FUNCATIONAL STORY-BASED INSTRUCTION ABOUT HAND WASHING TO TEACH EMERGENT LITERACY SKILLS AND HAND WASHING SKILLS TO THREE ELEMENTARY STUDENTS WITH SIGNIFICANT INTELLECTUAL DISABILITIES

by

Glenda Lee Hyer

Liberty University

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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ABSTRACT

School of Education, June, 2012.This study used a multiple baseline across participants design to evaluate the effects of Functional Story-Based Instruction about hand washing on the independent and correct emergent literacy responses and independent and correct hand washing responses of three elementary students with significant intellectual disabilities in small inclusive reading groups. Data were collected during baseline, intervention, and generalization phases, and then analyzed using visual analyses. The result of the study indicated a functional relationship between the independent and dependent variables. Social validity indicated Functional Story-Based Instruction about hand washing was an effective approach for teaching both emergent literacy skills and hand washing skills to students with significant intellectual disabilities. Limitations, suggestions for future research, and implications for practice are provided.

Dedication

First and foremost I dedicate my dissertation to God for with Him all things are possible. During the tough times, I held on to Gods promises. For I know the plans I have for you declare the Lord, plans to prosper you and give you a future (Jeremiah 29:11). Thank you Lord for keeping me in your hands through this process.

Next, I dedicate my dissertation to Dr. Karena Cooper-Duffy. Karena you are an amazing teacher, mentor and friend. You believed in me when I did not believe in myself. You pushed me to work harder when I needed it and encouraged and prayed for me when times were hard. Your wisdom, dedication, and friendship are true gifts from God. I will forever be grateful.

Finally, I dedicate my dissertation to my grandmother Haze Hyer (Great Grandma Eagle). Haze your great faith in God has been a bright light during the dark times in my life. You have continuously prayed, encouraged, and believed in me. It is my privilege to give back to you the title of Dr. Hyer. I love you!

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CHAPTER ONE: INTRODUCTION

Background

Teaching functional skills to students with significant intellectual disabilities is crucial for the students' future success and independence within society (Alwell & Cobb, 2009; Bouck, 2010; Cannella-Malone et al., 2011). Examples of functional skills can include (a) answering the telephone, (b) preparing meals, (c) completing hygiene skills, and (d) performing household chores (Bicard, Horan, Plank, & Covington, 2010; Cannella-Malone et al., 2011). Students acquire these crucial skills through systematic instruction, including scaffolding, direct instruction, and least-to-most prompting or time delay (Ayres, Lowrey, Douglas, & Sievers, 2012; Collins, Karl, Riggs, Galloway & Hager, 2010; Dollar, Fredrick, Alberto, & Luke, 2012). It is vital to use effective instructional practices, such as systematic instruction, to teach students with significant intellectual disabilities who need to review and practice functional skills daily in order to master the skills (Westling & Fox, 2009).

Due to federal mandates that increasingly link general education curriculum with an intense focus on academic attainment, emphasis on teaching functional skills to students with significant intellectual disabilities has declined over the last few decades (Alwell & Cobb, 2009; Bouck, 2010). These mandates, along with the Individuals with Disabilities Education Act (IDEA, 2004) and No Child Left Behind Act (NCLB, 2001), require students with significant intellectual disabilities to receive access to the general curriculum (Baker et al., 2010) or what is now known as the Common Core State Standards (NGA Center, 2010). These standards were established to set a high level of

academic attainment for all students in all states (Ayres et al., 2012; NGA Center, 2010). Consequently, students with significant intellectual disabilities must receive rigorous grade-level instruction in mathematics, language arts, science, and social studies (NGA Center, 2010). This rigorous instruction is intended to provide opportunities to increase success in post-school goals, including college and careers (Ayres et al., 2012; NGA Center, 2010).

Working under the new academic focus, educators struggle to include instruction on non-academic daily living skills in their classes (Collins et al., 2010), and question whether an intense focus on academic skills leads to real-life outcomes for students with significant intellectual disabilities (Ayres et al., 2012). For example, would learning the names of the fifty states lead to future success and independence for such individuals? Since academic skills are now connected heavily to the general curriculum, research is currently being conducted to evaluate the long-term effects for this population. However, little research has been conducted to date to evaluate whether academic instruction connected to the Common Core State Standards leads to students with significant intellectual disabilities entering the work force or college.

Despite doubts about universal standards, literacy, one of the academic skills outlined in Common Core State Standards, is viewed as an essential skill for participation in our society (Agran, 2011; Browder, Mims, et al., 2009; Forts & Luckasson, 2011; Ricci, 2011). Keefe and Copeland (2011) propose five principles of literacy: (a) all people can develop literacy skills, (b) literacy development is a human right, (c) literacy has a social component, (d) literacy can lead to empowerment, and (e) literacy develops meaning and provides multiple modes for sending and receiving information. Literacy

skills provide means for communication (Bailey, Angell, & Stoner, 2011; Machalicek et al., 2010), vocational opportunities, community involvement (Forts & Luckasson, 2011), and independence (Browder, Mims, et al., 2009; Keefe & Copeland, 2011; Moni, Jobling, Morgan, & Lloyd, 2011; Ricci, 2011). Due to their societal benefits, literacy skills could be viewed as essential to the future success of students with significant intellectual disabilities. However, those students also require functional skills to be independent and successful within society.

Because students with significant intellectual disabilities typically receive limited literacy instruction, most of these students need to develop emergent literacy skills (Agran, 2011; Baker et al., 2010; Browder, Gibbs, et al., 2009). Emergent literacy includes understanding the visual representation of print, the function of print, and oral and written language (Hudson & Test, 2011). Several factors contribute to the development of emergent literacy skills, including (a) home environment, (b) access to printed material, (c) communicative abilities, and (d) being read to daily (Browder, Gibbs, et al., 2009; DesJardin & Ambrose, 2010; Forts & Luckasson, 2011; Hudson & Test, 2011).

Most of the research conducted within the last thirty years on literacy development for students with significant intellectual disabilities has focused on teaching functional sight words to enhance functional skills (Browder, Gibbs, et al., 2009; Hudson & Test, 2011). Sight word instruction is used to teach individuals with significant intellectual disabilities to (a) learn leisure skills, (b) perform grooming skills, (c) navigate public transportation, (d) perform cooking skills, and (e) learn food safety skills (Courtade et al., 2012; Dollar et al. 2012; Madaus et al., 2010). However, most studies

that focus on using sight word to teach functional skills do not provide a comprehensive approach to literacy attainment, which is crucial for students to become conventional readers (Baker et al., 2010; Copeland, Keefe, Calhoon, Tanner, & Park, 2011). Additionally, most studies about literacy attainment for individuals with disabilities focus on students with learning disabilities, mild disabilities, or moderate disabilities. Only limited research examines literacy attainment in students with significant intellectual disabilities (Hudson & Test, 2011).

Given federal demands for academic skills and students' needs for functional skills, an instructional method combining these two areas could balance these educational concerns. However, no research study has been conducted to date that examines the effect of such combined instruction for students with significant intellectual disabilities.

Problem Statement

With federal mandates requiring a shift toward academics linked to the Common Core State Standards that compete with student's needs for non-academic functional skills, many educators are challenged with the dilemma of how and what to teach to students with significant intellectual disabilities (Browder, Gibbs, et al., 2009; Mims et al., 2009). Many school systems prioritize academic skills linked to Common Core State Standards and eliminate functional skill instruction (Bouck, 2010). Some schools try to teach both functional skills and academics but find the task overwhelming (Collins et al., 2010). Other schools have not made the shift to teaching academics and struggle to prioritize it over functional skills (Collins et al., 2010). How can educators meet the true educational needs of students with significant intellectual disabilities, both the need for functional skills like hand washing, and academic instruction such as emergent literacy

skills?

Purpose Statement

A new method of instruction that combines both literacy and functional skills to teach students with significant intellectual disabilities could alleviate educators' dilemma. This new method developed by the researcher, called functional story-based instruction (FSBI), combines systematic instruction to teach functional skills with story-based instruction to teach emergent literacy skills. Story-based instruction focuses on one functional skill topic, during which students demonstrate emergent literacy skills while learning about the functional skill topic. Immediately after story-based instruction, systematic instruction teaches students to implement the functional skill, thereby addressing both academic and functional education. The purpose of this study was to examine the effects of FSBI about hand washing on both the independent and correct emergent literacy responses and independent and correct hand washing responses of three elementary students with significant intellectual disabilities.

Significance of the Study

This study contributes to research on the best approach for teaching both academic and functional skills to students with significant intellectual disabilities. It provides a new and unique instructional method called functional story-based instruction, which teaches those skills together. In addition, this study supports the development of a Functional Story-Based Curriculum that implements story-based instruction to teach a wide range of functional skills such as (a) toileting, (b) dental hygiene, and (c) cooking skills. Ultimately, this study helps solve the dilemma of how to teach literacy skills linked to the Common Core State Standards without losing needed functional instruction.

Research Questions

This study sought to answer the following two research questions:

Research Question One: Will FSBI about hand washing teach literacy as indicated by increased independent and correct emergent literacy responses to elementary students with significant intellectual disabilities in small inclusive reading groups as measured by the story-based task analysis tool (see Appendix A)?

Research Question Two: Will FSBI about hand washing teach functional skills as indicated by increased independent and correct hand washing behaviors of elementary students with significant intellectual disabilities in small inclusive reading groups as measured by the hand washing task analysis tool (see Appendix B)?

Hypothesis

The hypothesis of this study was that elementary students with significant intellectual disabilities who received FSBI about hand washing, in small inclusive reading groups for a minimum of three sessions per week, would meet a 70% criteria on independent and correct emergent literacy responses and hand washing responses as measured by story-based task analysis and hand washing task analysis. The researcher set a 70% criteria for the intervention and generalization phases to ensure the change in behavior was not a matter of coincidence, as suggested by Cooper, Heron, and Heward (1987). The70% performance criteria allowed students to master skills and move through each phase in a timely manner. The researcher also selected a 70% criterion because it is considered a passing grade in North Carolina public schools (Public School of North Carolina, 2012), where the research took place.

Identification of Variables

The independent variable in this study was FSBI about hand washing, an instructional method that combined story-based instruction to teach emergent literacy skills with systematic instruction for hand washing skills.

The two dependent variables were (a) students' independent and correct emergent literacy responses, and (b) students' independent and correct hand washing responses. The independent and correct emergent literacy responses were defined as unaided and accurate responses by participants on the 14-step story-based instruction task analysis tool (see Appendix A). The independent and correct hand washing responses were defined as unaided and accurate responses by participants on the 10-step hand washing task analysis tool (see Appendix B).

Definitions

*Augmentative and Alternative Communication (AAC):"*Augmentative system involves the use of aids that supplement existing vocal communication skills; alternative systems are methods of communication that are used with by a person without vocal ability" (Westling & Fox, 2009).

Constant Time Delay (CTD): A prompting procedure offering a systematic way of teaching facts and discrete skills starting with a single controlling prompt that is faded after a set interval of time from when the student starts to demonstrate the behavior (Schuster, Gast, Worley, & Gultinan, 1988; Snell & Gast, 1981)

Conventional Literacy: skills necessary for decoding words, oral reading, fluency in reading, reading comprehension, writing, and spelling (National Early Literacy Panel, 2000).

Common Core State Standards: Rigorous grade-level instruction that sets a single

general curriculum for all states and all students (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

Emergent Literacy: reading and writing behaviors such as turning the page of a book, scribbling on paper, and reading aloud that will lead to conventional literacy development (Browder & Spooner, 2011)

Functional Skills: skills necessary to manage one's own personal affairs in order to become independent and successful in the following five categories: (a) self-care and domestic living, (b) recreation and leisure, (c) communication and social skills, (d) vocational skills, and (e) other skills vital for community participation (Bicard et al., 2010; Cannellla-Malone et al., 2011)

Significant Intellectual Disabilities: "Significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental periods, that adversely affects a child's educational performance" (Individual with Disabilities Education Act, 2004, Sec. 300.8,c, 6).

Story-based Instruction: a systematic approach for teaching literacy skills whereby the teacher models reading a story to a group of students. It can include: (a) vocabulary, (b) manipulative related to the story, (c) augmentative and alternate communication with repeated lines, (d) comprehension questions, (e) identification of the author and title, and (f) interactions with the book (Browder & Spooner, 2011).

System of Least Prompts: A prompting system that uses a brief waiting period following the initial stimulus, but then provides the student with a hierarchy of prompts that moves progressively from having a minimal influence to having a maximum controlling influence (Westling & Fox, 2009; Worley, Ault, & Doyle, 1992)

Systematic Instruction: "Teaching focused on specific, measureable responses that may either be discrete or a response chain, and that are established through the use of a defined method of prompting and feedback based on the principles and research in applied behavior analysis" (Browder & Spooner, 2011).

Task Analysis: Creation of all the steps necessary for an individual to complete a task, broken down into multicomponent steps (Westling & Fox, 2009).

CHAPTER TWO: LITERATURE REVIEW

Historical Perspective

Teaching literacy skills to students with significant intellectual disabilities has not been a priority in the past (Agran, 2011; Baker et al., 2010; Browder Mims, et al., 2009). The lack of exposure to literacy for this population is fueled by society's view that students with significant intellectual disabilities cannot learn literacy skills (Browder, Gibbs, et al., 2009; Hudson & Test, 2011). Limited exposure and low expectations in the home, school, and community have also considerably decreased the opportunities for students with disabilities to learn reading and writing skills (Browder, Mims, et al, 2009; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Westling & Fox, 2009). In fact, researchers Machalicek et al. (2010) find students with intellectual disabilities are at risk of obtaining little to no literacy skills. Without literacy development, students with significant intellectual disabilities struggle to maintain independence within our society (Agran, 2011).

NCLB (2001), NRP report (2000), and IDEA (2004) direct focus towards literacy skills in connection with the Common Core State Standards for students with significant intellectual disabilities (Browder, Mims, et al., 2009; Collins et al., 2010; Cooper-Duffy et al., 2010). Educators look to the NRP (2000) framework for developing literacy instruction for all students. This framework includes (a) phonemic awareness, (b) phonics, (c) fluency, (d) comprehension, and (e) vocabulary instruction (Baker et al., 2011; Garrett & O'Conner, 2010).

Relevance for Teaching Literacy Skills to Students with Significant Intellectual Disabilities

The importance of literacy is reflected in the improved quality of life and increased opportunities within society (Courtade, Browder, & Jimenez, 2012; Kent-Walsh, Binger, & Hasham, 2010). Literacy is essential to improve communication (Bailey et al., 2011; Machalicek et al., 2010; Tavers et al., 2011), gain employment, learn cooking skills, become conventional readers and writers, interact within the community, and learn independence (Morgan, Cuskelly, & Moni, 2011; Tavers et al., 2011; Westling & Fox, 2009).

Problems Teaching Literacy Skills to Students with Significant Intellectual Disabilities

Educators have struggled with how to teach literacy skills to students with significant intellectual disabilities for several reasons. First, these students demonstrate learning characteristics that include difficulty attending to stimuli, memorizing, generalizing, self-regulating, using observational learning, and applying learned skills (Mims, Browder, Baker Lee, & Spooner, 2009; Gargiulo, 2012; Westling & Fox, 2009). Second, many educators are not properly prepared to teach literacy skills to this population (Cooper-Duffy et al., 2010; Copeland et al., 2011; Ruppar, Dymond, & Gaffney, 2011). Third, because these students are not conventional literacy learners, educators struggle with the best approach for teaching the prerequisite emergent literacy skills (Browder, Lee, & Mims, 2011; Collins et al., 2010). Students with moderate disabilities have reading problems in sequencing, scanning words, and generalizing (Rosenberg, Westling, & Mcleskey, 2011). Many students with significant intellectual disabilities struggle to demonstrate that they are aware of being read to or to demonstrate knowledge of the difference between a book and a cup. Fourth, many students are non-

verbal, making it difficult for educators to know how to teach phonological awareness and vocabulary instruction (Browder, Mims, et al., 2009; Wood-Jackson, Wahlquest, & Marquis, 2011). Furthermore, educators have difficulty adapting reading and phonics instruction to non-verbal learners (Allot, Mathes, Roberts, Cheatham, & Champlin, 2010; Wood-Jackson, et al., 2011; Morgan, Cuskelly, & Moni, 2011). Some studies show students with significant intellectual disabilities can learn sight-words using time delay, but there is little research to show educators how best to teach those same students reading comprehension (Allor et al., 2010; Browder, Mims, et al., 2009).

Past Models for Teaching Literacy to Students with Significant Intellectual Disabilities

Readiness Model. For years, schools used the readiness model to teach literacy skills to students with significant intellectual disabilities (Browder, Lee, et al., 2011; Browder & Spooner, 2011; van Kleeck & Schuele, 2010). The readiness model required students to master sub-skills or prerequisites, such as letter sounds and relationships, before learning more advanced literacy skills (van Kleeck & Schuele, 2010). This model was problematic for students with significant intellectual disabilities since they never advanced past preschool level (Browder, Lee, et al., 2011; Browder & Spooner, 2011). Students who had limited speech or used Augmentative and Alternative Communication (AAC) were unable to demonstrate the prerequisite skills necessary for advancement (Hudson & Test, 2011; Wood-Jackson et al. 2011). At that time, literacy instruction to students with significant intellectual disabilities was limited to the preschool curriculum.

Functional Model. The functional model focused on teaching behaviors that had "real life application" (Collins, et al., 2010; Browder & Spooner, 2011) and was viewed

as the best approach for teaching vocational skills, leisure skills, personal care skills, and community skills (Alwell & Cobb, 2009; Bouck, 2010; Cannella-Malone et al., 2011; Collins et al., 2010). Because students with significant intellectual disabilities develop only a limited number of skills, careful selection of specific skills is crucial (Westling & Fox, 2009).

The Functional Model incorporated the use of systematic instruction to teach a wide range of functional skills. Systematic instruction has also been used to teach students personal care skills such as eating, toileting, dressing, tooth brushing, grooming, hygiene, drinking, and menstrual care (Westling & Fox, 2009). Research shows systematic instruction using least-to-most prompting can be effective for teaching functional skills to students with significant intellectual disabilities (Collins et al., 2010). The least-to-most prompting system starts with a cue from the teacher to start the task, followed by a brief waiting period, then a hierarchy of prompts (verbal prompt, verbal and gesture prompt, full physical prompt) until the task is performed (Collins et al., 2010; Mims, Browder, Baker, Lee, & Spooner, 2009; Westling & Fox, 2009).

For example Parrott, Schuster, Collins, and Gassaway (2000) conducted the most current research study on hand washing skill acquisition for students with intellectual disabilities using systematic instruction. Their multiple probe design across participants evaluated the effectiveness of simultaneous prompting procedures when teaching five students with moderate to severe disabilities the chained task of hand washing. Training consisted of a simultaneous prompting procedure of a sixteen-step task analysis and verbal praise after each completed tasks. Systematic instruction was effective in teaching all five participants the functional skills of hand washing skills.

The Functional Model was intended to help develop skills needed for (a) independent living, (b) participation within society, (c) social relationships, (d) employment, and (e) self-determination (Ayres et al. 2012; Westling & Fox, 2009). Emphasis was placed on teaching daily living skills for students that centered on independence (Bouck, 2010). Teaching functional skills became a priority for the education of students with significant intellectual disabilities, with little focus placed on academic attainment.

Functional Academic Model. In the late 1980's, an emphasis was placed on teaching students with disabilities a combination of age appropriate and relevant academics skills that had functional applications for students (Browder & Spooner, 2011). The combination of academics with functionality was known as the functional academic model. Its focus was on using literacy to teach independent living skills and independence within society (Bouck & Flanagan, 2010; Gargiulo, 2012). Functional literacy usually consisted of teaching students to recognize sight words (Baker, et al., 2010; Gargiulo, 2012; Rosenberg et al., 2011; Westling & Fox, 2009). Research showed that students could learn sight words, but had limited exposure to comprehensive literature that included reading and comprehension (Agran, 2011; Baker et al., 2010; Browder, Gibbs, et al., 2009). Like the Readiness Model and the Functional Model, the Functional Academics Model limited the access of students with significant intellectual disabilities to only to the range of literacy skills needed to become conventional readers (Browder & Spooner, 2011; Copeland & Keefe, 2007).

Current Models for Teaching Literacy to Students with Significant Intellectual Disabilities

Balanced Literacy Model. Many educators are currently moving towards a more balanced literacy approach for students with significant intellectual disabilities (Cohen & Brady, 2011). The Balanced Literacy Model promotes instruction of reading and writing behaviors in multiple environments with various levels of support and approaches (Uzuner et al., 2011; van Kleeck & Schuele, 2010). An example of the Balanced Literacy Model is thematic units with literacy centered on a theme or topic such as (a) the four seasons, (b) the environment or, (c) a holiday. The Balanced Literacy Model is founded on the belief that students with moderate to severe disabilities can learn literacy skills when given the appropriate accommodations and supports (Copeland et al., 2011; Smith, Demarco, & Worley, 2009). Researchers Cohen and Brady (2011) found that although the Balanced Literacy Model is a creative way to provide literacy instruction, it often lacks universal agreement of instruction and lacks emphasis in scope and sequence.

Direct Instruction Model. The direct instruction model by Engelmann (1966) has been used in the general education classroom for decades (Archer & Hughes, 2011). Its key components include (a) teacher manuals with scripted lessons, (b) student materials for each lesson, (c) student evaluation and summary sheets, (d) drill and practice, and (e) fast paced instruction in small groups (Gargiulo, 2012; Parette, Blum, Boeckmann, & Watts, 2009). The teacher manuals contain explicit instructions so that each scripted lesson can accurately be taught to students, ensuring effectiveness of curriculum goals (Gargiulo, 2012).

The Early Literacy Skills Builder (ELSB) is one example of a reading curriculum that provides direct instruction of emergent literacy skills (Knight, Browder, Agnello, & Lee, 2010). Its curriculum is divided into five levels focus on print, reading

comprehension, phonemic awareness, phonics, and vocabulary attainment. The ELSB curriculum has scripted lessons for teachers and includes games and interactive materials that engage students in reading behaviors in both one to one and small group formats. Research on the ELSB curriculum shows that through intensive instruction and allowing more time, students with moderate to significant intellectual disabilities gain a variety of early literacy skills including phonemic awareness (Browder & Spooner, 2011). More research is needed to determine whether the ELSB could lead to independent reading behaviors connected to meaningful life experiences (Browder et al., 2008; Knight et al., 2010).

Story-Based Learning Model. Recent trends for providing a comprehensive literacy program to students with significant intellectual disabilities focus on the story-based learning model (Browder, Lee, et al., 2011; Browder, Mims, et al., 2009; Hudson & Test, 2011; Pollard-Durodola et al. 2011). This model provides a means for students to participate in a wide range of literacy activities, develop communication skills, and acquire comprehension and vocabulary skills (Browder & Spooner, 2011; Hudson & Test, 2011; Mims et al., 2009; Pollard-Durodola et al. 2011).

Mims et al. (2009) used a multiple probe design across participants to investigate the shared story method for engaging students with visual impairments and intellectual disabilities to answer comprehension questions. Their study evaluated the least to most prompting system for increasing the number of independent and correct comprehension responses of participants. Three popular elementary books were adapted to include five objects representing the nouns in the story and were also adapted to include a repeated story line. The interventionist asked a total of 10 comprehension questions during the

shared story. After each question, the interventionist presented students with two objects, one as the correct response and one as a distracter. The results showed participants were able to increase their independent and correct comprehension responses. It found story-based instruction with systematic instruction using least prompting procedures and story objects to be an effective method for teaching reading comprehension to students with visual impairments and significant intellectual disabilities.

