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An Examination Of Print Awareness When Using Electronic And Printed Books With Preschool-Aged Children

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AN EXAMINATION OF PRINT AWARENESS WHEN USING ELECTRONIC AND PRINTED BOOKS WITH PRESCHOOL-AGED CHILDREN

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DEDICATION

This work is dedicated to my parents for encouraging me to learn and grow. Thank you for always believing in me and for supporting me throughout my education. This degree and thesis are thanks to you.

Thank you to Tenny Akihary for your unwavering support. Thank you for being my number one fan through everything.

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ABSTRACT

With growing numbers of online and electronic learning formats, it has become increasingly more crucial to consider literacy development and written language exposure in preschool-aged students. Emergent literacy, which includes print awareness, is a key element of future reading success. The following study aimed to examine children's print awareness skills through dialogic reading using both printed and ebook formats. During this study, five participants were selected from a local preschool and participated in a weeklong study in which they were read to dialogically with specific prompts concerning print awareness skills for a one-on-one intervention. During the initial session, a series of 10 print awareness prompts were introduced and baseline data were collected based on the participants' answers when given an ebook format and printed book format. The following days consisted of intervention by dialogic reading in both formats during individual sessions with the lead investigator. The final day of the study served as end of intervention data collection where the participants were asked the same 10 prompts as the initial session within both formats. Data revealed that dialogic reading served as a successful intervention and that preschool age students may perform print awareness tasks slightly better with printed books.

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Chapter 1: Introduction

According to the Literacy Project (2019), a reported 45 million Americans are illiterate and cannot read above a fifth-grade level. This staggering number calls for more research to be done in areas of literacy. It is vital educators realize the importance of literacy and the ways they can aid children in their areas of need.

Continuing, this statistic may not improve in the coming years if change is not implemented soon. With an ongoing pandemic, more and more students are turning to online resources. The Scholastic Media Room (n.d.) reports ebook readers have doubled amongst children since 2010 and we may see this trend grow even more due to online instruction increasing.

Data from Common Core of Data reviewed statistics concerning states with data available on district-level enrollment for years 2020 through 2021. Only eight states were considered in this study, but of those eight, some alarming discoveries were made. Most notable, Florida saw a 159.6% increase in virtual instruction (Gross, 2021). With these data, it is clearly demonstrated there is a need to reevaluate how we view online instructional materials such as electronic books.

Moving forward, another shocking discovery was evident within i-Ready results with young readers. This system is described by Ready Central Resources (n.d.) as the following, "i-Ready is an online program for reading and/or mathematics that will help your student's teacher(s) determine your student's needs, personalize their learning, and monitor progress throughout the school year." Essentially, this is a tool used in many public-school systems to identify areas of strength and growth for each student.

Data from 2021 through i-Ready systems revealed a 9% decrease in reading level amongst second graders who were already below reading level (Curriculum Associates, 2021). Even more surprising, a six% decrease was also seen in second graders who were at reading level (Curriculum Associates, 2021). Through these data, both early elementary readers who were on reading level or below reading level witnessed decreases in reading comprehension. Notably these data reflect pandemic students who were likely receiving at home virtual instruction. Therefore, the need to evaluate methods in facilitating reading through virtual instruction is again highly encouraged.

With the number of illiterate Americans and an ongoing pandemic pushing children to receive online instruction, the need for studies revolving around virtual materials such as electronic books are evident. Children across the country are experiencing a decrease in reading skills. Emergent literacy sets the foundation for future reading success and therefore the need to examine how book format impacts emergent literacy is justified.

Chapter 2: Discussion and Literature Review

Emergent literacy was first recognized by William Teale and Elizabeth Sulzby (1986). These two researchers worked to identify a term that would encapsulate a time in which children move from being unaware of print and the meaning it holds to acquisition of this knowledge and bridging into “reading readiness” (Teale & Sulzby 1986).

Emergent literacy theory remains a relatively new theory in the world of education and childhood development. Although Marie Clay coined this term in 1966,

it was not until 1986 that Teale and Sulzby expanded and developed this idea. Thus, it may be seen as a recent outlook on childhood reading development. However, emergent literacy theory has justified itself as a pillar of developmental theories through use of identifiable characteristics. These characteristics are described by Teale and Sulzby (1986) as such; emergent literacy development can be seen as early as birth, children are actively learning when being read to by an adult, and development of literacy follows a seemingly sequential order.

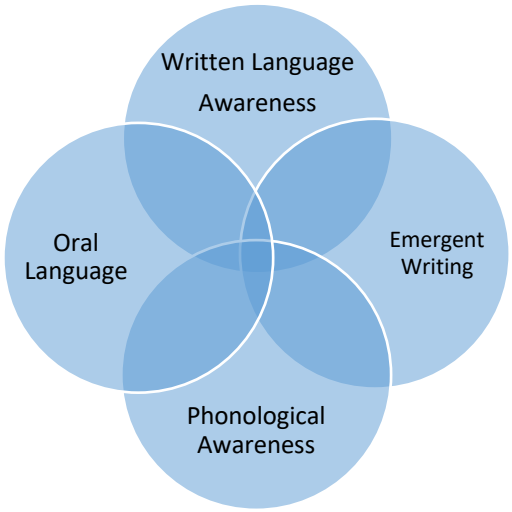
Emergent literacy is described as the prior knowledge about reading and writing that children learn before direct literacy instruction (Justice & Pullen, 2003). This is a crucial step in the foundation of education that children acquire at a dramatically young age. It is no secret that these early years of learning are incredibly formative and predictive of a child's future reading fluency. This can greatly impact future learning as we read textbooks, narratives, and other various forms of literature to increase learning. Therefore, the importance of emergent literacy skills is evident. These skills include domains of phonological awareness, oral language, emergent writing, and written language awareness, which form an incredible foundation for learning as a whole.

Continuing, Laura M. Justice suggests in her book *Clinical Approaches to Emergent Literacy Intervention* (2006) that as these skills further develop and mature, children enter this stage of emergent literacy. Justice (2006) provides the example of carrying over sound knowledge or phonological awareness into alphabetic principle. Through this illustration the importance of emergent literacy becomes even more

evident. Without these skill sets in place; children are not able to advance in stages of literacy development. It is increasingly clear that this serves as a precursor for later reading abilities. As children advance and grow through each domain and stage of literacy development, areas in which they struggle may hinder progress. For example, a child who does not hone print awareness skills such as knowing where to start reading will not be able to read independently until this skill is harnessed. With this in mind, fostering these skills becomes increasingly important. Professionals becoming aware and understanding the domains discussed below may help to identify and aide in strengthening these skills.

Figure 1

Domains of Emergent Literacy



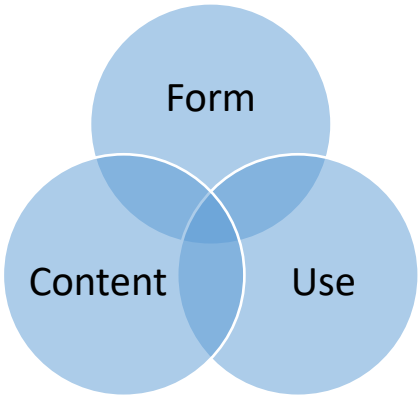
Within emergent literacy, four domains exist: written language awareness, oral language, writing, and phonological awareness (Justice, 2006). These domains overlap within subskill sets and carry over to fully develop literacy fluency and proficiency later

in life. This section will discuss each domain in depth and provide insight into how these skills interact with one another. Essentially, these domains and emergent literacy as a whole serve as the building blocks for literacy. The following domains serve as a foundation for later reading and overall education.

In addition, these domains align with a model readily used in educational and developmental professions: Bloom and Lahey's Model of Language (1978). This model inserted below illustrates three areas: form, content, and use. These areas highlight ways in which language can be used. Form represents syntax, morphology, and phonology as it includes the necessities of speech. Content then includes semantics including expressive and receptive vocabulary ability. Lastly, use represents the pragmatic or social use of communication. All these areas abridge language and how people use these subsets to communicate effectively. Throughout these domains of emergent literacy listed below, form, content, and use are present. This further represents the foundation that emergent literacy creates and how these areas build into later literacy and language development.

Figure 2

Bloom and Lahey's Model of Language (1978)



Phonological Awareness

Phonological awareness is described as an individual's ability to recognize, reflect, and manipulate the sound structure and units of speech (Milankov, Golubović, Krstić, & Golubović, 2021). Rhyming is an example of phonological awareness. This skill demonstrates the child is recognizing the sound structure of multiple words. Phonological awareness develops and grows into a more mature form. As children develop, this domain can be seen by reaching a level of manipulation within words. Children may express this knowledge by demonstrating their ability to blend sounds. For example, a child may "sound out" phonemes such as "c-a-t" and blend into a single word "cat" (Chard & Dickson, 1999).

Phonological awareness follows a developmental hierarchy. However, mastery is not needed in larger speech units such as words before it is visible in smaller units such as phonemes (Justice, 2006). Therefore, this hierarchy may be referred to as

"quasi-parallel" due to this overlap in acquisition of this skill. Although mastery of this skill does not necessarily need to be in a strict or exact order, a child must have some understanding of this skill if they are to succeed within emergent literacy (Justice, 2006).

