rather than cognitive skills being a determinant of reading ability, there is a reciprocal relationship (Stanovich et al., 1996).

Reading skills. Several studies have investigated the relationship between wide reading and reading skills (Anderson et al., 1988; Cipielewski & Stanovich, 1992; Kuhn, 2005; Taylor et al., 1990). One reason to suspect that engaging in reading could improve reading skill is the Input Hypothesis as proposed by Krashen (1989). He argued that to acquire competence in spelling and vocabulary a child needs comprehensible input in the form of reading. According to Krashen (1989), knowledge built through skill building exercises such as memorizing spelling or vocabulary words was limited because

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conscious learning focused on form rather than the overall understanding and utilized

mental faculties that were not specialized for language learning. In contrast, successful

wide reading focused on overall understanding and employed language-learning mental

faculties.

       With regard to the impact of wide reading on overall reading growth, researchers

have investigated the amount of time spent outside of school in wide reading (Anderson

et al, 1988), the amount of time spent in school that a child engaged in wide reading

(Taylor, et al.), and the number of children's book titles recognized by a child as a proxy

measure of wide reading. With one exception, the amount of wide reading predicted

significant growth in reading ability over time. The single exception occurred in a study

by Taylor, Frye, and Maruyama (1990), in which there was no significant relationship

found between the amount of reading a child engaged in at home and growth in reading

skill. This finding, however, may be a result of poor reliability of the measure used to

calculate time spent reading at home rather than the lack of a relationship between home

reading experiences and growth in reading skill (Cipielewski & Stanovich, 1992; Taylor

et al., 1990).

       Researchers have also explored the relationship between wide reading and some

of the more specific skills required for reading. Orthographic processing is a skill that

contributes to word recognition (Adams, 1990), an essential component in overall reading

comprehension (Cunningham, 1993; Gough & Tunmer, 1986). In a study investigating

the relationship between wide reading and orthographic processing, wide reading

contributed a significant amount of the variance in measures of orthographic processing,

even beyond phonological ability (Cunningham & Stanovich, 1990). With regard to

measures of fluency, including word recognition, prosodic reading, and correct words read per minute, Kuhn (2005), found that students who received instruction based on wide reading made "substantive" gains on pre and posttest measures (p. 127).

   Language skills. As with reading skills, researchers have also examined a variety of language skills and their relationship to wide reading. Chomsky (1972) found significant correlations between measures of wide reading and stages of syntactic development in children between the ages of 5 and 10 years. As children's wide reading increased they demonstrated knowledge of more syntactically complex sentences. The author concluded that the correlation was due to the greater variety of vocabulary and sentence structures seen in text than those that are heard in speech. Wide reading has also been associated with vocabulary, spelling skills and general knowledge (Cunningham & Stanovich, 1991). Wide reading as measured by a Title Recognition Test (Cunningham & Stanovich, 1990) was a significant unique predictor of spelling ability, several measures of word and vocabulary knowledge, and general world knowledge. Interestingly, wide reading was also found to have a significant relationship with listening comprehension in 4th graders (Hedrick & Cunningham, 1995) and amount of growth in listening comprehension from 3rd to 5th grade (Hedrick & Cunningham, 2002). Because listening comprehension of written passages involves the use of semantic, syntactic, and pragmatic skills (e.g., making inferences), these studies suggest that wide reading has a role in the comprehension of connected text beyond word recognition and increased vocabulary.

Methods, Measures, and Designs Used to Study Wide Reading

The relationship between wide reading and various language and literacy skills has been investigated in individuals that range from children as young as 5 years of age (Chomsky, 1972) to senior citizens (Cunningham & Stanovich, 1998). The measures used to collect wide reading data have changed over time. One of the earliest measures of reading volume was developed by Huck and included a multiple-choice quiz pertaining to 60 popular children's books, poems, and stories (Chomsky, 1972). Another early measure was a checklist of children's books that was completed by both the child and his or her parent(s). Unfortunately, the inclusion of 400 titles made this a lengthy and cumbersome task (Chomsky, 1972). Parent and child interviews as well as diaries have also been used to obtain information about amounts of wide reading, but the disadvantage to these methods was that they were time and labor intensive ways to obtain as well as to analyze data (Chomsky, 1972; Stanovich et al., 1996).

Other measures of wide reading have focused on having children complete a daily record of the amount of time engaged in reading (Anderson et al., 1988; Taylor et al., 1990). The problem with this approach was that it often involved teacher cooperation and the use of precious classroom time to complete daily records. Perhaps a more critical concern was that children had to rely on recall to report reading activity from the previous day or previous weekend, resulting in questionable reliability (Taylor et al., 1988).

In response to these concerns, Stanovich and West (1989) developed two proxy measures of relative print exposure for use with adults called the Author Recognition Test (ART) and the Magazine Recognition Test (MRT). Through the use of a checklist

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containing actual author or magazine names as well as foils these researchers created a measure with adequate reliability that eliminated many of the problems associated with earlier wide reading measures (Cunningham & Stanovich, 1991). The ART and MRT could be administered quickly in groups and yielded a numerical score. Because foils were included on the checklist, guessing or exaggerating the number of books read was not a temptation for the respondent. Additionally, a respondent did not need to produce a lengthy recall that could potentially tax memory and/or linguistic skills in order to demonstrate familiarity with a book (Cipielewski & Stanovich, 1992).

The ART and MRT inspired the researchers, Cunningham and Stanovich (1990), to create an adapted title recognition measure that would be appropriate for 3rd and 4th grade children. They developed the Title Recognition Test (TRT), which included 40 titles of popular children's books as well as foils. An estimate of the internal consistency reliability of this original version of the TRT was reported as .81 (coefficient alpha) (Hedrick & Cunningham, 1995). Since that time, adaptations of the TRT have been used in a number of wide reading studies (Cunningham & Stanovich, 1991; Hedrick & Cunningham, 1995; Hedrick and Cunningham, 2002). The adaptations have involved excluding books from the original TRT that were included in classroom instruction and modifications to comprise a list of age-appropriate texts (Hedrick & Cunningham, 2002). Each modification was followed by analysis that continued to support the reliability of the TRT.

In summary, despite the method used to gather data, measures of wide reading have been correlated with increased performance in both reading and language skills (Chomsky, 1972; Kuhn, 2005). The amount of wide reading also predicted reading

performance on various criterion measures of reading (Anderson et al., 1988; Cunningham & Stanovich, 1991; Hedrick & Cunningham, 2002; Taylor et al., 1990).

How Might Wide Reading Apply to Adolescents with Moderate to Severe Intellectual Disability?

The literacy skills of adolescents with moderate to severe intellectual disability are greatly under-investigated. As previously mentioned, current literacy instruction for these students tends to be dominated by behaviorist approaches focused on drill and practice of isolated skills (Katims, 2000). However, as suggested by Krashen (1989), knowledge built through these forms of skill building exercises is limited because conscious learning focuses on form rather than the overall understanding and utilizes mental faculties that are not specialized for language learning. This raises questions about how adolescents with moderate to severe intellectual disability might get the input that comes from an opportunity to practice literacy skills in the context of wide reading, their opportunities for exposure to numerous books about a variety of topics, and whether access to wide reading would have the same positive impact on this population as it has on other students.

Many children with moderate to severe intellectual disability are unable to read at a conventional level even by the time they reach adolescence. This may have as much to do the type of previous literacy instruction they have received as with the impact of their cognitive impairments (Kliewer et al., 2006). As for opportunities to engage in wide reading, there is a mismatch between books that have an accessible text level for these students and books that are written about age appropriate topics. As a result, these

adolescent students are left with the choice of reading books that are too difficult or books that seem immature and/or uninteresting.

Until recently, teachers have coped with this problem by reading aloud, providing books on tape, or identifying books with simple text about meaningful or humorous topics and making them available for older readers (Fielding & Roller, 1992). Other adaptations have included creating either written or electronic books for students about familiar events or topics of interest. Not only are many of these attempts to locate or create books for older students at beginning reading levels time consuming, some of them may not provide the intended support for comprehension. For example, listening to a book read aloud will not provide access for a student if the text is above that student's listening comprehension level (Catts, Hogan, & Fey, 2003; Nation, Clarke, Marshall, & Durand, 2004). Merely removing the burden of decoding does not guarantee text comprehension.

Another approach to making books accessible to older beginning readers is the practice of pairing or replacing text with picture symbols (Downing, 2005). Software programs such as Boardmaker v. 6 (Mayer-Johnson, 2006), PixWriter v. 3 (Slater Software, 2008), Unity for Writing with Symbols and Communicate: In Print (Prentke-Romich, 2004), and Writing with Symbols 2000 v. 2.6 (Widgit Software, 2002) allow the user to type in running text and produce an associated picture symbol paired with each word. Although this practice is intended to help students understand and become more involved in literacy activities, it is questionable whether the picture symbols actually support the beginning reader in developing literacy skills. The outcomes of several research studies that investigated the use of pictures to support the development of word

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identification in readers with and without disabilities indicated that children learned more words in fewer trials when words were presented alone than when paired with pictures (Pufpaff, Blischak, & Lloyd, 2000; Samuels, 1967; Samuels et al., 1974).

Pairing picture symbols with words may actually be confusing for a number of reasons. Symbols represent specific referents, which may include tangible items such as objects, visible actions, or abstract concepts such as feelings or ideas (Vanderheiden & Yoder, 1986). The ease with which a symbol can be interpreted in the absence of its referent can range from transparent, which is a fairly obvious association, to translucent or a somewhat obvious association, to opaque, which is difficult to interpret (Fuller & Lloyd, 1991). Picture symbols that represent grammatical functions are likely opaque and may not relate to the context of a story. For example, consider verbs, such as *do* and *is*. By necessity, these words are represented by abstract drawings of an arbitrary symbol or a sign (see Figure 1). If a student must learn to associate meaning with those abstract representations, one must ask why not simply teach that student the alphabetic spelling of those words. Although the alphabet is an abstract symbol set, the letter combinations are a much more widely understood and conventional representation of words.

Figure 1. Boardmaker picture communication symbols for the verbs, *do* and *is* (Mayer-Johnson, 2006).

Another difference between text and picture symbols relates to the multitude of single words that have multiple meanings and/or perform more than one grammatical function. While one word may have a consistent spelling, the context of surrounding words provides clues for the reader about the semantic and syntactic function of the target word. In the case of picture symbols, there are often multiple choices to represent single words. Consider the word *play*, which has a single spelling for both the noun and verb interpretations. Using picture symbols, this word might be represented by a drawing of people *play*in*g* a game, kids *play*ing on a playground, someone *play*in*g* music (e.g., an instrument or a CD), or a picture of a school *play*. Additionally, the people represented in these symbols may be stick figures or line drawings of a people with a variety of skin tones and hairstyles. These are all valid ways to represent the word, but how do so many different iconic representations of a single written word affect the reader? Unlike the consistent spelling of the word *play*, the reader may not be able to predict which version of iconic representation will be used. Additionally, without a standard, rule governed system such as the alphabet, who makes the decision about which symbolic representation of a word is the most appropriate? If the chosen symbol represents a word in a context that is either unfamiliar or different than what the reader was expecting, it may actually impede rather than improve comprehension.

There are a variety of commercially available symbol systems. A partial list of those used in software to create picture-supported text includes the Boardmaker (Mayer-Johnson, 2006), Widgit Literacy Symbols (Widgit Software Ltd., 2002), Communicate: SymWriter Pictures (Crick Software, 2005), and Literacy Support Pictures (Slater Software, 2008), and Unity for Writing with Symbols 2000 and Communicate: In Print

(Prentke Romich, 2004). Each symbol system has its own representation of individual words and concepts with some representations being more similar across sets than others (e.g., translucent symbols such as *dog* versus opaque symbols such as *is*) (see Figures 2 and 3). One potential problem that could exist for students would be learning a particular symbol set in one classroom environment, then moving to a new classroom where the teachers uses a different software program to symbolize text.
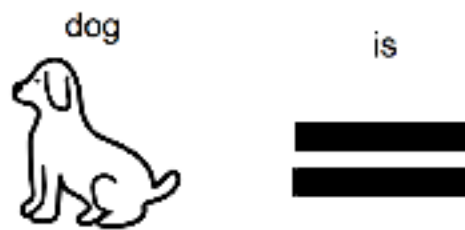
Figure 2. Boardmaker picture communication symbols for the words, dog and is (Mayer-Johnson, 2006).

Figure 3. Unity icons for the words, *dog* and *is* (Prentke Romich, 1995)

In contrast to the phenomenon of several picture symbols representing one word, often times a single symbol is used to represent several words and/or multiple derivations of a particular word. For example, when one looks up the PCS symbol for the word *big* in the Boardmaker library, there is a drawing of a small, medium, and large square with an arrow pointing to the largest square (see Figure 4). This same symbol is also used to

represent the words, *biggest*, a derivation of big, and the synonym, *large.* Another

example is one of the symbols for the word *good* (see Figure 5), which also serves as the

symbol for the phrase *3rd place*, an interpretation that may be based on the relative

words, good, better, and best. Although this may seem somewhat similar to the concept

of a single spelling for a word with multiple meanings, one major difference for using the

same symbol to represent multiple words is likely to reduce the number of symbols a

person needs to access due to space limitations in communication systems and/or to

quickly locate a symbol to facilitate communication rate and efficiency. Because these

types of picture symbols were developed to replace and/or augment oral communication

rather than written language, it makes sense that there would not be an emphasis on

developing a large symbol vocabulary to represent synonyms, word derivations, or a

variety of morphosyntactic forms (e.g., she versus her, me versus I). However,

synonyms, word derivations, and syntactically accurate words are important in written

language and are often critical to expressing and comprehending the intended message.

Therefore, it seems likely that using the same picture symbol to represent various

synonyms, word derivations, or morphosyntactic forms would result in confusion and

decreased comprehension of the written information.
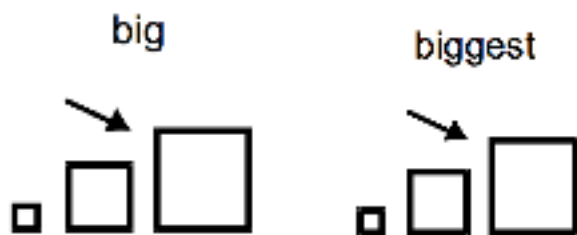
Figure 4. The single Boardmaker picture communication symbol, which is used to

represent both the word, *big*, and its derivation, *biggest* (Mayer-Johnson, 2006).
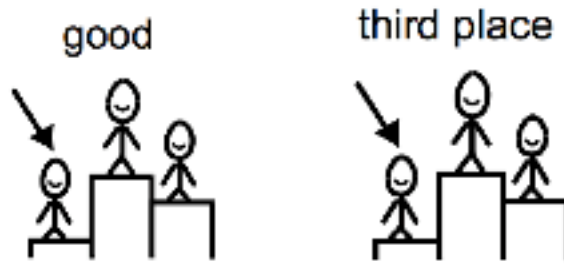
good third place

Figure 5.   The single Boardmaker picture communication symbol used to represent the word, *good* and the phrase, *third place* (Mayer-Johnson, 2006).