Browder, Mims, et al. (2009) used a multiple probe design across participants to investigate a method for implementing shared stories for three students with multiple disabilities. The method included both team planning and task analytic instruction. An interventionist met with the team to plan each student's instruction and to discuss adaptations needed for each student. The team adapted three popular elementary level books to include the student's name as the main character and a repeated story line that stated the main idea of the book. Sensory materials and objects that related to the story were also used during instruction. The team created a sixteen-step task analysis to prompt student participation and comprehension during story-based instruction. The interventionist used a one-to-one format to read the story aloud and provided least to most system of prompting for each step of task analysis as needed. The results showed that with proper adaptations and instruction, all three students increased their independent responses during story-based lessons. This result suggested that story-based instruction was an effective way of teaching emergent literacy skills to students with significant intellectual disabilities.

Browder et al. (2008) used a multiple probe design across participants, including team planning and task analytic instruction, to investigate a method for implementing

shared stories for three students with multiple disabilities. Three popular elementary level books were adapted to include the students' name as the main character and a repeated story line that stated the main idea of the book. A sixteen-step task analysis was created to prompt student's participation and comprehension during shared story reading. The interventionist used one-to-one format to read the story aloud and provided the system of least prompts for each step of the task analysis. All three students increased their independent responses during shared story reading, suggesting that shared story reading was an effective way to teach students with significant intellectual disabilities emergent literacy skills.

Summary of Teaching Models

Teaching comprehensive literacy skills is essential for students with significant intellectual disabilities to learn new skills and to gain independence within society (Agran, 2011; Browder, Gibbs, et al., 2009; Fenlon, McNabb, & Pidlypchak, 2010). However, knowing the best approach for teaching literacy to students with significant intellectual disabilities has been challenging for educators (Browder, Lee, et al., 2011; Cooper-Duffy et al., 2010). Past teaching models focused on teaching only functional skills or teaching functional academic skills without providing a comprehensive approach for literacy obtainment (Browder & Spooner, 2011; Collins et al., 2010). Current teaching trends have focused on the story-based learning model for teaching students with intellectual disabilities the necessary comprehensive literacy skills needed within society (Browder & Spooner, 2011; Hudson & Test, 2010; Fenlon, McNabb, & Pidlypchak, 2010). More research is needed to evaluate the effects of story-based instruction on the emergent literacy skills of students with significant intellectual disabilities. Additionally

research is needed to find an approach for teaching both emergent literacy skills and functional skills that are linked to the Common Core State Standard.

Critical Elements for Teaching Story-Based Instruction

Current research points to several critical elements needed for teaching story-based instruction to students with significant intellectual disabilities. These elements include (a) offering literacy in inclusive reading groups, (b) providing task analytic instruction, systematic prompting to learn steps of literacy, (c) choosing age appropriate books, (d) embedding communication systems, and (e) adapting materials for access to the book (Browder, Mims, et al., 2009; Hudson & Test, 2011; Mcleskey, Rosenberg, & Westling, 2012; Mims et al., 2009).

The first critical element is developing an inclusive reading group. This group will have both students with disabilities and typically developing students learning about a topic or concept together. Inclusive reading groups achieve five goals: (a) provide students the opportunity to share knowledge (b) allow students to learn from each other, (c) encourage students to work together, (d) provide all students access to the same curriculum, and (e) provide materials adapted to meet the needs of each student in the group (Mcleskey, Rosenberg, & Westling, 2012).

The second critical element is task analytic instruction and systematic prompting, used to teach students with significant intellectual disabilities a variety of skills, including site-word instruction and functional skills (Aykut, 2012; Browder, Lee, et al., 2011; Gargiulo, 2012; Spooner et al. 2009). Alberto and Troutman (2009) identified five steps for creating a task analysis: (a) define the target behavior, (b) acknowledge what prerequisite skills are needed, (c) identify materials, (d) watch the task being performed,

and (e) list the steps necessary for successful completion of that task (Gargiulo, 2012). Task analytic instruction and systematic prompting ensures that students with significant intellectual disabilities learn the necessary steps to complete a task while providing a prompting system when students are unsure of the next step in the task's sequence. Examples of systematic prompting strategies include (a) system of least prompts, (b) constant time delay, (c) progressive time delay, and (d) most-to-least prompts (Collins et al., 2010; Westling & Fox, 2009). Students with significant intellectual disabilities need task analytic instruction and systematic prompting to understand what the next step is and how to initiate that step.

The third critical element of story-based instruction is choosing age appropriate books and materials. Smith et al. (2009) state students with significant intellectual disabilities need age appropriate books as they mature through elementary, middle, and high school. Novels can be adapted to include abbreviated chapters, vocabulary words, main points, picture symbols, and key words. Age appropriate books enable students with significant intellectual disabilities to have access to the same reading curriculum as their typically developing peers, while working on necessary emergent literacy skills (Browder & Spooner, 2011; Smith et al., 2009)

Augmentative and alternative communication (AAC) is the fourth critical element for teaching story-based instruction. Incorporating ACC technology into story-based instruction can increase communication, engagement, and literacy attainment (Browder, Gibbs, et al., 2009; Fenlon, McNabb, & Pidlypchak, 2010; Kent-Walsh et al., 2010). AAC can include devices such as (a) picture communication boards, (b) communication notebooks, and (c) voice output devices (Fenlon, McNabb, & Pidlypchak, 2010; Smith et

al. 2009). Students with significant intellectual disabilities with communication impairments need access to AAC during literacy instruction in order to develop both emergent literacy and conventional literacy (Fenlon, McNabb, & Pidlypchak, 2010; Westling & Fox, 2009).

Adapting materials for story-based learning is the fifth critical element. Adaptations can include (a) adding a repeated story-line to each page, (b) making the students name the main character of the book, (c) using pictures to answer comprehension questions, (d) using communication picture strips, and (e) developing vocabulary charts (Browder, Gibbs, et al., 2009; Hudson & Test, 2011). Students with significant intellectual disabilities need a variety of adapted materials during literacy instruction to increase their independence and develop emergent and conventional literacy skills.

Researchers Cooper-Duffy et al. (2010) found seven critical elements for teaching literacy skills to students with significant intellectual disabilities: (a) development of themes that are age appropriate, (b) focus on the needs and strengths of the student, (c) lesson plans with objectives from the IEP, (d) selection of vocabulary words, (e) adaptations, (f) systematic instruction, and (g) evaluation of student progress. Understanding and implementing the critical elements of story-based instruction will lead to a wider range of literacy.

Theoretical Framework

The theoretical framework for story-based literacy instruction to teach emergent literacy skills to students with significant intellectual disabilities is based on three theories: (a) Piaget's cognitive learning theory (1952), (b) Vygotsky's zone of proximal

development (1962), and (c) Cambourne's conditions of learning theory (1988). These theories answer crucial questions: (1) why teach emergent literacy skills to students with significant intellectual disabilities, (2) where to teach emergent literacy skills to students with significant intellectual disabilities, and (3) how to teach emergent literacy skills to students with significant disabilities.

Cognitive Learning Theory

Jean Piaget developed the cognitive learning theory (1988), which could be used to support rationale for why educators should teach emergent literacy skills to students with intellectual disabilities. This theory states that developing children use their current cognitive development to understand and respond to physical experiences within their environments (Agbenyega, 2009). Unfortunately, many of these same students struggle to interact with stimuli around them due to physical limitations, communication problems, and cognitive impairments. The inability to interact with the environment in a typical way delays learning considerably. However, Piaget's concept of stages of development centers on the order of stages and the quality of knowledge acquired within each stage rather than the developmental age (Agbenyega, 2009). Focusing on the steps of development rather than the age of the student allows educators to break down learning into discrete components to help students make the necessary connections to academic skills such as literacy. The cognitive development theory (1988) focuses on a child's strengths instead of his or her weaknesses and promotes the idea that learning can take place at all ages and across all abilities.

Zone of Proximal Development Theory

The zone of proximal development theory developed by Vygotsky (1962) examines when to teach emergent literacy skills. The zone of proximal development is defined as the distance between a child's current development level and the level of potential development (Kausar, 2010; McLeod, 2010). Because of the lack of exposure to the reading and writing behaviors of typically developing students, many students with significant intellectual disabilities do not learn the necessary emergent literacy skills from their peers. To gain those skills, and eventually conventional literacy skills, students with significant intellectual disabilities need literacy instruction in groups also containing typically developing peers, with peers or teachers close at hand who can offer additional support. The zone of proximal development takes into account the direct instruction and unique learning required for students with significant intellectual disabilities to gain more advanced learning skills.

Though Piaget's (1952) cognitive learning theory seems to be in contrast to Vygotsky's (1962) zone of proximal development, the two theories are complementary. Piaget's cognitive Learning theory suggests students with significant intellectual disabilities must learn basic skills like emergent literacy skills before they can move toward more advanced skills like conventional literacy skills. Vygotsky's zone of proximal development theory (1962) states that some skills need to be explained and modeled so children can gain understanding. Many students with significant intellectual disabilities must have direct instruction from peers and adults to move from emergent literacy skills to conventional literacy skills. When given the opportunity to go through the stages of cognitive development with peer and teacher support, many students with

significant intellectual disabilities gain the essential literacy skills necessary for independence (Browder & Spooner, 2011).

Condition of Learning Theory

Cambourne's conditions of learning theory (1988) examines how to teach emergent literacy skills to students with significant intellectual disabilities. Cambourne's theory is based on learning principles of literacy development and has roots in both brain-based teaching strategies and the constructionist approach to learning. This theory offers a means to enhance literacy development that revolves around eight conditions: (1) immersion, (2) demonstration, (3) engagement, (4) expectations, (5) responsibility, (6) employment, (7) approximation, and (8) response (Armfield, 2009). When teachers incorporate the eight conditions into their instruction, students are able to develop a broad range of literacy skills.

According to Cambourne (1988), students need to be immersed in literacy-based and print-rich classrooms with access to a broad range of literacy opportunities (Armfield, 2009). In the past, literacy instruction for students with disabilities was limited to sight word instruction or preschool level instruction. Story-based instruction now offers students with intellectual disabilities a chance to develop a comprehensive array of emergent literacy skills while connecting to a deeper literacy experience such as comprehension of sight words.

The conditions of learning theory emphasizes the need for skills to be demonstrated to provide students with a model of how to appropriately complete a task. When teachers or peers demonstrate necessary steps of emergent literacy development,

such as pointing to the author, turning the page, or pointing to a picture, students with significant intellectual disabilities can construct meaning and demonstrate understanding.

Literacy experiences are heightened when students are actively engaged in the demonstration of literacy skills. To help students with significant intellectual disabilities become and stay actively engaged during story-based instruction, a prompting system is needed to help move them sequentially through the steps of a task. When engagement in literacy becomes independent for students with significant intellectual disabilities, the prompting system is faded. As students become more connected with literacy experiences, they are able to construct new knowledge. However, teachers must set realistic expectations and use practices that allow students with significant intellectual disabilities to become responsible for their own learning and generalize the information to other settings.

The conditions of learning theory recognizes that students learn differently. Cambourne's idea of approximation allows teachers to provide feedback and correction to direct the student's obtainment of the new literacy skills. Teachers need to provide positive feedback and encouragement to students with significant intellectual disabilities in order to offer a positive learning environment for learning to occur.

Summary of Theories

Synthesizing Piaget's cognitive learning theory, Vygotsky's zone of proximal development theory, and Cambourne's conditions of learning theory allows educators to fully develop instruction that centers on the learning needs of students with significant intellectual disabilities. Educators need to include in their instruction the following components of the theories listed above: (a) students with significant intellectual

disabilities should be immersed in a learning environment that focuses on comprehensive literacy attainment, (b) instruction in emergent literacy and hand washing skills should focus on the students' strengths instead of weaknesses, (c) each step of emergent literacy and hand washing should be broken down into discrete skills, (d) direct instruction of the discrete skills should be explained and modeled, (e) direct instruction needs to be demonstrated by peer tutors in learning groups, (f) students with significant intellectual disabilities should be engaged in the learning of emergent literacy and hand washing skills using prompting and error correction procedures, (g) educators need to set high expectations for students with significant intellectual disabilities. Piaget's cognitive learning theory, Vygotsky's zone of proximal development theory, and Cambourne's conditions of learning theory can be used to produce a clear model of instruction for students with significant intellectual disabilities.

Summary of Literature Review

We know that students with significant intellectual disabilities need to learn a wide range of functional skills, such as personal care skills, from systematic instruction. Over the last 30 years, systematic instruction has been a successful method for teaching functional skills (Westling & Fox, 2009). However, a recent switch in research has focused instead on teaching emergent literacy skills to these students. This emphasis has provided little to no direction for teaching functional skills.

Research indicates students with significant intellectual disabilities have not been taught comprehensive literacy skills that could lead to independence within our society (Agran, 2011; Baker et al., 2010; Browder, Gibbs, et al., 2009). Even though comprehensive literacy attainment and instruction is highly valued by our society,

education for students with significant intellectual disabilities has been limited to sight word instruction to teach functional skills (Browder, Mims, et al., 2009). While sight word instruction has successfully taught students with disabilities a broad range of functional skills (Westling & Fox, 2009), it offers little instruction on the comprehensive skills necessary to be conventional literacy learners.

NCLB (2001), the NRP report (2000), and IDEA (2004) force educators to focus on literacy instruction that connects to the Common Core State Standard (Browder et al., 2009; Cooper-Duffy et al., 2010). Unfortunately, many educators are uninformed on how to teach comprehensive literacy to students with significant intellectual disabilities (Cooper-Duffy et al., 2010). Past literacy models focused on teaching functional skills and offered educators little instruction on how to teach comprehensive literacy skills to this population (Browder, Gibbs, et al., 2009; Westling & Fox, 2009). Current research using the story-based instruction model holds promise for teaching students with significant intellectual disabilities comprehensive literacy skills (Browder, Mims, et al., 2009; Browder & Spooner, 2011; Collins et al., 2010).

To date, no research has been conducted on education combining both functional and literacy skills for students with significant intellectual disabilities. This study has created a possible new method, called functional story-based instruction, to do just that. The purpose of this study is to examine the effects of functional story-based instruction as a way to teach a functional skill and emergent literacy at the same time.

CHAPTER THREE: METHODOLOGY

Introduction

With the intense federal focus on academic attainment, many educators find it difficult to teach necessary functional skills to students with significant intellectual disabilities (Bouck, 2010; Browder et al., 2009; Collins et al., 2010). Combining the academic instruction of emergent literacy with the systematic instruction of functional skills might be a way to teach both of these skills. The researcher combined both teaching techniques to create a new method called functional story-based instruction. The purpose of this study was to examine the effects of FSBI about hand washing on the independent and correct emergent literacy and hand washing responses of three elementary students with significant intellectual disabilities in small inclusive reading groups. Data were collected on the participants' independent and correct emergent literacy skills and hand washing skills using task analyses tools. The researcher implemented a concurrent multiple baseline design across participants. This chapter presents the design, participants, setting, materials, instrumentation, procedures, and data analysis for the study.

Design

A concurrent multiple baseline across participant design (AB sequence) was used in this study. The multiple baseline design is the most often used method for experimental design in applied behavior analysis (Cooper, Heron, & Heward, 1987). In the concurrent (AB) design, the baseline "A" is concurrently evaluated, then the intervention "B" is sequentially introduced across baselines (Cooper et al., 1987). Once

the intervention B is introduced, it is not removed (Kennedy, 2005). The AB sequence allows the researcher to implement the intervention without returning to baseline conditions (Kennedy, 2005). A reversal design, where participants return to baseline, was not implemented because this study is about skill acquisition. If the participants were making progress on emergent literacy skills and hand washing skills during the study, withdrawal of the intervention would have been detrimental to the participants, and therefore viewed as unethical (Kazdin, 1982). It is important to note that a multiple baseline design does not require reversal of treatment to demonstrate experimental control (Cooper et al., 1987).

A multiple baseline design is most often used in the field of special education (Horner et al., 2005; Browder et al., 2006), because it allows researchers to work with small sample sizes (Cooper et al., 1987). Students diagnosed with significant intellectual disabilities represent less than one percent of all school age students (Rosenberg, Westling, & McLeskey, 2011); therefore, identifying larger sample sizes with similar characteristics for this heterogeneous population would be difficult. Multiple baseline design typically has two or more participants in a study, with each participant serving as his or her own control (Cooper, Heron, & Heward, 1987; Horner et al., 2005). To demonstrate experimental control, a minimum of two participants across two multiple baseline tiers are needed (Kennedy, 2005). This research study worked with three participants with significant intellectual disabilities across three multiple baseline tiers.

Functional independence of each tier is essential so that one tier does not compromise the effect of the other tiers, thus reducing the threats of internal validity (Kennedy, 2005). Internal validity refers to the confidence of the researcher that the

independent variable, and not other influences, was the cause for change in participants' behavior (Kennedy, 2005; Todman & Dugard, 2001). Internal validity is demonstrated by establishing functional relationships between independent and dependent variables (Horner et al., 2005; Kennedy, 2005). A functional relationship is demonstrated when (a) behaviors in baseline show no change in mean over time, and (b) after the intervention, or when the independent variable is introduced, and changes in behaviors are observed (Cooper et al., 1987).

In this study, three participants entered into baseline condition simultaneously. When baseline patterns were stable, meaning the measurable behaviors were consistent, the independent variable was systematically introduced into one baseline (Kennedy, 2005). The independent variable introduced in this study was functional story-based instruction about hand washing. The dependent variables were the independent and correct emergent literacy responses and hand washing responses of the participants.

The researcher observed the first participant receiving intervention and waited for change in the pattern of behavior. The researcher set the performance criterion of 70% on the dependent variables. As stated above, a 70% criterion for the intervention and generalization phases ensured the change in behavior was not a matter of coincidence (Cooper, Heron, & Heward, 1987). It allowed participants to gain almost complete mastery of skills and move through each phase in a timely manner. Furthermore, the researcher selected a 70% criterion because North Carolina public schools consider academic skills mastery of 70% a passing level (Public School of North Carolina, 2012).

When the first participant reached a performance criterion of 70% during intervention and moved into generalization phase one, the second participant entered into

the intervention phase, and the third participant remained in baseline. When the first participant reached the performance criterion of 70% in generalization phase one and moved into generalization phase two, and the second participant reached the performance criterion of 70% and moved into generalization phase one, then the third participant entered into intervention. This process was repeated through all tiers, ensuring the changes in one tier did not compromise the control of the other tiers (Kennedy, 2005).

By staggering intervention through the tiers, the researcher was able to observe the experimental effect across participants (Horner et al., 2005). If baseline data were stable, and changes in behaviors occurred only when FSBI about hand washing was introduced, then functional relationships between variables were demonstrated. The researcher and data collector used the same task analyses tools to collect data on the dependent variables during baseline, intervention and generalization phases.

Research Questions

This study sought to answer the following research questions:

Research Question One: Will Functional Story-Based Instruction about hand washing increase the independent and correct emergent literacy responses of the three elementary students with significant intellectual disabilities in small inclusive reading groups as measured by the Story-Based Task Analysis Tool?

Research Question Two: Will Functional Story-Based Instruction about hand washing increase the independent and correct hand washing behaviors of three elementary students with significant intellectual disabilities in small inclusive reading groups as measured by the Hand Washing Task Analysis Tool?

Hypothesis

It is hypothesized that three students with significant intellectual disabilities who receive Functional Story-Based Instruction about hand washing in small inclusive reading groups for a minimum of three sessions per week will meet a 70% performance criterion on independent and correct emergent literacy responses and hand washing responses as measured by story-based task analysis and hand washing task analysis.

Participants

Three participants with significant intellectual disabilities between the ages of six and eight years of age, taught in self-contained special education classrooms at public elementary schools, participated in this study. Significant intellectual disability is defined as "significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental periods that adversely affects a child's educational performance" (Individual with Disabilities Education Act, 2004, Sec. 300.8, c, 6). Six criteria were used to select participants: (a) have adequate vision and hearing to read the hand washing books, (b) demonstrate the ability to attend a group setting for 15 minutes, (c) have the physical ability to demonstrate hand washing behaviors, (d) have IQ scores no higher than 45, (e) speak English as their primary language, and (f) are nonverbal and communicate with gestures and or AAC.

Informed Assent was obtained from parents of participants before the study began. The special education teachers of participants, three teachers in total, obtained the specific characteristics of their students through school records. General information about Sally (all names of participants are pseudonyms) was provided, but specific information about her IQ and adaptive behavior scores were not released for

confidentiality purposes. Instead the special education teacher provided ranges for IQ and adaptive behavior scores. The special education teachers for Ward and Ellen gave specific information about their IQ scores, adaptive behavior scores, and medical history (see Table 1). All three teachers, after reviewing participants' records, verified that the students chosen to partake in this study met the six criteria. Participants' characteristics are presented in the table below

Table 1*Participants Characteristics*

Participant Characteristics	Sally	Ward	Ellen
Gender	F	M	F
Age	8	6	8
Grade	2nd	1st	2nd
Ethnicity	Caucasian	Caucasian	Caucasian
Primary Language	English	English	English
Disorder	Down Syndrome	Cerebral Palsy	Seizure Disorder
IQ score	35-45 range	35	38
Adaptive Behavior composite	-2 to -3 range	-3	-2
Vision and Hearing	Normal range	Normal range	Normal range
Communication	Limited verbal communication skills (gestures, such as pointing)	Limited verbal communication skills (smiling, crying, and eye gazing)	Limited verbal communication skills (repetitive phrases and pointing)
Physical Ability	No physical limitation to demonstrate hand washing	No physical limitation to demonstrate hand washing	No physical limitation to demonstrate hand washing
Group Attainment	30-45 minutes	15-30 minutes	30 minutes

Note. -2 = two standard deviations below mean, and -3 = three standard deviations below mean.

Participant One

Sally was 2nd grade 8 year-old Caucasian female diagnosed with Down syndrome. Her IQ was between 45 and35, which was within the severe range of intellectual disabilities. Her adaptive behavior score was 2-3 standard deviations below the mean (70-40), which indicated that her adaptive behavior skills fell between the moderate to low range. Her vision and hearing were in normal ranges. She was taught in a self-contained special education classroom in a rural public elementary school for students in kindergarten through 5th grade. Sally demonstrated significant limited verbal communication skills and used gestures, such as pointing to communicate. Sally's teacher noted that Sally could stay within a group setting 30-45 minutes, but required one-to-one support to complete tasks.

Participant Two

Ward was a1st grade 6 year-old Caucasian male diagnosed with Cerebral Palsy. On the Weschler Intelligence Scale for Children—Fourth Edition (WISC®-IV; Weschler, 2004), Ward received a Full-Scale IQ of 35, which was within the severe range of disabilities (Weschler, 2004). His score on the Vineland Adaptive Behavior Scale, Second Edition (VABS-II; Sparrow, Cicchetti, & Balla, 2005) was 3 standard deviations below the mean (55-40), which indicated that his adaptive behavior skills fell within the low range. His vision and hearing were with in normal ranges. He was taught in a self-contained special education classroom in a rural public elementary school. He used

limited verbal and non-verbal communication. Ward's preferred methods of communication were smiling, crying, and eye gazing. The teacher reported Ward was able to stay within a group setting for up to thirty minutes, but showed limited engagement when completing classroom tasks.

Participant Three

Ellen was a2nd grade 8year-old Caucasian female diagnosed with seizure disorders. On the WISC®–IV (Weschler, 2004), Ellen received a Full-Scale IQ of 38, which was in the severe range of intellectual disabilities (Weschler, 2004). Her VABS-II (Sparrow, Cicchetti, & Balla, 2005) score was 2 standard deviations below the mean (70-55), which indicated that her adaptive skills fell within the low to moderately low range. Her vision and hearing were in normal ranges. She was taught in a self-contained special education classroom in a rural public elementary school. Ellen used repetitive phrases throughout the day. Though she demonstrated verbal ability, she had limited conversation skills. The special education teacher reported that Ellen was able to stay within a group setting for 30 minutes, but needed prompting to complete tasks.