Oral Language

This domain starts to develop as early as birth. As infants smile when they hear their parents and begin to recognize their voices, the fundamental exchange of communication that is essential to oral language use is developing. Eventually, oral language comprehension and expression progress into more literary skillsets. Children will enjoy being read to and notice pictures within stories. Essentially, emergent literacy is built upon the foundation of oral language as it heavily involves semantics and syntax (Pullen & Justice, 2003). This skill can be seen early on with vocabulary. The child may recognize what the narrator is saying and point to the object as it is named. Through this, they are showing the oral language foundation via vocabulary skills. Additionally, grammar may be involved.

Susan L. Massey in her study *From the Reading Rug to the Play Center: Enhancing Vocabulary and Comprehensive Language Skills by Connecting Storybook Reading and Guided Play* (2012), states that oral language developed in preschool is heavily related to reading in later school years. Within oral language, children's lexicons are greatly expanding as they learn words through their parents talking to them, hearing others communicate with one another, or listening to electronic media, such as a television program. Even before birth, babies are exposed to speech sounds.

The Cleveland Public Library (2017) states that in utero, babies can hear at about just 10 decibels lower than outside than womb. All these instances bring forward an opportunity for a child to expand their vocabulary and have direct and indirect exposure to new words. One system that has been used to facilitate language growth by parents and educators is storybook reading. Storybook reading can target multiple domains, but it can particularly strengthen oral language by children actively hearing new words. Storybooks also allow for repetitions, encouraging the child to actively participate in the narration of a story and use their newly acquired vocabulary.

Emergent Writing

Writing is also an essential domain that encompasses literacy. Emergent writing encapsulates the first and early stages of writing in a child's life. This can be seen when a child imitates adult writing using invented spelling or "scribbling" (U.S. Department of Health & Human Services, n.d.). Emergent writing as a skill demonstrates a child's understanding that words carry meaning and have purpose.

In Puranik and Lonigan's study (2014), *Emergent Writing in Preschoolers: Preliminary Evidence for a Theoretical Framework*, indicators of emergent writing were noted. These skills included letter writing, writing the child's own name, spelling, and print knowledge. As noted throughout these characteristics of emergent writing, overlap is evident within other domains. For example, print knowledge may also be an indicator of written language awareness. It is a common theme for each domain to overlap in some way as all intertwine and build a foundation together for later literacy.

Written Language Awareness

Written language awareness is a domain that includes print awareness skills. With this domain, children realize print such as letters and words can be differentiated As Justice (2006) states in the book, *Sharing Books and Stories to Promote Language and Literacy,* print awareness is a broad term used to describe many actions that come long before children are able to read. Furthermore, emergent literacy develops through multiple areas, but Justice distinctively points out that children should show an interest in print even before they can read. This characteristic of print interest is evident through childhood development and indicates emergent literacy is active.

Emergent literacy encapsulates all of the domains above at different levels of a child's life. Although they may occur at different stages, each domain is essential in building and expanding lexicon both expressively and receptively, writing skills, reading skills, and so forth. These domains and each skill set within the domains ultimately lead to an end goal of reading fluency.

Dialogic Reading

Dialogic reading is an evidence-based practice in reading and language intervention. Dialogic reading has expanded and grown since its beginnings in 1992 with Grover J. (Russ) Whitehurst's study, *A Picture Book Reading Intervention in Day Care and Home for Children From Low-Income Families*. This beginning study documented a vital difference from typical adult reading and dialogic reading, role reversal. In typical book reading, the child serves as the audience and the adult as the storyteller. However, in dialogic reading the child is encouraged to become the

storyteller as the adult asks questions such as, “What are they doing on this page?” The child is prompted to talk about what they are seeing, what they think will happen, and the overall plot of the story. This allows the child to take the lead with the story and develop emergent literacy skills.

Dialogic reading is noted as a shared reading between an adult and a child that aims at increasing language and literacy skills in children (U.S. Department of Education, 2010). Whitehurst (2002) of Reading Rockets, which is a public media organization aimed to provide educators and caregivers information on reading, simply describes this practice as adults and children talking about a book. The Texas Education Agency (2013) identifies print awareness on Reading Rockets as an indicator of future reading skills, stating, “This understanding comes about through the active intervention of adults and other children who point out letters, words, and other features of the print that surrounds children.”

Everyday situations yield opportunity for language to develop. Written language development is no exception. In fact, emergent literacy is seen when young children are interacting with various forms of written media such as magazines or even a grocery list (Roth, Paul, & Pierotti 2006). Books have become a staple of acquiring and honing emergent literacy skills. This is viewed through preschool curriculum in which book reading remains a heavy influence in the classroom. Kentucky Early Childhood Standards (2003) include curriculum skills that are achieved through acquisition of emergent literacy in preschool. These curriculum skills include recognizing rhymes, knowing the difference between print and pictures, and listening

comprehension while hearing a story read by an adult. Despite this push for emergent literacy, standards do not currently identify book formats for reading instruction. Therefore, the question arises if there is any difference between customary books (paper/hard backs that have been involved in the school systems for centuries) or ebooks (newly accessible electronic books) when providing emergent literacy instruction. With an on-going pandemic and more children turning to home school/on-line learning platforms, the need for this research becomes even more relevant.

Review of the Literature

The articles in the literature review below provide insight into how previous studies have been designed and how their findings have proven emergent literacy to be an important aspect of early education. While there is substantial research supporting the need for children to develop emergent literacy skills such as vocabulary, phonological awareness, alphabet knowledge, and print awareness, there is certainly more to discover about this subject which opens the door for the current study comparing book formats. To provide clarity, electronic books may be referred to as ebooks throughout this writing. Additionally, traditional paper books will be referred to as printed books. The study aims to advance research as well as expand upon it through use of a collective case study design.

Continuing in the era of online learning, it would serve critical at this time to have studies investigate this area to view the possible benefits and downsides to this new age learning. It is evident that research is needed to investigate emergent literacy skill acquisition through use of ebooks and printed books. A recent study looked at

data provided by six sample states (Arkansas, Georgia, Maine, New Hampshire, Pennsylvania, and Utah) and determined that in the 2020-2021 school year, virtual school enrollment in grades K–5 increased by 112 percent (Gross, 2021). With these data displaying how many students are turning to online instruction, studies that revolve around literacy skills concerning ebooks are all the more vital.

Before delving into such a question, there was a need to review any previous literature regarding this concept. EBSCO Host and Google Scholar data bases were used to conduct a search of the following terms: "traditional books vs ebooks AND (emergent literacy or early literacy) AND (electronic books or ebooks or e-books or e-textbooks or electronic textbooks or etextbooks)." Many articles were found on the effects of students learning via ebooks. The articles found both deliver comparisons on electronic books and printed books in the area of emergent literature.

Willoughby, Evans, and Nowak (2015) focused on alphabet acquisition using both e-books and paperback books. Ninety-four junior kindergartners between the ages of 3 and 4 years in Ontario were selected as participants. The emergent literacy task observed was phonemic awareness via sound letter correspondence. More observable engagement in e-book stories were found. However, paper ABC book users more often named letters, along with corresponding objects. The article also found children in all conditions improved over time in emergent literacy and no significant differences between conditions were found.

During a study of children in Jordan, Ihmeideh (2014) focused on enhancing emergent literacy skills using e-books in comparison to those using printed books. In

total, 92 children were divided into groups determining what materials they used for enhancing their emergent literacy skills. The pre- and post-test data were collected on print awareness, vocabulary, alphabetic knowledge, and phonological awareness. This study suggested that the children in the e-books group performed significantly better as compared to the children who received printed books. This study also highlighted the areas in which significant improvement was indicated, such as print awareness and vocabulary. The research team suggested more research be conducted in this subject as well as the inclusion of parent or teacher perspectives.

O'Toole and Kannass (2018) focused on areas of story comprehension and word learning differing amongst book types (printed or electronic). One hundred typically developing 4-year-olds were selected from childcare programs for this study. Wordless picture books were created for this study which adapted to both electronic and printed versions. A bell would sound for the participants to turn the page as well as a recording of narration for the story. Open-ended "wh-" questions were created to measure story comprehension. The *Peabody Picture Vocabulary Test*, *Fourth Edition* [PPVT-4] (Dunn & Dunn, 2007) was administered to obtain a standardized measure for vocabulary. A questionnaire was also provided to parents discussing participants' ebook reading experiences. The results indicated word learning scores were higher in the e-book conditions as compared to the print book conditions. Story comprehension, however, did not reveal significant differences. The study also noted participants' attention was greater during audio narration as opposed to a live reader.

Korat and Shamir (2007) investigated multiple emergent literacy with 128 participants. This study answered research questions regarding which group (printed or electronic reading groups) presented with significant improvement in overall emergent literacy domains and whether there were any differences amongst socioeconomic groups. No inclusion or exclusion criteria were noted, limiting the research in some regard. The method of this study included three groups, the first consisted of the participants independently reading the ebook version, the second involved adults reading the printed version to the participants, and the third was a control group which did not receive any version of the book and remained in a regular kindergarten class. The study was conducted in two sessions and consisted of pre and post testing. Vocabulary amongst the first and second groups did not yield significant differences, however, both groups significantly surpassed the control group in this area. As for word recognition and phonological awareness, no significant differences in any group were noted.