Although there have been investigations concerning the effect of pairing picture symbols with words on word reading, there are currently no studies about the effects of picture supported text on overall reading comprehension or the development of concepts about print (e.g., directionality of print, one-to-one correspondence between spoken and written words, understanding that text rather illustrations convey the meaning). As pointed out in a research to practice brief prepared by The Center for Literacy and Disability Studies at the University of North Carolina, Chapel Hill (no date), current practice, common sense and anecdotal reports indicate that the use of picture supported text for emergent level readers may lead to increased interest, attention and exploration of written materials, and perhaps the development of some concepts about print (e.g., knowing where the cover of the book is, practice turning the pages, pretend reading). However, these are only impressions and without empirical evidence, teachers and professionals cannot be certain of the effects of pairing text with pictures. This practice should be used with caution, and professionals need to be sure that by pairing pictures with text, they are not inadvertently impeding upon the potential benefits of wide reading of text.

High Interest Books for Older Beginning Readers

Given the difficulties of creating interesting books for older emergent readers and the lack of evidence associated with the value of pairing text with symbols, it is fortunate that there is now a series of books on the market written for adolescent students who read at the most beginning levels. In 2004, Don Johnston, Incorporated began marketing a library of books called the Start-to-Finish® Literacy Starters (*STFLS*). This library now includes a total of 54 books that are written on core curriculum topics such as science, geography, history, and social studies, as well as stories about adolescent concerns such as sports, dating, high school, and self-advocacy. Refer to Appendix A for a complete list of *STFLS* titles. The books are short in length, contain high quality photographs, and include vocabulary and text that is appropriate for older students despite their beginning reading levels. Additionally, each book can be purchased in an electronic version with the option of mulitmedia presentation. Even if students cannot yet decode the text, they can benefit from listening to these books because the language comprehension demands are unlikely to exceed their emergent literacy or receptive language levels. Removing the decoding demands when books are at an appropriate listening comprehension level may help a struggling decoder's overall comprehension (Curtis, 1980).

Although the *STFLS* books have been on the market for the past 3 to 4 years, there was no existing research concerning how daily exposure to these texts might relate to reading improvement. The results from *Project Converge* (Erickson & Hatch, 2008, January) indicated that following the use of 3 of the *STFLS* books with 40 related comprehensive literacy lessons adolescent students with moderate to severe intellectual disability made significant gains in their emergent literacy skills. Based on the

correlations and the significant unique contribution of wide reading to various reading

and language skills reported in the literature for students without disabilities, it seemed

reasonable to expect a similar relationship when adolescents with moderate to severe

cognitive disabilities had an opportunity for daily exposure to a variety of books. While

the total of 51 *STFLS* books might not be considered extensive enough for students to

engage in wide reading, this library represented the largest collection of age and ability

appropriate books for adolescents at the most beginning reading levels. As such,

providing daily reading opportunities of the *STFLS* texts was the closest approximation to

wide reading possible using a commercially available library for this population of

students. Besides investigating daily reading opportunities, an additional difference

between previous wide reading studies and the current study was that text exposure (e.g.,

listening to a book, reading a book as part of class curriculum) was measured versus

confining the investigation to independent reading of self-selected materials. Because the

STFLS filled an existing void of reading materials for this population, listening to a book,

familiarity through class lessons, and self-selected reading were all behaviors of interest.

Conclusion

In reviewing the history of educational approaches used with individuals with

moderate to severe intellectual disability, there have been many attempts to address their

learning needs. The developmental approach focused on educational tasks that were

commensurate with the student's mental age, but resulted in little preparation for adult

life (U.S. Office of Special Education Programs, 2006). The emphasis on functional and

life skills curricula was a response to this concern and an attempt to better prepare

individuals with moderate to severe intellectual disability for increased independence and

post-school life (Brown et al., 1979). Unfortunately, functional and life skills curricula were undefined, and what was considered functional for students was left open for interpretation. With regard to reading, a functional curriculum was often interpreted as learning a list of sight words selected by the teacher, the family, and/or the IEP team (Joseph & Seery, 2004; Zascavage & Keefe, 2004). Research has shown that sight word instruction did not generalize beyond the words that were taught directly and that the words learned were not used functionally (Browder & Xin, 1998). Given the skills necessary to read text with comprehension and the instructional recommendations for children without disabilities, confining reading to sight word instruction hardly seemed like an effective approach to literacy instruction for any student, let alone a student with learning challenges.

In the 1990s and continuing into the new millennium, federal legislation such as NCLB and the reauthorizations of IDEA 1997 and IDEIA 2004 began to mandate that students with special needs have access to the content of the general curriculum, receive instruction from teachers who were highly qualified to teach that academic content in any classroom, and participate in alternate assessments based on grade-level content standards (Browder et al., 2007). Several studies have shown that when provided with systematic comprehensive instruction, students with moderate to severe intellectual disability can acquire some measure of literacy (Erickson et al., 2005; Erickson, et al., 1997; Hedrick et al., 1999; Pershey and Gilbert, 2002).

Even when students with moderate to severe intellectual disability receive good instruction, one problem continues to exist for older emergent readers. It is difficult to find books that contain text these students have the ability to decode and comprehend that

are written about topics of interest to older students. Typically, older emergent readers must choose between books with simple text that are written for very young children and books that are interesting but too difficult to read with comprehension. Neither of these are acceptable choices. The availability of a new library of books, the *STFLS* by Don Johnston, Inc., provides one solution to this dilemma. Because three books from this series had previously been used in combination with 40 comprehensive literacy lessons to develop emergent literacy skills in adolescents with moderate to severe intellectual disability (Erickson & Hatch, 2008, January), this study sought to investigate the effects of daily opportunities to choose and read books from the entire library of *STFLS* books on literacy development.

CHAPTER 3

Purpose of the Study

This study was designed to investigate the effect of providing daily access to a

wide variety of age and ability appropriate books, the *Start-to-Finish*® *Literacy Starters*

(*STFLS*) by Don Johnston, Inc, to adolescents with moderate to severe intellectual

disability. Because many adolescents with moderate to severe intellectual disability read

at an emergent level, there is a mismatch between books that are available to them on

topics of interest and books that they have the ability to read with comprehension. This

results in limited opportunities to engage in self-selected reading of a wide variety of

books, a practice that has been associated with increased word recognition, vocabulary,

prosodic reading, and listening comprehension skills in individuals without disabilities.

Additional goals of the study were to ascertain whether previous teacher exposure to

comprehensive literacy lessons developed for books similar to those used in the current

study would result in greater literacy gains for students of those teachers and to see if a

relationship existed between the number of books read by students and their performance

on a literacy assessment.

Methods

Research Hypotheses

This study employed a pretest/posttest, quasi-experimental nested design to determine

the benefits of providing adolescent emergent readers with moderate to severe intellectual

disability and their teachers with daily access to the *STFLS* library. Students were

assigned to one of two groups based on their teachers' participation in a previous study, *Project Converge* (Erickson & Hatch, 2008, January). During *Project Converge*, teachers used three of the *STFLS* books with an implementation plan comprised of 40 comprehensive literacy lessons developed specifically for those books. The literacy lessons focused on word study, comprehension and writing activities (see Appendix B). Students whose teachers did not participate in *Project Converge* were assigned to group 1: *STFLS* only. Students whose teachers used the 40-literacy lesson implementation plan in *Project Converge* were assigned to group 2: *STFLS* with previous but not current access to an implementation model. The specific hypotheses tested were:

Hypothesis One. . Classroom differences in literacy learning opportunities and materials that exist between groups at pretest will be eliminated by the conclusion of the intervention.

Hypothesis Two. All participants, independent of group membership will show a significant increase in their reading abilities as a result of the use of the *STFLS* library whether or not teachers have had previous access to an implementation model.

Hypothesis Three. Students in Group 2, whose teachers had previous access to the implementation model, will demonstrate significantly greater gains on all reading measures than students in Group 1, whose teachers did not have previous access to the implementation model.

Hypothesis Four. Students in Group 2, whose teachers had previous access to the implementation model, will check out books for independent reading with greater

frequency than students in Group 1, whose teachers did not have previous access

to the implementation model.

Hypothesis Five. There will be a predictive relationship between the number of

books read and performance on all reading measures for all participants

independent of group membership.

Hypothesis Six. Student performance on an adapted title recognition test including

titles of *STFLS* books as well as plausible foils will correlate positively with the

total number of texts read as recorded in personal reading logs.

Participants and Setting

Site.

This study was conducted in a public separate special education school serving

students with moderate to severe intellectual disability located in the central Piedmont

region of North Carolina. During the period of the study, the school served 126 students

between the ages of 5 and 22 years with moderate to severe intellectual disability. The

ratio of students to teachers was 3:1, and 67% of the students were eligible for free or

reduced lunch. A breakdown of students by ethnicity at this school and school averages

across the state of North Carolina is shown in Table 1. The research site included 6

secondary classrooms that completed the 40-lesson implementation model in *Project*

Converge and 4 that did not.

Table 1

Ethnic Representation for Research Site as Compared to North Carolina State Averages

Ethnicity	Research Site	Average for NC Schools
African American	48%	30%
Asian	5%	2%
Caucasian	44%	55%
Latino	2%	10%
Native American	1%	1%

Teacher Participants

A total of 10 teachers were recruited to participate in this study, and 9 agreed. All were certified to teach special education, and only 2 of the 9 teachers had ever taught students who were enrolled in general education programs. As a group, they had an average of 15.22 years of teaching experience with a range that extended from 2 to 30 years.

As mentioned earlier, the teacher participants were divided into two groups based on their previous experience with the *STFLS* books and the 40-lesson implementation plan used in *Project Converge.* There were 4 teachers who comprised Group 1 of this study, those who did not participate in *Project Converge.* Although all 4 of these teachers were at the research site when *Project Converge* was conducted, they had a variety of reasons for not participating. Two of the teachers worked with students that were 19-22 years old, older than the original age range for *Project Converge.* Once the student participant age range was extended, these teachers were offered but declined the opportunity to participate, and neither teacher provided an explanation. The other 2

teachers in Group 1 had different assignments during the period that *Project Converge* took place. One teacher worked in a K-2 setting; therefore her students were too young to be included. The other teacher worked as a school counselor and did not have her own classroom. At the time of the current study, the last 2 teachers had been reassigned to teach high school aged students.

Three of the 5 teachers who made up Group 2, those with previous experience, were initially recruited to participate in *Project Converge* because their students had significant disabilities and were between the ages of 8 and 18 years. After learning about *Project Converge*, two additional teachers at the school site petitioned to be included despite the fact that at 19-22 years old, their students were older than the target age range. Students in these two classes worked together frequently, as one of the petitioning teachers was responsible for teaching these students Language Arts and the other for teaching Math and Science. Given the paucity of literacy research involving this population of students, the principal investigator obtained permission to extend the age of participants and included these teachers and their students in *Project Converge*.

A comparison of the teaching experience between the 2 groups of teachers revealed several similarities. The range of teaching experience in Group 1 was 3 to 30 years, with a mean of 15.25 years. For Group 2, the range of 2 to 26 years was slightly more restricted, but the mean of 15.2 years of teaching experience was nearly identical to Group 1. Each group included 2 teachers who had taught for 4 years or less and 2 teachers who had taught for 24 years or more. For specific details on each teacher participant, refer to Table 2.

Table 2

Professional Experience of Individual Teacher Participants

Teacher	Group	Years of Experience	Current Class Description	Past or Current Experience Teaching Students with:
CB	1	30	Age Range: 15-19 yrs. Intellectual Level: Moderate	Emotional Disturbance, Learning Disabilities, Mild to Moderate Intellectual Disability
AJ	1	3	Age Range: 16-22 yrs. Intellectual Level Severe/Profound	Autism, Severe-Profound Intellectual Disability
FR	1	24	Age Range: 12-18 yrs. Intellectual Level: Moderate	Autism, Moderate and Severe-Profound Intellectual Disability
KT	1	4	Age Range: 17-21 yrs. Intellectual Level: Severe/Profound	Severe-Profound Intellectual Disability
BH	2	25	Age Range: 18-21 yrs. Intellectual Level: Moderate	Autism, Moderate and Severe-Profound Intellectual Disability
MH	2	2	Age Range: 12-14 Intellectual Level: Moderate to Severe	Autism, Severe-Profound Intellectual Disability
JM	2	19	Age Range: 12-16 Intellectual Level: Moderate to Severe	Autism, Mild, Moderate and Severe-Profound Intellectual Disability
RM	2	4	Age Range: 16-21 Intellectual Level: Moderate to Severe	Autism, Severe-Profound Intellectual Disability, as well as Medically Fragile Students
LW	2	26	Age Range: 19-21 Intellectual Level: Moderate	Autism, Learning Disabilities, Moderate Intellectual Disability, as well as General Education

Student Participants

Forty-three students between the ages of 12 and 21 participated in the study and were assigned to 1 of 2 groups based on their teachers' previous experience with the 40-lesson implementation plan used in *Project Converge.* As a requirement for enrollment at the research school site, all students had a documented intellectual disability in the moderate to severe/profound range as measured by a standardized IQ test. Because intellectual disability often coexists with other conditions, a number of student participants had accompanying communication, motor, and/or sensory impairments. Since the reading technology used in the study had a universal design, these students were welcomed and encouraged to participate. They added to the external validity of the study by representing the range of students typically found in self-contained special education classrooms for individuals with moderate to severe intellectual disability.

Both groups of students included some adolescents who participated in *Project Converge* and some who did not. Of the 14 participants in Group 1, 7 participated in *Project Converge.* Group 2 included 24 students who participated in *Project Converge* and 5 who did not. Refer to Table 3 for a breakdown of demographic information by group.

Table 3

Student Participant Demographic Information

	Group 1	**Group 2**
n	14	29
Male	12	22
Female	2	2
Free or Reduced Lunch	43%	69%
Race/Ethnicity		
African American	21%	38%
Asian	0%	7%

Race/Ethnicity (Continued)	Group 1	Group 2
Caucasian	65%	48%
Latino	7%	7%
Multi-racial	7%	0%
Special Education Qualifying Condition		
Autism	36%	41%
Moderate Intellectual Disability	21%	35%
Severe/Profound Intellectual Disability	14%	3%
Multiple Disabilities	29%	21%
Additional Complex Communication Needs	71%	41%

Sample Size

A total of nine certified special education teachers participated in this study. To determine the sample size of student participants, a general formula for multivariate research, N = 3kp was used, where N was the total sample size, k equaled the number of groups, and p represented the number of variables (Huberty, 1994). In this study, k equaled 2 since there were two groups (with and without exposure to the implementation model in *Project Converge*), and p equaled 7 for the number of dependent variables resulting from the battery of assessments: the Gates-MacGinitie Reading Test-Fourth Edition (GMRT®, MacGinitie, MacGinitie, Maria, Dreyer, and Hughes, 2000), the Universally Accessible Emergent Literacy Battery (Erickson, Clendon, Abraham, Roy and Van de Carr, 2005), and the researcher constructed Title Recognition Test (TRT) (Cunningham and Stanovich, 1990). Using this formula, the estimate for sample size was 42.

Pretest and Posttest Procedures for Student Participants

The Gates-MacGinitie Reading Test - Fourth Edition (GMRT®) (MacGinitie et al., 2000), the Universally Accessible Emergent Literacy Battery (Erickson et al., 2005), and an adapted version of a Title Recognition Test (Cunningham and Stanovich, 1990;

Hedrick & Cunningham, 2002) were used with the student participants at pretest and posttest. All assessments were administered to individual students by the researcher or a trained research assistant who had experience with students with disabilities.