It is important to note that toward the end of the research study, Ellen became ill with a high fever and required hospitalization for several days. When she returned to school, she had dried and peeling skin on approximately 90% of her hands. Ellen's doctor reported hand washing would aid in the removal of the dead skin and she should continue with hand washing training.

General Education Students

Six general education students were needed to create the three inclusive reading groups for this study. The researcher and cooperating special education teachers

identified a general education teacher from each school who taught students at the same grade levels as the participants with significant intellectual disabilities. Two general education students from second grade were needed to form an inclusive reading group with Sally, two general education students from second grade were needed to form an inclusive reading group with Ellen, and two general education students from first grade were needed to form an inclusive reading group with Ward. The general education teachers identified two readers without disabilities from their general education classrooms who met the following requirements: (a) would benefit from additional reading practice in a small group format, (b) could model emergent literacy skills, and (c) could leave the general education setting for thirty minutes, three times per week. The parents of the general education students were contacted and gave informed consent. No data were taken on the general education students because they were not participants of the study, but rather helped form small reading groups for the participants.

Interns

Three interns from Western Carolina University (WCU), a rural university in the southeast, were chosen to implement the intervention of FSBI about hand washing for this study. The three interns were chosen because they (a) were in their senior year and working full-time on internships to obtain certification in adaptive curriculum, (b) were in three different public elementary school classrooms in three different counties, (c) were serving elementary students with significant intellectual disabilities, and (d) had no prior knowledge of FSBI to teach hand washing. Interns provided their informed consent.

The three interns were Caucasian females between the ages of 22 and 24. All interns had 2 to 3 years experience working with individuals with disabilities. To control

for internal validity, the interns had no knowledge of the other interns' involvement in the research study and were asked not to discuss the study with anyone except the researcher.

Setting

The study took place in the fall of 2011 within three public elementary schools from three different counties in North Carolina. The three schools were located in rural areas of Western North Carolina and were chosen based on the following criteria: (a) had at least one elementary special education classroom that taught students with significant intellectual disabilities, (b) had at least one intern from WCU working with students with significant intellectual disabilities in the elementary classroom, (c) had at least one student with significant intellectual disabilities who met the eligibility requirements of this study, (d) had an interest in learning the benefits of FSBI about hand washing for students with significant intellectual disabilities, and (e) had two general education students that could help form a small reading group three days per week for thirty minutes.

The researcher targeted the three counties visited for this study. Because of the small population of students with significant intellectual disabilities within the three elementary schools, the actual county and elementary school names will not be mentioned in order to provide confidentiality for those participating.

The first school taught grades K-5. It had a total population of 456 students, 91% or which were considered white non-Hispanic. A total of 25 students from grades K-5 were identified with a disability. The second school taught grades K-5. It had a student population of about 500 students, 94% of which were considered white non-Hispanic. A total of 60 students from grades K-5 were identified with a disability. The third school

taught grades K-8. It had a population of 690 students, 85% of which were considered white non-Hispanic. A total of 40 students were identified with disabilities.

The literacy setting for baseline, intervention, and generalization sessions was an inclusive small reading group at a square table within the special education classroom. The table was located in the back of the classroom near the sink. The hand washing setting for baseline, intervention, and generalization phases was a sink in the classroom. This setting was the same for each participant at each school.

Literacy Materials

The materials needed for this study included three literacy kits, three sets of hand washing materials, and three flip cameras. All the materials were identical in order to control for threats of internal validity (Kennedy, 2005). Detailed descriptions of the materials are presented below.

Literacy Kit. The researcher created three literacy kits for this study to make materials for literacy lessons easily accessible and to ensure the materials would not get lost. The literacy kit was a clear, small, 14 inches wide, 17 inches long, and 10 inches high plastic watertight box with a lid and handle. A checklist of all the materials was printed on an orange piece of paper and taped to the side of the kit to ensure all materials were included. Prior to baseline, the data collector checked each kit to ensure all materials were included. The literacy kit contained the following items: (a) one bottle of bubbles, (b) three copies of three books about hand washing, (c) three vocabulary word documents, (d) three comprehension sheets, and (e) an AAC device.

Bubbles. A small bottle of bubbles with a wand was used as the attention getter during FSBI about hand washing.

Books about hand washing. Three books about hand washing were used in this study. Each kit had three copies of each book. Each page in the books included a velcro page riser to make page turning easier. The riser was square-shaped and placed on the edge of each page.

The repeated story line "when I wash my hands" was added to the bottom of each page of the books. The line, like all printed documents, was created in Microsoft Word and typed in Times New Roman font. The line was then highlighted in yellow to make it more visible. A piece of packing tape was placed over the repeated story line to secure its placement.

The books were numbered one, two, or three on the front of the book at the bottom left side. The number of the book allowed the interns to know in which order to read the books. The number on a book was based on the book's reading level, which was calculated using Fry's Readability Graph (Fry, 1977). The lowest reading level was book one, and the highest reading level was book three (see Table 2).

Table 2

Reading Book Levels

Book Number	Title of the Book	Author	Grade Level
Book 1	*Show Jo How to Wash Your Hands*	Charlie Buckley	1st grade (beginning)
Book 2	*When I Wash My Hands*	Glenda Hyer	1st grade (middle)
Book 3	*Wash Your Hands*	Tony Ross	2nd grade (beginning)

Vocabulary words. Each literacy kit contained three vocabulary word documents for each student. The ten vocabulary words consisted of the steps of hand washing taught

in this study (see Appendix C). The ten vocabulary words were: (a) sink, (b) water on, (c) wet hands, (d) get soap, (e) rub hands, (f) rinse hands, (g) water off, (i) paper towel, (j) dry hands, and (k) trash can. Each vocabulary word had a picture of the hand washing behavior at the top and the written word underneath. By having vocabulary documents that paired pictures with words, students with significant intellectual disabilities could begin understanding the meaning of words, learn to make inferences, formulate predictions, develop comprehension, and acquired stronger literacy skills (Cohen & Johnson, 2011; Alberto, Fredrick, Hughes, McIntosh, & Cihak, 2007).

Comprehension questions. The researcher created three laminated comprehension documents (see Appendix D). The documents consisted of multiple-choice questions with three picture/word card answers for each question. One picture/word card was the answer and the other two were distractors (see Appendix D). The picture/word cards were attached to the comprehension word documents with velcro so the order of the answers could be switched to avoid memorization of card placement. Switching the order of answers allowed the researcher to measure the true comprehension of the participants.

Alternative and augmentative communication devices. All literacy kits included a BIGMack® communication device. This device had a five inch round activation surface and recorded a single message. Participants activated the pre-recorded by pushing the top surface of the BIGMack®. Providing an AAC device offered the participants a way to read the books with their peers (Ruppar, Dymond, & Gaffney, 2011).

Hand Washing Materials

Hand washing materials for this study included a hand washing strip, unscented pump soap, paper towel dispensers, sink with turning faucets, and a wastebasket.

Hand washing strip. The researcher created a laminated hand washing strip that contained the same ten hand washing steps found on the vocabulary document. The hand washing strip was horizontal and had ten 2x2 inch vocabulary words in sequential order that showed students how to wash their hands. It was placed over the sink at participants' eye level and remained there during baseline, intervention and generalization phases. The hand washing strip was a guide for all students to see and use during hand washing.

Unscented push-top soap dispenser. To ensure all hand washing materials were the same for all participants, the researcher purchased push-top soap dispensers. The bottles required participants to push the handle down to get soap. Unscented soap was used to avoid possible allergies or fixation on scents.

Paper towel dispenser. The paper towel dispensers and paper towels at each school were identical. Dispensers were attached to the wall next to the sink and required participants to reach up and pull paper towels out of the dispenser.

Faucets. All bathrooms contained turning faucet handles. Having the same faucet handles was important for this study because it allowed the researcher and data collector to take data on the same hand washing responses of the participants.

Wastebaskets. The wastebaskets used in this study did not have lids. This allowed the participants to easily drop or place used paper towels into wastebaskets.

Data Collection Materials

Flip Camera. The researcher assigned each intern a flip camera to use during all phases of the study to capture data. The camera included a floor camera tripod, so the camera could be mounted and raised to capture the participants' responses.

Instrumentation

Task Analyses Tools. Task analyses are assessment tools used to collect data on both the academic and functional skills of students with disabilities (Browder & Spooner, 2011). Task analyses are created by observing the steps of a behavior, such as the steps of hand washing. Each step is then broken down into smaller, observable, components, and any non-essential step is removed (Alberto & Troutman, 2009). The steps of task analyses are written in the same sequence that the responses should be performed in (Kleinert &Kearns, 2010).

In this study, the researcher and data collector used two task analyses tools for data collection procedures for both the participants' emergent literacy responses and hand washing responses during baseline, intervention, and generalization phases. The task analyses tools were also used for procedural fidelity checks. The two task analyses tools were the story-based task analysis tool and the hand washing task analysis tool.

Each task analysis had four columns. Column one had a description of the instructions interns were to provide for each step. It was used for procedural fidelity measures of the interns' instruction, but was also a self-monitoring tool for the intern. Column two had a plus sign and minus sign for each step so the researcher and data collector could circle (+) to indicate correct instruction or (-) to indicate incorrect instruction or a skipped instructional step. Column three had a description of the participants' responses for each step. Column four had a plus sign and a minus sign for

each step, so the researcher and data collector could circle (+) for independent and correct participant responses or (-) for incorrect participant responses.

Story-Based Task Analysis Tool. Browder, Trela, and Jimenez (2007) created and implemented a story-based task analysis to measure the emergent literacy skills of 6 students with moderate disabilities. The study showed all students increased their emergent literacy skills. The same story-based task analysis used by their study was adapted for use in this study. The adaptation made on the story-based task analysis was the addition of "exploration of the book" as the first step of the 14-step task analysis. The "exploration of the book" allowed students an opportunity to look at the pictures before reading the book.

Hand Washing Task Analysis Tool. The researcher created the hand washing task analysis tool by first performing the steps of hand washing, and then writing down the steps in order. The reliability of the hand washing task analysis tool was then measured. The researcher watched and scored the hand washing behaviors of twenty-five 1st grade students, and twenty-five 2nd grade students using the hand washing task analysis tool. The students were scored based on whether or not they used the exact sequence of hand washing as listed on the analysis tool. If the students skipped a step or completed steps in a different order, they received (-) for incorrect actions. If the students followed the exact sequence of the hand washing steps, they received (+) for correct actions. Six of the students' hand washing behaviors varied from the analysis tool. For example, one student got soap before turning on the water. A total of 44 out of 50 students matched the exact sequence of the Hand Washing Task Analysis Tool. It was concluded that the hand washing task analysis tool was reliable for the specific purpose

of scoring hand washing behaviors of students who were in 1st and 2nd grade.

Procedure

Institutional Review Board and Approval. Prior to data collection, approval was obtained from the Institutional Review Board (expedited review) through Liberty University for students with significant intellectual disabilities who were between the ages of five and eight. Before beginning the study, the researcher explained the research study and obtained necessary consent forms from the Exceptional Children's Directors at the three counties used in this study, the parents of both the general education students and the participants with significant intellectual disabilities, and the interns from WCU.

The researcher contacted the three Exceptional Children Directors of the three counties to schedule individual appointments. At these meetings, the researcher explained the purpose of the study, discussed both the setting and the participants needed, and offered a timeline for completion. A letter providing information about the research was presented to each director to allow the Board of Education of that county to review details of the study and give approval for the research.

Three interns agreed to participate in the study three days per week for 45 minutes during the Fall 2011 semester. In addition, the interns agreed to attend a 2-hour training session to learn how to administer the intervention of FSBI. The researcher made each intern aware that participation would be voluntary, and withdrawal from the study at any time and for any reason would not affect her grade or relationship with WCU, Liberty University, the researcher, or the cooperating public elementary school.

The researcher met with each cooperating special education teacher to identify one student with significant intellectual disabilities from their classroom that met the

criteria of the study. A letter about the research, including contact information of the researcher, was mailed to the families of each student. Families were invited to an open house to ask any questions about the research study. The researcher made the parents of the participants aware that their participation would be voluntary and that withdrawal from the study could be made at any time for any reason. Consent from the parents of the participant with significant intellectual disabilities was obtained because their children had significant intellectual disabilities and were between the ages of six and eight.

The researcher and the cooperating special education teacher identified one general education teacher who taught students at the same grade level as the participant with significant intellectual disabilities. The researcher presented the general education teacher an overview of the research study, including the reading benefits for the students in the general education classroom. The general education teacher identified two students from his or her classroom that would benefit from extra reading practice. An overview of the study and the researcher's contact information was sent to the parents of the general education students. Informed consent was obtained. No data were taken on the students from the general education classroom.

Data Collector Training. The individual that served as a data collector was a graduate student pursuing a degree in counseling at WCU. She attended a 2-hour training session on how to take data using both the story-based task analysis tool and hand washing task analysis tool. A data collector checklist was used during training (see Appendix E). The data collector served as a second observer to establish interrater reliability for each of the dependent variables across phases and participants. She also collected procedural fidelity data on intern training and intern instruction.

Training of the data collector took place in a classroom setting at WCU prior to the beginning of the study. The materials for data-collector training included (a) copies of the task analyses tools, (b) prerecorded videos on story-based instruction and hand washing instruction, (c) a television with a video player and, (d) the data collector training checklist. The researcher and data collector used the checklist to check off the training steps as they occurred. It ensured all parts of training were completed.

The training session was divided into five components: (a) overview of FSBI, (b) explaining and reviewing the story-based task analysis tool and hand washing task analysis tool, (c) practicing data collection with the researcher by watching videos of story-based instruction and hand washing instruction and taking data using the task analyses tools, (d) performing data collection apart from the researcher by watching videos of story-based instruction and hand washing instruction and taking data using the task analyses tools, and (e) comparing data for interrater reliability.

The researcher presented the data collector an overview of FSBI and the importance of teaching both emergent literacy skills and hand washing skills to students with significant intellectual disabilities. The researcher also provided a copy of the task analysis tools. Next, the researcher and the data collector sat beside each other and watched a prerecorded video on story-based instruction and hand washing instruction. Both the researcher and data collector scored the teacher's instruction and the student's behaviors using the story-based task analysis tool and hand washing task analysis tool. Data on the teacher was collected for procedural fidelity purposes only. The researcher provided the data collector feedback on the teachers' instruction and student's responses

during the video when needed. The researcher showed the data collector how to use the task analyses tools to take data.

Lastly, the researcher and data collector sat apart from each other and watched a prerecorded video about story-based instruction and hand washing. They scored the teacher's instruction and the students' responses using the task analyses tools separately. After the video, the researcher and data collector compared their scores on the task analyses tools for interrater reliability. An agreement was recorded when both the data collector and researcher had an identical score on the task analysis. A disagreement was recorded when the researcher and the data collector had different scores on the task analysis. The researcher and data collector continued watching and scoring videos until they reached a score of 90% interrater reliability. Two prerecorded sessions were needed to achieve 90% interrater reliability.

Initial Intern Instructions and Intervention Training

Intern Initial Instructions. Prior to baseline, the researcher provided the intern specific instruction about the research setting, camera placement, literacy kit materials, and hand washing materials. The initial instructions insured that the setting and materials were the same for all phases. No instruction was given on FSBI to teach hand washing. Detailed descriptions of the initial instructions are presented below**.**

Setting Instructions. To ensure the setting for the study was identical during all phases, the researcher explained to each intern the seating arrangement that was to be used during literacy instruction. Each intern was directed to have all three students sit across from the intern, with the participant with significant intellectual disabilities between the two general education students.

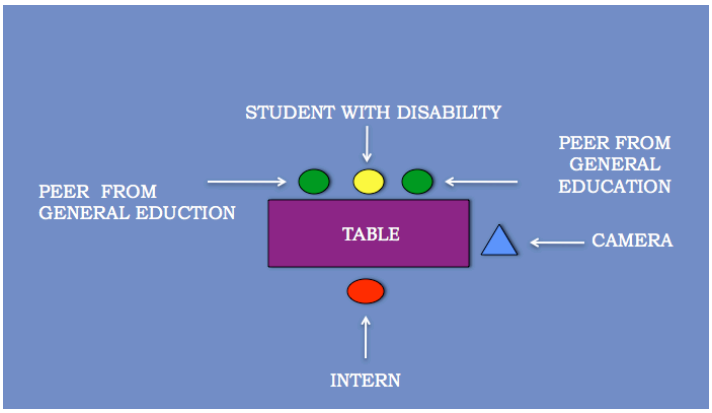


Figure 1: Setting for Emergent Literacy lessons

Camera Instructions. The intern was directed to place the flip camera 5 feet from the right or left side of the table, but focused to record the responses of the participants. The placement of the flip camera was important so that it did not become a distraction to the students, but rather captured data during all phases. The researcher instructed the intern to use the same arrangement for each session.

The interns were instructed to move the camera to the sink after the literacy lesson. The camera was placed 5 feet from the left or right side of sink, but focused on the hand washing responses of participants.

Literacy Kit Instructions. Each intern was given the story-based literacy kit. The interns were instructed to use book one for the first session, book two for the second session, book three for the third session, then repeat the sequence. This allowed the researcher to measure the participants' current emergent literacy skills with the three books used in this study. The interns were asked to use their current literacy instruction and any of the materials they wanted from the literacy kit. No instruction was given to the interns on what to do with the materials in the literacy kit or how to teach a literacy lesson during baseline.

Hand Washing Instructions. The researcher directed the intern to use the

classroom sink for hand washing instruction. The researcher showed the intern the hand washing materials that would be used throughout the study. The researcher secured the hand washing strip above the sink at eye level for the students and asked the intern to keep the strip in the same location throughout the research study. The researcher instructed the interns to use the initial prompt of "go wash your hands" after each literacy session. The interns did not receive training on how to teach hand washing during baseline.

Intern Intervention Training

The three interns received separate instruction on how to teach FSBI to students with significant intellectual disabilities. The order in which the interns entered into the training was based on the stability of baseline of the participants. When a stable baseline was reached, the researcher asked one intern to enter into training. The other two interns remained in baseline with the students.

The 2-hour training occurred in a one-to-one training format in a classroom setting and at a bathroom sink at WCU. The intern was given a copy of a functional story-based training manual at the start of training (see Appendix G). The training manual contained six main components: (a) materials, (b) overview of story-based instruction, (c) self-monitoring for story-based instruction, (d) overview of systematic instruction to teach hand washing, (e) self-monitoring of hand washing instruction, and (f) incorporating both components of story-based and hand washing instruction to teach the FSBI intervention.

The researcher, data collector, and intern used a procedural checklist to mark completed training tasks throughout training (see Appendix H). If a training task was

completed, the researcher, data collector, and intern put a (+) on the checklist. If part of training was omitted, the researcher, data collector and intern put a (-). The checklists were compared for procedural fidelity of intern training.

Component One. The training included the same materials used in baseline (literacy kit, hand washing materials, and flip camera). The researcher asked the intern to remove all the materials from the literacy kit and place them on the table. This was done to ensure all the materials needed for training were available. The researcher reviewed how the materials would be used during intervention and generalization phases and highlighted the importance of having all materials ready before instruction.

The researcher provided the intern a copy of the story-based task analysis tool and hand washing task analysis tool for instructional purposes. The researcher and intern reviewed each step of the two analysis tools. The researcher clarified that the researcher and data collector would take data on the participants' independent and correct emergent literacy responses and independent and correct hand washing responses using the task analyses tools. No data would be taken on the general education students. Data on the intern would be taken for procedural fidelity measures only. Procedural fidelity measures would ensure all the instructional steps were completed. The researcher emphasized that the intern would use the task analyses tools to self-monitor instruction.

Component Two. The researcher provided an overview of the importance of teaching students with significant intellectual disabilities story-based instruction. Story-based instruction for this study was linked to the Common Core State Standard for K-5th grade, which included the following: (a) asking who, what, where, and why questions related to a story, (b) identifying words or phrases found in books, (c) actively engage in

group reading activities with purpose and understanding, (d) answer questions related to the book, and (e) pointing to author and title of the book (Common Core State Standard, 2012)

The story-based task analysis tool was again reviewed. The 14 steps of story-based instruction included the following: (a) explores the book, (b) interacts with attention getter, (c) attends to vocabulary words, (d) identifies vocabulary words, (e) says a prediction, (f) identifies the title, (g) identifies the author, (h) turns the first page of the book to start reading, (i) turns pages when appropriate, (j) reads repeated story lines, (k) identifies correct symbols or words, (l) selects a correct answer for the first comprehension question, (m) selects a correct answer for the second comprehension question, and (n) selects a correct answer for the third comprehension question (see Appendix B).

Component Three. The intern was asked by the researcher to play the role of the participant for instructional purposes. The researcher demonstrated how to teach the 14 steps of story-based instruction using book one and the materials in the literacy kit. The researcher used the story-based task analysis tool to model how to self-monitor instruction.

After the researcher demonstrated story-based instruction, the intern practiced teaching the 14 steps of story-based instruction using book one and the materials from the literacy kit. The intern used the story-based task analysis tool to self-monitor instruction. The researcher role-played a student with significant intellectual disabilities and provided the intern with multiple opportunities to teach story-based instruction. The researcher and data collector took data on the intern's instruction using the story-based task analysis tool

and compared the data for reliability. The intern was required to make a procedural fidelity score of 90% on the story-based task analysis tool (column one and two) before moving on to the hand washing instruction. The researcher provided feedback on instruction when necessary.

Component Four. The researcher provided an overview of the systematic instruction to teach hand washing. The researcher provided a definition of systematic instruction and system of least prompts and explained the system of least prompts would be used during hand washing instruction. The system of least prompts consisted of (a) say, (b) say and point, (c) say and physically guide. The researcher provided the intern an opportunity to ask questions about the system of least prompts.

The researcher reviewed the hand washing task analysis tool with the intern (see Appendix B). The researcher explained the 10 steps of hand washing: (a) move to the sink, (b) turn the water on, (c) wet hands, (d) get soap, (e) rub hands together, (f) rinse hands, (g) turn the water off, (i) get a paper towel, (j) dry hands, and (k) throw the paper towel in the trash can.

Component Five. The next phase of training took place at the bathroom sink. The researcher asked the intern to role-play the hand washing responses of a student with significant intellectual disabilities. The researcher started with the initial prompt of "go wash your hands" and then demonstrated how to teach each step of hand washing using the system of least prompts. The hand washing task analysis tool was used by the researcher to model how to self-monitor instruction. The researcher asked the intern to vary her hand washing responses so the researcher could demonstrate all the prompting procedures.

Next, the researcher and intern switched roles. The researcher provided multiple opportunities for the intern to practice systematic instruction of hand washing using the system of least prompts. The intern used the hand washing task analysis tool to self-monitor instruction (see Appendix B). Both the researcher and the data collector took data on the intern's instruction of hand washing using the hand washing task analysis tool (column three and four). Data were compared for reliability. The intern was required to receive a procedural fidelity measure of 90% before moving on to the final step of training.

Component Six. In the final part of training, the intern demonstrated the intervention of FSBI about hand washing with the researcher. The intern used the story-based task analysis tool to self-monitor instruction (see Appendix A). The researcher pretended to be a student with significant intellectual disabilities during the instruction and did not provide feedback. The data collector and researcher took procedural fidelity measures on the intern's implementation of story-based instruction using the story-based task analysis tool (column one and column two). Immediately following the story-based instruction, the intern taught hand washing skills using the hand washing task analysis tool to self- monitor instruction. The researcher pretended to be a student with significant intellectual disabilities during the instruction and did not provide feedback. For procedural fidelity, the researcher and data collector took data on the intern's implementation of hand washing instruction using the hand washing task analysis tool (column three and four).