Aliagas and Margallo (2016) reported on two years of ethnographic data revolving around shared reading storybook apps within four Spanish families. The children involved in these readings were between ages 18 months and five years of age. This study, again, did not aim to compare digital books to printed books, but rather investigate children's responses to interactivity of storybook apps. The current study chose to take a different approach, but Aliagas & Margallo's addition to the literature and overall discourse cannot be ignored. Data from this study suggests that children are approaching reading with a newfound level of proactivity due to

storybook apps being heavily interactive. For future studies, interest may surround the question of which format children prefer.

Wood, Fitton, Petscher, Rodriguez, Sunderman, and Lim (2018) continued this discussion by having evaluated the effect of ebook vocabulary instruction with Spanish-English speaking participants. During this study, 288 children in kindergarten received ebook instruction for 10-20 weeks. These books included "scaffolding through explanations in Spanish, repetitions in English, checks for understanding and highlighted morphology." Results indicated the greatest effect on expressive labeling as administered via the [PPVT-4] (Dunn & Dunn, 2007). However, no significant difference was noted with expressive definitions. This study adds an additional layer to the discussion of multilingual children and acquisition of another language via ebook.

Despite how different and similar these studies are, it is undeniable that all have contributed to the discussion of digital and customary printed books. Although differing modes, methods, and designs were used, these studies continue an important discussion about the impact of emergent literacy with technology. Yet, the literature must grow and continue to cast even more knowledge on this subject.

Chapter 3: Methods

Purpose and Research Question

The purpose of this research study was to examine the print awareness skills of preschool aged children during joint book readings using varied formats of books. More specifically, the study aimed to examine the print awareness skills of young children when engaged in joint book reading using a printed book and ebook. The

research questions included: How does a child demonstrate print awareness during dialogic reading using printed books? and How does a child demonstrate print awareness during dialogic reading using ebooks? Based on previous scholarship, the researcher predicted that children would demonstrate similar print awareness skills in ebook and printed books.

Research Design

The study used a collective case study research design. Creswell (2007) described this design as research involving one issue being observed in multiple case studies that may occur at one site and with a goal of demonstrating multiple perspectives. This design allowed for multiple individual cases to be examined at the same time, giving a new perspective to the previous scholarship.

Sessions were individualized with each participant, however, overall times varied due to number of responses, transition times, and so forth. Although times varied, the average session lasted 20 minutes. In the initial session, the prime investigator provided each participant with a paper book and ebook version of the same story. No intervention was conducted during the initial session, due to collecting baseline data. Participants were asked all ten questions for both printed and ebook formats. A binary system (+/-) was utilized to distinguish correct/incorrect answers. A total of ten correct answers resulted in 100% accuracy. Participants were asked all ten questions first on printed versions and then were provided ebooks via iPad using Eastern Kentucky University's Libraries resource of MackinVIA™ children's books. The first session used the book *Bruce's Big Move* by Ryan T. Higgins (2019) in both formats.

No feedback was provided after participants responded in order to keep baseline as accurate as possible. Throughout the week, intervention was implemented using the same stories on printed and ebook formats. During the last session, the same ten questions were asked again using *Little Tree* by Loren Long (2016) in both formats. No intervention or feedback were provided during the last session.

Participants and Location

Participants of the study included five preschool-aged children between the ages of 3 and 4 years. Four of the participants were female and one participant was male. One participant was African American. Of the five participants, only one child was receiving speech services for an articulation disorder.

A convenience and purposive sampling paradigm were used for the study. All participants were students attended LaFontaine Preparatory School's Nature School located at 2066 Lancaster Rd, Richmond, KY 40475. LaFontaine Early Learning Center (*The Nature School* 2020) describes the private school's curriculum as building success in areas of "visual and gross motor skills, color and picture identification, early language, counting, and oral communication." Due to their commitment to assessing and aiding in early language, the study proved to be a beneficial fit with the participants as they were exposed to literacy skills throughout the sessions.

Parents of children attending the preschool were initially provided with information flyers regarding information about the primary investigator, research question, and overall details on how the study would be conducted. Upon parent interest, families were provided with consent forms to participate in the weeklong

study. The candidates were informed that refusal to participate would not interfere with their typical education at this preschool. Parents who decided to participate were notified that their child would be pulled out of regular activities for 30 minutes every day for five days totaling two hours and 30 minutes for the entirety of the study. All participants were assigned a number for data collection purposes as seen in the data charts later presented.

Baseline Data Collection

Day one consisted of baseline data collection. In the initial session, the prime investigator provided each participant with a paper book and ebook version of the same story. No intervention was conducted during the initial session due to collecting baseline data. The initial session began by gathering one student at a time for an individual session in a small room at the school. The lead investigator introduced herself and allotted for three to five minutes to explain the study, request permission, and get to know the child. The lead investigator read the following script to each participant on the first day:

> "Hi! My name is Miss Marissa, I'm going to be working with you this week. We are going to read a lot of books this week. I will read the book and then we will read the same book on our iPad, sometimes we might switch and do our iPad first and then I'll read. Today, I just want to show you some books and ask you questions. Tomorrow I can start reading to you and read on the iPad. Would you like to start?"

After receiving verbal assent from the participant, the lead investigator introduced the paper version of the book "*Bruce's Big Move*" by Ryan T. Higgins (2019). The investigator did not say the title or give any information about the book. Each participant was then asked all ten of the following questions:

1. Show me where to start reading
2. Point to a letter
3. Where is the first letter on this page?
4. Show me a word on this page
5. Where is the title of the book?
6. Where is the last word on this page?
7. Point to a space between two words
8. Turn the page
9. Show me the beginning of the book
10. Show me the end of the book

A binary system (+/-) was utilized to distinguish correct/incorrect answers. A total of ten correct answers would result in 100% accuracy

The investigator then removed the printed book and presented the child with an iPad to view the ebook version of "*Bruce's Big Move*" by Ryan T. Higgins (2019). Ebooks were acquired using Eastern Kentucky University's Libraries resource of MackinVIA™ children's books. This format included automatic word highlighting and narration, therefore it was important not to push play and simply present the same ten prompts/questions listed above. Again, no cues or feedback were provided to

during the collection of baseline data. After data were collected using both book formats, the investigator thanked the child and let them know reading would begin the following day. Participants were dismissed to regular class schedules and reunited with their class.

Intervention

A dialogic reading intervention was provided on days two, three, and four of the study using stories in both printed and ebook formats. Sessions were individualized with each participant, however, overall times varied due to number of responses, transition times, and so forth. Although times varied, the average dialogic reading session lasted 20 minutes.

Dialogic reading is described as a shared reading between an adult and a child that aims at increasing language and literacy skills in children (U.S. Department of Education, 2010). During this intervention, dialogic reading was utilized by providing various prompts designed to elicit responses specific to print awareness skills. Prompts included the primary investigator reading the title of the book every session, pointing to specific letters on the page, turning the page and asking the participant to help turn the page, finger tracking and using automatic highlighting during ebooks, and closing the book/showing the end of the ebook and telling the client “the end!” These prompts were chosen due to their focus on print awareness skills during dialogic reading. Specifically showing the participants the title and ending of each book orients them on where to begin and where to stop reading. This is essential for later reading success. Page-turning is another essential reading skill in order to know how to

progress through a story book. Finger tracking is a visual guide that uses the reader's fingers to move across the text. This highlights letters, words, as well as identifies where to start and where to stop reading on a page and overall brings attention to the page. The automatic highlighting used during the ebooks aimed to provide the same skills, but used a yellow highlight to identify each word on a page as the narrator read.

A total of five prompts were used with every child during each intervention session for both ebook and printed book formats. These prompts were as follows:

1. This is where I will start reading, can you help me point to it?
2. This is where we find the title of our book, it's called *read title name*. What's the title of our book?
3. Help me find a letter on this page.
4. This is the last word on this page, can you find the last word on the next page?
5. Can you help me turn the page?

Day Two: First Day of Intervention

Day two consisted of pulling each participant out of class, one at a time for their individual reading session. The lead investigator had posted sticky notes with the five prompts listed above using the printed version of the book *The Sun is a Peach* by Sara Cassidy (2020). The same prompts were additionally used in the ebook version of *The Sun is a Peach* as the investigator wrote time stamps to pause the story and ask the question/give a prompt. Although the prompts maintained the same purpose,

structurally some rewording was needed. For example, prompt #1, “This is where I will start reading, can you help me point to it?” was changed to “This is where the story will start reading, can you help me point to it?” during the ebook reading. Prompts occurred on different pages of the story depending on the printed or ebook version. The investigator started with the printed book version on day two. The investigator would introduce the title of the story by using prompt #2, ”This is where we find the title of our book…” Followed by reading the title and then asking the participant immediately what the title of the book is. If the child was able to respond with the correct title name, the binary data reflected a “+” to indicate a correct response followed with verbal praise. If the participant needed additional cueing or simply did not respond, a “–”was used in data collection to reflect an incorrect response followed by feedback such as, “Very good try, the title of our book is *The Sun is a Peach*.”

On page three of the printed book, the investigator introduced prompt #1,” This is where I will start reading, can you help me point to it?” The investigator pointed to the beginning of a sentence for the duration of this prompt, approximately 10 seconds and then removed their finger when asking for the participant to point. If the participant could independently point to the beginning of the sentence, a “+” was used to indicate a correct response followed by verbal praise. If the child did not respond to the prompt or required additional cueing, a “– “was used to indicate an incorrect response. If the response was incorrect, the investigator provided feedback such as the investigator pointing again to the beginning of the sentence and saying, “Here is where we start reading! Let’s start.”