The GMRT® was selected as the measure of early conventional reading achievement for a variety of reasons, including the national standardization and rigorous testing of reliability and validity, as reported by the publisher. When compared to other well-established norm-referenced tests such as the Iowa Test of Basic Skills and the Stanford 9, the GMRT® yields a correlation coefficient of around 0.8, which demonstrates adequate reliability (Hirsch, 2007). Additionally, the GMRT® has been determined to be a valid measure of reading ability, and test scores in early grades have been shown to predict scores in later years (Hirsch, 2007). The GMRT® measures the core reading skills identified by the National Reading Panel and the International Reading Association, and the range of levels that can be tested begin at pre-reading and extend through twelfth grade.

In the current study, 5 student participants completed Level 1 of the GMRT®, which included word decoding and silent reading comprehension subtests. Due to the brief intervention period and reports in the literature of the GMRT® being used as a criterion-referenced test (Hirsch, 2007), raw rather than standard scores were used to calculate gains from pretest to posttest. Correct responses received a score of one and incorrect responses were scored as 0. The passages on the comprehension subtest were comprised of both expository and narrative genres. Students were asked to read 2 to 3 sentences at a time, and then identify one of 3 pictures that illustrated the meaning of what had just been read. The response format was particularly appropriate for

adolescents with moderate to severe intellectual disability because it did not require

verbal skills. Additionally, if a student did not have the motor control to point to the

desired response, a communication partner could scan the choices and watch for the

student to demonstrate a predetermined response behavior.

To assess the emergent literacy skills of all student participants, the researcher

chose the Universally Accessible Emergent Literacy Battery. This is a comprehensive

measure of early reading skills, specifically, concepts about print, writing, alphabet

identification, identifying words with the same initial sound and words that rhymed, and

phoneme blending. The Universally Accessible Emergent Literacy Battery has been used

in two previous studies including *Project Converge,* where it yielded coefficient alphas of

r = .83-.87. In the current study, the Universally Accessible Emergent Literacy Battery

yielded coefficient alphas of r = .77-.83. In both *Project Converge* and the current study,

scores from the alphabet identification subtest were excluded because they were not

positively correlated with the other emergent literacy subtests, thus reducing the internal

consistency of the measure. It appears that in the samples from these 2 studies, students

may have memorized the alphabet in a rote manner rather than learning how to use the

alphabet in the way it is taught to typically developing readers, as a tool for reading,

spelling, and/or phonemic awareness activities. As a result, knowledge of the alphabet

was unreliable as a measure of emergent literacy understanding.

As with the GMRT®, the accessibility of the Universally Accessible Emergent

Literacy Battery made it particularly appropriate for the participants in this study.

Responses could be directly accessed by pointing or adapted for scanning or yes/no

responses, so a student did not need to not have verbal speech to complete the

assessment. Raw scores were used to measure gains from pretest to posttest with a total of 42 points possible. With the exception of the writing sample, which was scored on a scale from 1 (uncontrolled scribbling) - 5 (conventional letters with phonemic spelling), correct responses earned 1 point and error responses were scored as 0.

During the concepts about print (Clay, 2005) subtest, students looked at a commercially available book designed specifically for the task. The pages in the book had been manipulated with text or pictures inverted on some pages, text written from bottom to top and right to left, and other deviations from traditional books. Tasks included demonstrating how to orient and progress through a book, indicating the directionality of print, and understanding that the text rather than the pictures provide the meaning in a book. For the writing sample, students received an accessible writing tool and paper and were asked to write about the topic of their choice. During the alphabet identification subtest, students were asked to identify a specified letter from a field of three choices. Three phonemic awareness tasks made up the remainder of the assessment. For the initial same consonant subtest, the examiner said a target word while showing the student a matching picture communication symbol (PCS). The student was then asked to identify the word with the same beginning sound from a field of 3 PCS symbols that the examiner pointed to and named. The procedure for the rhyming subtest was similar to the initial same consonant subtest. The examiner named a target word while pointing to a representative PCS symbol. The student was then asked to identify the word with the same ending or rhyming sound as the examiner named and pointed to the 3 PCS symbol choices. In the final subtest, sound blending, the examiner asked the student to listen to some sounds and put them together in his or her head to make a word.

The student indicated his or her response by identifying a PCS representation of the word from 3 possible choices. All words used in the sound blending subtest had a consonant-vowel-consonant structure. See Appendix C for sample pages of the 3 phonemic awareness subtests from the Universally Accessible Emergent Literacy Battery.

Finally, an adapted title recognition test (TRT) was used as a proxy measure of wide text exposure (see Appendix D). Several versions of TRTs have been used in studies with students without disabilities (Cunningham and Stanovich, 1990; Hedrick and Cunningham, 2002). The TRT was a preferred method for measuring wide text exposure because it has low cognitive and language demands, and it eliminated socially desirable responses by including foils.

Based on examples cited in the literature (Cunningham and Stanovich, 1990; Hedrick and Cunningham, 2002), the researcher created a TRT specifically for use in this study. Two forms of the test were constructed. Each included 25 of the 51 book titles from the *STFLS* library and 13 foils. The foil titles included 17 titles that the *STFLS* publisher, Don Johnston, Incorporated, had either not yet released, revised, or rejected and an additional 9 titles that were created using morphosyntactic and semantic constructions similar to existing titles. Prior to finalizing the list of titles, one of the *STFLS* authors reviewed and approved the foils created by the researcher as being similar to the existing titles. Additionally, a university professor who was unfamiliar with the *STFLS* library reviewed both forms of the TRT and was unable to identify the foil titles. Next, real and foil titles were separated, alphabetized and assigned a number based on that sequence. The assigned numbers for each set (i.e., real titles, foil titles) were then run through a random number generator two times, then assigned to Form A or Form B

based on the position within the final sequence. All odd numbered items from the real

title and foil sets were placed on Form B and even numbered items went on Form A, with

both forms listing titles alphabetically. For the purposes of this study, only the 38

randomly selected items on Form A were used.

Student participants were administered the TRT as a class during pretest and

posttest measures. Each student received a test form, and the class was instructed by a

member of the research team to either mark or let their teacher know (e.g., say yes, make

a discrete response such as a head nod) the names of books they had read. Students were

also told that some of the titles on the list were pretend or made up, and that they would

lose points if they selected those titles. Students were reminded to only indicate titles

they were sure they knew. A member of the research team then read each of the titles on

the test form aloud while classroom teachers and staff assisted students in recording their

responses. Scoring was based on the procedure used by Hedrick and Cunningham

(2002). The proportion of incorrect responses was subtracted from the proportion of

correct responses resulting in a possible scoring range of -1 to +1. At pretest, the

researcher knew which *STFLS* titles, if any, each student had been exposed to from her

experience with *Project Converge*, and scores were based on that information. Since all

students in the current study had access to the entire *STFLS* library during the course of

the intervention, posttest responses were counted as correct or incorrect based on whether

the student identified real or foil titles, respectively.

Pretest and Posttest Procedures for Adult Participants

Pretest and posttest procedures for the adult participants included an adapted

version of the Early Language and Literacy Classroom Observation (ELLCO) (Smith and

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Dickinson, 2002) and a researcher constructed teacher interview. The goal of both of these measures was to obtain a pre-intervention baseline and document post-intervention changes in classroom environments, teacher beliefs and attitudes toward literacy instruction for their students, as well as the availability of literacy learning opportunities.

The ELLCO is a field-tested observation tool designed for kindergarten through 3rd grade classrooms. It was selected for use in this study because although the student participants were adolescents, they read at the emergent and early literacy levels targeted in the ELLCO. Adaptations used in the current study included the replacement of the Teacher Interview with a researcher-constructed interview and the deletion of 6 items that were not appropriate for the literacy instruction of adolescent students. Specifically, the deleted items included the provision of books, props, and writing tools in classroom areas designated for block and dramatic play. Raw scores were calculated from a possible total of 116 points.

The portions of the ELLCO used in the current study included a Literacy Environment Checklist, a Classroom Observation Rating Scale, and a Literacy Activities Rating Scale. The psychometric properties of the ELLCO were obtained through the publisher, Paul H. Brookes Publishing Company (2008), and were calculated on information obtained from a sample of 616 classrooms over a 6-year period. Cronbach's alpha scores for each section of the ELLCO were (a) Literacy Environment Checklist total score = .84, (b) Classroom Observation total score = .93, and (c) Literacy Activities Rating Scale total score = .72. Thus, the internal consistency of all sections of the ELLCO ranged from good to excellent. Additionally, inter-rater reliability for each section of the ELLCO ranged from 81 to 90% when novice observers received training

from an experienced observer. Although this researcher would be considered a novice observer with regard to the ELLCO, 4 of the 18 administrations of the checklist (i.e., 2 pretest and 2 posttest) occurred under the supervision of an experienced observer.

The teacher interview contained a total of 18 questions divided into 4 topic areas. Specifically, the interview topics addressed the teacher's professional experience, the amount and types of books available to students in their classroom libraries, the frequency and type of literacy instructional activities in their classes, and how often students engaged in self-selected reading. Three of the questions required a simple yes or no response, and one question required the teacher to select 1 of 3 possible choices. The remaining questions were open ended with prompts listed for the interviewer if the teacher had difficulty with a response. See Appendix E for the content of the teacher interview.

Inter-Rater Reliability

For all of the assessment measures in the current study, one of 7 volunteers recruited by the researcher assisted with secondary scoring. These volunteers included 4 licensed speech-language pathologists, 2 university professors with doctoral degrees in Education, and 1 licensed physical therapist. All had at least 2 years of professional experience working with students with moderate to severe intellectual disability. Prior to administering the assessments, team members reviewed and practiced test administration with another adult.

After all assessments had been completed, inter-rater reliability was determined using point-to-point agreement between two raters on at least 15% of all assessments. Percent of exact agreement was calculated by dividing the number of agreements

between raters by the total number of agreements and disagreements, then multiplying by 100.

Since the GMRT® and the Universally Accessible Emergent Literacy Battery were administered individually, 2 raters scored them consecutively. The primary rater sat next to the student and administered the test, while the second rater sat at the same table and observed. Each rater scored assessments individually, without knowledge of the other rater's scoring decisions. Inter-rater reliability was calculated for 15% of the 86 administrations of the Universally Accessible Emergent Literacy Battery (6 pretests and 7 posttests) and ranged from 90 to 100% agreement, with an average of 95.8%. For the GMRT®, inter-rater reliability was calculated for 20% of the 10 test administrations (1 pretest and 1 posttest) and ranged from 98 to 100% agreement with an average of 99%. Disagreements among raters occurred when students made unexpected body movements that raised questions about the intent of the choice and/or when a student's selection of a response was unclear. For example, if a student touched more than 1 picture symbol when responding to a question, concerns arose as to whether the intended response was the 1st symbol the student selected, the last symbol or neither. Following calculation of inter-rater reliability, discrepancies were discussed among raters and a final decision was determined based on mutual agreement.

Inter-rater reliability for the TRT was calculated for 22% of the 74 total tests administered (8 pretests, 8 posttests). Because the TRT was administered to classes rather than individual students, scoring occurred after all testing had been completed. Tests examined for inter-rater reliability were randomly selected. Each student participant was assigned a number between 1 and 43. Those numbers were then run

through a random number generator 2 times, one time for each administration of the TRT. The top 8 numbers of each of the 2 random generations were then matched with the codes of the student participants to be scored by a second rater. Inter-rater reliability ranged between 95 and 100% agreement, with an average score of 99.7%. Discrepancies occurred when students made unclear marks on their response forms that extended into more than 1 response box, were near but outside of a response box, or were written so lightly that it was unclear whether the mark was intentional. Discrepancies were resolved by discussion and consensus.

Four of the 18 administrations of the ELLCO were examined for inter-rater reliability (2 pretest and 2 posttest). The range of point-to-point agreement was 88 to 99% with a mean of 94%. Because the researcher was a novice observer with regard to the ELLCO, she deferred to the opinion of the second rater, an expert observer, to resolve scoring discrepancies.

Intervention

For approximately 7 weeks or 31 school days, teacher participants were asked to make the *STFLS* books available to their students for at least 30 minutes each day either through instruction, self-selected reading or a combination of the two. Because the *STFLS* books were available in both paperback and electronic formats, teachers were asked to read the Literacy Starter Guide to become familiar with the software and learn how to customize access for individual readers. Specific instructions included making the reading technology and paperback books accessible to students during unstructured class times and for any specified self-selected reading time. Additionally, teachers were

encouraged to use the *STFLS* materials during literacy instruction, but no suggested or prescribed lesson plans were provided.

Data Collection Methods and Instruments

To track the instructional use of books, teachers kept a log of the texts they used during literacy lessons. The form consisted of a table prepared by the researcher with space to list book titles and a brief explanation of the purpose for that reading for each day of the week. Teachers were also asked to keep any lesson plans or instructional materials they created. For example, a teacher book log might show that a class read the book *Not Until You're 16* (Stemach, 2006) to predict the ending (purpose for reading) on a Monday. Additionally, the teacher might provide the chart students completed while engaged in the lesson. To see a blank teacher book log, refer to Appendix F. The researcher collected teacher book logs at the end of every 2nd week of the intervention.

To measure student reports of text exposure, each student received a reading log placed in a personal folder near the classroom library. The logs had a list of all of the *STFLS* titles and columns for each day of the week. Students were asked to check off the title of each book they selected to read or listen to during the school day. Teachers and staff supported students who were unable to complete the task independently in recording the books they chose for self-selected reading. The researcher collected student book logs at the end of each week of the intervention. Refer to Appendix G to see a blank student book log.

The information from the student books logs was compared to an adapted version of a TRT (Cunningham & Stanovich, 1991; Hedrick & Cunningham, 2002). Since a TRT had not been used with students with moderate to severe intellectual disability, it

was unclear whether this population of students attended to books titles and/or if they remembered them. To gather initial information regarding the validity of using a TRT for this population, students completed a TRT prior to receiving access to the *STFLS* library, and it was expected that the students would recognize no more than 3-5 real titles on the test. At the completion of the investigation, the students completed another TRT, with the expectation that the number of real book titles that the students recognized would increase.

Treatment Fidelity

One of the goals of this study was to determine how teachers and students independently used an accessible library. Therefore, the treatment criteria were not particularly stringent. Treatment fidelity measures included verbal confirmation of teacher completion of the Literacy Starter Guide, which described how to use the *STFLS* instructionally, at least 2 observations of each teacher conducting a literacy lesson, bi-weekly collection of teacher book logs, and weekly collection of the student book logs.

Planned Analyses

Several statistical analyses were conducted to address the hypotheses driving this research. Results were considered significant when they fell at or below an alpha of .05. Statistical analyses were conducted using SPSS 16.0 for Mac.

Hypothesis One. Classroom differences in literacy learning opportunities and materials that exist between groups at pretest will be eliminated by the conclusion of the intervention.

Raw scores from the ELLCO were used in an independent samples *t-test* on the mean pretest as well as posttest scores of the 2 groups of teachers. Additionally, mean

scores of the various sections of the ELLCO were compared by group to determine the areas of greatest difference prior to the intervention.

Hypothesis Two. All participants, independent of group membership will show a significant increase in their reading abilities as a result of the use of the *STFLS* library whether or not teachers have had previous access to an implementation model.