After the intern finished the lesson, the researcher and data collector compared data taken on both task analyses. The researcher provided the intern feedback on

instruction of both tasks. The intern was required to teach FSBI until a procedural fidelity measure of 90% was reached on both task analysis tools.

The intern was instructed to use the FSBI intervention of hand washing during the next available small group session. Book one would be used until the researcher instructed the intern to switch books. The researcher clarified that the same instructional setting, literacy kit, and hand washing materials used during baseline would be used for intervention and generalization phases. The FSBI intervention to teach hand washing would be added. The intern was given an opportunity to ask any additional questions before the training session ended.

Baseline

The three groups (Sally, Ward, and Ellen) entered into baseline on the same date. A group consisted of one participant with significant intellectual disabilities and two students from the general education classroom. Three groups were formed. Baseline sessions lasted approximately 30 minutes three days a week. During baseline, the three groups received a literacy lesson and hand washing lesson, which were taught by the interns.

In each lesson, an intern placed the camera 5 feet from the left or right side of the table so that it did not distract students. The students from the general education classroom were instructed to sit at the table across from the intern and the participant was instructed to sit in between the two general education students. The intern used her current literacy instruction and any of the materials from the literacy kit. The first session of baseline started with book one, and the books were rotated each session. The intern used a variety of methods for literacy instruction, none of which taught emergent literacy

skills. The researcher and data collector took data on the participant's independent and correct emergent literacy responses using the story-based task analysis tool.

Immediately following the literacy lesson, the intern moved the camera to the sink and told the students to "go wash your hands." The intern would typically take the participant to the sink to wash his or her hands. All interns taught the participants hand washing instruction using their current methods of instruction, none of which used the system of least prompts. The researcher and data collector took data on the participants' independent and correct hand washing responses using the hand washing task analysis tool. No instruction on the FSBI intervention about hand washing was provided during baseline. All baseline sessions were recorded for data collection purposes.

Intervention

After baseline was stable, the first participant (Sally) entered into FSBI intervention on hand washing. The other two participants (Ward and Ellen) remained in baseline. The intervention started with story-based instruction. The intern used the 14 steps on the story-based task analysis tool to self-monitor instruction. The 14 steps are described in detail below.

Story-Based Instruction

Step 1: The Attention Getter. A session started with the intern saying, "Let's begin," and initiating the attention getter. Bubbles were used as the attention getter, because it mirrored the theme of hand washing. The intern blew the bubbles toward the students for approximately 2 minutes. The researcher and data collector took data on step one, (the attention getter), of the story-based task analysis tool. A correct response (+) was defined as the participant looking, reaching or touching the bubbles, and an incorrect

response (-) was defined as no interaction with the bubbles.

Step 2: Exploration of the Book. Each student in the reading group was given a copy of book one. The students were told they could explore the book for 1 minute. A 5-second time delay was used with the participant. If, after5 seconds, the participant did not initiate exploring the book, the intern used hand-over-hand to help him or her explore the book. Any exploration of the book by the participant was correct as long as he or she did not damage the book. If the participant was destructive with the book, the intern provided immediate error correction by using hand-over-hand instruction to help him or her explore the book. The researcher and data collector took data on step two (exploration of the book) on the story-based task analysis tool. A correct response (+) was defined as any independent interaction (looking, touching, and turning pages) that was not destructive, and an incorrect response (-) was defined as the participant not exploring the book, being destructive with the book, or being prompted by the intern.

Step 3: Review of Vocabulary Words. Each student in the reading group was given a copy of the ten vocabulary words. The intern said and pointed to the vocabulary word on the vocabulary word document, and then instructed the participant to look at and point to the vocabulary word. The intern used a zero-second time delay by gently taking the participant's hand to point to each of the vocabulary words while saying each word. If the participant did not look at the words, the intern gently moved the participant's head towards the vocabulary words and continued with zero time delay to teach the words. The researcher and data collector took data on step three (review of vocabulary words) on the story-based task analysis tool. A correct response (+) was defined as the participant looking at the vocabulary words while the researcher took his or her hand to touch all the

vocabulary words, and an incorrect response (-) was defined as the participant not looking at the vocabulary words while the researcher took his or her hand to touch all the vocabulary words, or not allowing the researcher to help him or her touch the vocabulary words.

Step 4: Identification of Vocabulary Words. The intern asked all the students to identify the ten vocabulary words by pointing or saying each vocabulary word. The intern waited 5 seconds before physically prompting the participant. If the participant did not respond to the verbal prompt by touching or saying the word after 5 seconds, the intern took the participant's finger and placed it on the correct word. If the participant did not look at the words, the intern would gently move the participant's head to look at the words, then prompt the participant by taking his or her finger and placing it on the correct word. The intern continued this process for each vocabulary word. The researcher and data collector took data on step four (identification of the vocabulary words) on the story-based task analysis tool. A correct response (+) was defined as the participant independently looking at and touching the correct vocabulary word. One independent and correct response was required for the participant to receive a correct score (+) on the story-based task analysis tool. An incorrect response (-) was defined as the participant not looking at or touching any of the ten vocabulary words, which required prompting from the intern.

Step 5: Prediction. The intern placed the vocabulary sheet in front of the students and asked each student, "What do you think the book is about?" A 5-second time delay was used before prompting the participant to respond. After a 5-second time delay, if the participant did not respond by touching, saying, or looking to make a prediction, the

intern helped the participant point to the vocabulary word, while stating what the book was about. The researcher and data collector took data on step five (prediction) on the story-based task analysis tool. A correct response (+) was defined as the participant making an independent prediction by looking, pointing or saying a response. Any response was correct because it was a prediction. An incorrect response (-) was defined as the participant not making an independent prediction, which required the intern to provide a prompt.

Step 6: Point to the Title. The intern read and pointed to the title of the book. The intern then asked the students to point to the title. A 5-second time delay was used before prompting the participant to point to the title. After 5 seconds, if the participant did not respond, the intern read the title again and took the participant's hand to touch the title. If the participant did not look and point to the title, the intern gently moved the participant's head to look at the title and took the participant's hand to touch the title. The researcher and data collector took data on step six (point to the title) on the story-based task analysis tool. A correct response (+) was defined as the participants looking and touching the title of the book. An incorrect response (-) was defined as the participants not looking or touching the title of the book, which required prompting by the intern.

Step 7: Point to the Author. The intern asked the student to "point to the author" while pointing to the author on the front page of the book. After 5 seconds, if the participant did not respond by touching or looking at the author's name, the intern prompted the participant by saying, "point to the author," while taking the participant's hand and touching the author's name or gently moving the participant's head to look at the author's name while touching the author's name. The researcher and data collector

took data on step seven (point to the author) on the story-based task analysis tool. A correct response (+) was defined as the participant's independently looking and pointing to the author of the book. An incorrect response (-) was defined as the participant not looking or pointing the author of the book, which required prompting by the intern.

Step 8: Turn to the First Page of the Book. The intern asked the students, "How do we get started?" and waited 5 seconds for the participant to turn to the first page of the book. After 5 seconds, if the participant did not turn to the first page, the intern pointed to the book and stated, "Turn the page." The intern used hand-over-hand to help the participant turn the page of the book. The researcher and data collector took data on step eight (turn to the first page) on the story-based task analysis tool. A correct response (+) was defined as the participant independently turning to the front of the book. An incorrect response (-) was defined as the participant not turning to the front of the book, which required prompting by the intern.

Step 9: Reading the Repeated Line. The intern and the students read the book while tracking each word with their finger. The participant read the repeated line at the bottom of each page. The students from general education paused and waited for the participant to read the repeated line at the bottom of the page. A 5-second time delay was used for the participant to initiate the repeated line by pointing to the repeated line in the book and using AAC to read the line. If, after 5 seconds the participant did not initiate the repeated line, the intern would tell the participant, "It is your turn to read." The intern would take the participant's hand to touch the repeated line and then activate the AAC to read the line. The same procedure was used for every repeated line. The researcher and data collector took data on step nine (the repeated story line) on the story-based task

analysis tool. A correct response (+) was defined as the participant independently looking, pointing, activating the AAC, or saying the repeated line once during the shared reading. An incorrect response (-) was defined as the participant not looking, pointing, activating the AAC, or saying the repeated line, which required prompting by the intern.

Step 10: Turn the Page of the Book. After the repeated story line was read, the intern gave the participant an opportunity to turn the page independently. If the participant did not turn to the first page after 5 seconds, the intern pointed to the book and stated, "Turn the page," and used hand-over-hand to help the participant turn the page of the book. The researcher and data collector took data on step ten (turn the page of the book) on the story-based task analysis tool. A correct response (+) was defined as the participant turning one page of the book. An incorrect response (-) was defined as the participant not turning any pages of the book, which required prompting by the intern.

Step 11: Identification of Word or Picture. The intern paused one time during the story to ask students to find a word or picture on the page. The word or picture was on the page where the intern paused. The intern used a 5- second time delay before initiating the prompting procedures. After 5 seconds, if the participant did not touch the word or picture, the intern would prompt the participant by saying the word while taking the participant's hand and touching the picture or word. If the participant chose an incorrect answer, the intern immediately repeated the word, and took the participant's hand and touched the correct picture. The researcher and data collector took data on step eleven (identification of Word or Picture) on the story-based task analysis tool. A correct response (+) was defined as the participant independently pointing to the correct word or picture in the book. An incorrect response (-) was defined as the participant not pointing

to the word or picture, which required prompting by the intern.

Steps 12 through 14: Comprehension Questions. The intern gave the students a comprehension document. The intern used a piece of paper to cover two of the comprehension questions for the participant, making it less distracting. The intern read the question and the three answer choices, then used a 5- second time delay before prompting the participant. After 5 seconds, if the participant did not respond, the intern said the correct answer while placing the finger of the participant on the correct answer. If the participant did not look and touch the correct answer, the intern would gently move the participant's head to look at the correct answer, while taking his or her finger to touch the correct answer. If the participant chose an incorrect answer, the intern immediately provided error correction by reading the question again, saying the correct answer, and placing the participant's finger on the correct answer. The intern checked the responses of the other readers before moving on to the next comprehension question. The procedure continued for the additional comprehension questions. The researcher and data collector took data on steps twelve through fourteen (comprehension questions) on the story-based task analysis tool. A correct response (+) was defined as the participant independently looking and pointing to the correct answer of the comprehension question. An incorrect response (-) was defined as the participant not looking or pointing to the correct answer, which required prompting by the intern. Data were collected on each comprehension question.

Hand Washing Instruction

Immediately following the story, the intern started the hand washing procedures by saying, "Go wash your hands." The intern waited 5 seconds for the participant to

begin walking to the sink. If, after 5 seconds, the participant did not start walking to the sink, the intern pointed in the direction of the sink and said, "Walk to the sink." Again, the intern waited 5 seconds for the participant to initiate a response. If the participant did not walk toward the sink after 5 seconds, the intern physically helped the participant walk to the sink. The system of least prompts was used for each additional step of hand washing. The researcher and data collector took data on the 10 steps of hand washing using the hand washing task analysis tool. A correct response (-) was defined as the participant making an independent and correct response on each of the ten steps. An incorrect response (-) was defined as participant not making a hand washing response, making an incorrect hand washing response, or the intern prompting the participant during the step. If the intern accidentally prompted the participant during a step, and the participant was completing the step correctly, an incorrect response (-) was marked because a prompt was delivered.

Generalization Phases

The only change from the intervention phase to generalization phases one and two was the use of a different book at a higher reading level. Generalization across the books allowed the researcher to observe whether or not the participants could demonstrate the FSBI about hand washing across different reading levels. The rotation into phases was based on the participants reaching the 70% criterion level. The participant only needed to reach the 70% criterion once to initiate a phase change. For example, when Sally reach 70% during intervention with book one on the story-based task analysis and hand washing task analysis, she moved to generalization phase one with book two. Ward was the next participant to enter into intervention phase, and Ellen remained in baseline.

When Sally reached 70% during generalization phase one, she moved to generalization phase two with book three, Ward moved to generalization phase one, and Ellen entered into the intervention phase. The process of meeting the criterion level of 70% before a phase change continued throughout the study. Sally and Ward entered all the phases of the study; however, Ellen, never entered into generalization phase two due to severe medical complications that occurred at the end of the study.

The FSBI on hand washing remained the same for intervention, generalization phase one, and generalization phase two. The setting for hand washing remained at the sink within the classroom. The researcher and data collector used the hand washing task analysis tool to take the participants' hand washing responses across all phases. The researcher did not change the setting or use different hand washing materials during the generalization phases so that the participants could work toward 100% hand washing responses at the classroom sink before moving to generalization phases.

Procedural Fidelity

Procedural fidelity evaluated the extent that intervention procedures were implemented as intended (Cooper et al., 2007). The researcher and data collector took procedural measures on the interns' instruction across all phases using story-based and hand washing task analysis tools. Procedural fidelity was collected for 44% of instruction. The interns received a correct score (+) for correctly implementing the steps of the intervention, and an incorrect score (-) for incorrectly implementing a step or skipping a step of the intervention. Procedural fidelity was calculated for each session by dividing the number of agreements for each step by the number of agreements plus disagreements.

Data Analysis

The aim of the multiple baseline design research was to evaluate the impact of FSBI on the independent and correct emergent literacy responses and hand washing responses of three elementary students with significant intellectual disabilities. The researcher and data collector used the story-based and hand washing task analysis tools to collect data on the three participants. The analysis tools were also used for interrater reliability and procedural fidelity measures.

Researchers have debated which type of data analysis would be best to use for multiple baseline designs (Cooper et al., 1987; Kennedy, 2005; Kratochwill & Levin, 1992; Todman & Dugard, 2001). Todman and Dugard (2001) discuss the use of small-n experimental design for randomized testing of single subject design studies. Though Todman and Dugard (2001) make an argument for the use of randomized testing, they assert there is no simple rule for researchers to decide whether this type of statistical analysis is appropriate for single subject research. They state the more experimental control demonstrated and the larger the expected effect in the single subject design study, the less need for statistical analysis. Kratochwill and Levin (1992) find that many statistical analyses for multiple baseline design require a minimum of six participants, behaviors, or settings. Kennedy (2005) states inferential statistics do not fit the design requirements for single subject research and only skew the results of the study.

Visual analysis has been determined as the most effective method for analyzing single subject research for over 35 years (Kennedy, 2005), and is the traditional method of analyzing data for multiple baseline across participant designs (Horner et al., 2005). Researchers use visual analysis to look for specific patterns, so the researcher can

indicate a functional relationship exists. This functional relationship is based on the dependent variable being a direct manipulation of the independent variable (Horner et al., 2005). Visual analysis answers whether or not significant change in the behavior took place and to what extent change in behavior can be credited to the intervention (Cooper et al., 1987; Kennedy, 2005). Descriptive statistics can also be used with visual analysis to aid in organizing and summarizing a data set (Ary et al., 2006). For this research study, the researcher determined descriptive statistics and visual analysis would be the most appropriate method for analyzing the data, answering the research questions, and confirming the hypothesis for this study for several reasons. Descriptive statistics was chosen because it could graphically organize and analyze the raw data of participants across all phases (Ary et al., 2006). Descriptive statistics were used to examine central tendency (mean or mode), dispersion (standard deviation), and skew (range of data points), and then the data was plotted graphically for visual inspection (Ary et al., 2006). Like descriptive statistics, visual analysis could be used to interpret results of the study using level, trend, magnitude (effect size) and variability of data (Cooper et al., 1987). Visual analysis was chosen for this study because experimental control appeared across the three participants during baseline, intervention, and generalization phases. In addition, visual analysis provided a visual interpretation of participants' behavior change during all phases (Cooper et al., 1987). Finally, visual analysis was chosen because it was the most effective method to detect and analyze aspects of behavior change over time in single subject research (Cooper et al., 1987).

Descriptive Statistics

Mean. Mean, or average, is the most commonly used measure of central tendency (Ary et al., 2006). To find the mean, all the data points are added together and then divided by the total number of data points in the set (Ary et al., 2006).

Mode. Mode is the number that occurs most often in a data set and is typically different from the mean. It provides information about the frequency of data in a series of numbers. Data points recorded most often are considered the mode (Kennedy, 2005). The researcher looked for data points most often recorded in each phase for each participant.

Standard Deviation. The standard deviation is used to determine how much variation exists from the mean (Cooper et al., 1987), and was calculated for all participants in all phases. The standard deviation formula was calculated as follows:

$$\sigma = \sqrt{\frac{\sum(x - \overline{x})^2}{N}}$$

Range. By subtracting and adding the standard deviation score from the mean, the researcher can find the upper and lower limits of the data points. The range of data points will show how the data actually deviates from the mean in each phase (Finn, 2012).

Visual Analysis

Visual analysis contains an explanation of the level (mean), trend, magnitude, and variability of performance for all participants during all phases of the study (Horner et al., 2005). Other forms of visual analysis include non-overlapping data, graphs of the mean, criterion and bar graphs of overall performance (Kennedy, 2005)

Level. Level in a multiple baseline design is the average of the data in each phase (Horner et al., 2005; Kennedy, 2005). It allows for estimation of central tendency or the way data clusters around the same value (Kennedy, 2005). A mean level graph provides

an easy to see analysis of the mean performance across phases (Horner et al., 2005; Kennedy, 2005).

Trend. Trend refers to the direction taken by data paths (Cooper et al., 1987). According to Horner et al. (2005), trend is the rate of increase or decrease of the trend line for the dependent variable. The trend line should be the best-fit line for the data. Trend lines are described in three ways: (a) an increasing trend, (b) a decreasing trend, or (c) a zero trend (Cooper et al., 1987). Trend was calculated by (a) finding the mean of the first three data points in intervention and making an X, (b) finding the mean of the last three data points in generalization two and marking an X and (c) connecting the X's with a straight line (Browder & Spooner, 2011). For best fit, the line is adjusted so that half of the data points fall below and above the trend line (Kennedy, 2005). Baseline was not included in the trend line because the aim of the research question was to look at the effect of FSBI about hand washing on the independent and correct emergent literacy and hand washing responses of three participants.

Slope, Magnitude, and Variability. Trend has two elements: (a) slope and (b) magnitude (Kennedy, 2005). When evaluating the trend, the researcher must simultaneously evaluate the slope and magnitude (Kennedy, 2005). Slope refers to the upward or downward slant of the data within a graph. Based on the data, the slope can be positive (upward), flat, or negative (downward) (Kennedy, 2005). Based on the data of this study, slope is used to predict for every session (X-intercept) what the unit of change in behavior (Y-intercept) would be. The formula the researcher used to calculate the slope is M=y2-y1/x2-x1 (Finn, 2012). Slope can provide information about the upward progression of data points across phases. Magnitude is the size of the slope and is

estimated as (a) high, (b) medium, or (c) low depending on the direction of the trend line (Kennedy, 2005). A trend line going straight up would be described as high, a trend line going across the graph in an upward motion would be considered moderate, and a line that goes straight across or down would be described as low (Kennedy, 2005). When evaluating trend, the researcher must simultaneously evaluate slope and magnitude (Kennedy, 2005). Variability can be defined as where the data points are located in relationship to the mean and can be described in three ways: (a) high, (b) medium, and (c) low (Kennedy, 2005). A positive medium trend with low to moderate variability indicates a significant relationship between variables (Kennedy, 2005).

Non-overlapping Data. The researcher also calculated the non-overlapping data. To find the non-overlapping data, the researcher identified the highest data points in the baseline phase (Scruggs, Mastropieri, & Casto, 1987). A horizontal line was drawn starting from the highest baseline point and continued across the graph. The researcher counted the total number of data points in the intervention phase. Next, the researcher counted the number of data points in the intervention phase above the highest baseline point line. The researcher divided the total number of non-overlapping data points that were above the highest baseline point line in intervention, by the total number of data points in intervention and multiplied by 100 to get the percentage of non-overlapping data (Scruggs et al., 1987). The intervention was deemed to be most effective if the percentages of non-overlapping data were high (Scruggs et al., 1987). Non-overlapping data were calculated for intervention and generalization phases for hand washing only. Non-overlapping data cannot be calculated if baseline is zero, because the non-overlapping data would be calculated at 100%; therefore, non-overlapping data for

emergent literacy was 100%. The researcher presented the non-overlapping data for hand washing. The ranges for the percentage of non-overlapping data were as follows: (a) < 50 unreliable treatment, (b) 50%-70% questionable effectiveness (c) 70-90% fairly effective and (d) 90%-100% highly effective (Scruggs et al., 1987).

Criterion Graph. The researchers set a criterion level of 70% for independent and correct emergent literacy and hand washing responses for the three participants. The participants had to have one data point at 70% in the intervention phase before they could move to the next phase. A criterion graph was created to visually display data points falling on or above the criterion level of this study. A horizontal line was drawn starting at the criterion level of 70% and continued across the graph. Data points above the criterion line were counted in each phase and then divided by the total number of points in each phase. By taking the total sum and multiplying it by 100%, the researcher calculated the percent of points above the criterion line.

Bar Graph of Overall Mean Data. The researcher created a bar graph of both the emergent literacy responses and hand washing responses of each participant. The bar graph contained the mean of independent and correct emergent literacy and hand washing responses for all phases, so that a visual trend of data could be presented. The visual representation shows if a change in emergent literacy and hand washing responses occurred when the FSBI intervention o was introduced.

Descriptive statistics and visual analysis provided the overall results of this study and are presented in chapter four.

CHAPTER FOUR: RESULTS

This chapter reports results of the multiple-baseline design research study using descriptive statistics and visual analysis. As previously stated, the aim of the study was to evaluate the effects of FSBI with hand washing on the independent and correct emergent literacy responses and hand washing responses of three elementary students with significant intellectual disabilities. The independent variable was FBSI about hand washing. The dependent variables were the independent and correct emergent literacy and hand washing responses of the three participants. Interrater reliability and procedural fidelity measures are presented first, followed by results for each research question and hypothesis. Finally, social validity data from interns are presented.

Interrater Reliability Agreement

Prior to the first session of baseline, the data collector and researcher trained in agreement until reliability was recorded on average at 100% for three consecutive sessions. The story-based and hand washing task analysis tools were used to collect data during baseline, intervention, and generalization phases. The researcher and the data collector collected interrater reliability agreement data across 44% of the sessions. The mean interrater scores were 100% accuracy for baseline, 96% accuracy for intervention, 97% accuracy for generalization phase one, and 97% accuracy for generalization phase two. The mean scores for hand washing responses were 98% accuracy for baseline, 94% accuracy for intervention, 93% accuracy for generalization phase one, and 95% accuracy for generalization phase two.

Procedural Fidelity

The researcher and data collector collected procedural fidelity data in order to certify that interns followed procedures outlined in training on FSBI with hand washing. Procedural fidelity data were collected on 44% of the lessons. Data showed procedures were followed at 99% for all lessons across all participants and conditions.

The researcher, intern, and data collector collected procedural fidelity measures on the implementation of intern training using a procedural fidelity checklist. Procedural fidelity of intern training was collected across all training sessions and calculated with 100% fidelity.

Emergent Literacy Data for Research Question One

Will FSBI about hand washing increase the independent and correct emergent literacy responses of the three participants with significant intellectual disabilities in small inclusive reading groups as measured by the story-based task analysis tool? Descriptive statistics and visual analysis answered this question. Descriptive statistics were used to explain the mean, mode, and standard deviation on all three participants across each phase.

Visual analysis was used to create a mean level graph and trend line for all three participants. The graph also included level and slope across each phase. The researcher evaluated the trend line including the slope, magnitude and variability to show whether or not a functional relationship was established between the independent variable and dependent variables.

Participant One: Sally Emergent Literacy Responses.