Page four of the printed book included prompt #3, “Help me find a letter on this page.” If the participant was able to independently point to any letter on the page, a “+” was used to indicate a correct response followed by verbal praise and confirmation saying, “You’re right! That is the letter *name of letter.*” If the child did not respond to the prompt or required additional cueing, a “– “was used to indicate an incorrect response followed by feedback such as, “That’s a good try. Here is the letter ‘A.’”

Page five of the printed book began an interlude to prompt #4 with the investigator pointing to the last letter on the page, turning the page, and then asking the participant to point to the last letter on page six. Prompt #4 always followed prompt #3 to give participants the best opportunity to succeed at letter finding. If the participant was able to independently point to the last letter on the page, a “+” was used to indicate a correct response followed by verbal praise and the investigator naming the letter. If the child did not respond to the prompt or required additional cueing, a “– “was used to indicate an incorrect response. Feedback for this prompt varied. For example, three participants pointed at letters, but not the *last* letter. Therefore, redirection by the investigator was appropriate by stating, “That is a letter, but is that at the end of our page? Let’s look over here,” with the investigator pointing to the correct letter. One participant responded initially with “I don’t know,” requiring the prime investigator to ask them to guess. The participant pointed at an incorrect letter and the investigator responded by providing the same feedback for the other

participants. Data reflected only the initial response and did not include responses after feedback had been provided.

Prompt #5 was sporadically introduced throughout the ebook and printed book reading. Some participants requested to turn every page, while others had to be prompted. All participants correctly turned the page in the printed version which was rewarded with verbal praise. However, if the child was unable to accomplish this task the investigator was prepared to demonstrate and aid in page turning if needed. It is important to note that ebook formats chosen had an auto play function. Therefore, the investigator would pause and instruct the participants to turn the page.

The prompts mentioned above were delivered in the same manner on alternate pages during the ebook reading. As previously shared, the sentence structure of these commands was altered depending on how they fit during the ebook version. These included altering prompt #1, as the auto narrator read the story, not the investigator.

At the end of the session, the investigator thanked the participant and reminded them that they will read another book the following day. The participants were reunited with their class and assumed a regular schedule after each individual session concluded.

Day Three

Day three consisted of pulling each participant out of class for their individual reading session. The lead investigator again used posted sticky notes with the five prompts on them while using the printed version of the book, *We Don't Eat Our*

Classmates by Ryan T. Higgins (2021). The same prompts were additionally used in the ebook version of *We Don't Eat Our Classmates* (2021). The investigator identified time stamps to pause the story and ask the question or provide the prompt. The same binary system (+/–) was utilized, meaning if the child was able to respond correctly, the binary data reflected a "+" to indicate a correct response followed with verbal praise. If the participant needed additional cueing or simply did not respond, a "–" was used in data collection to reflect an incorrect response and followed up with feedback.

The investigator introduced the ebook first by using prompt #2 reading the title. If the child could respond immediately with the correct title name, a "+" to indicate a correct response followed with verbal praise. If the participant needed additional cueing or simply did not respond, a "– "was used in data collection to reflect an incorrect response followed by the same feedback from Day Two.

On page eight of the ebook, the investigator introduced prompt #1. The investigator pointed to the beginning of a sentence for the duration of this prompt, approximately 10 seconds just as the previous day, and then removed their finger when asking for the participant to point. If the participant could independently point to the beginning of the sentence, a "+" was used to indicate a correct response followed by verbal praise. If the child did not respond to the prompt or required additional cueing, a "– "was used to indicate an incorrect response and feedback would be provided.

On page two of the ebook, prompt #3 was used. If the participant was able to independently point to any letter on the page, a "+" indicated a correct response

followed by verbal praise and confirmation saying, “You’re right! That is the letter *name of letter*” If the child did not respond to the prompt or required additional cueing, a “– “was used to indicate an incorrect response followed by the investigator naming a letter.

As with the previous day, prompt #3 was followed with prompt #4. On page six, the investigator pointed to the last letter on the page, turned the page, and then asked the participants to point to the last letter on page seven. If the participant was able to independently point to the last letter on the page, a “+” was used to indicate a correct response followed by verbal praise and the investigator naming the letter. If the child did not respond to the prompt or required additional cueing, a “– “was used to indicate an incorrect response. Feedback for this prompt varied as with the previous day depending on the participant. Two participants required redirection using the same feedback from day two on both printed and ebook formats. Again, prompt #5 indicated all participants knew how to turn the page for both ebook and printed books without prompting or demonstration by the investigator.

Continuing as the previous day, the prompts mentioned above were delivered in the same manner on alternate pages during the printed book reading, with sentence structure being altered as needed. At the end of the session, the investigator again thanked the participant and reminded them that they would read another book the following day. The participants were reunited with their class and assumed a regular schedule after each individual session.

Day Four

Day four consisted of pulling each participant out of class, one at a time for their individual reading session. The lead investigator had posted sticky notes with the five prompts using the printed version of the book, *The Panda Problem* by Deborah Underwood (2019). The same intervention prompts were again used in the ebook version of *The Panda Problem* (2019) with the investigator writing time stamps to pause the story and ask questions/give a prompt. The same binary system (+/-) was used. If the child was able to respond correctly, the binary data reflected a "+" to indicate a correct response followed with verbal praise. If the participant needed additional cueing or simply did not respond, a "- "was used in data collection to reflect an incorrect response and followed up with feedback.

Continuing with the previous days, the investigator began with prompt #2 to introduce the title of the book. If the child responded immediately with the correct title name after the investigator read it, a "+" to indicate a correct response followed with verbal praise. If the participant needed additional cueing or did not respond, a "- "was used in data collection to reflect an incorrect response followed by the same feedback as previously.

On page three of the printed book, the investigator introduced prompt #1. The investigator pointed to the beginning of a sentence for the duration of this prompt, approximately 10 seconds just as the previous day, and then removed their finger when asking for the participant to point. If the participant independently pointed to the beginning of the sentence, a "+" was used to indicate a correct response followed by verbal praise. If the child did not respond to the prompt or required additional

cueing, a “- “was used to indicate an incorrect response and feedback would be provided.

On page six of the printed book, prompt #3 was used. If the participant was able to independently point to any letter on the page, a “+” indicated a correct response followed by verbal praise and confirmation of the investigator naming the letter. If the child did not respond to the prompt or required additional cueing, a “- “ was used to indicate an incorrect response followed by the investigator naming a letter.

Prompt #3 was again followed with prompt #4. On page eight, the investigator pointed to the last letter on the page, turned the page, and then asked the participants to point to the last letter on page nine. If the participant was able to independently point to the last letter on the page, a “+” was used to indicate a correct response followed by verbal praise and the investigator naming the letter. If the child did not respond to the prompt or required additional cueing, a “- “was used to indicate an incorrect response. Feedback for this prompt varied as with the previous day, depending on the participant.

Prompt #5 again revealed all participants knew how to turn the page for both ebook and printed books. The prompts mentioned above were delivered in the same manner on alternate pages during the printed book reading, with sentence structure being altered as needed.

At the end of the session, the investigator again thanked the participant and told them they would be back tomorrow for the last day. The participants were reunited with their class and assumed a regular schedule after each individual session.

End of Intervention Data Collection

End of intervention data was collected on day five. During the last session, the same ten questions used during baseline were asked again using the book *Little Tree* by Loren Long (2016) in both book formats. No intervention or feedback were provided during the last session.

The last session began by again selecting the participants one at a time from class and placing them in a private room at the facility. The investigator began each session by explaining that today would be the last time they would be working together. The investigator continued to explain that this day would be a lot like the first day, in that they would be given an iPad book and another (printed) book and asked some questions.

The lead investigator then provided the participant with an iPad displaying the ebook, *Little Tree* (2016). The investigator did not disclose the title or give any information about the book. The investigator then asked questions one through ten in numerical order. No cues or feedback were given. The investigator then removed the iPad and provided the child with the same book (*Little Tree*) in a printed book format. After participants answered all ten questions, the investigator thanked them for all their hard work that week and then dismissed them to regular class schedules.

Materials

The books selected for this study included *Bruce's Big Move* by Ryan T. Higgins (2019), *The Sun is a Peach* by Sara Cassidy (2020), *We Don't Eat Our Classmates* by Ryan T. Higgins (2021), *The Panda Problem* by Deborah Underwood (2019), and *Little Tree* by Loren Long (2016). Books were evaluated using the Lexile Level system which measures a child's reading ability for various books ("Lexile & Quantile Hub," n.d.). *Bruce's Big Move* by Ryan T. Higgins (2019) received a level AD510L which correlated to ages five through seven. *We Don't Eat Our Classmates* by Ryan T. Higgins (2021) was evaluated at a level AD500L with an age range of five through seven. *The Panda Problem* by Deborah Underwood (2019) received a 510L level and an age range of three through seven. *Little Tree* by Loren Long (2016) had a level of 520L and an age range of five through eight. *The Sun is a Peach* by Sara Cassidy (2020) was not available in the Lexile Level system. An additional search of reading level for the book was made using the Fountas and Pinelle reading level system; however, no results were found ("Fountas and Pinnell Information and Teacher Community," n.d.). This unavailability of reading level may be attributed to the book's recent publishing date of 2020, which was the latest book used in the study. Although no reading level was available using the previously mentioned systems, Orca Book Publishing listed *The Sun is a Peach* as a pre-school book.