The initial plan for addressing this hypothesis was to use a multivariate analysis of variance (MANOVA) to analyze the data set according to the treatment group (independent variable = group) to determine if there were significant differences on the dependent variables, which included the gains scores from the five subtests of the Universally Accessible Emergent Literacy Battery and the single raw score of the GMTR®. However, after calculating the coefficient alphas from the pretest and posttest performance of all participants on the Universally Accessible Emergent Literacy Battery ($r = .77-.83$), it was determined that the subtests were correlated highly enough to be considered a single rather than multiple dependent variables. Therefore, a one-tailed paired samples *t-test* was used to compare the pretest and posttest performance of all student participants. By coincidence, all students whose literacy levels were appropriate to complete the GMRT® were in Group 2, and a separate paired samples *t-test* was used to evaluate their gains from pretest to posttest.

Hypothesis Three. Students in Group 2, whose teachers had previous access to the implementation model, will demonstrate significantly greater gains on all reading measures than students in Group 1, whose teachers did not have previous access to the implementation model.

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An independent samples *t-test* was used to compare the performance of students between groups and determine whether their gains scores on the Universally Accessible Emergent Literacy Battery (dependent variable) differed significantly by group membership (independent variable). Since all students who completed the GMRT® were in Group 2, performance on that measure could not be compared across groups.

Hypothesis Four. Students in Group 2, whose teachers had previous access to the implementation model, will check out a variety of different books for independent reading with greater frequency than students in Group 1, whose teachers did not have previous access to the implementation model.

A one-tailed independent samples *t-test* was planned to compare the frequency with which students in Group 1 and Group 2 checked out different books.

Hypothesis Five. There will be a predictive relationship between the number of books read and performance on all reading measures for all participants independent of group membership.

Linear regression was planned to determine whether participants' gains scores on the Universally Accessible Emergent Literacy Battery (dependent variable) could be predicted by the number of different books read, as reported in the student reading logs (independent variable). Because only 5 students completed the GMRT®, performance on that measure was not included.

Hypothesis Six. Student performance on an adapted title recognition test including titles of *STFLS* books as well as plausible foils will correlate positively with the total number of texts read as recorded in student reading logs.

Pearson product moment correlation was planned to compare performance on the TRT with the total number of books read as recorded in the student reading logs.

Summary

This study was designed to investigate the effect of providing daily access to a variety of age and ability appropriate books to adolescents with moderate to severe intellectual disability. Additionally, the study sought to determine the additive impact of instruction provided by teachers who had used 40 literacy lessons the previous semester that were based on a comprehensive approach to literacy instruction. Using one commercially available assessment, one assessment that had been used in 2 previous studies, and a researcher-constructed assessment, the literacy gains of 2 groups of adolescents with moderate to severe intellectual disabilities were measured and compared. Further analysis was planned to investigate differences in teacher practices, attitudes, and beliefs concerning the value of literacy instruction for this population of students.

CHAPTER 4

Results

The purpose of this investigation was to determine the effect of providing ongoing opportunities for students with moderate to severe intellectual disability to interact with a variety of age and ability appropriate texts. Students were divided into 2 groups based on their classroom teachers' experience with 40 comprehensive literacy lessons used in a previous study at this research site, *Project Converge,* and three books from the *Start-to-Finish* *Literacy Starters* (*STFLS*) library used in this study. Multiple analyses were conducted using SPSS 16.0 for Mac to test the six hypotheses in the current investigation and are described in the remainder of this chapter. All analyses were based on an alpha of .05.

The Instructional Context

The first hypothesis guiding this investigation involved the classroom environment and instructional opportunities provided by the 2 groups of teachers. Hypothesis One proposed that classroom differences in literacy learning opportunities and materials that existed between groups at pretest would be eliminated by the conclusion of the intervention. Two assessments were completed to describe the instructional context of the study and to determine the presence of any significant disparities between the classroom environments and literacy learning opportunities afforded to the 2 group of student participants both before and after the intervention. These included the Early Language and Literacy Classroom Observation (ELLCO)

(Smith and Dickinson, 2002) and individual teacher interviews. Because these assessments were administered before and after the intervention, they were intended to capture changes in the classroom environment, teacher attitudes and beliefs about the value of literacy instruction for their students, and the type and amount of instructional activities provided to the student participants.

ELLCO and Teacher Interviews

Raw scores from the ELLCO were analyzed in a variety of ways to make comparisons between teachers in Group 1, those who did not participate in *Project Converge* and Group 2, those who did participate in *Project Converge.* Additionally, data were analyzed to determine the overall growth of all teacher participants in providing literacy learning opportunities. The ELLCO pretest and posttest total and subsection scores for both groups of teachers are included in Table 4.

Table 4.

Mean Pretest and Posttest Total and Subsection Scores for the ELLCO

	Group 1 (n=4)	Group 2 (n=5)
Literacy Environment Checklist		
Pretest	13.0	18.0
Posttest	16.5	21.4
General Classroom Environment		
Pretest	21.75	24.2
Posttest	24.0	26.6
Language, Literacy and Curriculum		
Pretest	14.5	20.8
Posttest	26.0	31.4
Literacy Activities Rating Scale		
Pretest	3.0	5.2
Posttest	5.25	7.8

Total Score	Group 1 (n=4)	Group 2 (n=5)
Pretest	52.0	72.0
Posttest	70.2	87.2

Prior to conducting an independent samples *t-test* to test for mean differences between the two groups at pretest, the data were screened to ensure that they met the assumptions for this analysis, specifically, equality of variances and normal distribution of data. Next, an independent samples *t-test* was performed to compare the mean ELLCO pretest scores of the 2 groups of teachers. This was of interest to document the similarity and disparity of classroom environments and teacher practices between the 2 groups at the outset of the study. The results revealed a significant difference, with the teachers in Group 1 scoring lower than the teachers in Group 2, as indicated by a mean difference and standard error difference of -18.2 and 6.769, respectively, $t(7) = -2.689$, $p = .016$. This suggested that the literacy learning environments in the classrooms of the teachers in Group 1 did not offer the same depth and breadth of literacy materials and artifacts as did the classrooms of the teachers in Group 2.

Next, the mean scores of the various sections of the ELLCO were compared to determine the areas of greatest disparity between groups. They were the Literacy Environment within the classroom (mean difference of -6.0 points) and the Language, Literacy and Curriculum scale (mean difference of -6.3 points). Questions included in the Literacy Environment Checklist focused on two areas, books and writing. With regard to books, areas investigated included the availability and appeal of a classroom book area, the number and variety of books in the classroom, and the accessibility of books to students. Writing items addressed the types of writing materials, supports, and models available to students as well as evidence of student work displayed within the

classroom. Three of the 4 teachers in Group 1 had few or no books that could be independently accessed by students and little to no student writing displayed within their classrooms. In contrast, 4 of the 5 teachers in Group 2 had accessible books available for their students, and 3 of the 5 teachers in that group had samples of student writing displayed in their classrooms and the surrounding hallways.

The Language, Literacy and Curriculum scale from the ELLCO required the observer to rate the teacher's facilitation of oral language, reading and writing opportunities and instruction, and the integration of curriculum with classroom activities. Although oral language facilitation was an area of strength for the teachers in Group 1, 3 of the 4 teachers did not provide structured reading or writing lessons, and there was little evidence of any type of literacy curriculum in the classroom activities. This represented a marked difference from the teachers in Group 2 who were conducting guided reading lessons several times a week if not daily. Additionally, two of the teachers in Group 2 consistently provided writing opportunities and displayed student work.

Teacher interviews prior to the initiation of the study were consistent with the ELLCO observations. Two of the 4 teachers in Group 1 reported that their students would destroy books if they were available without adult supervision and that they did not feel it was appropriate for their students to work on writing. In fact, one of the teachers thought that due to his students' unpredictable behaviors, it might be dangerous for them to have access to pencils.

At the conclusion of the study, an independent samples *t-test* was conducted to compare the ELLCO posttest scores of the 2 groups of teachers. Results from this analysis yielded a mean difference and standard error difference of -15.2 and 8.42,

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respectively, $t(7) = -1.805$, $p = .114$, and did not reveal a significant difference between the groups. While there was not a significant difference between the two groups of teachers at posttest, it was important to note that both groups of teachers increased their total ELLCO scores at posttest, with Group 1 increasing 20 points (pretest=52, posttest=72) and Group 2 increasing 17 points (pretest=70.2, posttest=87.2).

Again, comments from the teacher interviews and teacher reading logs supported the results of the ELLCO. At the conclusion of the study, all teacher participants were providing guided reading lessons at least 2 times a week and made books continuously accessible to their students for free independent reading. Several global themes were noted in the teacher comments including their surprise at the level of comprehension demonstrated by the students during literacy lessons, how much students enjoyed having their own copy of a book during guided reading, the care that students took of the books, the variety of topics the students found interesting, and the pride their students seemed to be taking in their new reading abilities. Three of the 9 teachers reported that they felt participation in the study had improved their teaching and made them feel empowered. Additionally, six of the nine teachers said that they were now committed to continuing the practice of providing regular literacy instruction and commented that they now viewed literacy instruction as necessary and critical for their students.

To summarize, the ELLCO revealed that there were significant differences between the classroom environments and teachers who participated in the two groups at the outset of this study. These differences were consistent with the information provided by teachers in the interviews, and must be considered when interpreting the findings related to the additional research hypotheses guiding this investigation. However, the

fact that ELLCO scores for both groups increased by posttest and a significant difference was no longer present suggested that both groups benefited from the intervention in terms of its influence on the language and literacy environment in the classrooms.

Results of Student Participant Measures

The primary purpose of this study was to investigate the impact of providing students with intellectual disability with access to a library of age and ability appropriate books over a period of 31 days. Furthermore, the study was designed to determine whether teacher-participation in a 40-day intervention that provided them with access to similar books and prescriptive, comprehensive literacy lesson plans influenced their students when the teachers only had access to the books themselves. Five hypotheses were posed relative to these purposes. First, descriptive data reflecting student performance on the pretest and posttest measures will be provided. Then each of the hypotheses and associated analyses will be described below.

Descriptive Statistics

During the two weeks prior to the initiation of the 31 days of intervention began, all students completed the Universally Accessible Emergent Literacy Assessment Battery and the Title Recognition Test. In addition, some participants (n=5) whose teachers reported had conventional reading skills, completed the Gates-MacGinitie Reading Test (GMRT[®]). Each of the assessments was repeated during the two weeks following the 31 days of intervention. Results for all participants are reported in Table 5 for all participants and for each group.

Table 5.

Mean Scores on Pretest and Posttest Measures

		All (n=43)_	Group 1 (n=14)	Group 2 (n=29)
Universally Accessible Emergent Literacy Assessment Battery				
	Pretest	17.42	13.64	19.24
	Posttest	20.21	15.36	22.55
Title Recognition Test				
	Pretest	.05	-.002	.06
	Posttest	.08	-.02	.11
Gates-MacGinitie Reading Test				
	Pretest			37.4
	Posttest			44.2

The Impact of Access to the STFLS Library

The second hypothesis looked at all student participants as a single group and their pretest to posttest scores on the Universally Accessible Emergent Literacy Battery. Specifically, Hypothesis Two held that all participants, independent of group membership would show a significant increase in their reading abilities as a result of the use of the *STFLS* library whether or not teachers have had previous access to an implementation model.

A one-tailed paired samples *t-test* was used to determine if the gains in reading abilities of all student participants as measured by the total raw posttest scores for student participants on the Universally Accessible Emergent Literacy Battery increased

significantly from pretest to posttest. Since the posttest raw scores from the Universally

Accessible Emergent Literacy Battery were not normally distributed, a log10

transformation was completed, resulting in normal distribution. The log 10

transformation was selected because it is a particularly effective method to use to

normalize positively skewed distributions (Field, 2005). An additional log10

transformation was completed for the Universally Accessible Emergent Literacy Battery

pretest scores and the assumption of normally distributed data was met. Using the

transformed scores, a one-tailed paired samples *t-test* resulted in a mean difference of

2.79 with a standard deviation of 4.82, which indicated a significant mean gain for all

student participants from pretest to posttest, $t(42) = 3.794$, $p = .000$. The overall effect of

the intervention for all student participants was calculated using the formula for Cohen's

d. Specifically, the mean pretest score for all participants was subtracted from their mean

posttest score and divided by the standard deviation of pretest scores. The overall effect

of the intervention was small, $d = .30$.

A separate one-tailed paired samples *t-test* was conducted to determine if the 5

students who took the GMRT® made significant gains from pretest to posttest. Because

the assumptions for the planned analysis were met, raw scores were used. The results

revealed a mean difference of 6.8 points, and a standard deviation of 7.09. As with

performance on the Universally Accessible Emergent Literacy Battery, the score from the

GMRT® *t-test* indicated a significant mean gain from pretest to posttest, $t(4) = 2.146$, $p =$

.049.

The Impact of Teachers Who Participated in Project Converge on Student

Outcomes

Several teachers at the site selected for this investigation participated in a 40-lesson intervention study in the semester immediately preceding the implementation of this study. Five of those teachers volunteered to participate in the current study and comprised group 2. It was believed that student participation in the classrooms of these teachers would benefit more from access to the *STFLS* Library because their teachers would be more skilled at using the books, value them more, and provide more opportunity and encouragement for their students to access the books.

The third hypothesis guiding this investigation was intended to compare the performance of the students in the two groups. Specifically, Hypothesis Three stated, students in Group 2, whose teachers had previous access to the implementation model, would demonstrate significantly greater gains on all reading measures than students in Group 1, whose teachers did not have previous access to the implementation model.

A one-tailed independent samples *t-test* was used to compare the performance of students between groups and to determine whether their gains scores on the Universally Accessible Emergent Literacy Battery (dependent variable) differed significantly by group membership (independent variable). Because all students who completed the GMRT® were in Group 2, performance on that measure could not be compared across groups. The assumptions of normally distributed data and homogeneity of variance were met; therefore, raw gain scores from the Universally Accessible Emergent Literacy Battery were used in the analysis. The results showed a mean gain and standard deviation for Group 1 of 1.71 and 3.99, respectively. For Group 2, the mean gain and

standard deviation were 3.31 and 5.16, respectively. Although Group 2 made a larger

mean gain than Group 1, the results of the independent samples *t-test* did not indicate a

significant difference in gain scores between groups, $t(41) = -1.017$, $p = .158$.

In order to better understand the differences in gains between Groups 1 and 2, an

effect size for each group was calculated using the formula for Cohen's *d.* Specifically,

each group's mean pretest score was subtracted from their mean posttest score and

divided by the standard deviation of within group pretest scores. Results indicated that

both groups achieved a small effect, with a Cohen's *d* value of .19 for Group 1 and .36

for Group 2. However, students in Group 2 who had access to the *STFLS* library and

were taught by teachers who had previous experience with the comprehensive literacy

lessons used in *Project Converge* achieved nearly double the effect of the students whose

teachers did not have previous experience with the comprehensive literacy lessons. In

other words, these effect sizes suggested that having access to age and ability appropriate

texts resulted in literacy gains for adolescents with moderate to severe intellectual

disability in a brief, 31 day period, but when access to books was coupled with

instruction provided by teachers who had experience with comprehensive literacy

instruction, the effect was even stronger.

To further investigate the effect of the intervention for students from Group 2, an

effect size was calculated for the 5 students from that group who completed the GMRT®.