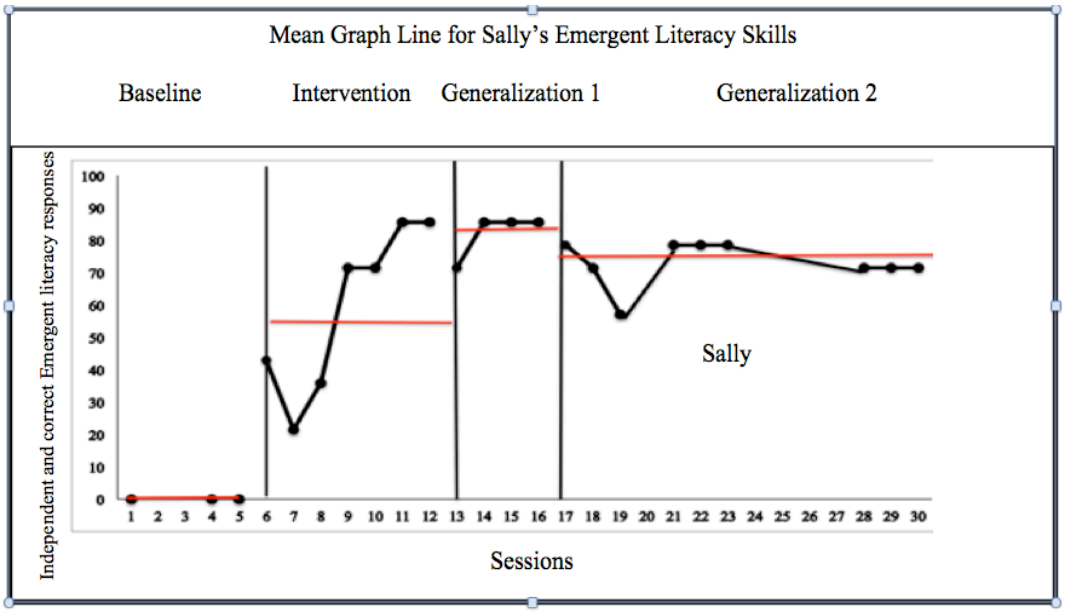


Figure 2. Mean graph line for Sally's emergent literacy skills. Data were collected in baseline, intervention, and generalization phases one and two. The red line represents the mean line during each phase.

Mean. In Figure 1, during baseline condition, Sally made an average of 0% independent and correct emergent literacy responses across three sessions. However, immediately after receiving the intervention, Sally made an average of 59% independent and correct emergent literacy responses across seven sessions. During generalization phase one, Sally averaged 82% independent and correct emergent literacy responses across four sessions. During generalization phase two, Sally averaged 73% independent and correct emergent literacy responses across eight sessions. In comparing the average of baseline before and after the intervention, Sally showed an 82% increase in independent and correct emergent literacy skills.

Table 3.

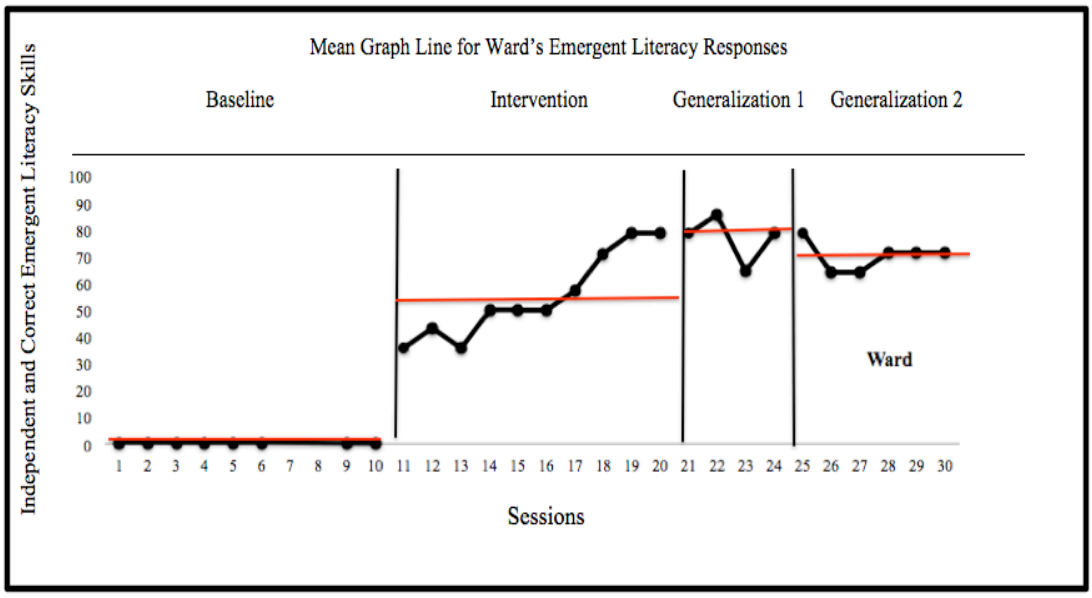
Criterion Calculations of Sally's Emergent Literacy Responses

Calculation	Baseline	Intervention	Generalization 1	Generalization 2
Mean	0%	59.1%	82.1%	72.9%
Mode	0%	71.4%	85.7%	78.5%
Standard deviation	0%	25.6%	7.1%	6.9%
Range	0%	33.5-84.7%	75 -89.2%	66-79.8%

Mode. In Table 3, the mode for baseline was 0. However, during intervention the mode was 71.4%. The mode increased to 85.7% in generalization phase one and 78.5% in generalization phase two. Sally increased from a mode of 0 to a mode of 85.7% after intervention.

Standard Deviation and Range. In Table 3, standard deviation for intervention phase was 25% and level was 59%. Variability of Sally's emergent literacy responses fell between 33.5-84.7%. A standard deviation score of 25 indicated data points were spread away from the mean with high variability and with less stability of data points. In generalization phase one, the standard deviation was 7% and the mean was 82.1%. The variability of Sally's emergent literacy responses during generalization phase one fell between 75 -89.2%. The standard deviation score in generalization phase one indicated data points were closer to the mean and were stable. In generalization phase two, the standard deviation was 7% and the level was 72.9%. Variability of Sally's emergent literacy responses during generalization phase two fell between 66-79.8%. The standard

deviation scored indicated data in generalization phase two were closer to the mean and were stable. The baseline mean data was 0%, but during intervention phase there was high variability with unstable data during intervention until Sally reached generalization phase one. At generalization one, Sally had a mean average of 82.1% with low variability and was stable. The variability remained low and the data remained stable in generalization phase one and generalization two.



Participant Two: Ward Emergent Literacy Responses.

Figure 3. The mean of Ward's independent and correct an emergent literacy response during story-based instruction. Data were collected in baseline, intervention, and generalization phases one and two. The red line represents the mean during each phase.

Mean. In Figure 2, during baseline condition, Ward averaged 0% independent and correct emergent literacy responses across eight sessions. However, immediately after the intervention, Ward averaged 54.9% independent and correct emergent literacy responses across 10 sessions. During generalization phase one, Ward averaged 76.8% independent

and correct emergent literacy responses across four sessions. During generalization phase two, Ward averaged 67.7% independent and correct emergent literacy responses across four sessions. In comparing averages of baseline with averages of generalization phase one after intervention, Ward averaged a 76.8% increase in independent and correct emergent literacy skills.

Table 4.

Calculations of Ward's Emergent Literacy Responses

Calculations	Baseline	Intervention	Generalization One	Generalization Two
Mean	0%	54.9%	76.8%	70.1%
Mode	0%	50%	78.5%	71.4%
Standard Deviation	0%	16.2	8.7%	5.5%
Range	0%	38.7-71.1%	68.1-85.5%	64.6-75.6%

Mode. In Table 4, the mode for baseline was 0%. However, during intervention the mode was 50%. The mode increased to 78.5% in generalization phase one. The mode for generalization phase two was 71.4%. Ward increased from a mode of 0% to a mode of 78% after intervention, which is a considerable increase.

Standard deviation and variability. In Table 4, the standard deviation for intervention phase was 16.2% and the level was 54.9%. The variability of Ward's emergent literacy responses during intervention fell between 38.7-71.1%. A standard deviation score of 16% indicated data in intervention spread away from the mean with high variability and with less stability among data. In generalization phase one, the

standard deviation was 8.7% and the mean was 76.8%. The variability of Ward's emergent literacy responses in generalization phase one fell between 68.1-85.5%. The standard deviation score in the generalization phase one indicated data points were closer to the mean and stable. In generalization phase two, the standard deviation was 5.5% and the level was 70.1%. The variability of Ward's emergent literacy responses during generalization phase two fell between 64.6-75.6%. The standard deviation scored indicated data in generalization phase two were closer to the mean and stable. The baseline for mean data was 0%, but during intervention phase there was high variability with unstable data until Ward reach generalization phase one. When Ward reached generalization one, he had a mean average of 76.8% with low variability and stability. The variability remained low and data remained stable in generalization phase one and generalization two.

Participant Three: Ellen's Emergent Literacy Responses.

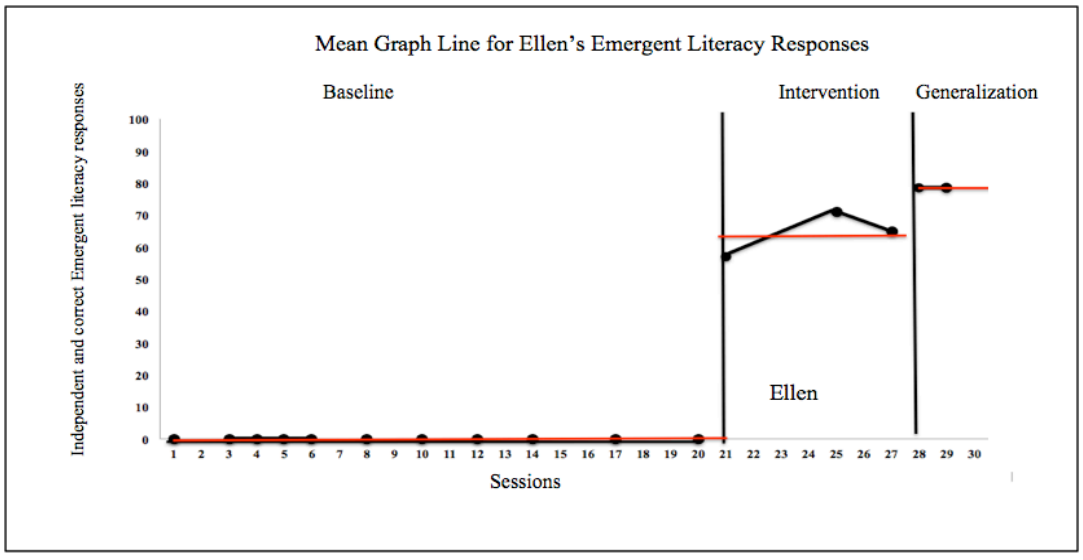


Figure 4. The mean of Ellen's independent and correct emergent literacy responses during story-based instruction are presented. Data were collected in baseline, intervention, and in generalization phase 1. The red line represents the mean during each phase.

Mean. As seen in Figure 3, Ellen averaged 0% independent and correct emergent literacy responses across eleven sessions during baseline conditions. Immediately after receiving the intervention, Ellen averaged 64.2% independent and correct emergent literacy responses across three sessions. During generalization phase one, Ellen averaged 78.6% independent and correct emergent literacy responses across two sessions. In comparing the means of baseline before intervention, Ellen averaged 78%, showing an increase in independent and correct emergent literacy skills.

Table 5

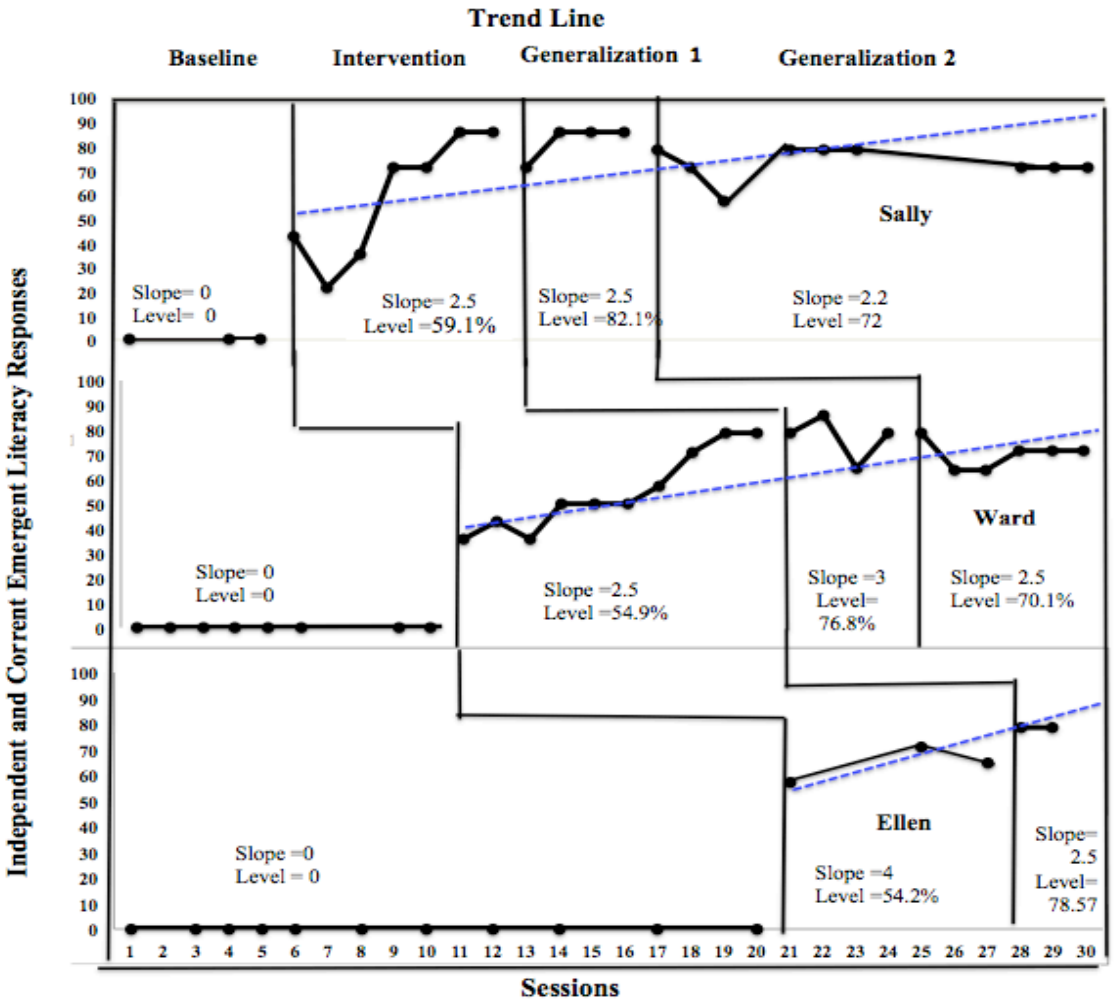
Calculations of Ellen's Emergent Literacy Responses

Calculation	Baseline	Intervention	Generalization1
Level	0%	64.2%	78.5%
Mode	0	57	78.5
Standard deviation	0%	7%	0%
Range	0%	57%-71%	0%

Mode. In Table 5, the mode for baseline was 0%. However, during intervention the mode was 57%. The mode increased to 78% in generalization phase one. Ellen increased from a mode of 0% to a mode of 78% after intervention, which is a considerable increase.

Standard deviation and variability. In Table 5, the standard deviation for intervention phase was 7% and the level was 64%. The variability of Ellen's emergent literacy responses in intervention phase fell between 57-71%. A standard deviation score of 7% in intervention phase indicated data were close to the mean with low variability and more stability. In generalization phase one, the standard deviation was 0%, and both the mean and mode were 78.7%, indicating no variability and data were located on the mean. Ellen's baseline was 0%, and during intervention phase the 64% mean data showed low variability and remained stable. Variability remained low and data remained stable in generalization phase one.

Trend Lines for Emergent Literacy Responses



***F**igure 5. Trend lines for emergent literacy responses during the study. Trend lines are* represented in blue. The slope and level are also displayed for each trend line.

Trend Line for Sally. Intervention data indicated a moderate positive increasing trend with high variability (slope = 2.5). Generalization one data indicated a moderate positive increasing trend with high variability (slope = 2.5). Generalization two data showed a moderate positive increasing trend with moderate variability (slope = 2.2). The emergent literacy data for Sally indicated a moderate positive increasing trend with moderate variability. The increase in trend with positive slope indicated an increase in

behavior over time. The slope indicated Sally showed a 2.4 gain in independent and correct emergent literacy responses after every session.

Trend Line for Ward. Intervention data indicated a moderate positive increasing trend with moderate variability (slope= 2.5). Generalization one data indicated a moderate positive increasing trend with high variability (slope = 3). Generalization two data showed a moderate positive increasing trend with low variability (slope= 3). The overall emergent literacy data for Ward indicated a moderate positive increasing trend with moderate variability. The increase in trend with positive slope indicated an increase in targeted behavior over time. The slope indicated that on average Ward showed a 2.8% gain in independent and correct emergent literacy responses after every session.

Trend Line for Ellen. Intervention data indicated a moderate positive increasing trend with low variability (slope= 4). Generalization one data showed a moderate positive increasing trend with low variability (slope= 2.5). The overall emergent literacy data for Ellen showed an overall moderate positive increasing trend with low variability. The increases in trend with positive slope indicated an increase in behavior over time. The slope indicated Ellen made an average of 3.25 gain in independent and correct emergent literacy responses after every session.

Hand Washing Data for Research Question Two

Will Functional Story-Based Instruction about hand washing increase the independent and correct hand washing behaviors of three students with significant intellectual disabilities in small inclusive reading groups as measured by the hand washing task analysis tool? Descriptive statistics and visual analysis answered research

question two. Descriptive statistics included the mean, mode, standard deviation, and range across all phases for three participants.

Visual analysis was used to create a mean level graph, non-overlapping data graph, and a trend line graph for all three participants. The trend line graph also included level and slope of each participant across each phase. The researcher evaluated the trend line for slope, magnitude, and variability to show whether or not a functional relationship was established between the independent variable and the dependent variables.

Participant One: Sally's Hand Washing Responses.

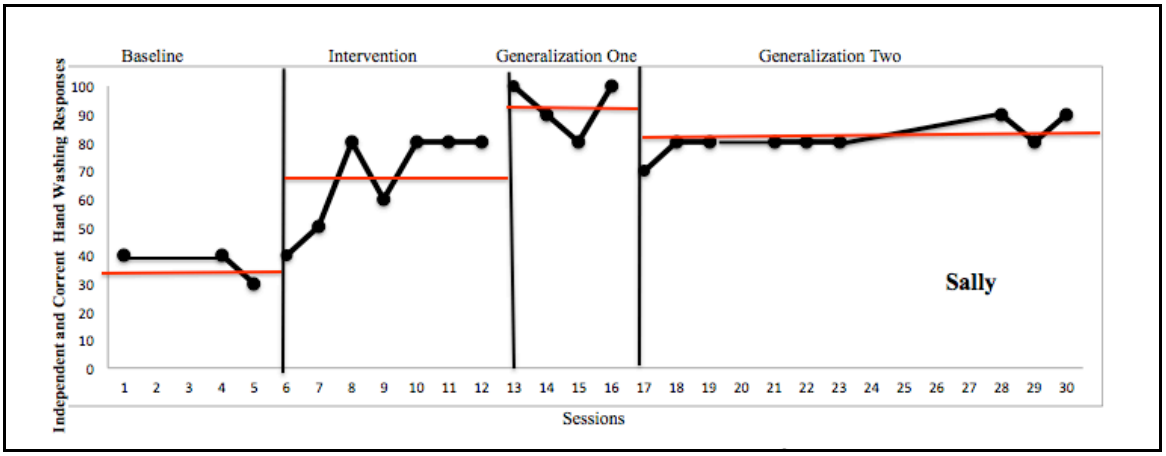


Figure 6. The mean level of Sally's independent and correct hand washing responses during hand washing instruction. Data were collected in baseline, intervention, and in generalization phases one and two. The red line represents the mean during each phase.

Mean. In Figure 5, during baseline condition, Sally made an average of 36% correct and independent hand washing responses across three sessions. However, immediately after the intervention, Sally made an average of 67.1% correct and independent hand washing responses across seven sessions. During generalization phase one, Sally averaged 92.5% correct and independent hand washing responses across four sessions. During generalization phase two, Sally averaged 81.2% correct and independent

hand washing responses across eight sessions. In comparing the mean of baseline to generalization one, Sally increased independent and correct hand washing responses by 56%.

Table 6

Calculation of Sally's Hand Washing Responses

Calculations for Sally's Hand Washing Responses	Baseline	Intervention	Generalization One	Generalization Two2
Level	36%	67%	92%	81%
Mode	40%	80%	100%	80%
Standard deviation	5%	17%	9%	6%
Range	31%- 41%	50%-84%	83%-100%	75%-87%

Mode. In Table 6, the mode for baseline was 40%. However, during intervention the mode was 50%. The mode increased to 80% in generalization phase one and 100% in generalization phase two. Sally increased from a mode of 0% to a mode of 100% after intervention, which is indicated she mastered all the skills of hand washing.

Standard deviation and variability. In Table 6, the standard deviation for intervention phase was 17% and the level was 67%. Variability of Sally's hand washing responses for intervention fell between 50-84%. A standard deviation score of 17% during the intervention phase indicated data were spread away from the mean with high variability and with less stability of data. In generalization phase one, the standard deviation was 9% and the mean was 92%. The variability of Sally's hand washing responses fell between 83-100%. The standard deviation score in generalization phase

one indicated data were closer to the mean and were stable. In generalization phase two, the standard deviation was 6% and the level was 81%. The variability of Sally's hand washing responses during generalization phase two fell between 75-87%. The standard deviation score in generalization phase two indicated data were closer to the mean and stable. The baseline for mean data was 36%, but during intervention phase data showed high variability and instability until Sally reached generalization phase one. At that point, she had a mean of 92% with low variability and stability. The variability remained low and the data remained stable in generalization phase one and generalization two.

Participant Two: Ward's Hand Washing Responses.

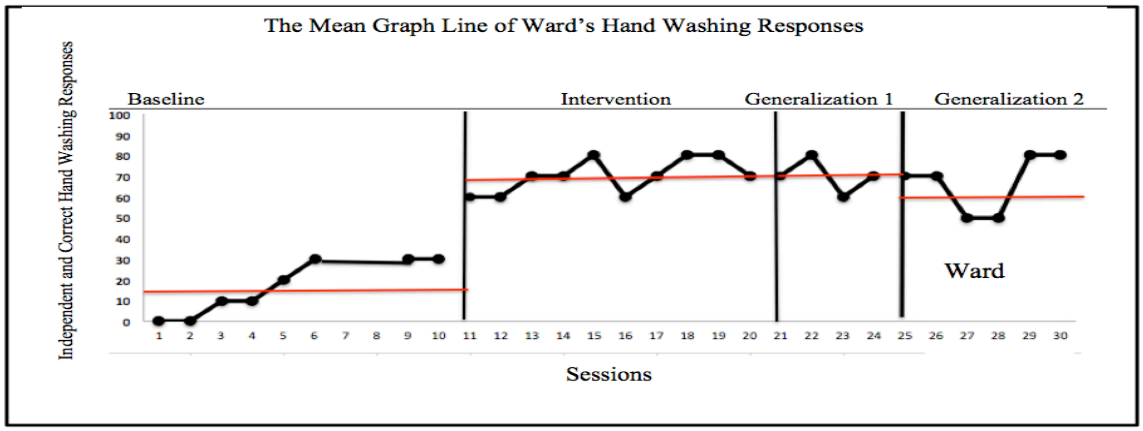


Figure 7. The mean of Ward's independent and correct hand washing responses during hand washing instruction. Data were collected in baseline, intervention, and in generalization phases one and two. The red line represents the mean during each phase.