In regard to book selection, reading level was viewed as the most important selection criteria. The research team did not wish to risk validity or skew results by selecting materials significantly above the participants' chronological age or

developmental stage. Although all stories were to be read by the lead investigator, the research team felt it was important to use books that were designed for this age group. In this approach, the team decided these books would better maintain the children's interests and their ability to understand the story/reading. Books were secondarily selected on mutual availability from Madison County Public Library for printed books and Eastern Kentucky University's Mackin Via for ebook versions. This was selected as criteria to help the lead investigator have books readily available and at no extra cost to the research study. Criteria additionally included all formats to be at relatively the same word count and page count on all books. Again, the research team believed this would keep data valid. Also, longer books would have put an additional time constraint on removing the participants from classroom activities. Furthermore, attention to the book reading was thought to have been more achievable through shorter books as all books were no more than 40 pages at maximum. Ebooks were required to include auto-narration by a person (formats with text-to-speech were excluded) and the inclusion of auto-word highlighting. Auto-narration by a person was significant to the team. The lead investigator did not wish to potentially skew or invalidate data due to a text-to-speech narration as this may have influenced students to refuse intervention. The investigator felt text-to-speech was too unnatural for the participants to listen to for the entirety of the study. Auto-word highlighting was also of importance due to the printed books use of finger tracking. Book selection criteria helped ensure intervention validity and supported participant engagement.

Research Timeline

Day one focused on obtaining baseline data for the five participants during individualized sessions. The participants were provided two books, one printed and one in e-book format. Ten questions/requests were asked of the participants, with no intervention or feedback from the investigator. Data were collected with a binary system (+/−) and were converted to a numerical system for data analysis with zero being an incorrect response and one being the correct response. A total of 10 represented a perfect score. This analysis provided a visual reference in bar graphs.

Day two focused on two book reading sessions following conditions A (print) and B (electronic). The principal investigator dialogically read to the students, using finger tracking. The principal investigator utilized a script prior to this, as well as having noted prompts via sticky notes to ensure reliability during reading. The ebooks used audio narration as well as word highlighting. The investigator also used a script and notes for time stamps to provide prompting during ebook sessions. All intervention scripts used the five prompts previously shared, although page numbers differed according to ebook or printed formats. For example, prompt #1 concerning pointing to the first word on a page would be asked on page one of a printed book and page three of an ebook in an effort not pollute data collection. These readings followed the same sequence as the following days; however, they utilized a new book.

The final day was used for determining development of print awareness skill. The principal investigator provided the participants with two books, one printed and one in e-book format, and repeated the prompts listed above with no corrective feedback or

intervention method. Table 1 provides an in depth and detailed plan/agenda for each day of the study.

Table 1

Research Timeline and Plan

Day 1 (Monday)	Baseline	Day one will focus on obtaining baseline with the principal investigator and the participants in individualized sessions. The participants will be given two books, one printed and one in e-book format. For each book, the investigator will provide the following prompts without the use of any intervention strategies: -Show me where to start reading - Point to a letter - Where is the first letter on this page? - Show me a word on this page - Where is the title of the book? - Where is the last word on this page? - Point to a space between two words - Turn the page - Show me the beginning of the book - Show me the end of the book

Table 1 (continued)

Day 2 (Tuesday)	Intervention	This first day of intervention will involve two book reading sessions involving an electronic version and print version. The investigator will dialogically read to the students *The Sun is a Peach* in individualized sessions, using finger tracking. Condition A will be read first followed by condition B. The investigator will use a script and sticky notes during the print reading to note when to ask a dialogic reading question related to print awareness. After the reading of the print book, the investigator will switch to the e-book version of *The Sun is a Peach* The investigator will have a script for questions as well as time stamps of when to stop the book. The e-book will utilize word highlighting and audio narration.
Day 3 (Wednesday)	Intervention	Day two of intervention will involve two book reading sessions involving an electronic version and print version. The investigator will dialogically read to the students *We Don't Eat Our Classmates* in individualized sessions, using finger tracking. Condition B will be presented first followed by condition A. The investigator will use a script and sticky notes during the print reading to note when to ask a dialogic reading question related to print awareness. After the reading of the print book, the investigator will switch to the e-book version of *We Don't Eat Our Classmates* The investigator will have a script for questions as well as time stamps of when to stop the book. The e-book will utilize word highlighting and audio narration.
Day 4 (Thursday)	Intervention	Day three of intervention will involve two book reading sessions involving an electronic version and print version. The investigator will dialogically read to the students *The Panda Problem* in individualized sessions, using finger tracking. Condition A will be presented first followed by condition B. The investigator will use a script and sticky notes during the print reading to note when to ask a dialogic reading question related to print awareness. After the reading of the print book, the investigator will switch to the e-book version of *The Panda Problem.*

Table 1 (continued)

Day 5 (Friday)	Post- intervention data collection	The final day will focus on obtaining end of intervention data. The participants will be given two books different from the ones used during baseline, one printed and one in e-book format, to determine these prompts from, without intervention methods from the investigator. Data will be collected with a binary system of zero being an incorrect response and one being the correct response. A total of 10 will represent a perfect score.

Data Analysis & Representation

Data were collected via binary system for baseline and end of intervention as the participants were asked a series of 10 questions. Data were collected using a binary system (–/+) and analyzed using a bar graph to represent printed and ebook formats during baseline and end of intervention.

Days 2, 3, and 4 consisted of intervention via dialogic reading in which five prompts were utilized each day to determine any growth regarding print awareness. A binary system (-/+) was also used during this data collection. Analyses were provided via line graph for all intervention days using both ebook and printed book format.

Data were entered into Microsoft Excel and individual bar graphs were created to represent baseline and end of intervention data. Individual line graphs were created to illustrate and compare growth during intervention sessions for each participant.

Chapter 4: Results

This study aimed to examine print awareness in both printed books and ebooks through dialogic reading in both formats.

Participant Data

In total five participants were studied throughout the experiment. Two students were absent on two days throughout the week and therefore required makeup sessions. During these sessions the students were read the books for the corresponding day's agenda, as well as the books from the previous day which they had missed. Despite makeup sessions, the study remained on schedule and took one week to complete. Data correlating to the research questions were taken during intervention days 2, 3, and 4 and the first and last session of the study (Days 1 and 5).

Figures 3 through 7 illustrate the participants' baseline and end of intervention data. Figures 8 through 12 depict the individual data for the three days of intervention