Using Cohen's *d* formula as previously described, students who took the GMRT®

achieved a medium effect ($d = .47$). This finding not only supported the observation that

access to age and ability appropriate texts for adolescents with moderate to severe

intellectual disability delivered by teachers who had experience with comprehensive

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literacy instruction could result in meaningful gains, it suggested that the effect was even stronger for students who were at an early conventional reading level.

The Impact of Teachers Who Participated in Project Converge on the Quantity of Book Reading

Because the 5 teachers who taught the students in Group 2 had participated in *Project Converge* during the semester prior to this investigation, they had previous exposure to 3 of the *STFLS* books. These teachers observed how much their students enjoyed the books during *Project Converge*, even students that teachers believed would not be interested in reading or literacy activities. Additionally, the Group 2 teachers saw their students make significant gains during an 8-week intervention period. Therefore, it was suspected that the teachers in Group 2 might have higher expectations about their students' ability to enjoy and benefit from the *STFLS* books, and as a result, provide more access to the books as well as more encouragement to read and explore the titles.

To examine this, Hypothesis Four stated that students in Group 2, whose teachers had previous access to the implementation model, would check out a variety of different books for independent reading with greater frequency than students in Group 1, whose teachers did not have previous access to the implementation model. Table 6 reports the descriptive statistics for all participants as a whole and for each group separately.

Table 6.

Mean Number of Different Books Checked Out by Students

	All (n=43)	Group 1(n=14)	Group 2(n=29)
Different Books Checked Out	11.63	6.07	14.31

A one-tailed independent samples *t-test* was planned to compare the frequency with which students in Group 1 and Group 2 checked out books; however, the data were count data with a Poisson distribution rather than a normal distribution. Therefore, a Poisson loglinear regression for count data was completed. The scale for this regression was set using Pearson's Chi Square statistic to estimate the variance, and the results indicated that as hypothesized, the students in Group 2 did check out different books with significantly greater frequency than students in Group 1 (Wald Chi-Square = 13.838, df=1, p = .000). These results suggested that students in classes with teachers who participated in *Project Converge* received a different level or type of encouragement to engage in independent reading of books than did students whose teachers had not been exposed to the implementation model.

The Impact of Wide Reading

Given that wide reading has been correlated with both increased language and literacy skills, particularly, improved orthographic processing, spelling, fluency, prosodic reading, and correct words read per minute (Cunningham & Stanovich, 1990; Kuhn, 2005), the fifth hypothesis guiding this investigation sought to determine if this relationship extended to adolescents with moderate to severe intellectual disability. The fifth hypothesis stated that there would be a predictive relationship between the number of different books read and performance on all reading measures for all participants independent of group membership.

Linear regression was used to determine whether participants' gains scores on the Universally Accessible Emergent Literacy Battery (dependent variable) could be predicted by the number of different books read, as reported in the student reading logs

(independent variable). Because only 5 students completed the GMRT®, performance on that measure was not included. The results of the regression indicated that the number of different books read predicted scores on the Universally Accessible Emergent Literacy Battery, b = .074, $t(42)$ = 1.228, p = .226. However, the number of different books read did not explain a significant proportion of variance in scores on the battery, R^2 = .035, $F(1, 42)$ = 1.509 , p =.226.

An additional investigation was attempted to see if varying amounts of different books read could predict gains scores on the Universally Accessible Emergent Literacy Battery. To prepare for this analysis, a frequency distribution of the number of different books selected was completed and the data were divided into 3 different categories that included data from students who read 0-5 different books (n = 14), 6-10 different books (n = 16), and 11 books or more (n = 13). The range of different books read extended from 2 to 45. Next, 2 of the 3 categories were recoded into dummy variables for comparison with the reference category, 11 or more different books read. A linear regression was run using the gains scores from the Universally Accessible Emergent Literacy Battery as the dependent variable and the 2 dummy variables as independent variables. Results indicated that the number of different books read accounted for only 4.4% of the variance in the gains score of the Universally Accessible Emergent Literacy Battery. Additionally, there were no significant differences between students who read 0-5 different books and those who read 11 or more different books (p = .783) or students who read 6-10 different books and those who read 11 books or more (p = .211) with regard to predicted performance on the Universally Accessible Emergent Literacy

Battery. In summary, the number of different books read was not a significant predictor of gain scores on the Universally Accessible Emergent Literacy Battery.

The Use of a Title Recognition Test with Students with Intellectual Disability

Measuring the quantity of books students have read is a challenge that has been addressed for students without disabilities using a title recognition test (Cunningham & Stanovich, 1991; Hedrick & Cunningham, 1995; Hedrick and Cunningham, 2002). The current study employed an adapted title recognition test constructed for the purpose of assessing the quantity of reading the student participants engaged in during the 31-day intervention. There was no prior evidence to indicate whether or not the title recognition test (TRT) would be effective for this population due to a myriad of language, cognitive, and memory problems experienced by individuals with intellectual disability. Therefore, a log of the specific books the students read was also employed.

This final hypothesis was intended to investigate the effectiveness of the TRT as an indicator of wide reading for students with intellectual disability. If the TRT was an effective tool for this population of students, performance on the measure should have been positively related to the actual number of books students read as recorded in the logs. Specifically, Hypothesis Six posited that student performance on an adapted title recognition test (TRT) including titles of *STFLS* books as well as plausible foils would correlate positively with the total number of texts read as recorded in student reading logs.

Pearson product moment correlation was used to compare performance on the post TRT with the total number of different books read as recorded in the student reading logs. The correlation, which was based on 31 cases for whom the TRT was available at

posttest was not significant, $r(29) = .009$, $p = .480$. To determine whether dividing participants into categorical groups based on the number of different books read might differ in the strength of their relationship to performance on the post TRT, another correlation was run with the different books read variable recoded into 3 values to represent low exposure (0-5 different books), moderate exposure (6-10 different books), and high exposure (11 or more different books). The number of different books that students read during the intervention spanned from 2 to 45. The results of this correlation indicated that there was a significant relationship between the categorical amounts of different books read and posttest performance on the TRT ($p = .048$). Based on this significant correlation, a one-tailed linear regression was conducted. The results of the regression indicated that the low, moderate, and high categories of different books read predicted scores on the TRT, $b = .056$, $t(30) = 1.720$, $p = .048$. The categorical values of different books read explained a significant proportion of variance in scores on the TRT, $R^2 = .093$, $F(1, 29) = 2.96$, $p = .048$. To summarize, there was a predictive relationship between the categorical amounts of different books read and performance on the TRT.

Summary of Findings

The findings from the analyses employed in this study indicated that providing age and ability appropriate books to adolescents with moderate to severe intellectual disability resulted in significant gains in literacy skills for both emergent and early conventional readers. Additionally, the effect of access to these books, as measured by Cohen's *d*, was increased when students were placed in classes taught by teachers who had previous exposure to 40 comprehensive literacy lessons in *Project Converge*. Those were the students who comprised Group 2. An additional increase in the effect of the

intervention was noted in those students from Group 2 who were able to read at an early conventional level at the outset of the investigation, as judged by their ability to complete the GMRT[®].

Additional analyses were conducted to determine the influence of group membership on the frequency with which students chose to read a variety of different books. Significant differences were found between the groups. Students in Group 2 read different books with greater frequency than the students in Group 1.

Finally, several analyses were run to determine the relationship between the number of different books that students read and their performance on a reading test and a TRT. The number of different books read by students was not significantly related to their posttest scores on the Universally Accessible Emergent Literacy Battery or the TRT. However, when the different books variable was recoded into 3 values to represent low, moderate, and high exposure, the relationship was both positively correlated and predictive of posttest performance on the TRT.

CHAPTER 5

Discussion

This study accomplished the purpose of determining that daily reading

opportunities of a variety of texts had a positive influence on the literacy gains of

adolescents with moderate to severe intellectual disability. In a brief, 31 day intervention

period, access to age and ability appropriate books resulted in a mean significant increase

on the Universally Accessible Emergent Literacy Battery (Erickson, Clendon, Abraham,

Roy, & Van de Carr, 2005) and a small effect, $d = .30$, for all student participants. When

literacy gains were analyzed by group, the additional impact of receiving instruction from

teachers who had been exposed to comprehensive literacy instruction was revealed.

Students of those teachers had nearly double the effect, $d = .36$, when compared to

students whose teachers had not been exposed to comprehensive literacy instruction, $d =$

.19. Furthermore, when students of teachers who had been exposed to comprehensive

literacy instruction read at an early conventional level, the impact of daily reading

opportunities was even greater, $d = .47$. These findings will be discussed in the context

of Beukelman and Mirenda's (2005) Participation Model.

Breaking Barriers

The Participation Model developed by Beukelman and Mirenda (2005) that was

outlined in Chapter 2 described 5 areas where learning opportunities were often limited

for individuals with disabilities. They included barriers in policy, practice, knowledge,

skill and attitude. This model was applied to the literacy opportunities afforded to

adolescents with moderate to severe intellectual disability and provided a context for understanding the gains made in this brief intervention period by a group of students who do not have a history of rapid or extensive literacy development (Erickson, 2003; Katims, 2000). While not all areas of the participation model were studied directly in the current investigation, there are several ways that changes in factors relating to participation in literacy may explain the varying effects of daily reading opportunities for the 2 groups of students.

Policy and Practice Changes. In segregated special education settings, policy often dictates that the curricular focus must be on functional life skills rather than academic instruction. With regard to practice, this usually translates to student educational placement in educational environments that are not print rich and offer reduced or extremely limited literacy instructional time (Kliewer, Biklen, Kasa-Hendrickson, 2006; Mike, 1995; Zascavage & Keefe, 2004). Teachers, parents and administrators often accept this as an appropriate educational environment based on the belief that this is the best or the only option for students with moderate to severe intellectual disability.

In the current study, all of the participants attended a public separate school and were placed in self-contained special education classrooms. Prior to implementing the intervention, the Environmental Language and Literacy Classroom Observation (ELLCO) (Smith & Dickinson, 2000) was completed for each of the 9 participating classrooms and confirmed the presence of several environments that lacked an accessible classroom library and had a paucity of other print and literacy-related resources. The ELLCO results revealed that 3 of the 4 teachers who comprised Group 1, those who did

not have experience with comprehensive literacy instruction from participation in a

previous study, *Project Converge*, had few or no books that could be independently

accessed by their students as compared to only 1 of the 5 teachers in Group 2. Students

in the classrooms that comprised group 1 had limited to no opportunities to interact with

or explore texts, which may explain the difference in both the pre and posttest

performance of Groups 1 and 2 on the Concepts About Print tasks on the Universally

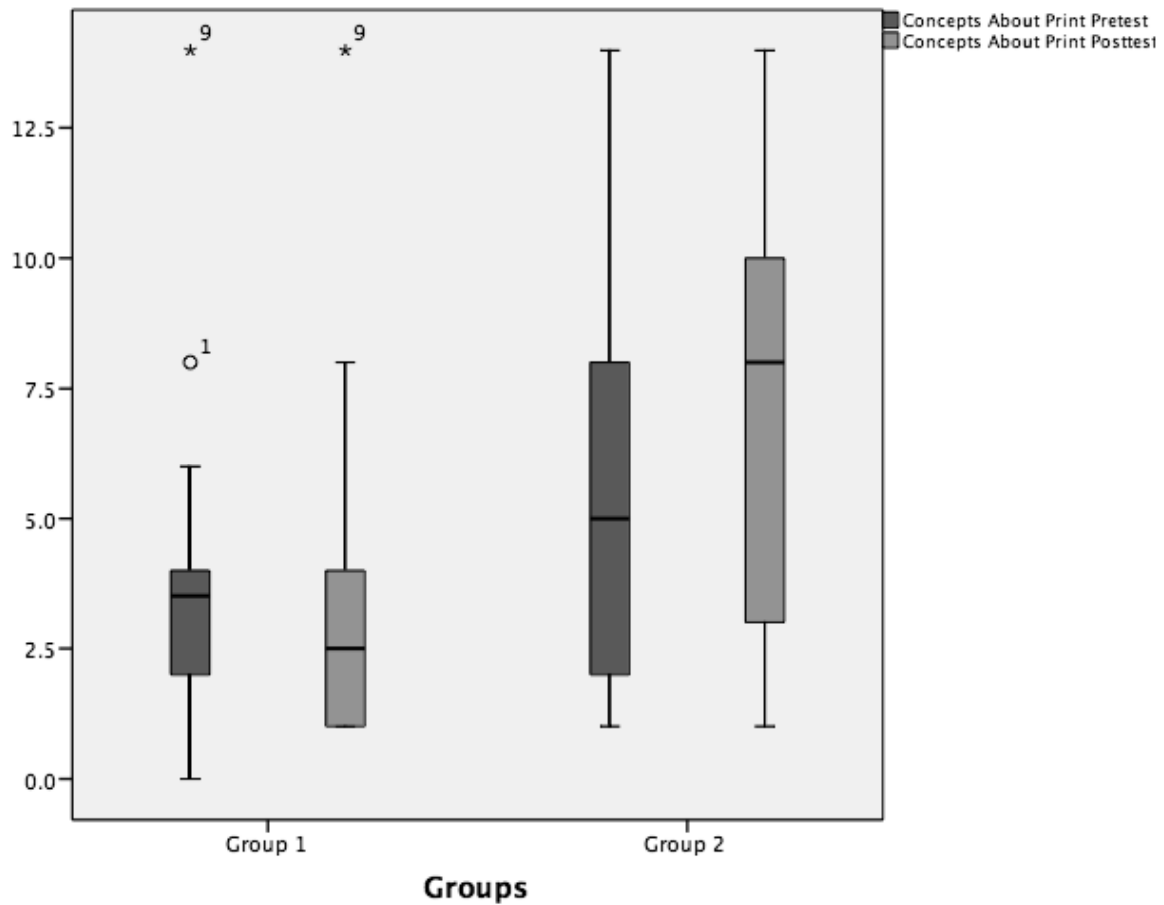Accessible Emergent Literacy Battery (see Figure 6).

Figure 6. Group Pretest and Posttest performance on the Concepts About Print Tasks

from the Universally Accessible Emergent Literacy Battery (Erickson, Clendon,

Abraham, Roy, & Van de Carr, 2005).

The daily use of *STFLS* books during the intervention in these classrooms reflected a change in practice for all 4 teachers from Group 1. However, because 3 of the 4 teachers in Group 1 put the books away after reading time was completed, and they were not available again until the following day, students in those classrooms did not have as much of an opportunity to benefit from interacting with the texts as the students from Group 2, where 4 of the 5 teachers left the books out for continuous student access.

Another accepted practice in special education is the use of truncated, drill and practice instructional approaches to literacy, such as sight word reading. This instruction is delivered without addressing the additional skills that are necessary to read silently with comprehension (Katims, 2000). As defined in the Whole-to-Part Model of Silent Reading Comprehension (WTP) (Cunningham, 1993), students need to be able to identify words through mediated as well as automatic means, comprehend the language of text, and process connected text with fluency. Developing these skills requires instruction that is comprehensive rather than truncated or isolated.