Mean. In Figure 6, during baseline condition, Ward averaged 16.2% correct and independent hand washing responses across eight sessions. However, immediately after receiving the intervention, Ward averaged 70% correct and independent hand washing responses across ten sessions. During generalization phase one, Ward averaged 70% correct and independent hand washing responses across four sessions. During generalization phase two, Ward averaged 62.5% correct and independent hand washing

responses across four sessions. In comparing the mean between baseline and generalization one, Ward increased by 53% on independent and correct emergent literacy skills.

Table 7

Calculation of Wards' Hand Washing Responses

Calculation	Baseline	Intervention	Generalization One	Generalization Two
Mean	16%	70%	70%	66%
Mode	30%	70%	70%	70%
Standard deviation	13%	8%	8%	13%
Range	3-29	62%-78%	62%-78%	53%-79%

Mode. In Table 7, the mode for baseline was 30%. However, during intervention the mode was 70%. The mode remained at 70% in generalization phases one and two. Ward increased from a mode of 0% to a mode of 70% after intervention, which is a considerable increase.

Standard deviation and variability. In Table 7, the standard deviation for intervention phase was 8% and the level was 70%. The variability of Ward's hand washing responses during intervention fell between 62-78%. A standard deviation score in intervention of 8% indicated data were close to the mean with low variability and were stable. In generalization phase one, the standard deviation was 8% and the mean was 70%. The variability of Ward's hand washing responses in generalization phase one fell between 62-78%. The standard deviation score in generalization phase one indicated data

were closer to the mean and stable. In generalization phase two, the standard deviation was 13% and the level was 66%. The variability of Ward's hand washing responses during generalization phase two fell between 53-79%. The standard deviation scored in generalization phase two indicated data spread away from the mean with instability. The data points had more variability in generalization phase two than the other phases.

Participant Three: Ellen's Hand Washing Responses.

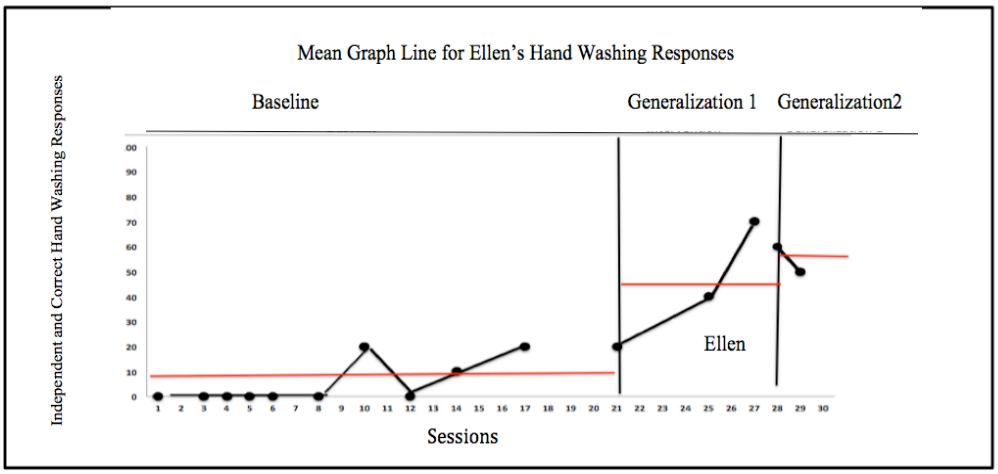


Figure 8. The mean of Ellen's independent and correct hand washing responses during hand washing instruction. Data were collected in baseline, intervention, and in generalization phase1. The red line represents the mean during each phase.

Mean. In Figure 7, during baseline condition, Ellen averaged 6.25% independent and correct hand washing responses across eleven sessions. However, immediately after the intervention, Ellen averaged 43.3% independent and correct hand washing responses across three sessions. During generalization phase one, Ellen made an average of 55% independent and correct hand washing responses across two sessions. In comparing the

means of baseline with generalization one, Ellen increased by 48% in independent and correct emergent literacy skills.

Table 8.

Calculations of Ellen's Hand Washing Responses

Calculations	Baseline	Intervention	Generalization One
Level	6%	43%	55%
Mode	0%	40%	0%
Standard deviation	8%	27%	7%
Range	0%-14%	16%-70%	48%-62%

Mode. In Table 8, the mode for baseline was 0%. However, during intervention the mode was 40%. The mode could not be determined for generalization phase one because only two data points were collected. Sally increased from a mode of 0% to a mode of 40% during intervention. During generalization phase one, data points were 50% and 60%, indicating an increase in mean.

Standard deviation and variability. In Table 8, the standard deviation for intervention phase was 27% and the level was 43%. The variability of Ellen's hand washing responses during the intervention phase fell between 16-70%. A standard deviation of 27% in the intervention phase indicated high variability and instability. The standard deviation for generalization phase one was 7% and the level was 55%. The variability of Ellen's hand washing responses in generalization phase one fell between 48-62%. A standard deviation of 7% during generalization phase one indicated low

variability and stability. Data had more variability during the intervention phase than in the generalization phase.

Trend Lines for Hand Washing Responses.

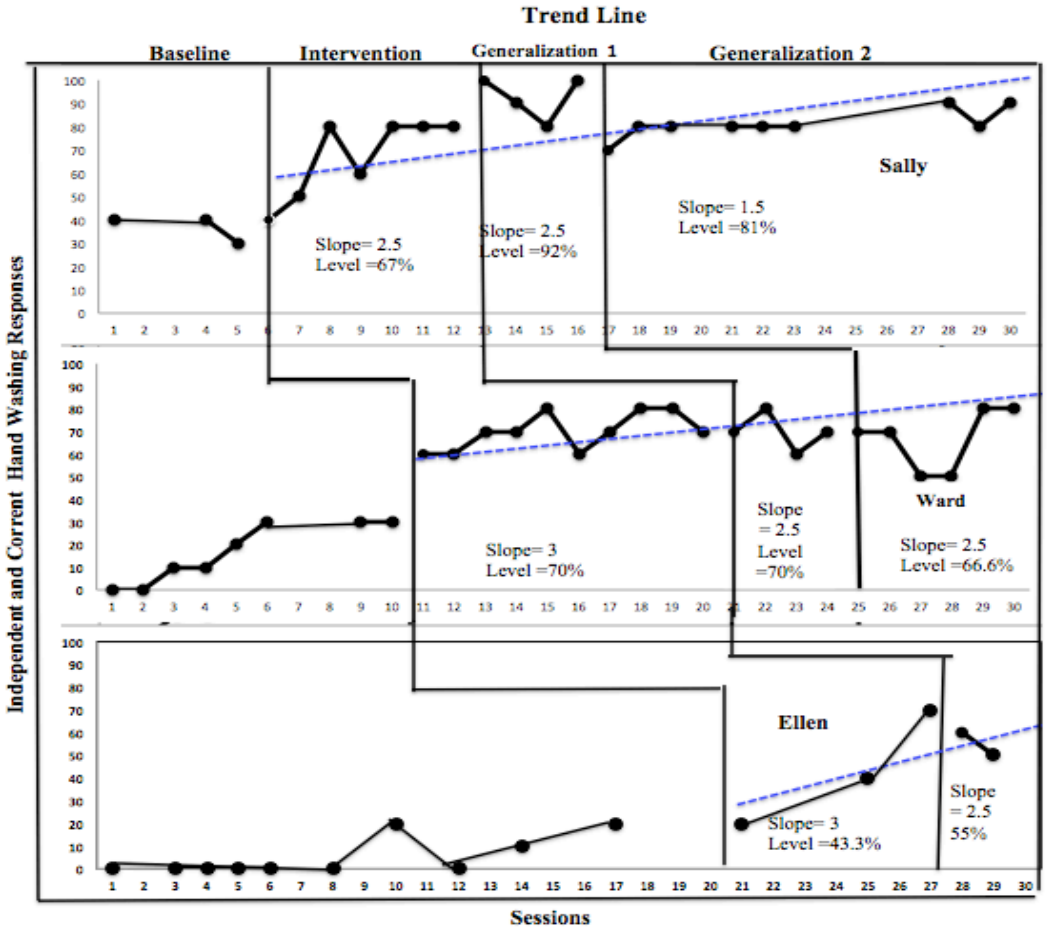


Figure 9. Trend lines for hand washing across the study. The trend line is represented in blue. The slope and level are also displayed for each trend line.

Trend Line for Sally. Intervention data showed a moderate positive increasing trend with high variability (slope= 2.5). Generalization one data indicated a moderate positive increasing trend with high variability (slope= 2). Generalization two data indicated a moderate positive increasing trend with low variability (slope= 1.5). The

overall hand washing data for Sally indicated an overall moderate positive increasing trend with high variability. The increase in trend with positive slope indicated an increase in behavior over time. The slope indicated Sally averaged a 2.16% gain in independent and correct hand washing responses per session.

Trend Line for Ward. Intervention data indicated a moderate positive increasing trend with high variability (slope= 3). Generalization one data indicated a moderate positive increasing trend with low variability (slope= 2.5). Generalization two data indicated a moderate positive increasing trend with high variability (slope= 2.5). The overall hand washing data for Ward showed an overall moderate positive increasing trend with moderate variability. The increase in trend with positive slope indicated an increase in behavior over time. The slope indicated Ward averaged a 2.66% gain in independent and correct hand washing responses per session.

Trend Line for Ellen. Intervention data indicated a moderate positive increasing trend with high variability (slope= 3). The overall emergent literacy data for Ellen indicated an overall moderate positive increasing trend with moderate variability. The increase in trend with positive slope indicated an increase in behavior over time (slope= 2.5). The slope indicated Ellen averaged a 2.75% gain in independent and correct hand washing responses per session.

Percentages of Non-Overlapping Data for Hand Washing Responses.

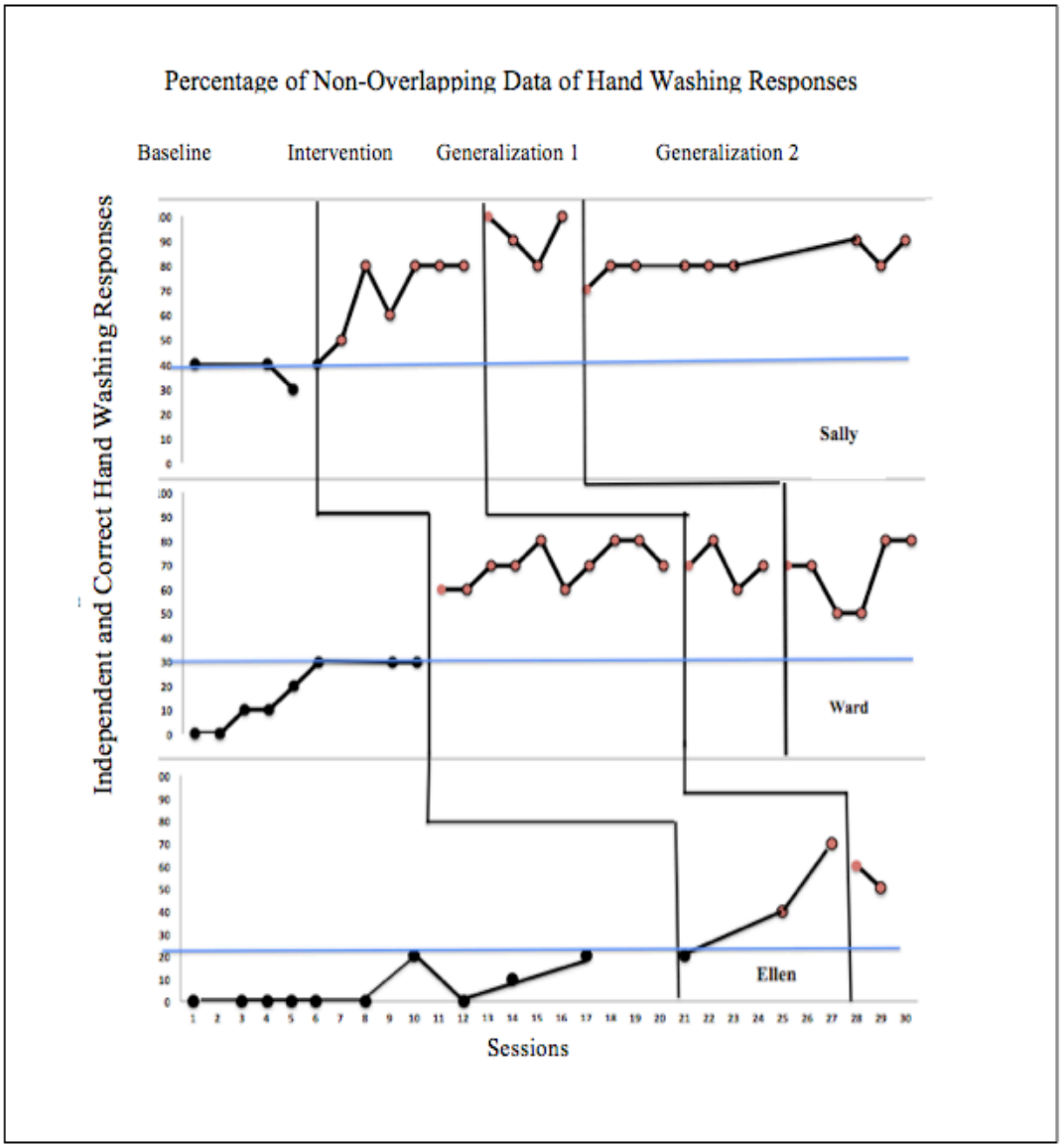


Figure 10. Non-overlapping data for hand washing responses. The highest data point in baseline is indicated with a blue line. The data points above the highest baseline data point are marked in red.

Sally's highest baseline point was 40%. The total number of hand responses in intervention, generalization phase one, and generalization phase two was 20%. The total number of hand washing responses above the highest baseline point in intervention, generalization phase one, and generalization phase two totaled 19%. The total non-overlapping data equaled 95%, which is considered highly effective.

Ward's highest baseline data were 43%. The total number of hand responses in intervention, generalization phase one, and generalization phase two was 20%. The total number of hand washing responses above the highest baseline point was 20%. The total non-overlapping data equaled 100%, which landed in the highly effective range for percentage of overlapping data.

Ellen's highest baseline data were 30%. The total number of hand responses in intervention and generalization phase one equaled 5%. The total number of hand washing responses above the highest baseline point was 4%. The total non-overlapping data totaled 90%, which landed in the highly effective range for percentage of overlapping data.

Research Hypothesis

The researcher hypothesized that participants who received FSBI about hand washing in small inclusive reading group for a minimum of three sessions per week would meet the 70% criteria on independent and correct emergent literacy responses and hand washing responses as measured by the story-based and hand washing task analysis tools. To test this hypothesis, the researcher created a graph with the percentage of data points on or above the criterion line of 70% across intervention, generalization one, and generalization two for all three participants. The criterion level of 70% was set for the

dependent variables for this study. The researcher counted the number of responses above the 70% criterion level in each phase. Next, the researcher reported the overall responses above the criterion level of 70%. The results are presented in Figure 10.

Criterion Level Graph for Emergent Literacy Responses.

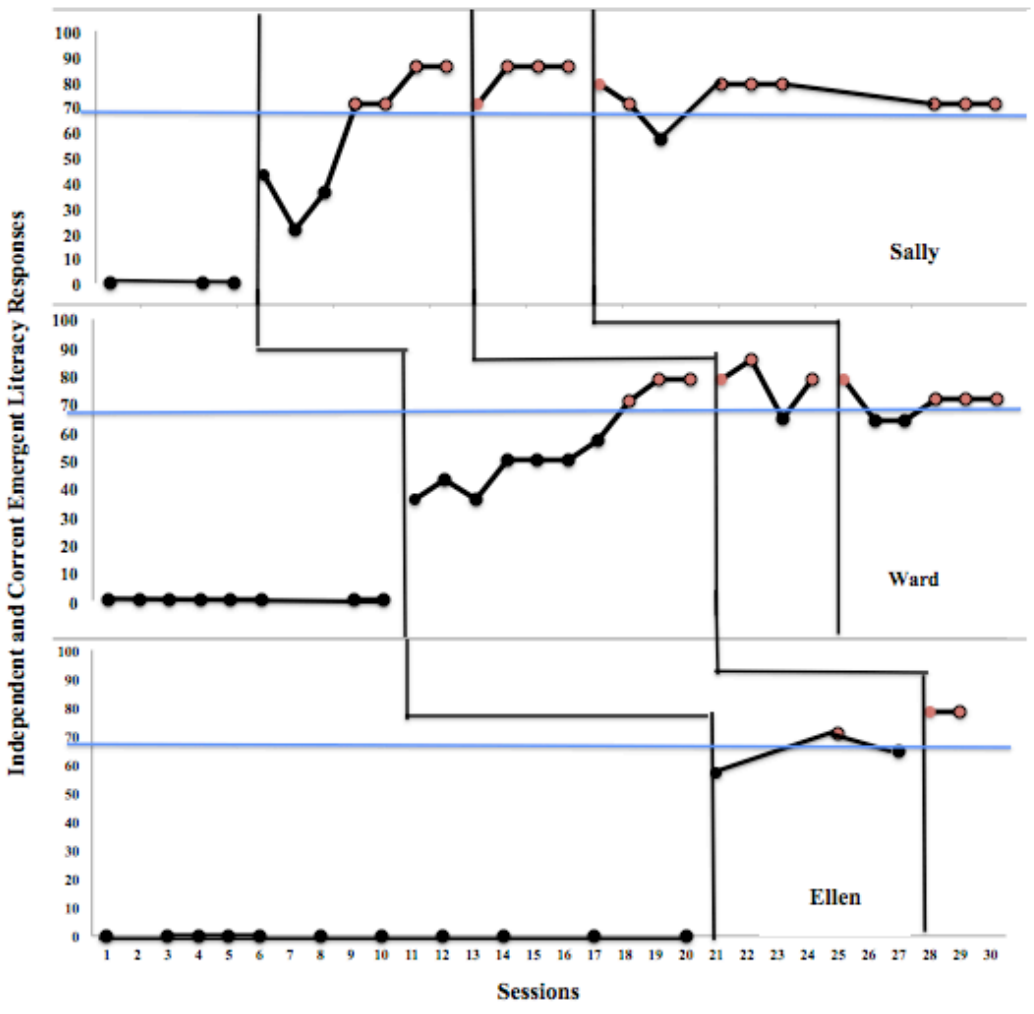


Figure 11: The percentages of responses above the criterion line for emergent literacy responses. The 70% criterion line is represented in blue. Data points above the criterion level of 70% are represented in red.

During intervention, 57% of Sally's emergent literacy responses were above the 70% criterion level. In generalization phase one, 100% of Sally's emergent literacy responses were above the 70% criterion level. In generalization phase two 88% of Sally's emergent literacy responses were above the 70% criterion level. Overall results indicated 80% of Sally's emergent literacy responses were above the criterion level of 70%.

During intervention, 30% of Ward's emergent literacy responses were above the 70% criterion level. In generalization phase one, 80% of Ward's emergent literacy skill responses were above the 70% criterion level. In generalization phase two 66% of Ward's emergent literacy responses were above the 70% criterion level. Overall results indicated 50% of Ward's emergent literacy responses were above the criterion level of 70%.

During intervention, 33% of Ellen's emergent literacy responses were above the 80% criterion level. In generalization phase one, 100% of Ellen's emergent literacy responses were above the 70% criterion level. It is important to note that Ellen had two emergent literacy responses in generalization phase one. Overall results showed 60% of Ellen's emergent literacy responses were above the criterion level of 70%.

Criterion Level Graph for Hand Washing Responses.

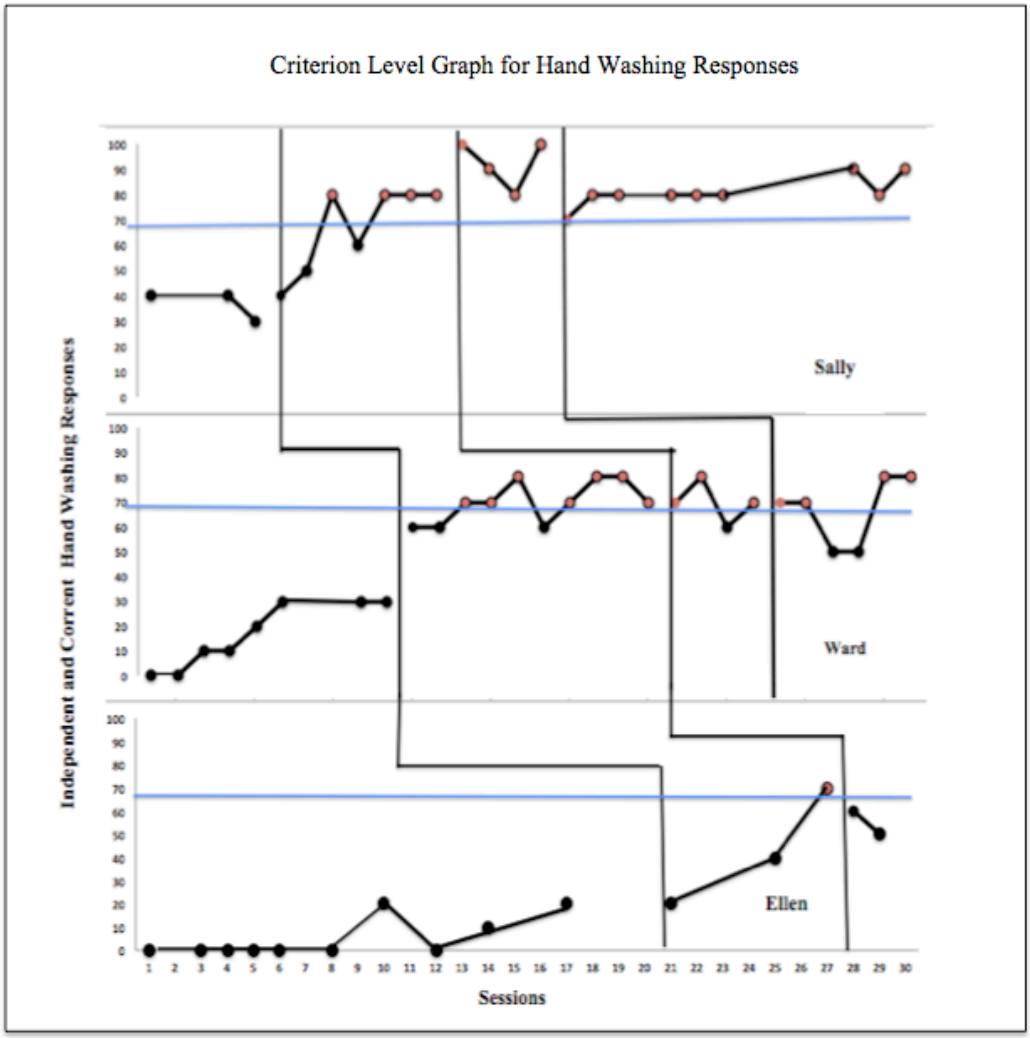


Figure 12: The percentages of responses above the criterion line for hand washing responses. The 70% criterion line is represented in blue. The data points above the criterion level of 70% are represented in red.

During intervention, 57% of Sally's hand washing responses were above the 70% criterion level. In generalization phase one, 100% of Sally's hand washing responses

were above the 100% criterion level. During generalization phase two, 88% of Sally's hand washing responses were above the 70% criterion level. Overall results showed 85% of Sally's hand washing responses were above the criterion level of 70%.

During intervention, 30% of Ward's hand washing responses were above the 70% criterion level. In generalization phase one, 80% of Ward's hand washing responses were above the 75% criterion level. During generalization phase two, 66% of Ward's hand washing responses were above the 70% criterion level. Overall results showed 70% of Ward's hand washing responses were above the criterion level of 70%.