Figure 3

Child 1 Baseline and End of Intervention

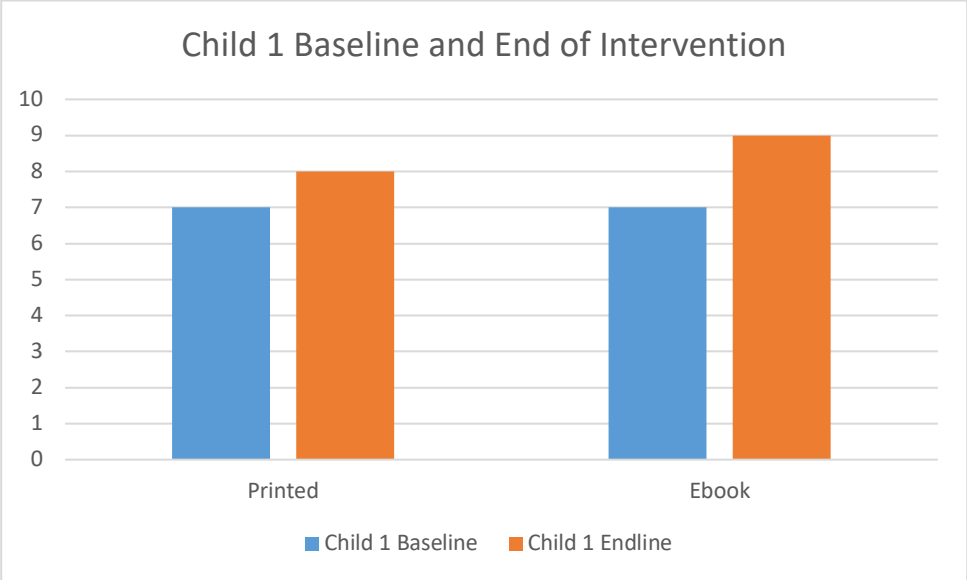


Figure 4

Child 2 Baseline and End of Intervention

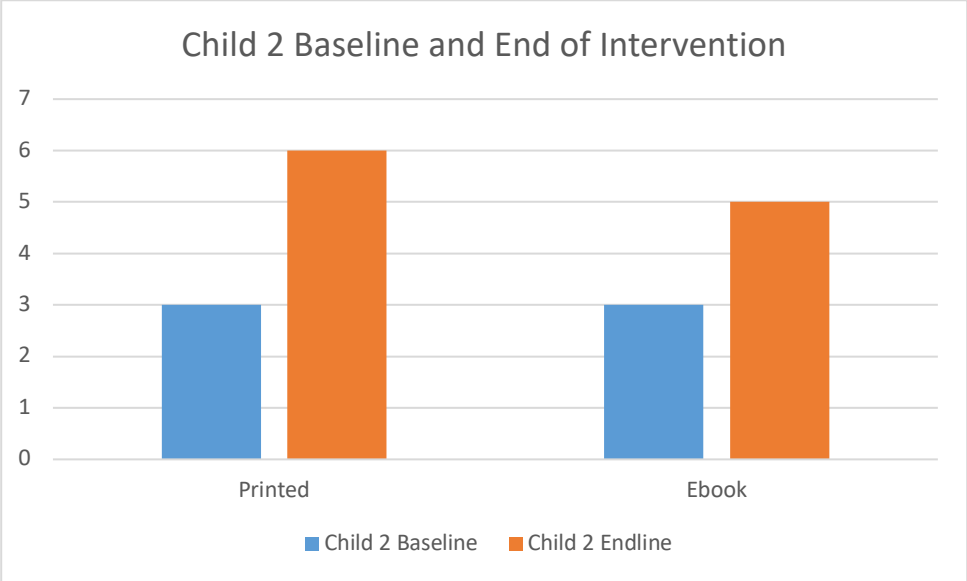


Figure 5

Child 3 Baseline and End of Intervention

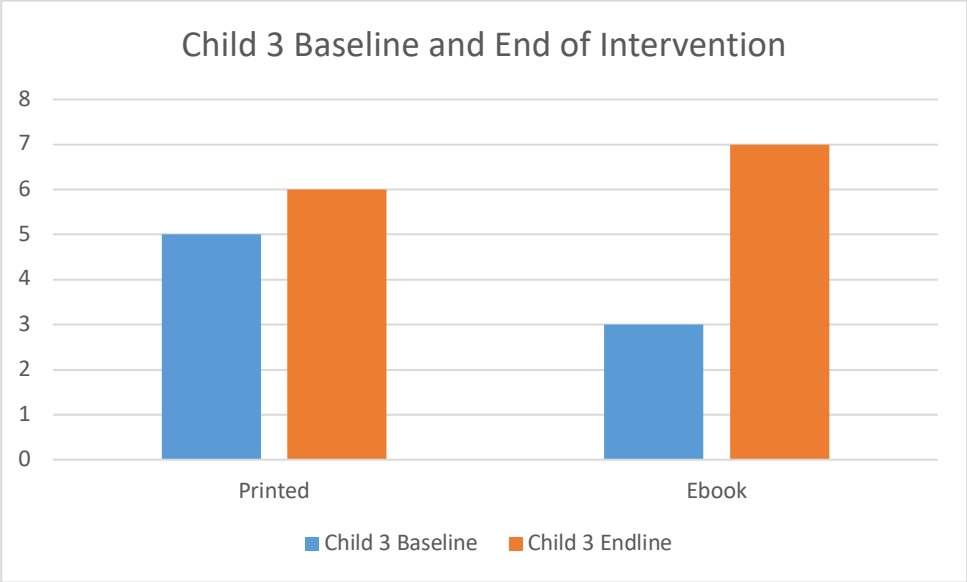


Figure 6

Child 4 Baseline and End of Intervention

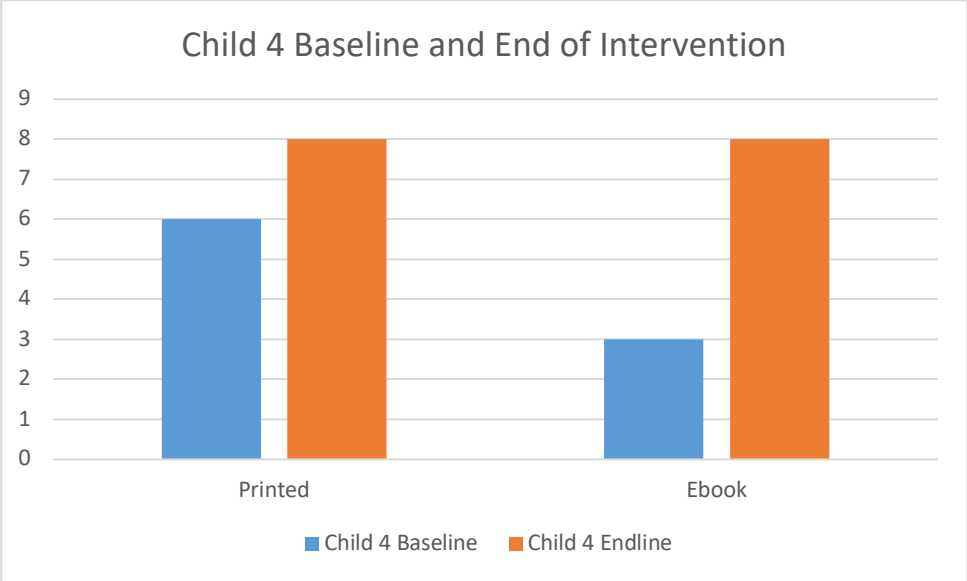


Figure 7

Child 5 Baseline and End of Intervention

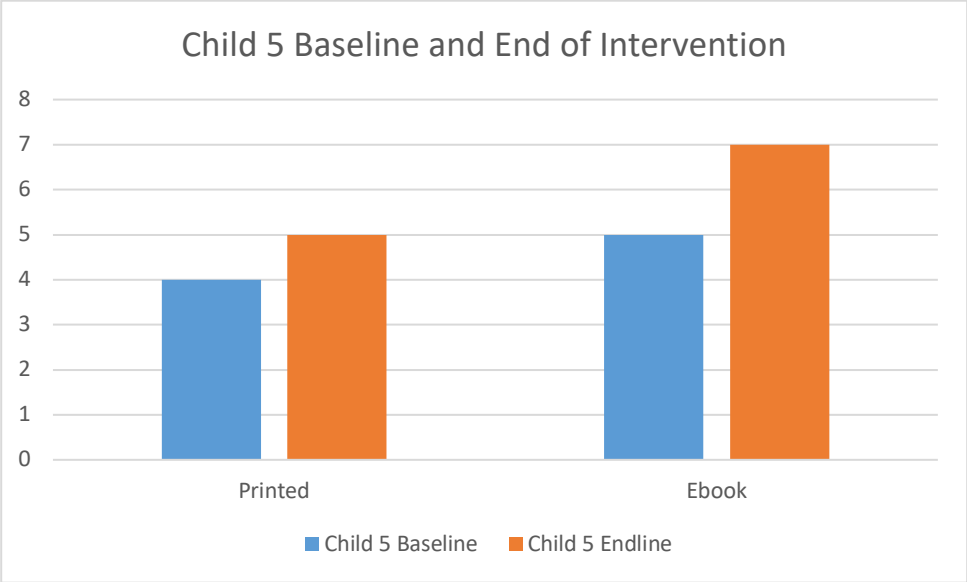


Figure 8

Child 1 Intervention Data

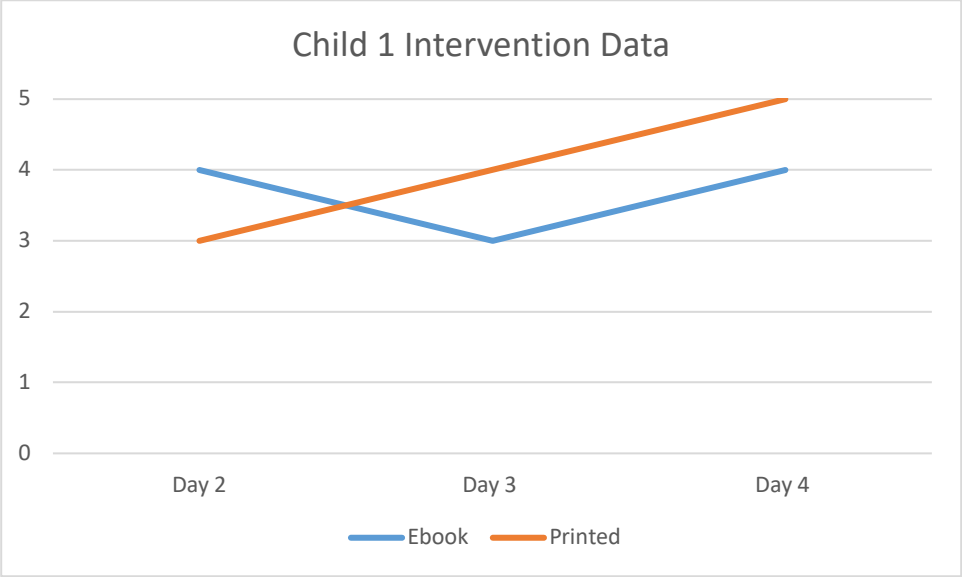


Figure 9

Child 2 Intervention Data

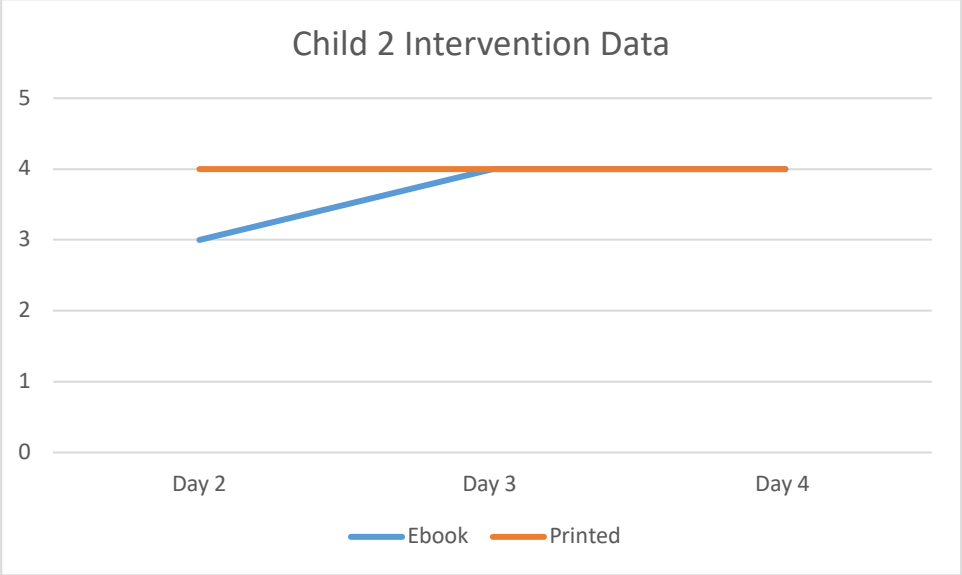


Figure 10

Child 3 Intervention Data

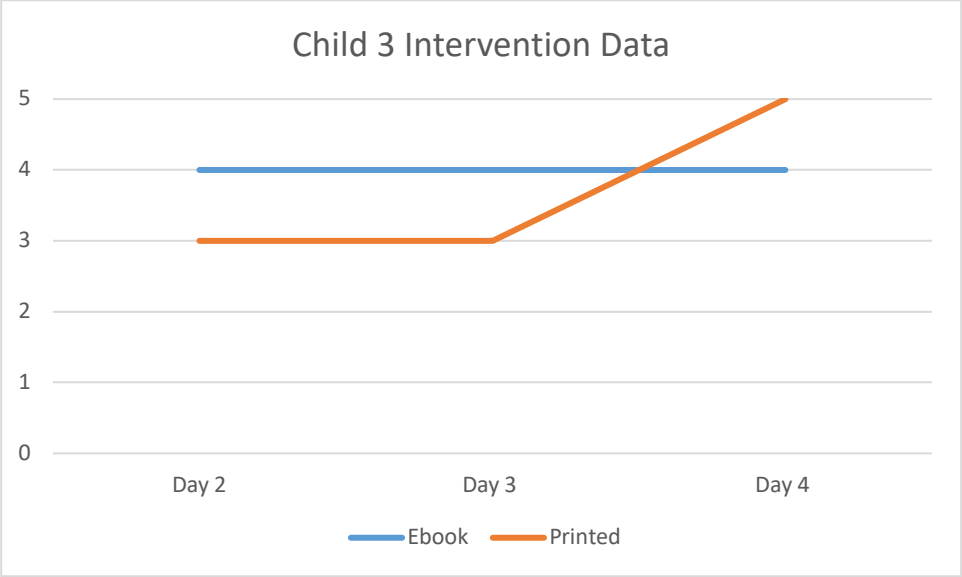


Figure 11

Child 4 Intervention Data

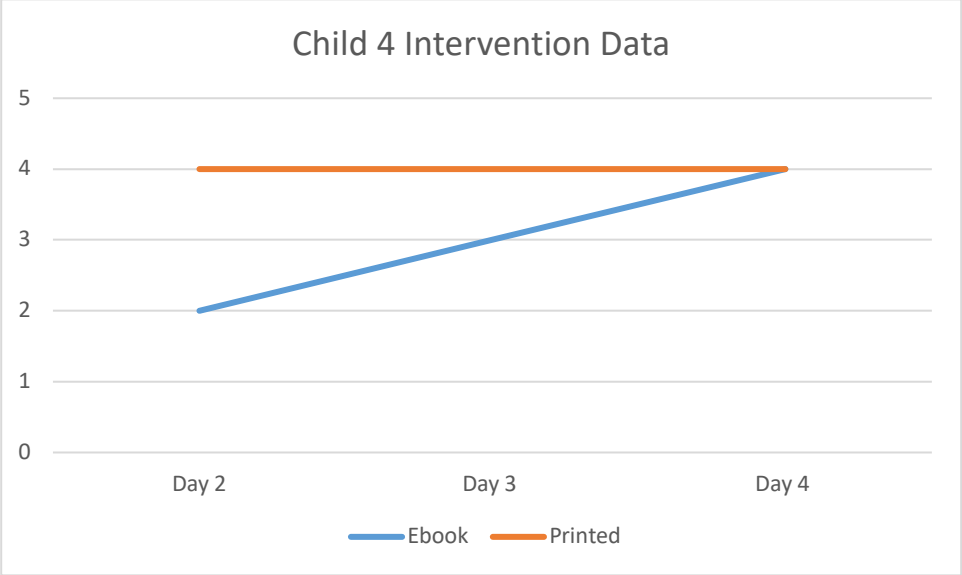
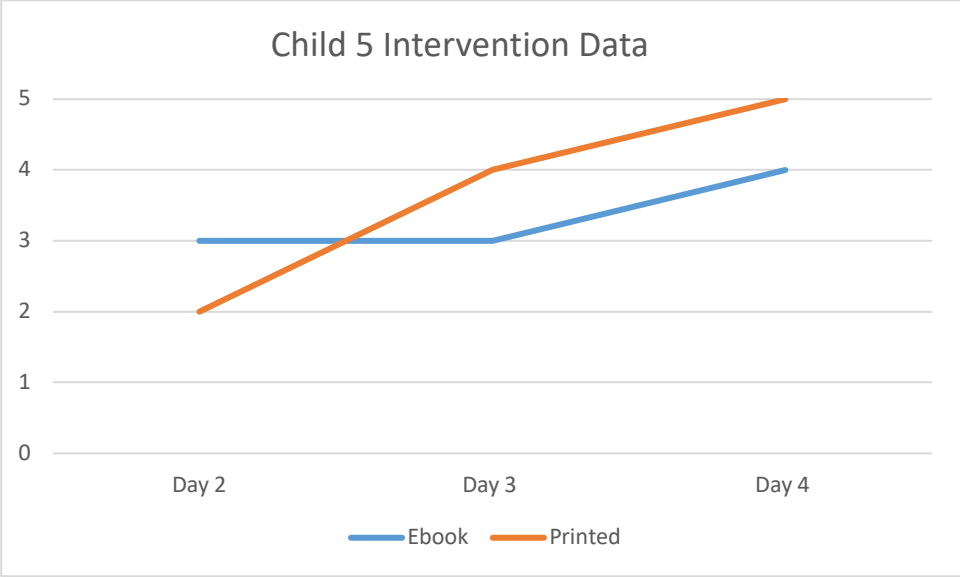


Figure 12

Child 5 Intervention Data



Prompt Responses: Baseline with Printed Books

During baseline and end of intervention sessions, participants were asked all 10 questions for both ebook and printed book formats. All questions were asked in the order listed. This section will focus on the results regarding the baseline session with printed books.

Child 1 received 70% accuracy (7/10 trials) during baseline with printed book format. However, the participant was not consistent with responses between formats. The client incorrectly answered prompt #1 “Show me where to start reading.” The participant correctly answered question #2 “Point to a letter” and questions #3 “Where is the first letter on this page?” The participant incorrectly answered prompt #4 “Show me a word on this page” during the printed book version. The participant

also incorrectly answered question #5 “Where is the title of the book?” However, the client responded correctly to prompt #6 “Where is the last word on this page,” prompt #7 “Point to a space between two words,” prompt #8 “turn the page,” prompt #9 “Show me the beginning of the book,” and prompt #10 “Show me the end of the book.”