In the current study, all students had daily access to the *Start-to-Finish[®]Literacy Starters (STFLS)*. In addition to daily self-selected reading opportunities, each of the 9 teachers in the study chose to use some of the *STFLS* books instructionally. The number of different titles teachers used instructionally ranged from 2 to 17 during the 31-day intervention, and the average frequency of lessons ranged from 1 to 4 times per week (see Table 7). During instruction, students had the opportunity to listen to the written language in each book and to use oral language or communication boards to answer questions, make choices and comment on topics related to the text. Providing consistent literacy instruction in this type of group environment represented another practice change

for all of the teachers in Group 1 and was a continuation of the practice change that teachers from Group 2 experienced when they participated in *Project Converge.* The rich interactions that occurred around the literacy lessons provided students with the opportunity to develop their vocabulary, general knowledge, listening comprehension of written language, and appropriate use of books (e.g., orientation of book, turning pages, and directionality of print). The fact that on average, the teachers in Group 2 provided instruction with more frequency (3.3 lessons/week as compared to 2.5 lessons/week) and across a greater variety of books (8.4 books as compared to 6.75 books) may have accounted for the larger overall gain made by Group 2 on the Universally Accessible Emergent Literacy Battery.

Table 7.

Instructional Use of STFLS Books

Teacher	Group	Average Number Lessons per Week	Total Number Different Titles
1-1	1	2	17
1-2	1	4	2
1-3	1	2	5
1-4	1	2	3
Group Totals	**1**	**2.25**	**6.75**
2-5	2	1	12
2-6	2	4	3
2-7	2	3.5	8
2-8	2	4	5
2-9	2	4	14
Group Totals	**2**	**3.3**	**8.4**

Knowledge and Skill Changes. Because the research shows that most professional textbooks for preservice special education teachers recommend decontextualized and functional approaches to literacy instruction, (Katims, 2000), it was no surprise that this was the approach advocated by the majority of teachers in Group 1 at the outset of the study. While there was no direct assessment of change in teacher knowledge or skill as a result of the current intervention or participation in Project Converge, the differences in the ELLCO at pretest suggested that the teachers in Group 2 started the intervention with knowledge and skills about creating a print rich environment and supporting successful literacy interactions that were not present in Group 1. For example, there were greater numbers of books and writing materials available to students in the classrooms of teachers from Group 2 at the outset of the study. These teachers also incorporated more reading instruction and writing opportunities into their class lessons. The differences in the instructional environments across the two groups decreased markedly by the end of the study, resulting in overall ELLCO scores that increased for both groups but were no longer significantly different.

Other evidence demonstrating differences in the knowledge and skills of the teachers across the two groups was found in the teacher logs. Careful inspection of those logs revealed that teachers in Group 1 were more likely to use fewer books for instruction while teachers in Group 2 were more likely to use more books that covered a greater variety of topics. Specifically, 3 of the 4 teachers in Group 1 used 5 or less books instructionally across the entire intervention that addressed only 1 or 2 topics. Because they had increased their frequency of literacy lessons, this meant the teachers in Group 1 were providing repeated exposure to small group of books. In contrast, 4 of the 5

teachers in Group 2 used 5 or more books instructionally that covered 3 or more topics over the course of the intervention. This provided students in Group 2 with more opportunities to see and learn about the variety of information available in the *STFLS* books.

Shifts in Attitude. When Beukelman and Mirenda (2005) described the various types of barriers that could limit learning opportunities for individuals with disabilities, they referred to attitude as the most "subtle and insidious" (p. 144) type of barrier. This was because people may have attitude barriers but realize they are socially unacceptable, and as a result, they do not express them. In the current study, there was no direct assessment of shifts in teacher attitudes about the value of literacy instruction for their students. However, an examination of the posttest ELLCO scores for both groups of teachers revealed a change in the way teachers organized their classrooms and instructional time to provide more literacy learning opportunities. Specifically, both groups of teachers increased the numbers and types of books available to students within their classrooms and incorporated daily self-selected reading opportunities. Additionally, all teachers in the study began to provide guided reading and listening comprehension lessons using the *STFLS* books on a regular basis, with a range extending from teachers who taught an average of 2 lessons per week to teachers who taught an average of 4 lessons per week.

One could contend that these changes do not represent a shift in attitude about the value of providing literacy learning experiences and opportunities to adolescents with moderate to severe intellectual disability. Rather, these changes may have occurred simply because the teachers agreed to participate in this study, and/or the teachers now

had access to a greater variety of books to provide to their students. However, it should be noted that the only intervention requirement of the study was to make the books available to students for 30 minutes each day. Choosing to use instructional time for guided listening and reading lessons was a choice all teachers made to a greater or lesser extent. Therefore, it appeared that all teachers felt it was worth their time and effort to provide guided listening and reading instruction on a regular basis, which was a stark contrast to the functional approach advocated by the majority of the teachers in Group 1 at the outset of the study.

Intrinsic Traits. As a group, individuals with moderate to severe intellectual disability have certain challenges the affect literacy acquisition due to the nature of their disability. Cognitive deficits, communication challenges, and global development delays can all impact the rate of literacy learning. Historically, medical and educational professions have focused on these challenges and gone so far as to make proclamations about the literacy learning potential and limits for individuals with moderate to severe intellectual disability. One need only refer to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM IV) (American Psychiatric Association, 2000) to see the limited literacy predictions for this population. However, other than a history of low achievement, it is not clear what the basis of these expectations is (Kliewer, Biklen, & Kasa-Hendrickson, 2006). Could they be as much a result of inappropriate or limited instruction as of intrinsic learning limits?

Findings from the current study supported the contention that individuals with moderate to severe intellectual disability can demonstrate emergent literacy growth in a short period of time when provided with appropriate instruction and reading materials.

As a group, the 43 adolescents who participated in this study made significant gains when given 31 days of ongoing access to age and ability appropriate texts, as measured by the Universally Accessible Emergent Literacy Battery. In addition, students whose teachers had experience with comprehensive literacy instruction experienced nearly twice the effect of the intervention as students whose teachers were unfamiliar with comprehensive instruction.

One explanation for the varying magnitude of the intervention effect could be that the students in Group 1 began the intervention with a lower mean pretest score than Group 2 (13.64 as compared to 19.24). This may have indicated lower cognitive abilities or literacy learning potential, although exact IQ scores for students were not available to the researcher. To address this issue, 5 of the students from Group 1 with the lowest pretest scores were identified. Their mean pretest score was 5.8 and individual scores ranged from 1 to 9 points. When the posttest gains of the same students were examined, they had a mean gain of 2.0 points, which was higher than the mean Group 1 gain of 1.29 and the mean gain of Group 2, 1.93. This provides evidence that students who began the intervention with extremely low literacy skills, due to low cognitive levels, ineffective or limited literacy instruction, or some combination of both, were at least as capable of responding to the intervention as students with higher baseline literacy skills.

Another intrinsic trait that each student brought to this study was the previous type and amount of literacy instruction he or she received. While the influence of the participating teachers' experience with comprehensive literacy instruction has been discussed, it is also important to consider that some of the students in the current study participated in *Project Converge*. As a result, these students received a semester of

comprehensive literacy instruction prior to this study. Specifically, 7 of the 14 students

in Group 1 (50%) and 24 of the 29 students in Group 2 (83%) participated in *Project*

Converge. It is reasonable to suspect that the literacy skills they gained during *Project*

Converge influenced the additional gains they made during the current study.

　　　　To address this issue, student gains were analyzed with reference to their

participation in *Project Converge* as well as their teacher's participation (see Figure 7).

Of the 4 groups of students, those who participated in and were taught by teachers from

Project Converge made the largest mean gain, 3.92 points. This was followed by

students who participated in *Project Converge* but were taught by teachers who did not,

with a mean gain of 2.71 points. Students who did not participate in *Project Converge*

but were taught by teachers who did made the smallest mean gain of .400 points. The

group of students who along with their teachers did not participate in *Project Converge*

made a mean gain of .714 points. These results indicate that the students who had

received previous comprehensive literacy instruction were able to better respond to the

intervention in the current study than students who had not been previously exposed to

comprehensive literacy instruction, particularly when taught by teachers who had

experience with and continued to use comprehensive literacy instruction.
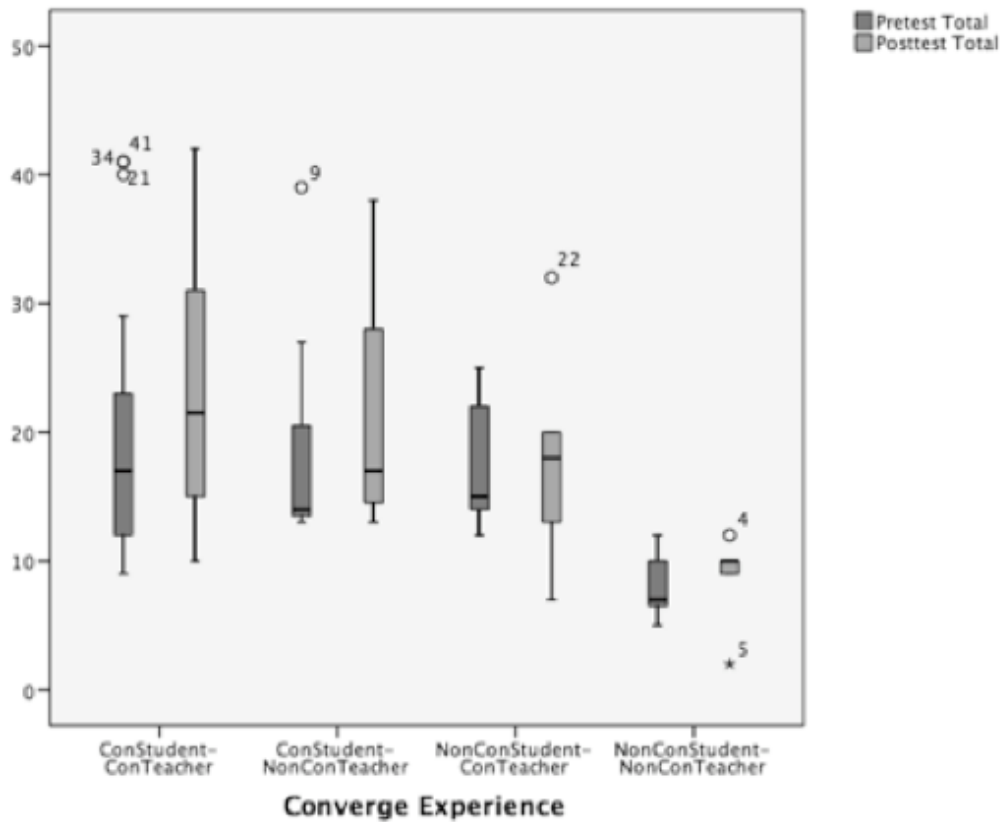
Figure 7. Pretest and Posttest results of students grouped by the status of their

participation and their teacher's participation in *Project Converge*, a previous study that

employed comprehensive literacy instruction.

One final consideration related to intrinsic abilities involved the most proficient

readers in this study, those students from Group 2 who read at an early conventional

level, as measured by their ability to complete the Gates-MacGinitie Reading Test

(GMRT®). These students entered the study with the most developed reading skills and

experienced the largest effect of the intervention, $d = .47$. They achieved a mean posttest

gain on the GMRT® of 9.75 points, with the range of gains scores extending from -5 to

14. All but one student achieved an increased score at posttest, which is quite remarkable given the lack of experience all of the participants had with standardized testing and the relatively brief duration of the study.

These students' results were interesting for two reasons. The first related to the availability and instructional use of appropriate curricular materials. The students who completed the GMRT® had relative strengths in the areas of word identification and print processing, but what they lacked were comparable written language comprehension abilities. This was evident when looking at their percentage of accuracy on the 2 subtests of the GMRT®. At pretest, these students achieved 51% accuracy on the word identification subtest as compared to 40% accuracy on the comprehension subtest. The language comprehension deficits of these students became more apparent as they attempted to answer questions about text. This occurred whether someone had read the text to these students or they had read it themselves.

During the course of the current study, these early conventional readers participated in guided reading comprehension lessons based on what their teachers had learned during *Project Converge*. Prior to reading, teachers provided background information that helped the students understand and relate to the target book. They also set an explicit purpose for each lesson, so that students understood specifically what they were trying to listen for or understand. Because the target books were about topics the students were interested in, and the books had language and vocabulary that was at an appropriate listening comprehension level, these students completed the guided reading lessons with increasing accuracy as the intervention progressed. Rather than continuing to read words that had no meaning when connected, these early conventional readers

were beginning to develop their written language comprehension skills and bolster the area of weakness that had previously prohibited successful reading comprehension. Results of the GMRT® confirmed this observation as students achieved equal mean posttest gains of 8% on both the word identification and comprehension subtests of this measure. Not only were these early conventional readers continuing to develop their word identifications skills, they were now also developing their comprehension.

Another point of interest involving this group of students was the extent to which their higher baseline literacy skills affected their response to the intervention. Reading is a generative skill (Clay, 2005). In most cases, once an individual can read well enough to do so independently, simply engaging in more reading results in an accumulation of skills and improved reading abilities. However, as previously discussed, this group of early conventional readers lacked language comprehension skills, and without specific instruction to improve this area, repeated reading did not improve their comprehension. Because these early conventional readers also had a history of literacy instruction in special education classrooms, they may have lacked the rich emergent literacy experiences that are necessary to build the foundation for later literacy achievements (Justice and Kaderavek, 2004). The self-selected reading and instructional opportunities afforded through this intervention gave the early conventional readers a chance to explore a variety of high interest books and to engage in rich oral language discussions about them. According to teacher reports, these students did not have that type of literacy experience prior to *Project Converge* and the current intervention. Therefore, it appeared the once the area of relative weakness was addressed, and these students had opportunities to explore and interact around high interest books at an appropriate ability

level, they may have been able to capitalize on their reading skills in a way that the lower baseline readers were not yet able to.

Overlap of Barriers: A Cascading Effect. Although Beukelman and Mirenda (2005) described 5 different types of extrinsic barriers that could impede the opportunities of students with disabilities, none of these exists in isolation, nor are they discrete. Many of the examples cited earlier could be interpreted as a more than 1 type of barrier. For example, consider the use of a functional literacy approach. It could be a practice barrier if it was accepted without question, yet it could also be a knowledge barrier if it was used due to a lack of awareness of the benefits of comprehensive literacy instruction. A functional literacy approach might also indicate a skill barrier if a teacher felt that he or she did not have the skills to develop or use comprehensive instruction. Finally, a functional literacy approach could be an attitude barrier if a teacher felt sight words were all his or her students were capable of learning.

When an individual puts up any one of these 5 types of barriers to learning, other areas are typically affected. Again, consider the example of a functional literacy approach, which continues to be well represented in many special education classrooms. Do teachers use that approach so frequently because they are unaware of other, potentially more effective literacy approaches (knowledge barrier), or because it is a commonly accepted practice (practice barrier)? Once teachers make a decision to use a functional literacy approach, the intrinsic abilities of their students are compromised. Research shows that sight word instruction does not generalize beyond the words explicitly taught (Browder & Xin, 1998). This in turn reinforces the attitude that individuals with moderate to severe intellectual disability have limited literacy learning

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potential. Thus, an erroneous assumption about the intrinsic abilities of this population is perpetuated based on the domino effect of extrinsic barriers erected by well meaning professionals. The consequences of extrinsic barriers and their cascading effect can be dire. It is essential that professionals examine the literacy choices they make for students with moderate to severe intellectual disability to determine whether they are based on fact or impressions, and to be certain they are the most effective approaches for literacy development. No child without disabilities could become a proficient reader if given only functional literacy instruction. Why would we expect students who have intrinsic learning and communication challenges to benefit from less rather than equal or more reading instruction than students without those challenges?