During intervention, 33% of Ellen's hand washing responses were above the 70% criterion level. In the generalization phase one, 0% of Ellen's hand washing responses were above the 70% criterion. Overall results showed 33% of Ellen's hand washing responses were above the criterion level of 70% for hand washing.

Functional Story-Based Instruction about Hand Washing Bar Graph. The overall goal of the study was to answer the following question: will FSBI about hand washing would increase both the independent and correct emergent literacy responses and hand washing responses of three participants with significant intellectual disabilities? The researcher created a bar graph for each participant that showed the percentage of independent and correct emergent literacy responses beside the percentage of independent and correct hand washing responses across each phase. The bar graph was created to provide a visual representation of the overall impact of FSBI about hand washing on the dependent variables.

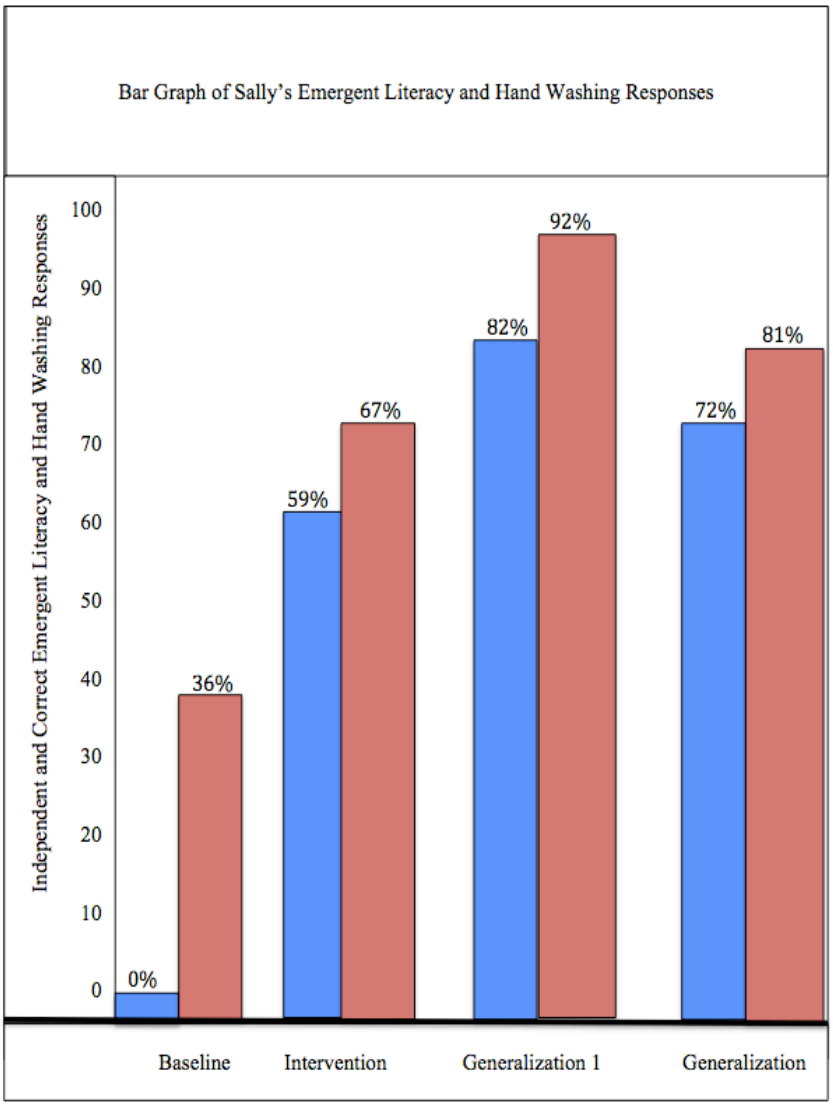


Figure 13. Sally's emergent literacy responses and hand washing responses across all phases of the multiple baseline design. The blue bar represents emergent literacy skills responses. The red bar represents hand washing responses.

After baseline, Sally increased and maintained her independent and correct emergent literacy and hand washing responses during all phases.

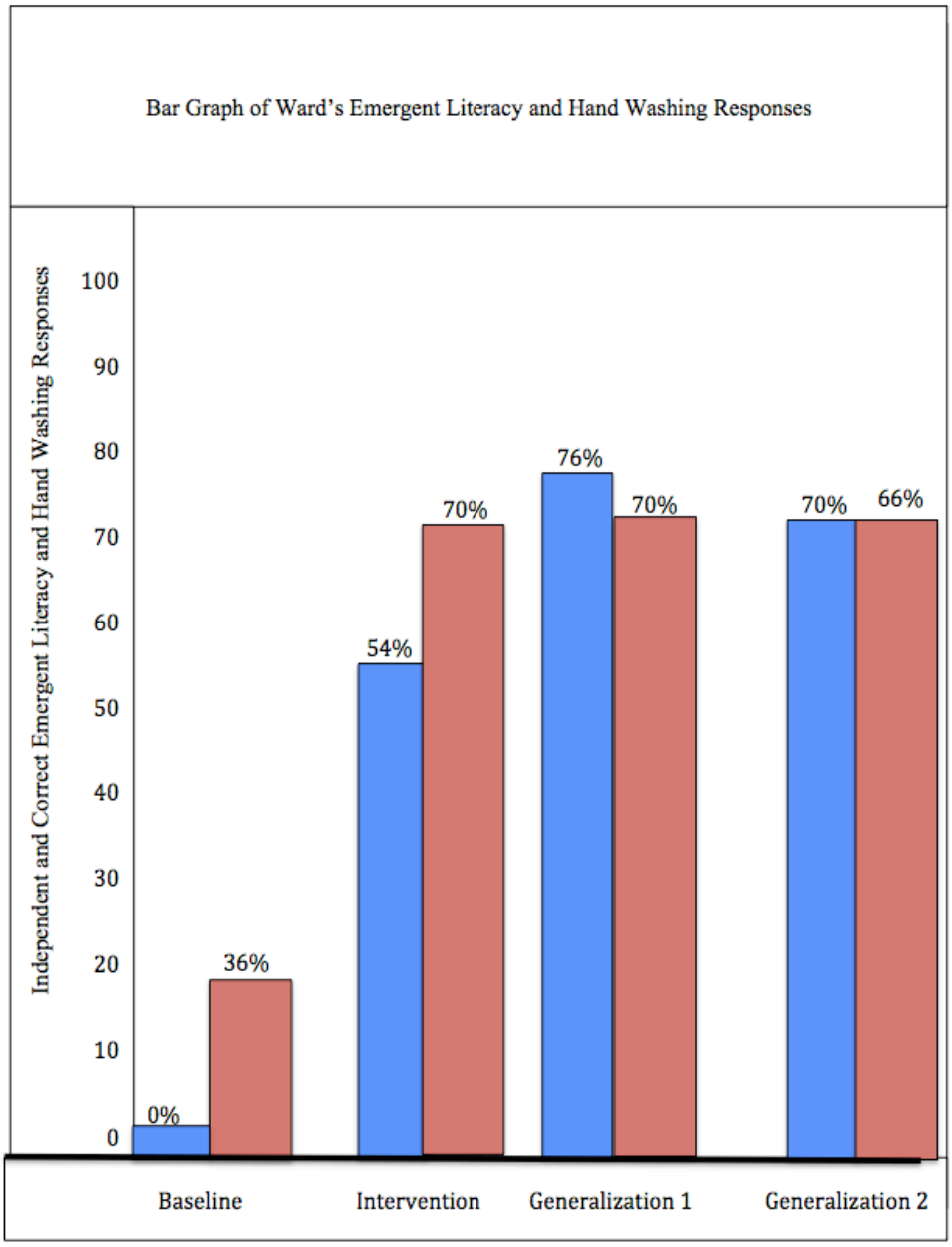


Figure 14. Ward's emergent literacy responses and hand washing responses across all phases. The blue bar represents emergent literacy skills responses. The red bar represents hand washing responses.

After baseline, Ward increased and maintained her independent and correct emergent literacy and hand washing responses during all phases

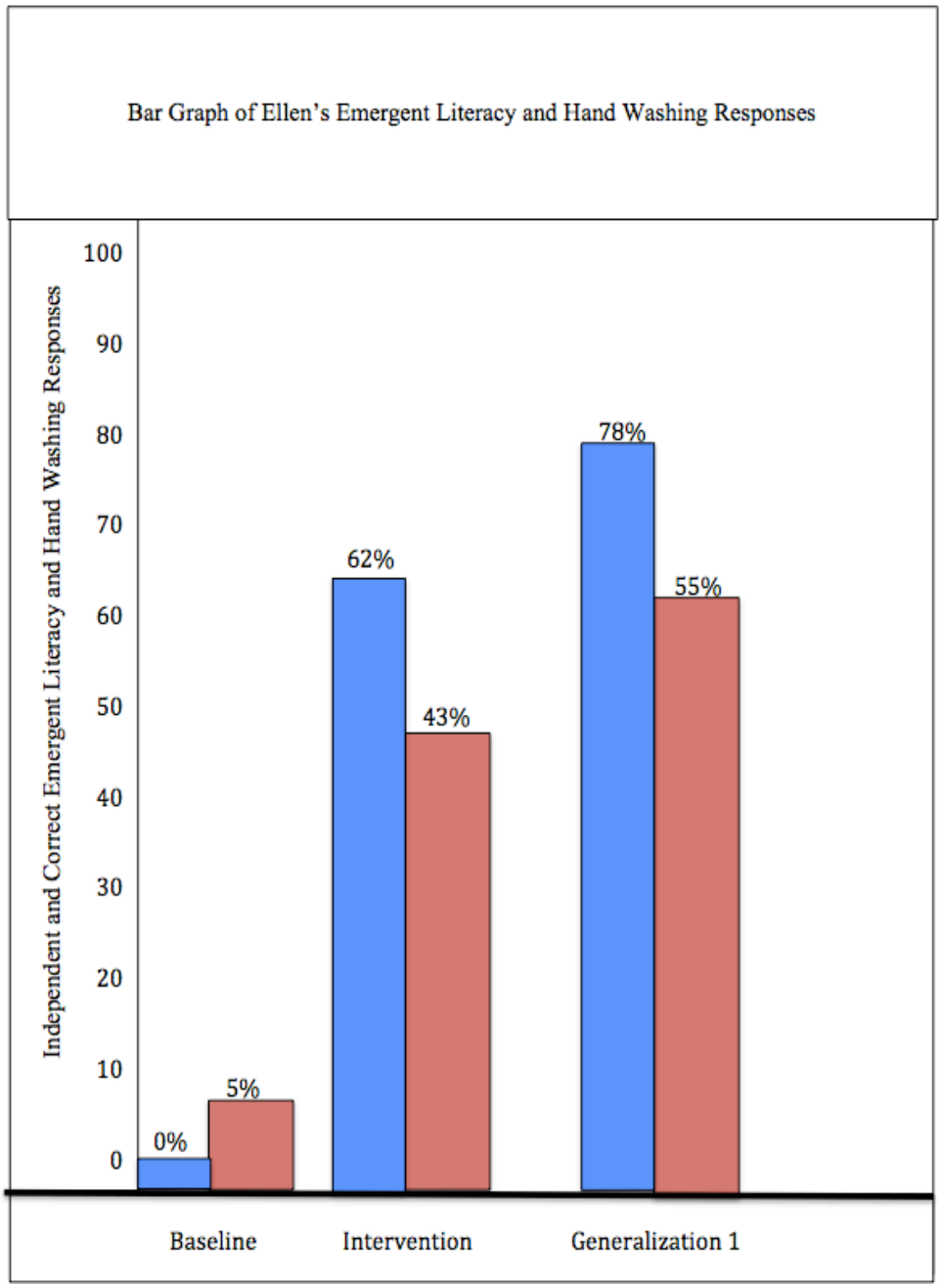


Figure 15. Ellen's emergent literacy responses and hand washing responses across all phases. The blue bar represents emergent literacy skills responses. The red bar represents hand washing responses.

After baseline, Ellen increased and maintained her independent and correct emergent literacy and hand washing responses during intervention and generalization one.

Social Validity

Social validity data were collected from the interns at the end of the study to evaluate the social importance of outcomes (Fawcett, 1991) and social acceptance of procedures (Wolf, 1978). A survey was emailed to each intern at the end of the study (see Appendix F). The mean range for questions one through ten fell between 3.3 and 4.0 on a 4-point Likert scale. All items were rated as agree or strongly agree. The lowest-rated item was "Implementing story-based instruction enabled my students with significant intellectual disabilities to demonstrate emergent literacy skills," which garnered mean ratings of 3.3. The overall mean results for questions one through ten were 3.6. The results are displayed in Table 9.

Table 9

Interns' Responses to a Social Validity Questionnaire

Question	Strongly Disagree	Disagree	Agree	Strongly Agree
The story-based task analysis and datasheet helped me teach students with significant intellectual disabilities emergent literacy skills.	4.0	4.0	3.0	3.6
Implementing story-based instruction enabled my students with significant intellectual disabilities to demonstrate emergent literacy skills.	3.0	4.0	3.0	3.3
The hand washing task analysis and datasheet helped me teach my students with significant intellectual disabilities hand washing skills.	4.0	4.0	3.0	3.6
After instruction using the hand washing task analysis and datasheet, my students with significant intellectual disabilities were able to independently complete steps of hand washing.	4.0	4.0	3.0	3.6
Story-based instruction could provide a means for teaching other personal care skills to students with significant intellectual disabilities.	4.0	4.0	4.0	4.0
It would be beneficial for other teachers to learn how to teach students with significant intellectual disabilities using story-based instruction.	4.0	4.0	4.0	4.0
I enjoyed teaching my student with significant intellectual disabilities in an inclusive small group format.	4.0	4.0	3.0	3.6
I think more students with significant intellectual disabilities would benefit from an inclusive small group format.	4.0	4.0	3.0	3.6
I will use story-based instruction to teach emergent literacy skills and other functional skills to my students with significant intellectual disabilities in the future.	4.0	4.0	3.0	3.6
I am glad I received training in story-based instruction to teach both emergent literacy skills and hand washing skills to students with significant intellectual disabilities.	4.0	4.0	4.0	4.0

Summary

Through the use of descriptive statistics and visual analysis, the researcher determined the FSBI intervention about hand washing increased the emergent literacy and hand washing responses of three students with significant intellectual disabilities. In addition, social validity measures taken on three interns showed FSBI to be effective approach that the interns would use in the future.

CHAPTER FIVE: SUMMARY AND DISCUSSION

Summary of the Findings

Evidence for Research Question One. Results from the data showed all three participants significantly and rapidly increased independent and correct emergent literacy responses after the FSBI intervention. The group average went from 0% independent and correct emergent literacy responses during baseline to a group average of 69% independent and correct emergent literacy responses, which is a 69% increase from the baseline. The same increase in emergent literacy responses were seen when the mode was compared for the participants across all phases. During baseline the mode was 0% for the participants, after generalization phases, the mode was 70.5%, which was a 70.5% increase from baseline. The mean average and mode from baseline through the generalization phases indicated the FSBI intervention significantly increased all three students' independent and correct emergent literacy responses.

The standard deviation showed high variability during the intervention phase, which indicated the participants' scores were spread away from the mean as emergent literacy skills were being acquired. This could be due to the progressive acquisition of the participants' skill development. During generalization phases, the variability of data for Sally, Ward, and Ellen were closer to the mean, indicating participants acquired emergent literacy skills and maintained the skills. This is typical for students with significant intellectual disabilities who achieve generalization and mastery of a skill.

The trend line for slope and level of each participant indicated a moderately positive increasing trend with moderate variability across all phases and all participants. The moderate variability was a result of participants acquiring new skills across phases

by reading progressively harder grade level books. In each phase, books increased in difficulty by half a grade level. The participants gained emergent literacy skills while grade level increased, which resulted in moderate variability in data around the mean as participants adjusted to the increased difficulty. After evaluating slope, level, magnitude, and variability in data, results indicated an increase in participants' independent and correct emergent literacy responses across the entire study. Overall findings suggested the FSBI intervention increased three participants' independent and correct emergent literacy responses.

Evidence for Research Question Two. Results showed all three participants increased their independent and correct hand washing responses after receiving FSBI intervention. The group average went from 19% independent and correct hand washing responses during baseline to a group average of 66% independent and correct emergent literacy responses, which is a 47% increase from baseline. The same results were seen when comparing the mode of each participant across all phases. The group average of mode was 23% at baseline, but after intervention the group average of mode was 67% across all phases, which is a 44% increase from the baseline. Mean and mode data from baseline through the generalization phases indicated that FSBI increased all three students' independent and correct emergent literacy responses.

The standard deviation showed high variability during the intervention phase for Sally and Ellen, which indicated the two participants' scores were spread away from the mean as hand washing skills were being acquired. During generalization phases, the variability of data points for Sally and Ellen were closer to the mean, which indicated that once the participants acquired hand washing skills, the participants were able to maintain

those skills. Ward's standard deviation showed high variability in baseline, indicating that he acquired hand washings skills during the baseline phase. Ward acquired a stable baseline of 30%. The acquisition of some of the hand washing skills could have been from incidental learning. However, Ward increased his hand washing skills during intervention phase and generalization phases with moderate variability.

Results indicated non-overlapping data was highly significant. All three students increased their independent and correct hand washing skills above the highest point in baseline.

A trend line showing the slope and level of each participant throughout the study showed a moderate positive increasing trend line with moderate variability for all three participants. This indicated a noticeable increase in the participants' independent and correct hand washing responses from baseline to generalization phases. Overall findings suggested FSBI about hand washing increased the three participants independent and correct hand washing responses.

Evidence for Hypothesis. This study hypothesized that elementary students with significant intellectual disabilities who received FSBI about hand washing, in small inclusive reading groups for a minimum of three sessions per week would meet a 70% criterion on independent and correct emergent literacy responses and hand washing responses as measured by the story-based and hand washing task analysis tools.

Results from a criterion line graph showed all three participants made independent and correct emergent literacy and hand washing responses above the criterion level of 70% after receiving the FSBI intervention. A bar graph showing the independent and correct emergent literacy and hand washing responses of each

participant indicated that all three students increased both independent and correct emergent literacy and hand washing responses immediately after the intervention was introduced. Data also showed that participants met and surpassed the 70% criterion level.

Evidence for Social Validity. Social validity data indicated interns believed FSBI about hand washing was useful and practical for teaching both emergent literacy skills and hand washing skills to students with significant intellectual disabilities. Interns stated that FSBI would be useful in the future to teach emergent literacy skills and other functional skills to students with significant intellectual disabilities (see Table 9).

Implications Based on Relevant Literature and Theory

Federal Mandates like IDEA (2004) and NCLB (2001) required educators to teach students literacy skills connected to the Common Core State Standards (NGA Center, 2010). Therefore, students with significant intellectual disabilities needed to develop emergent literacy skills (Agran, 2011; Baker et al., 2010; Browder, Gibbs, et al., 2009). A lack of emergent literacy skill was evident for the participants of this research study as they all had 0% emergent literacy skills during baseline. However, after receiving the FSBI intervention, participants were able to increase their independent and correct emergent literacy responses. This study has found story-based instruction to be an effective method for students with significant intellectual disabilities to gain emergent literacy skills, which could lead to the development of comprehensive literacy skills.

Another researcher found results similar to those found this study. Mims et al. (2009) used a multiple probe design across participants to investigate a method for engaging students with visual impairments and intellectual disabilities to answer comprehension questions and learn emergent literacy skills through the use of story-

based instruction. Their results showed participants were able to increase their independent and correct comprehension responses. This study also found story-based instruction with systematic instruction using the system of least prompting procedures and story objects to be effective for teaching students with visual impairments and significant intellectual disabilities emergent literacy skills.

Browder, Lee, et al. (2011) also found positive results when using systematic instruction to prompt literacy responses during story-based instruction. The results of the study showed that when teachers used a script and provided systematic instruction during story-based instruction, three students with significant intellectual disabilities increased both comprehension abilities and literacy engagement.

Browder, Mims, et al. (2009) found that with proper adaptations and instruction, all of the participants of the study increased their independent responses during story-based lessons. The adaptations were similar to the current study, with adaptations like page risers, AAC, and repeated story lines. The results from the study suggest story-based instruction was an effective way to teach emergent literacy skills to students with significant intellectual disabilities.

This current study also looked at the need for teaching functional skills like hand washing to students with significant intellectual disabilities. Researchers Alwell and Cobb (2009) indicated teaching functional skills to students with significant intellectual disabilities are crucial for future success and independence within society. However the increase of federal mandates to teach academic skills caused a decline in teaching functional skills to students with significant intellectual disabilities. The review of the literature and this study's findings imply that FSBI is a plausible way for students with

significant intellectual disabilities to learn both emergent literacy skills and functional skills in order to gain independents, learn academics skills connected to the Common Core States Standards, without losing the necessary functional skills like hand washing.

Implication for Practice

An analysis of the data showed several practical applications for special education teachers. First, FSBI could be the solution to the current problem found in literature: how do we provide literacy skills linked to the Common Core State Standards while still providing the necessary functional skills for students with significant intellectual disabilities? With the new emphasis on teaching academic skills, many special education teachers no longer teach functional skills. Special education teachers need to continue teaching students with significant intellectual disabilities the functional skills required for independence. FSBI may ease the problem by providing a method for teaching functional skills using systematic instruction.

Second, even though special education teachers must teach literacy skills connected to the Common Core State Standards, many special education teachers do not know the best method for teaching academic skills to students with significant intellectual disabilities. With a little instructor training, FSBI would provide a method of teaching both academic and functional skills to students with significant intellectual disabilities, and this method could be generalized to other books and functional skills.

Third, often parents of children with significant intellectual disabilities are eager to learn how to teach functional skills and academics within home. FBSI could provide a simply way of teaching parents best practice for teaching both skills to their children.

Fourth administrators, principals, and general education teachers struggle in knowing

the best to support special education teachers and this population of students. Workshops and Training on FBSI could provide the best approach for teaching students with significant intellectual disabilities functional skills and academics linked to the Common Core State Standard.

Fifth, because many educators struggle to know the best approach for teaching academics and functional skills to students with significant intellectual disabilities linked to the Common Core State Standards, its important for higher education to include FBSI for interns.

Lastly, FBSI Curriculum kits could be development that focuses on a wide range of functional skills linked to the Common Core State Standard for students with significant intellectual disabilities.

Limitations of The Study

First, only three participants were included in this study. The researcher was limited by the small population of students with significant intellectual disabilities that met the requirements of this study. It is unknown if FSBI would be effective using a larger sample size.

Second, to develop an inclusive group setting, two typically developing students were removed from their general education classroom and placed in a small inclusive reading group in a special education classroom. It is unknown if FSBI would be effective in the general education setting for students with significant intellectual disabilities.

Third, because the researcher wanted the three participants to learn all the steps of hand washing in the special education classroom, the participants did not generalize hand washing skills to other settings. It is unknown if the participants would be able to wash

their hands in multiple environments with a variety of materials.

Fourth, the study was implemented three days per week for thirty minutes; however, the participants missed several days throughout the study due to illnesses. For example, Ellen was hospitalized for a high fever and returned to school with dried blisters on 90% of her hands. Her blisters made hand washing difficult during generalization phase one. It is unknown if Ellen would have increased her hand washing skills in generalization phase one if the illness had not occurred. It is also unknown if a higher increase of independent and correct emergent literacy and hand washing responses would have occurred if FSBI were taught more than three days per week.

Fifth, because of time restraints on the study and Ellen's hospitalization, Ellen was unable to progress to generalization phase two. It is unknown if she would have increased emergent literacy responses and hand washing responses during generalization phase two.