Child 2 obtained 30% accuracy (3/10 trials) during baseline for printed book format. The participant correctly answered prompt #1 “Show me where to start reading” during the printed version. The participant incorrectly answered prompt #2 “Point to a letter” and prompt #3 “Where is the first letter on this page?” The child responded correctly to prompt #4 “Show me a word on this page.” However, they incorrectly answered prompt #5 “Where is the title of the book,” prompt #6 “Where is the last word on this page,” and prompt #7 “Point to a space between two words.” The participant did however respond correctly to prompt #8 “Turn the page.” The child incorrectly answered prompt #9 “show me the beginning of the book” and prompt #10 “Show me the end of the book.”

Child 3 achieved 50% accuracy (5/10 trials) during the printed format reading the participant correctly answered prompt #1 “Show me where to start reading,” prompt #2 “Point to a letter,” and question #3 “Where is the first word on this page” in the printed format. However, the participant incorrectly responded to prompt #4 “Show me a word on this page,” prompt #5 “Where is the title of the book,” and prompt #6 “Where is the last word on this page?” Prompts #7 “Point to a space between two words” and #8 “Turn the page” were answered correctly. Prompts #9

“Show me the beginning of the book” and #10 “Show me the end of the book” were both answered incorrectly

Child 4 recieved a 60% accuracy (6/10 trials) in printed book reading. Participant 4 incorrectly answered prompt #1 “Show me where to start reading.” The child correctly answered prompt #2 “Point to a letter, but incorrectly responded to prompt #3 “Where is the first letter on this page?” The participant correctly answered prompts #4 “Show me a word on this page” and #5 “Where is the title of the book?” However, the participant incorrectly answered prompts #6 “Where is the last word on this page” and #7 “Point to a space between two words.” Child 4 answered prompt #8 “Turn the page” correctly, but incorrectly responded to prompts #9 “Show me the beginning of the book” and #10 “Show me the end of the book” during the printed book reading.