Influence of Age and Ability Instructional Materials

The provision of age and ability appropriate books to adolescents with moderate to severe intellectual disability was one of the unique aspects of this study. For the first time, the adolescents at this research site had daily access to a wide variety of texts that they could explore, and in some cases, read. Additionally, the vocabulary, language, and sentence constructions used in the *STFLS* books were appropriate for emergent and early conventional level readers, which was also beneficial when teachers taught guided reading and listening lessons. Improved test scores indicated that students benefited from access to the *STFLS* library. Evidence collected through observation and teacher interviews revealed the specific aspects that made a difference for students and their teachers.

A consistent theme throughout the postintervention teacher interviews was how much the students enjoyed the *STFLS* books. Teachers mentioned that students liked the

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high quality photographs, the story lines, and the variety of topics. They also commented

that the students liked seeing picture of kids who looked like them, in terms of age, and

racial and ability diversity. Many teachers were surprised at the interest their students

had in the *STFLS* books, because they had not shown a previous interest in books.

Finally, teachers commented on the care their students took of the *STFLS* books. One

teacher reported that her students stacked the books in a neat pile and inspected the books

after every use to make sure they were in good condition. Apparently, her class was

disrupted when a student found that a staple had come loose in one of the books and was

trying to find the person responsible.

The *STFLS* books also appeared to have a positive impact on at least 7 of the 9

teacher participants. As opposed to decontextualized drill and practice, observations of

the literacy lessons using the *STFLS* books revealed loud, interactive and vibrant

exchanges. Additionally, teachers and students alike appreciated the fact that each

student in the class could have his or her own copy of the book during instruction. In

lessons observed in these classrooms, students actively participated by answering

questions, making comments, and suggesting ideas to alter the stories by changing some

of the characters to those of the teacher or students in the class. As a group, students

laughed, had discussions, and at times, raised their hands excitedly to provide a response.

Students at the most beginning reading levels enjoyed shouting out the repeated lines of

some of the books. Because repeated lines were based on the context of the story rather

than a recurring pattern, it appeared that the students were engaged and comprehending

the plot as they said the line at the appropriate time. It was also interesting to see

teachers include the students who were nonverbal in a more participatory way through

the use of voice output communication devices and overlays with a variety of response choices.

When the researcher visited the school site, teachers would often approach her to report specific books the students particularly enjoyed. Although some titles were consistent across multiple classrooms, others were unique to a particular class. This was at least partially due to the books teachers chose to use instructionally. For example, one teacher commented that she was not going to use any of the *STFLS* books about history because her students would not have the ability to relate to the past. However, a teacher directly across the hall with similar students reported that the history books were favorites among her class, especially with the boys. Another teacher expressed her surprise when one of her class's favorite *STFLS* books was an adaptation of a Mark Twain story. When teachers honored the idea of students being able to self-select books from the entire library, they were often surprised at what their students found interesting and what they could comprehend.

<center>Unexpected Findings and Limitations</center>

As with any research project, this study had some limitations, some expected, some not. The first unexpected finding was the ineffectiveness of the Title Recognition Test (TRT). It did not work as a proxy measure of wide reading. Performance on the TRT was not a significant predictor of performance on the Universally Accessible Emergent Literacy Battery, nor were individual TRT scores significantly correlated with the actual number of books students read as recorded in the student book logs.

On the surface, it appears that a TRT does not work well with students with moderate to severe intellectual disability. However, the majority of the participants in

this study were at an emergent literacy level, and the number of early conventional readers was too few to have the power to detect the effectives of the measure for this population. This is an area that needs more exploration.

The brevity of the intervention presented another limitation. Although as a group, all students made significant gains from pretest to posttest, a longer intervention period might have yielded even stronger effect sizes. Additionally, it would have been interesting to see a if longer intervention period might have resulted in better outcomes for the students who had not participated in *Project Converge* during the previous semester. While it was suspected that the outcomes for these students would be lower if they were taught by teachers who did not participate in *Project Converge*, the low outcomes for these students who were taught by teachers who did participate in *Project Converge* was an unexpected finding. A longer intervention period and/or more participants may have resulted in enough power to detect a significant improvement at posttest for Group 1 and significant differences between 4 groups of: (1) students who did not participate in *Project Converge* placed with teachers who did not participate; (2) students who did participate in *Project Converge* placed with teachers who did; (3) students who did not participate in *Project Converge* placed with teachers who did participate; and (4) students who participated in *Project Converge* placed with teachers who also participated.

The Universally Accessible Emergent Literacy Battery also presented limitations due to ceiling effects. The maximum score on the Universally Accessible Emergent Literacy Battery was 42 points. Four students earned pretest scores of 39 or higher, so there was little room for improvement. The growth of these students was captured on the

GMRT®, which showed significant mean gains at posttest, but the tests for group differences and group effect sizes were based solely on the results of the Universally Accessible Emergent Literacy Battery.

Language is another area where growth may have gone undocumented. Therefore, the lack of a language measure represents another limitation of the study. Given the relationship between language and literacy skills (Snow & Tabors, 1993; Teale & Sulzby, 1992) it seems reasonable to expect that the increase in the 2 group mean scores on the Universally Accessible Emergent Literacy Battery following the intervention may have been accompanied by an increase in language comprehension. Because nearly half of the student participants were unable to use speech to meet their face-to-face communication needs and did not have an augmentative communication system, it would have been difficult to measure expressive language; however, a receptive language measure may have yielded valuable information.

A conscious decision to increase the external validity of the intervention resulted in an expected decrease in experimental control. In giving teachers the option to make books accessible to their students for 30 minutes each day through self-selected reading, instruction, or a combination of the 2, it was impossible to track the exact combination of exposure each student had or the amount of time specifically allocated for self-selected reading. The teacher reading logs indicated the titles of books used instructionally and the focus of individual lessons, but the skill with which teachers delivered literacy instruction using the *STFLS* books varied, and the quality of these lessons was not measured systematically. Finally, no measures were employed to capture how often or how enthusiastically teachers encouraged their students to engage in self-selected reading

on a day-to-day basis. When student logs indicated only a few books were read, it was

not possible to tell if this was due to the student's genuine lack of motivation to read

and/or minimal encouragement by the teacher to explore the available books. More

information in any on of these areas might have better explained the difference in the

effect size between groups.

The final limitation of this study was the potential differences that existed in the 2

groups of teachers beyond the one group's previous participation in *Project Converge.*

For example, 2 of the 4 teachers in Group 1 were offered the opportunity to participate in

Project Converge but declined for reasons they did not disclose. This may have been due

to doubts that literacy instruction was important for their students and/or skepticism that

their students had the potential to benefit from the intervention. Although these teachers

voluntarily agreed to participate in the current study, lingering doubts may have affected

the intensity with which they delivered the intervention.

Future Directions

While the current study adds evidence to the small but growing body of

information about effective literacy instruction for individuals with intellectual disability,

many questions remain. In this study, daily reading opportunities resulted in literacy

gains for students with moderate to severe intellectual disability, but the exact methods

that teachers used to expose their students to a variety of age and ability appropriate

books were not well defined. In the future, it would be helpful to investigate the effect of

daily reading opportunities of a variety of texts under more controlled conditions. One

approach would be to stipulate the exact amount of time allocated for free reading and

contrasting the number of books students read when teachers simply offered reading as

an option versus requiring sustained silent reading. Although the ultimate goal is to have students choose rather than be required to read, students from this population historically have not had exposure to a wide variety of books. A sustained silent reading requirement might actually help these underexposed readers discover books of interest as well as selection of reading as a preferred activity.

Another approach might be to define a specified time for daily independent reading while mandating the number of books teachers use instructionally in their literacy lessons. Instead of having self-selected reading or a literacy lesson fill the independent reading requirement, these would be separate activities. It would be interesting to see if the number of different books that teachers used instructionally while students engaged in daily free reading predicted outcomes on a literacy measure.

Finally, it would be extremely interesting to replicate *Project Converge* with the addition of a group of students who received the specified comprehensive literacy lessons while having access to the entire *STFLS* library for self-selected reading each day. Since there is evidence that these interventions worked when delivered sequentially, it would be important to investigate the effect of receiving the interventions concurrently.

<div align="center">Conclusion</div>

This study investigated the benefits of providing adolescents with moderate to severe intellectual disability daily access to a library of age and ability appropriate books. Gains from the intervention were measured with the Universally Accessible Emergent Literacy Battery, an assessment that has been used in 2 previous studies. Results indicated that as a group, participants made significant gains in only 31 days of intervention. The additional effect of being taught by a teacher familiar with

<div align="center">117</div>

comprehensive literacy instruction was also analyzed by comparing the posttest gains of

29 students whose teachers who had used 40 comprehensive literacy lessons during a

previous study, *Project Converge*, to the gains of the 14 students whose teachers had not

been exposed to the comprehensive literacy lessons. Although there was not a significant

difference between the gains of the 2 groups, students whose teachers had used the

comprehensive literacy lessons achieved nearly twice the effect from the intervention as

the students whose teachers had not seen the comprehensive literacy lessons.

Furthermore, an analysis of the gains of a subgroup of students who were early

conventional readers and were taught by the teachers from *Project Converge* revealed an

even larger intervention effect.

There are several clear implications from these results. First, students benefit

from access to interesting books that are written at their literacy level. Historically, this

has been a problem for older students who are beginning readers. They typically have a

choice between reading books that they can decode but seem immature, or choosing

books that look interesting but are too difficult to read. The *STFLS* library offers one

solution to this dilemma by providing books about topics of interest to adolescents that

are written at an emergent literacy level. Teachers and students need access to this type

of library, and schools need to find the funding to provide it. However, as helpful as the

STFLS books are, there are currently only 54 books in the entire library. More books

with these specifications are needed to build a complete library.

The other major implication from this study is the importance of comprehensive

literacy instruction. Preservice and practicing teachers as well as administrators need to

be informed of the research concerning effective literacy instruction for students with

moderate to severe intellectual disability. Functional approaches to literacy and sight word programs continue to dominate both research and practice; however, sight word instruction does not result in generalization, nor are the limited reading skills developed through sight word instruction used functionally (Browder & Xin, 1998). In contrast, there is a growing body of evidence that supports comprehensive literacy instruction for students with moderate to severe intellectual disability.

Preservice and practicing special education teachers need instruction in the theory behind a comprehensive literacy approach as well as training in how to deliver comprehensive instruction. This includes having access to appropriate curricular materials such as the *STFLS* books for adolescent students.

Finally, teachers and administrators must question the assumptions they make about the literacy potential of students with moderate to severe intellectual disability, especially as these students become adolescents. This study provided evidence that these adolescent students are not too old, nor are they too cognitively impaired to gain literacy skills. Like any child, with or without disabilities, if we as teachers fail to provide effective literacy instruction, these students will not learn to read. However, it is imperative that we realize the lack of literacy acquisition is not due to inherent limits within the student. Rather, it is due to a failure to provide effective comprehensive literacy instruction.

Appendix A:

Alphabetical Listing of *Start-to-Finish*® *Literacy Starter* Books

A Blast from the Past	My Job
A Butterfly is Born	My One and Only Date
A Fish Story	My Town-Long Ago
A Person or a Plant?	My War
A School of Fish	My Week
An Answer for Everything	Nine Planets
Better Butter	Not in this House
Big Trouble	Not Until You're 16
Can It!	Off to Africa
Dead or Alive	Off to War
Don't Bug Me	Oh, Brother!
Down in the Dumps	One Life Left
Famous	Out of Here
Free is Good	Play Ball!
Giants in the Desert	Run for Your Life!
Hall of Fame	Shop Til I Drop
Hot and Burning	Sign It
I Can Do That	Six Legs and Counting
I Choose Africa	Snowballs in the Desert
I Made a Frog	The Adventures Of Mark Twain
Let's Do Plants	The Desert Ship
Life Is Not Fair	To the Moon
Look How Things Change	Trading Faces
Loretta Gets a Zebra	Wear a Helmet
Memo	When Your Work is Done
Missing	Wonders of Africa
Money Talks	Working on the Weekend

Appendix B:

Sample Comprehensive Literacy Lessons Used in *Project Converge*

Famous

word study
LESSON 1 (T)

Overall Goal:
Learn the meaning of the vocabulary word "ask."

Part One
MATERIALS:
- **LITERACY STARTERS**
  - "ask" vocabulary card
- Items in the classroom that students "ask" for during the day
- Chart paper

Part Two
MATERIALS:
- **LITERACY STARTERS**
  - "ask" vocabulary card
- **MEville to WEville:**
  - Unit 1 R#48
- Chart paper
- Five sentence strips or index cards
- Marker

PREPARATION:
Make two columns on the chart paper, labeling one column *Mad* and the other column *Sad*.

Cut out the symbols from Unit 1 R#48.

Write the following on sentence strips or index cards:
a tissue
a hug
a walk
some chocolate
to be left alone

1

Students learn about the word "ask."

INTRODUCING THE WORD:
Part One
Students are introduced to the word "ask."

- The teacher shows students the "ask" vocabulary card.

- The teacher leads students in **reading** the word three to five times.

- Students create questions to **ask** one another and they are recorded on chart paper.

- Students **identify** items in the classroom that they ask for during the day.

- The teacher asks the students to **say** what they would do if they wanted each item.

- The teacher says *"What would you do if you wanted a (book)?"*

- Students **say** *"I'd ask for it."*

VOCABULARY LESSON:
Part Two
Students **select** items or actions that they might **ask** for when they are feeling mad or sad.

- The teacher places the *"mad"* and *"sad"* symbols at the top of the chart paper and asks students to **identify** them.

- The teacher then says items or actions one by one and lets the student **choose** what column to put them under. The items or actions include:
  ° *a tissue* ° *a hug* ° *a walk* ° *some chocolate* ° *to be left alone*

- The teacher puts the responses under the chosen feeling symbol. The teacher explains to students that since people are all different, there are no right or wrong ways to feel when asking for these things.

- The teacher should explain why each of the items might help when someone is mad or sad.

- After the students have placed the choices under a symbol, the teacher asks if there are any other items or actions that they want to **talk** about.

Famous

comprehension
LESSON 1 (T)

Students read to identify feelings.

Overall Goal:
Identify the emotions/facial expressions that the characters show in different situations, based on the story, pictures, and the reader's own background knowledge.

MATERIALS:
- **LITERACY STARTERS**
  - Famous book or CD
- **MEville to WEville:**
  - Completed Feelings book (created in lesson from Unit 1 p.63)
  - Unit1 R#48
- Chart paper (two sheets)
- Scissors
- Glue or tape

PREPARATION:
Make one copy of R#48 and cut out the symbols.

Label the chart paper *Expressions*.

BEFORE READING:

Build Background Knowledge with MEville to WEville:
Show students the Feelings Book they made and help them remember what it was about. Tell students, *"Not everyone looks the same when they feel a certain way."*

- Reread the book together. While reading, the teacher asks students to **name** or **identify** how they would look if they were feeling the way the feelings are described in the book.

- The teacher shows students the symbols cut from R#48 and asks them to **name** each feeling and **show** how they look when they are feeling happy, sad, mad, scared, and tired.