Finally, data were taken only on students with significant intellectual disabilities' obtainment of the functional skill of hand washing and academic skill of emergent literacy. It is unknown the benefit of FBSI of the general education students participation.

Recommendations for Future Research

First, to develop an inclusive group setting, two typically developing students were removed from their general education room and placed in a small inclusive reading group in a special education classroom. Future studies could look at the effect of story-based instruction within inclusive groups for students with significant intellectual disabilities in the general education classroom.

Second, this study worked with three elementary participants with significant intellectual disabilities in grades kindergarten through 2nd grade. Future studies could evaluate the effectiveness of FSBI with students with significant intellectual disabilities in other grades, including middle school, high school, and postsecondary education.

Third, the study implemented FSBI to teach students with significant intellectual disabilities the functional skill of hand washing. Future research could evaluate the effectiveness of FSBI for other functional skills like dressing, brushing teeth, and hygiene.

Fourth, the study focused on emergent literacy and hand washing skills minimal technology. Further studies could incorporate video modeling or other media tools in FSBI to improve the engagement and independent practice of functional skills and emergent literacy skills.

Fifth, the study took data on the effect of FBSI about washing for the students with significant intellectual disabilities in small group format. Further studies could include data collection on the literacy obtainment of the students from general education who participate in the small groups

Finally, at baseline all three students had no emergent literacy responses, suggesting teachers are not prepared to teach academics like emergent literacy skills to students with significant intellectual disabilities. Further research is needed to explore teaching special education teachers FBSI to teach skills to students with significant intellectual disabilities.

Conclusion

Using FSBI was an effective method for teaching both emergent literacy skills and hand washing skills to three students with significant intellectual disabilities. Although the results of this study were positive, this was the first study that looked at the effect of FSBI to teach both emergent literacy skills and hand washing skills. Therefore, additional research is needed to truly know the effects of FSBI. It is also unknown if FSBI could be used to teach other functional skills. Overall, the benefits of FSBI had a positive effect and increased the independent and correct emergent literacy skills and hand washing skills for three students with significant intellectual disabilities.

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APPENDIX A: STORY-BASED TASK ANALYSIS TOOL

Story-based Task Analysis Tool

Participant: _____ Date: _____

Completed by: _____

(Phase circle /#) Phase: BL_____ IT1_____ GM/M1_____ GM/M2_____

What teachers will do	+ Indep - Not indep	What students will do	+ Indep - Not indep
1.The teacher provides an opening attention getter that gains the students attention.	+ -	The student touches or looks at the bubbles.	+ -
2. Allows student to independently explore the book for one minute	+ -	The student looks through the book for one minute.	+ -
3. The teacher provides each student with 12 vocabulary words. The teacher reviews each vocabulary word with students. The teacher uses hand-over-hand to have each student point, touch each vocabulary picture/word (Zero time delay)	+ -	The student looks and points, to review the twelve vocabulary words.	+ -
4. The teacher asks each of the students to identify all of the vocabulary words. The Teacher waits for five seconds before prompting students to point or say the vocabulary word.	+ -	The student looks, points or says, to identify twelve vocabulary words.	+ -
5.The teachers ask students "What do you think the book is about?" The teacher provides the students with a vocabulary picture sheet. The teacher waits five seconds before prompting the students to point or say a prediction.	+ -	The student looks, points, or says a prediction.	+ -
6. The teacher reads the title and ask student to point to the title. The teacher waits five seconds before prompting students to point to the title.	+ -	The student looks and touches the title of the book.	+ -
7. The teacher reads the author's name and asks students to point to the author. The teacher waits five seconds before prompting students to point to the name author.	+ -	The student looks and touches the author's name.	+ -
8. The teacher ask the students "How do we get started?" and waits for five seconds before prompting students to turn to the first page.	+ -	The student turns to the first page of the book.	+ -
9.Teacher helps student with significant intellectual disabilities	+	The student reads text or repeated line .The student points to the repeated line in the book	+

by using hand over hand with zero time delay to point to repeated text and say or activate AAC to say repeated line	-	and says or activates AAC repeated line.	-
10. The teacher gives the students the opportunity to turn the page independently. The teacher waits five seconds before prompting students to turn the page.	+ -	The student turns the page of the book when appropriate.	+ -
11.The teacher pauses at least once during the story to ask students to find vocabulary word or symbol in the book. Teacher waits five seconds before prompting students to point to word or symbol.	+ -	The student looks and points to the correct vocabulary word/picture.	+ -
12.The teacher asks first comprehension questions and waits five seconds before prompting student to say or point to answer.	+ -	The student looks and points to the correct answer.	+ -
13.The teacher asks second comprehension questions and waits five seconds before prompting student to say or point to answer.	+ -	The student looks and points to the correct answer.	+ -
14. The teacher asks third comprehension questions and waits five seconds before prompting students to say or point to answer.	+ -	The student looks and points to the correct answer.	+ -

+ = Independent: The student completed the step independently without any verbal directions, gestures or physical prompt from the teacher

- = Not independent: The student required verbal directions, gestures or physical prompt from the teacher to complete the step.

APPENDIX B: HAND WASHING TASK ANALYSIS TOOl

Hand Washing Task Analysis Tool

Participant: _____ **Date:** _____

Completed by: _____

Phase (circle /#) BL_____ **IT1**_____ **GM/M1**_____
GM/M2_____

What Teacher will Do	Date: (+) Indep (-) Not Indep	What Student will Do	Date: (+) Indep (-) Not Indep
Provide Prompt: Wash your hands	+ -		
Wait five seconds. Say, then point, then physical support student to move to the sink. Wait five seconds for student to initiate next step of hand washing	+ -	Move to the sink	+ -
Turn on the water. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing	+ -	Turn on the water	+ -
Wet hands. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Wet hands	+ -
Get Soap. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Get Soap	+ -
Rub hands together. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Rub hands together	+ -
Rinse hands. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Rinse Hands	+ -
Turn off water. Say, then point, then physical support student to complete step. Wait five second for student to initiate next step of hand washing.	+ -	Turn off water	+ -
Get paper towel. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Get paper towel	+ -
Dry hands. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Dry hands	+ -
Throw paper towel away. Say, then point, then physical support student to complete step. Wait five seconds for student to initiate next step of hand washing.	+ -	Throw paper towel away	+ -

+ = Independent: The student completed the step independently without any verbal directions, gestures or physical prompt from the teacher
- = Not independent: The student required verbal directions, gestures or physical prompt from the teacher to complete the step.

APPENDIX C: VOCABULARY WORD DOCUMENT

sink 	dirty hands 	water on 	rinse hands 	get soap 
rub hands 	rinse hands 	paper towel 	dry hands 	Trash can 

APPENDIX D: HAND WASING COMPREHENSION

QUESTIONS

Hand Washing Comprehension Questions

1. Where do you go to wash your hands?

2. Why do we need to wash our hands?

3. Where do we put the paper towel when we are done drying our hands?

APPENDIX E: DATA COLLECTOR TRAINING CHECKLIST

+/ -	Data Collector Training Tasks
	The researcher provided an overview of Functional Based Instruction.
	The researcher explained, reviewed, and demonstrated steps of the Story-based Task Analysis Tool
	The researcher explained, reviewed, and demonstrated steps of the Hand Washing Task Analysis Tool.
	The researcher asked the data collector if he or she had any questions about Story-Based Task Analysis Tool or Hand Washing Task Analysis Instrument
	The researcher and the data collector watch a video about story-based instruction and about hand washing instruction and score the behaviors together using the Story-based Task Analysis Tool and Hand Washing Task Analysis Tool. The researcher provided the data collector feedback on each behavior of the students during the video.
	The researcher and data collector watch a video about story-based instruction and Hand Washing instruction, and score separately the behaviors of the students using the Story-based Task Analysis Tool and Hand Washing Task Analysis Tool. After scoring, the researcher and data collector score the datasheets for interrater reliability.
	The researcher and data collector continue watching and scoring videos of story based instruction until they reach a score of 90% interrater reliability.

APPENDIX F: TEACHER SOCIAL VALIDITY QUESTIONNAIRE

Questions	Responses			
1. The story-based task analysis and datasheet helped me teach students with significant intellectual disabilities emergent literacy skills.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
2. Implementing story-based instruction enabled my students with significant intellectual disabilities to demonstrate emergent literacy skills.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
3. The hand washing task analysis and datasheet helped me teach my students with significant intellectual disabilities hand washing skills.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
4. After instruction using the hand washing task analysis and datasheet, my students with significant intellectual disabilities were able to independently complete steps of hand washing.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
5. Story-based instruction could provide a means for teaching other personal care skills to students with significant intellectual disabilities.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree

6. It would be beneficial for other teachers to learn how to teach students with significant intellectual disabilities using story-based instruction.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
7.I enjoyed teaching my student with significant intellectual disabilities in an inclusive small group format.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
8.I think more students with significant intellectual disabilities would benefit from an inclusive small group format.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
9.I will use story-based instruction to teach emergent literacy skills and other functional skills to my students with significant intellectual disabilities in the future.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
10. I am glad I received training in story-based instruction to teach both emergent literacy skills and hand washing skills to students with significant intellectual disabilities.	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree

Intern Training Manual

Introduction

The purpose of this training is to provide instruction on how to use Functional Story-Based Instruction to student with significant intellectual disabilities. The manual is divided into six components: (a) materials, (b) overview of story-based Instruction, (c) self-monitoring story-based Instruction, (d) overview of hand washing instruction, 5) self-monitoring washing instruction, and 6) teaching both components of story-based and hand washing instruction to teach Functional Story-Based Instructional about hand washing.

The manual is designed to provide comprehensive training on how Functional Story-Based instruction can teach emergent literacy skills and hand washing skills. Examples of emergent literacy skills include identifying the author of a book, identifying the title, turning the page of a book, reading the repeated story line, and answering comprehension questions. In addition, the manual will provide instruction using the least to most prompting procedures to teach the personal care skill of hand washing.

Component One: Materials

The purpose of the component 1 Materials is to review the materials needed for Functional Story-Based Instruction and hand washing.

Story-Based Instruction Materials Literacy Kit

- An attention getter (bottle of bubbles)
- 3 copies of the Literacy books 1-3

- 3 vocabulary sheets
- 3 comprehension sheets
- AAC device

Hand Washing Materials

- Classroom sink
- Unscented soup
- Paper towels
- Trash can
- Hand washing Strip over the sink

Flip Camera

The flip camera should be place to the right or left side of the table during literacy instruction and sink during hand washing instruction so that it is not a distraction to the students and that the camera can capture data.

Story-Based Task Analysis Tool and Hand Washing Task Analysis Tool

1. Review each step of the Story-Based Task Analysis Tool.
2. The Story-Based Task analysis will only be used to collect data on the student but you can use the story-based instruction to self-monitor instruction.
3. Notice how the materials are used in each step of the Story Based Task Analysis Tool.

Component Two: Overview of Story-Based Instruction

The story-based instruction has been successful in teaching students with moderate disabilities emergent literacy skills. Society views literacy as important for independence within society. Teaching the skills are crucial Using the fourteen steps, you

will teach emergent literacy skills to your students. You will use the Story-Based Task Analysis to self-monitor your instruction so that none of the steps are skipped. You will use constant time delay to teach the steps of emergent literacy. Constant time delay (zero and 5 second) are prompting procedure that offers a systematic way of teaching facts and skills that starts with a single controlling prompt after a set interval of time which is faded when the student starts to demonstrate the behavior.

The Steps of the Story-Based Task Analysis Tool

Step 1: The Attention Getter

Step 2: Exploration of the Book

Step 3: Vocabulary Words Using Zero- Time Delay)

Step 4: Vocabulary Words Using Five- Second Time Delay

Step 5: The Prediction Question

Step 6: Point to the Title

Step 7: Point to the Author

Step 8: How do we Get Started

Step 9: The Repeated Line

Step 10: Turn the Page

Step 11: Find the Vocabulary Word/Symbol

Steps 12-14: Comprehension Questions

Component Three: Role-Play

The researcher will show you how to teach a story-based instruction about hand washing using book one and the materials in the literacy kit. The researcher will model how to self-monitor instruction using the Story-Based Task Analysis Tool to self –monitoring

instruction. You will act as the student with significant intellectual disabilities and the researcher will demonstrate instruction.

Next the researcher and you will switch roles. The researcher will give you multiple opportunities to practice story-based instruction. The researcher and data collector will take data using the Story-Based Task Analysis Tool. You will be required to reach 90% on the procedural fidelity check before moving on to hand washing instruction.

Component Four: Overview of Systematic Instruction to Teach Hand Washing

Systematic instruction. A repeatable, predictable, organized process, which reflects currently, accepted best practices using performance data to make education modifications to instruction (Snell, 1987). We will use the system of least prompts to teach hand washing in this study. The system of least prompts includes say, say and point, say and physically guide. The researcher demonstrates the system of least prompts as an example

The Steps of the Hand Washing Task Analysis Tool

Step 1: move to the sink

Step 2: turn the water on

Step 3: wet your hands

Step 4: get soup

Step 5: Rub hands

Step 6: rinse your hands

Step 7: turn the water off

Step 8: get a paper towel

Step 9: dry your hands

Step 10: throw the paper towel away

Component Five: Role-play for Hand Washing Instruction

The researcher and you will relocate to the bathroom sink for hand washing training. The researcher and you will role-play how to teach hand washing using the system of least prompts. You will act as the student with significant intellectual disabilities, The researcher will use the Hand Washing Task Analysis Tool to show you how to self-monitor hand washing instruction. Next the researcher and you will switch roles so that you could practice. The researcher who was acting as the student with significant intellectual disabilities will provide you multiple opportunities to practice teaching using the system of least prompts. The researcher and data collector will take data on your instruction of hand washing for reliability. You will be required to make 90% on the procedural fidelity measure before moving to the final part of training.

Component Six: Teaching Functional Story-Based Instruction about Hand Washing

You will demonstrate your knowledge of Functional Story-Based Instruction by teaching a complete lesson to the researcher. The researcher will pretend to be the student with significant intellectual disabilities and will provide you no feedback during this final phase. You will start with story-based instruction and uses all the materials in the literacy kit but starts with book one. The data collector and researcher will take data on your instruction of story-based instruction using the Story-Based Task Analysis Tool for reliability and procedural fidelity checks. Next you will demonstrate hand washing instruction. The researcher will act as the student with significant intellectual disabilities but will not provide feedback. The data collector and researcher will take data on your

instruction of hand washing instruction using the Han Washing Task Analysis Tool for reliability and procedural fidelity checks. The researcher and data collector compare scores on the task analyses tools. You will be required to make a procedural fidelity measure of 90% before training ended.

Final Instructions

You will use the intervention of Functional Story-Based instruction at the next small group session. Start with book one and do not switch to another book until instructed by the researcher. The same instructional setting, literacy kit and hand washing materials will be used during baseline, intervention, and generalization phases. The intervention of Functional Story-Based Instruction on hand washing would now be added. The intern was given an opportunity to ask additional questions before the sessions ended.

APPENDIX H: INTERN TRAINING PROCEDURAL CHECKLIST

The intern was required to make a procedural fidelity score of 90% on the Story-Based Task Analysis before moving to the hand washing instruction.	Yes	No
The researcher provided an overview of systematic instruction to teach hand washing.	Yes	No
The researcher provided a definition of systematic instruction and system of least prompts	Yes	No
The researcher explained the system of least prompts (say, say and point, say and physically guide)	Yes	No
The researcher gave the teacher a copy of the Hand Washing Task Analysis Toot and gives the teacher an opportunity to review the order of the steps.	Yes	No
The training for hand washing occurred at the bathroom sink	Yes	No
The researcher demonstrated with the intern how to teach hand washing using the system of least prompts	Yes	No
The intern demonstrated with the researcher how to teach hand washing using the system of least prompts	Yes	No
Both the researcher and data collector took data on the intern's hand washing instruction using the Hand Washing Task Analysis Tool.	Yes	No
The data on hand washing was compared for reliability	Yes	No
The intern was required to receive a procedural fidelity measure of 90% before moving on to the final step of training.	Yes	No
The intern demonstrated the intervention of Functional Story-Based Instruction about hand washing with the researcher.	Yes	No
The researcher pretended to be a student with significant intellectual disability during training and did not provide feedback.	Yes	No
The data collector and researcher took data on the intern's implementation of Functional Story-Based Instruction using the task Analyses.	Yes	No
The intern was required to receive a procedural fidelity measure of 90% before training ended.	Yes	No
The intern was instructed to use Functional Story-Based Instruction about hand washing at the next available small group session.	Yes	No
The intern was instructed to use book one until the researcher told her to switch.	Yes	No

The research provided the intern with a training procedural fidelity check- list. The researcher explained to the intern how to use the procedural fidelity check-list	Yes	No
Researcher and intern checks to ensue all materials for both the literacy kit and hand washing are available for training.	Yes	No
Researcher emphasizes the importance of having the material ready during intervention and generalization phases	Yes	No
The researcher provided the intern a copy of the Story Based Task Analysis Tool task analysis instrument and reviewed the students' responses on each step.	Yes	No
The researcher explains during intervention, the intern will start with book one and continue to use book one until the researcher instructs the intern to move to book two. The researcher explains to the intern the Functional Story-Based instruction will be used during intervention and generalization phases	Yes	No
The researcher reviews the student responses on the Story-Based Task Analysis Tool with the intern	Yes	No
The researcher explained that the intern would use the Story-Based Task Analysis Tool as a self-monitoring tool for instruction	Yes	No
The researcher demonstrated how to teach fourteen steps of the story-based instruction using book one and the materials from the literacy kit	Yes	No
The researcher modeled how to use the Story-Based Task Analysis Tool to self-monitor instruction.	Yes	No
The intern practiced teaching the fourteen steps of story-based instruction.	Yes	No
The intern used the materials from the literacy kit to provide instruction and the Story-Based Task Analysis Tool to self-monitor instruction.	Yes	No
The researcher role-played a student with significant intellectual disabilities and provided the intern with multiple opportunities to practice.	Yes	No
The research and data collector took data on the intern's instruction using the Story-Based Task Analysis Tool to compare data for reliability.	Yes	No

The researcher clarified that the same instructional setting, literacy kit, and hand washing materials, used during baseline, would be used for intervention and generalization phase.	Yes	No
The researcher explained the intervention of Functional Story-Based Instruction to teach hand washing would be the only new component added.	Yes	No
The intern was given an opportunity to ask additional questions before training ended	Yes	No

APPENDIX I: IRB APPROVAL

LIBERTY UNIVERSITY

Good Afternoon Glenda,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. Attached you'll find the forms for those cases.

Thank you for your cooperation with the IRB and we wish you well with your research project. We will be glad to send you a written memo from the Liberty IRB, as needed, upon request.

Sincerely,

Fernando Garzon, Psy.D.

IRB Chair, Associate Professor

Center for Counseling & Family StudieS

(434) 592-5054

11/06 Ref. # _____

APPLICATION TO USE HUMAN RESEARCH SUBJECTS
Liberty University
Committee On The Use of Human Research Subjects

1. Project Title: Story-Based Instruction to Teach Both Emergent Literacy Skills and Handwashing Skills to Elementary Students with Significant Intellectual Disabilities
2. Full Review X
3. Funding Source (State N/A if not applicable): NA
4. **Principal Investigator**:

Name: Glenda Hyer Title: Student Phone: 828-776-7828, Email: glhyer@liberty.edu, Address: 31 English Oaks Dr, Candler NC 28715

5. **Faculty Sponsor** (if student is PI), also list co-investigators below Faculty Sponsor, and key personnel:
   Dr. Dianne Keith Liberty University, Education Department,
   Assistant Professor
   Phone: 434-582-2445
   Email: dlkeith@liberty.edu
6. Non-key personnel:

7. **Co-Faculty Sponsers/ Consultants:**
   Dr. Jessica Talada Adjunct Professor
   Liberty, Education Department,
   Phone: (570) 888-3213
   Email: javanderpool@liberty.edu

   Dr. Karena Cooper-Duffy, Associate Professor
   Western Carolina University, Special Education Department
   Phone: 828-227- 3285
   Email: kcooper@email.wcu.edu

8. The principal investigator agrees to carry out the proposed project as stated in the application and to promptly report to the Human Subjects Committee any proposed changes and/or unanticipated problems involving risks to subjects or others participating in approved project in accordance with the Liberty Way and the Confidentiality Statement. The principal investigator has access to copies of 45 CFR 46 and the Belmont Report. The principal investigator agrees to inform the Human Subjects Committee and complete all necessary reports should the principal investigator terminate University association. Additionally s/he agrees to maintain records and keep informed consent documents for three years after completion of the project even if the principal investigator terminates association with the University.

Principal Investigator Signature: _____
Date_____

_____

Faculty Sponsor (If applicable)

Submit the original request to: Liberty University Institutional Review Board, CN Suite 1582, 1971 University Blvd., Lynchburg, VA 24502. Submit also via email to irb@liberty.edu

APPLICATION TO USE HUMAN RESEARCH SUBJECTS

10. This project will be conducted at the following location(s): (please indicate city & state)

☐ Liberty University Campus

X Other (Specify): Locations for the Dissertation

The research could be conducted in the following Counties and School systems:

1. Haywood County Schools, Haywood County, NC
2. Buncombe County Schools, Buncombe County, NC
3. Jackson County Schools, Jackson County NC

11. This project will involve the following subject types: (check-mark types to be studied)

☐	Normal Volunteers (Age 18-65)	☐	Subjects Incapable Of Giving Consent
☐	In Patients	☐	Prisoners Or Institutionalized Individuals
☐	Out Patients	X	Minors (Under Age 18)
☐	Patient Controls	☐	Over Age 65
☐	Fetuses	☐	University Students (PSYC Dept. subject pool ___)
X	Cognitively Disabled	☐	Other Potentially Elevated Risk Populations_____
X	Physically Disabled		
☐	Pregnant Women		

12. Do you intend to use LU students, staff or faculty as participants in your study? If you do not intend to use LU participants in your study, please check "no" and proceed directly to item 13.

YES ☐ NO X

If so, please list the department and/classes you hope to enlist and the number of participants you would like to enroll.

In order to process your request to use LU subjects, we must ensure that you have contacted the appropriate department and gained permission to collect data from them.

Signature of Department Chair:

_____

_____

Department Chair Signature(s) Date

13. Estimated number of subjects to be enrolled in this protocol: **12**

14. Does this project call for: (check-mark all that apply to this study)
X Use of Voice, Video, Digital, or Image Recordings?
☐ Subject Compensation? Patients $_____ Volunteers $_____Participant Payment Disclosure Form
☐ Advertising For Subjects?
☐ More Than Minimal Risk?
☐ More Than Minimal Psychological Stress?
☐ Alcohol Consumption?
X Confidential Material (questionnaires) **X Waiver of Informed Consent?**
☐ Extra Costs To The Subjects (tests, hospitalization, etc.)? ☐ VO2 Max Exercise?
☐ The Exclusion of Pregnant Women?
☐ The Use of Blood? Total Amount of Blood _____
Over Time Period (days) _____
☐ The Use of rDNA or Biohazardous materials?
☐ The Use of Human Tissue or Cell Lines?
☐ The Use of Other Fluids that Could Mask the Presence of Blood (Including Urine and Feces)?
☐ The Use of Protected Health Information (Obtained from Healthcare Practitioners or Institutions)?

15. This project involves the use of an **Investigational New Drug** (IND) or an **Approved Drug For An Unapproved Use.**
☐ YES **X NO**
Drug name, IND number and company: _____

16. This project involves the use of an **Investigational Medical Device** or an **Approved Medical Device For An Unapproved Use.**
☐ YES **X NO**
Device name, IDE number and company: _____

17. The project involves the use of **Radiation or Radioisotopes**:
☐ YES **X NO**

18. Does investigator or key personnel have a potential conflict of interest in this study?
☐ YES **X NO**