- As the students **say** the names of the feelings and show how they look, the teacher puts the symbols up on the left side of the chart.

Building Background Knowledge Another Way:
Tell students, *"We all have lots of feelings and our faces often show or express how we feel. Not everyone looks the same when they feel a certain way."*

- Write *Feelings* at the top of the chart, and ask students to **show** how they look when they are feeling happy, sad, mad, scared, and tired.

- As the teacher calls out each feeling and the students show their faces, the teacher writes the feeling words down the left side of the chart paper.

1

Unit 1 | Famous

Famous

**writing lesson
LESSON 1 (T)**
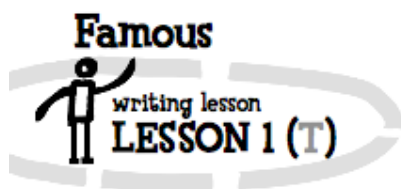
Students write to describe their classmates.

Overall Goal:
Write one or two words to describe a classmate as part of a class cheer.

MATERIALS:
- **LITERACY STARTERS**
  - Famous book or CD
- Chart paper (three pieces)
- An appropriate writing tool for each student

PREPARATION:
Create a template on a piece of paper with blanks that students will fill in to write a class cheer. There will be one verse about each student in the class with the following lines:
(Student's name) is a student in our class. (He/she) is very _____. (He/she) works hard to learn at school. (He/she) is very cool!

Make a copy of this sheet for each student in the class.

On a piece of chart paper, make a large copy of the class cheer but write it for teachers and staff members. For example, *(Teacher's name) is a teacher in our class. (He/She is very _____. He/She works hard to teach at school. (He/she) is very cool!*

BEFORE WRITING:
- The teacher shows students the book, Famous, and tells the class, *"These are all students at one school, just like you are all students at this school. The book tells us things about the students. It describes them. Look at Jake. The book describes Jake. It tells us that he is sad about missing the bus. The book describes Zack. It tells us that Zack is sad about his lunch. Let's think about words we could **write** to describe the students and teachers in this class. We will use them to create a class cheer."*

- The teacher hangs up one piece of chart paper. Tell students, *"Let's start by writing a word that describes me. First, I'll write my name. Then, you **tell** me words that describe me. **Tell** me words that tell something about me."*

- The teacher writes the words that students say.

- The teacher writes the name of each student in the class, then lists the words that students **say** about each student.

- After the lists have been created for each person in the room, hang up the piece of chart paper with the cheer written on it.

- The teacher reads the first line with his or her name and asks students to **say** or **choose** a describing word they like best. Once a decision is made, fill in the blank and read the verse back to the students.

- The teacher tells the class that they will each **write** their own class cheer. The teacher provides each student with a copy of the cheer. Students are asked to **write** the names of each of their classmates on the first blank line of a verse, then **choose** a word from the list to describe that student and write that word or phrase on the second blank line.

Appendix C:

Sample Pages from the Phonemic Awareness Subtests of the Universally Accessible

Emergent Literacy Battery

"Listen to the beginning sound in the word Sam. I'm going to decide which of these words has the same beginning sound as Sam."

(Point to the pictures while saying the words.)

"Listen- sun, pig, balloon.
Sam and sun both begin with the sound /s/, so I will point to the sun. Now you try."

(CLICK on page to continue)
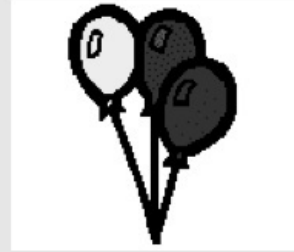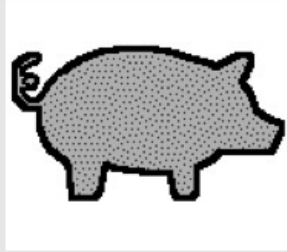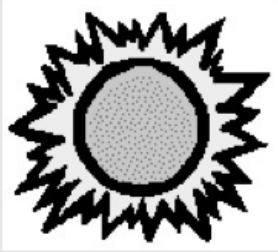
"Listen to the word jam. I'm going to decide which of these words rhymes with jam- that means the word has the same ending as jam."

(Point to the pictures while saying the words.)

"Listen-sun, ham, book. Jam and ham both end with the sound /am/, so I will point to the picture of ham."

(CLICK on page to continue)
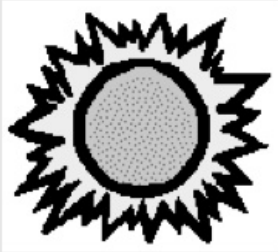
"Now, you try. Listen to the word bat. Now listen to these words."

(Point to the pictures while saying the words.)

"Fish, moon, cat. Which of these words rhymes with bat?"

During the practice items only, say "try again," and re-ask the question until the student finds cat.

(CLICK on page to continue)
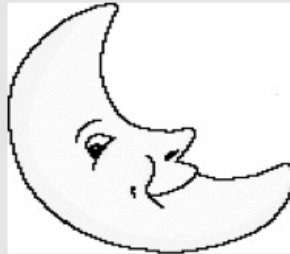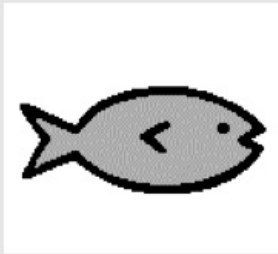
"For example, I'll say /p/ /i/ /g/.
I'm going to put those sounds together in my head to make a word.

I'm going to find the picture that is the same as the word I make."

(SILENTLY point to pan, pig and pen.)

"I'll choose pig, because when I put the sounds /p/ /i/ /g/ together, it makes the word pig."

(CLICK on page to continue)
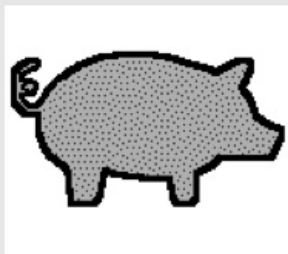
"Now you try.

What word do you get when you put these sounds together /p/ /a/ /n/?"

Silently point to the pictures pan, peg, pin.

During these practice items only, say *"try again"* and re-ask the question until the student finds pan.

(CLICK on page to continue.)
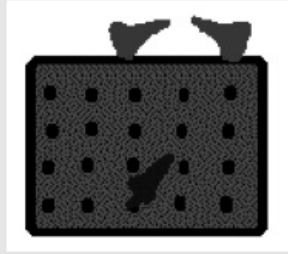
Appendix D:

Title Recognition Test

Name: _____   Date: _____

Title Recognition Questionnaire - Form A

Book Title	Check here if you have read or looked through this book.
1. A Blast From the Past	
2. A Butterfly Is Born	
3. A Pirate's Life for Me	
4. About Face	
5. An Answer for Everything	
6. Better Butter	
7. Big Trouble	
8. Going West	
9. Gone Fishing	
10. Hall of Fame	
11. Hot and Burning	
12. I Can Do That	
13. Let's Do Plants	
14. Life Is Not Fair	
15. Life, Liberty and Happiness	
16. Loretta Gets a Zebra	
17. Memo	
18. Missing	
19. Money Talks	
20. My Job	

Book Title	Check here if you have read or looked through this book.
21. My Week	
22. Not in This House	
23. Out of Here	
24. Piracy	
25. Rain, Rain, Go Away?	
26. Ride That Bike	
27. Run for Your Life!	
28. Sky Colors	
29. Snowballs in the Desert	
30. Tall Ships	
31. Tea Party	
32. Trading Faces	
33. The Adventures of Mark Twain	
34. Wear A Helmet	
35. When Your Work Is Done	
36. Working on the Weekend	
37. Win the War	
38. You Never Know	

Appendix E:

Teacher Interview

Teacher Interview

Name: **Date:**

The following interview includes questions about the availability and use of reading materials for students with moderate to severe intellectual disability. I am going to ask you questions about a **classroom library**. For the purposes of this interview, **a classroom library** refers to any type of reading material (e.g., books, magazines, newspapers, books on the computer, books on tape) that students may independently select to read or explore as a free choice activity in your classroom.

Section I. Section I includes questions about your teaching experience.

1. About how many years have you been teaching?

2. Tell me about the students in your current classroom.
Prompt: For example, so any of them have:
- o *Intellectual disability*
- o *Physical disability*
- o *Sensory deficit (e.g., vision, hearing)*
- o *Nonverbal communicator*
- o *Pervasive Developmental Disorder*
- o *Any other type of syndrome or disorder?*

3. What teaching certifications do you have?

Section II. This section includes questions about the types of books that are available to students in your classroom to select for reading as a free-choice activity.

4. About how many print or electronic books are in the your classroom library?
Prompt:
- o *less than 10*
- o *11-25*
- o *26-50*
- o *more than 50*

* At Post-Intervention Interview: Has the number of type of books changed as a result of participating in this study? If so, how?

5. I'm interested in whether your students have access to assistive technology. Do you have any electronic books in your classroom and software programs that support reading and/or writing?
Prompt:
- o *Screen readers such as Read:Outloud, WYNN, or Kurzweil*
- o *Talking word processors such as Write:Outloud or IntelliTalk*

o   *Word prediction programs such as Co:Writer*

If so, how many of the students in your class use this assistive technology, and how often do they use it?

* At Post-Intervention Interview: Has this changed as a result of participating in this study?

6. I am going to name some different types of books, and you can just say "yes" or "no" indicate whether this type of reading material is available to the students in your classroom. I'll also be asking whether these materials are in paper &/or electronic formats.

Type of Book	Traditional Paper Format	Electronic/ Computer Access	None in this classroom
fiction			
nonfiction (e.g., history, biography, science)			
"how to" books (e.g., cookbook, craft book)			
student created books (e.g., "About Me" books, books picturing and describing events or personal interests)			
magazines			
newspapers/newsletters			

7. Knowing that it is often challenging to find books with appropriate text levels, to what extent do you feel students with moderate to severe cognitive impairments/intellectual disability can comprehend the reading material in their classroom library?
Prompts:
o   *All of them can comprehend all of the reading material.*
o   *All of them can comprehend most of the reading material.*
o   *All of them can comprehend some of the reading material. Can you estimate that percent of the books you think most of them can comprehend?*
o   *Some of them can comprehend some of the reading material. About how many of your students cannot comprehend the available books?*
o   *They cannot comprehend any of the reading material.*
o   *Reading comprehension is not an appropriate goal for my students.*

8. To what extent do you feel that the students with moderate to severe cognitive impairments/intellectual disability have access to reading material within the classroom that is of interest to them and nondisabled students of the same chronological age?
Prompts:
- o *All of the material is interesting.*
- o *Most of the material is interesting.*
- o *Some of the material is interesting. Can you estimate a percentage of the material that would be of interest to your students and their nondisabled peers?*
- o *None of the material is interesting.*

9. Who purchased the majority of the books for your classroom library?
Prompts:
- o *You*
- o *The school*
- o *The school district*
- o *The books were already in the classroom*
- o *The books were donated*
- o *Someone else*

10. Who chooses the book titles for your classroom library?
Prompts:
- o *You*
- o *The Media Specialist*
- o *The Assistive Technologist*
- o *The school*
- o *The Special Education Department*
- o *Other:*

Section III. This section includes questions about how books are used in classroom literacy instruction.

11. How often are books used in literacy or class lessons? *Prompts:*
- o *At least once daily*
- o *2-3 times per week*
- o *Once a week*
- o *Less than once per week*

* At Post-Intervention Interview: Has this changed as a result of participating in this study?

12. When you use a book for literacy or class lessons, how often is the same book read?
Prompts:
- o *More than 5 times*
- o *3-5 times*
- o *2 times*
- o *Once*

13. In literacy or class lessons, are the books used to specifically address the following activities? Has this changed over the course of the study?
   o listening comprehension   yes   no
   o silent reading   yes   no
   o vocabulary   yes   no
   o writing   yes   no

Section IV. This final section has questions about how your students use books as a choice or self-selected activity.

14. How often do students in your classroom have an opportunity during the school day to choose a book from the classroom library and read? *Prompts:*
   o *At least once daily*
   o *2-3 times per week*
   o *Once a week*
   o *Less than once per week*

* At Post-Intervention Interview: Has this changed as a result of participating in this study?

15. Do your students have the following options at school:
   o To take home a book from the class library? yes   no
   o To visit the school library?   yes   no
   o To visit the community library?   yes   no

16. About how many of the students in your classroom take advantage of the opportunity to take home a book?
Prompts:
   o *All of the students*
   o *Almost all of the students*
   o *About half of the students*
   o *A few of the students - Can you estimate a number?*
   o *None of the students*
   o *This is not an option for my students.*

17. Is there any additional information about your classroom library or the use of reading material with students that you would like to tell me?

18. I'm wondering if participating in this study has made a difference in:
   o Your instructional practices, and if so, how?
   o Your students' interest or use of books?
   o Your thoughts about what your students are capable of learning in terms of literacy?

Appendix F:

Teacher Book Log

TEACHER: **WEEK OF:**

Day of the Week	Book Title	Purpose of Lesson
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		

Attendance

Student	10/15	10/16	10/17	10/18	10/19	10/22	10/23	10/24	10/25	10/26

Appendix G:

Student Book Log

Name:_____   **Week of** _____

Book	Monday	Tuesday	Wednesday	Thursday	Friday	Did you like the book?	
1. A Blast from the Past						yes	no
2. A Butterfly is Born						yes	no
3. A Fish Story						yes	no
4. A Person or a Plant?						yes	no
5. A School of Fish						yes	no
6. An Answer for Everything						yes	no
7. Better Butter						yes	no
8. Big Trouble						yes	no
9. Can It!						yes	no
10. Dead or Alive						yes	no
11. Don't Bug Me						yes	no
12. Down in the Dumps						yes	no
13. Famous						yes	no
14. Free is Good						yes	no
15. Giants in the Desert						yes	no
16. Hall of Fame						yes	no
17. Hot and Burning						yes	no
18. I Can Do That						yes	no
19. I Choose Africa						yes	no
20. I Made a Frog						yes	no
21. Let's Do Plants						yes	no
22. Life Is Not Fair						yes	no
23. Look How Things Change						yes	no
24. Loretta Gets a Zebra						yes	no
25. Memo						yes	no
26. Missing						yes	no

Book	Monday	Tuesday	Wednesday	Thursday	Friday	Did you like the book?	
27. Money Talks						yes	no
28. My Job						yes	no
29. My One and Only Date						yes	no
30. My Town-Long Ago						yes	no
31. My War						yes	no
32. My Week						yes	no
33. Nine Planets						yes	no
34. Not in this House						yes	no
35. Not Until You're 16						yes	no
36. Off to Africa						yes	no
37. Off to War						yes	no
38. Oh, Brother!						yes	no
39. One Life Left						yes	no
40. Out of Here						yes	no
41. Play Ball!						yes	no
42. Run for Your Life!						yes	no
43. Shop Til I Drop						yes	no
44. Sign It						yes	no
45. Six Legs and Counting						yes	no
46. Snowballs in the Desert						yes	no
47. The Adventures Of Mark Twain						yes	no
48. The Desert Ship						yes	no
49. To the Moon						yes	no
50. Trading Faces						yes	no
51. Wear a Helmet						yes	no
52. When Your Work is Done						yes	no
53. Wonders of Africa						yes	no
54. Working on the Weekend						yes	no

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