Lastly, Child 5 received 40% accuracy (4/10 trials) during printed book reading. The participant correctly answered prompt #1 “Show me where to start reading” and prompt #2 “Point to a letter.” However, the participant incorrectly answered prompts #3 “Where is the first letter on this page,” #4 “Show me a word on this page,” #5 “Where is the title of the book,” and #6 “Where is the last word on this page?” in the printed book reading, but incorrectly answered this question during the ebook format. Prompts #7 “Point to a space between two words” and #8 “Turn the page” were answered correctly. The last two prompts #9 “Show me the beginning of the book” and #10 “Show me the end of the book” were answered incorrectly.

Prompt Responses: Intervention with Printed books

Intervention included the use of dialogic readings of *Bruce's Big Move* by Ryan T. Higgins (2019), *The Sun is a Peach* by Sara Cassidy (2020), *We Don't Eat Our Classmates* by Ryan T. Higgins (2021), *The Panda Problem* by Deborah Underwood (2019), and *Little Tree* by Loren Long (2016) on both ebook and printed book versions. During these readings, the investigator provided a series of five prompts. Data was taken on the initial responses of the participants; however, feedback was provided afterwards by the investigator. The number of correct items were divided by the total number of trials to equate a percentage. Figures 8-12 show line graph analyzation of the intervention days. This section will focus on the results from printed book readings only.

Beginning with Child 1, an increase in accuracy with printed books was observed. This participant received 60% accuracy (3/5 trials) on Day 2, the initial start of intervention. However, the increase in accuracy is observed by the participant reaching 100% accuracy (5/5 trials) on the final day of intervention, Day 4.

Child 2 differs from Child 1 due to their static data. Child 2 remained at 80% accuracy (4/5 trials) throughout the entirety of intervention. Day 2, Day 3, and Day 4 saw no decreases or increases when presented with print awareness prompts.

Child 3 saw an increase in printed books. The participant started intervention on Day 2 with 60% accuracy (3/5 trials) and remained at this level of accuracy with Day 3 as well. However, on Day 4, the final day of intervention, the child received 100% accuracy (5/5 trials) when given print awareness prompts during dialogic reading.

Child 4, like Child 2, also saw a static level of accuracy with printed books. The participant stayed at 80% accuracy (4/5 trials) for all days of intervention. No changes occurred throughout intervention regarding the participant's accuracy with printed books.

Finally, Child 5 also saw an increase with printed book intervention. The child began intervention with 40% accuracy (2/5 trials) when given a prompt. Day 3 saw an increase of 80% accuracy (4/5 trials) with printed books. Lastly, Day 4 data revealed 100% accuracy (5/5 trials) for Child 5.

Prompt Responses: End of Intervention with Printed Books

Regarding the end of intervention session, the participants were asked the same 10 questions in the same order as day one/baseline data collection session. No feedback or cueing were provided to ensure pure data. This section will focus on end of intervention data.

Beginning with Child 1, the participant obtained 80% accuracy (8/10 trials) during printed book reading. Child 1 incorrectly answered prompt #1 "Show me where to start reading." However, they correctly answered prompts #2 "Point to a letter," #3 "Where is the first letter on this page," #4 "Show me a word on this page," and #5 "Where is the title of the book?" The participant incorrectly responded to prompt #6 "Where is the last word on this page?" The child correctly answered prompts #7 "Point to a space between two words," #8 "Turn the page," #9 "Show me the beginning of the book," and prompt #10 "Show me the end of the book" during printed book reading.

Child 2 also saw improvement from baseline receiving 60% accuracy (6/10 trials) during printed reading. The participant correctly responded to prompts #1 “Show me where to start reading” and #2 “Point to a letter.” The child incorrectly answered prompt #3 “Where is the first letter on this page?” Child 2 correctly answered prompt #4 “Show me a word on this page” and #5 “Where is the title of the book?” The participant incorrectly responded to prompts #6 “Where is the last word on this page” and #7 “Point to a space between two words.” Prompts #8 “Turn the page,” #9 “Show me the beginning of the book,” and #10 “Show me the end of the book,” were all answered correctly by Child 2.

Child 3, following their peers, saw an increase from baseline as well. The participant received 60% accuracy (6/10 trials) in printed reading. Child 3 incorrectly answered prompt #1 “Show me where to start reading” in printed format. The child then answered prompt #2 “Point to a letter” correctly. The participant answered prompt #3 “Where is the first letter on this page” incorrectly. Child 3 answered prompt #4 “Show me a word on this page” correctly. The child answered prompts #5 “Where is the title of the book” and #6 “Where is the last word on this page” incorrectly. Child 3 then correctly answered prompts #7 “Point to a space between two words,” #8 “Turn the page,” #9 “Show me the beginning of the book,” and #10 “Show me the end of the book.”

Child 4 also saw an increase from baseline by obtaining 80% accuracy (8/10 trials) for printed book reading. The participant correctly answered prompt #1 “Show me where to start reading” and prompt #2 “Point to a letter.” Prompt #3 “Where is the

first letter on this page" was answered incorrectly by the participant. The child then correctly answered prompts #4 "Show me a word on this page" and #5 "Where is the title of the book." Prompt #6 "Where is the last word on this page" was answered incorrectly by the child. Child 4 answered prompts #7 "Point to a space between two words," #8 "Turn the page," #9 "Show me the beginning of the book," and #10 "Show me the end of the book" correctly.

Finally, Child 5 increased from baseline by receiving 50% accuracy (5/10 trials) in the printed version. The participant incorrectly answered prompt #1 "Show me where to start reading," but correctly answered prompt #2 "Point to a letter." Prompt #3 "Where is the first letter on this page" was answered incorrectly by the participant. Child 5 correctly answered prompts #4 "Show me a word on this page" and #5 "Where is the title of the book." Prompts #6 "Where is the last word on this page" and #7 "Point to a space between two words" were incorrectly answered by the child. Prompt #8 "Turn the page," was answered correctly, however, prompt #9 "Show me the beginning of the book," was answered incorrectly. The final prompt, #10 "Show me the end of the book" was answered correctly.

Results of Ebooks

With an ongoing pandemic and more increased use of ebooks, it is relevant this area be studied. This section of the study focuses on the results of print awareness within ebooks. These results reveal data on baseline, intervention, and end of intervention.

Prompt Responses: Baseline with Ebooks

Child 1 received 70% accuracy (7/10 trials) during baseline for ebook reading. The participant incorrectly answered prompt #1 “Show me where to start reading.” The child then correctly answered prompts #2 “Point to a letter,” #3 “Where is the first letter on this page,” and #4 “Show me a word on this page.” Child 1 incorrectly answered prompts #5 “Where is the title of the book” and #6 “Where is the last word on this page.” The participant correctly answered prompts #7 “Point to a space between two words,” #8 “Turn the page,” #9 “Show me the beginning of the book,” and #10 “Show me the end of the book.”

Child 2 obtained 30% accuracy (3/10 trials) during baseline for ebook reading. The participant incorrectly answered prompts #1 “Show me where to start reading,” #2 “Point to a letter,” and #3“Where is the first letter on this page.” Prompt #4 “Show me a word on this page” was answered correctly by the participant. Child 2 incorrectly answered prompt #5 “Where is the title of the book,” but correctly answered prompt #6 “Where is the last word on this page.” Prompt #7 “Point to a space between two words” was answered incorrectly, but prompt #8 “Turn the page” was answered correctly. Prompts #9 “Show me the beginning of the book,” and #10 “Show me the end of the book” were answered incorrectly.

Child 3 received 30% accuracy (3/10 trials) during ebook reading. The participant correctly answered prompt #1 “Show me where to start reading,” but incorrectly answered prompt #2 “Point to a letter.” Prompt #3 “Where is the first word on this page” was answered correctly. The participant correctly answered prompt #4

“Show me a word on this page.” The child then incorrectly answered prompts #5 “Where is the title of the book,” #6 “Where is the last word on this page,” and #7 “Point to a space between two words.” Prompt #8 “Turn the page” was answered correctly. The participant incorrectly answered prompts #9 “Show me the beginning of the book” and #10 “Show me the end of the book.”

Child 4 also received a 30% accuracy (3/10 trials) in ebook reading. Child 4 correctly answered prompt #1 “Show me a word on this page” incorrectly. The participant then answered prompt #2 “Point to a letter” correctly. Prompts #3 “Where is the first word on this page” and #4 “Show me a word on this page” were answered incorrectly. Prompt #5 “Where is the title of the book” was answered correctly. The participant answered prompts #6 “Where is the last word on this page” and #7 “Point to a space between two words” incorrectly. Prompts #8, “Turn the page” was answered correctly. Prompts #9 “Show me the beginning of the book” and #10 “Show me the end of the book” were answered incorrectly.

Lastly, Child 5 obtained 50% accuracy (5/10 trials) with an ebook during baseline. The participant incorrectly answered prompt #1 “Show me a word on this page,” but correctly answered prompt #2 “Point to a letter.” The participant incorrectly answered prompt #3 “Where is the first word on this page,” but then went on to correctly answer prompt #4 “Show me a word on this page.” The child incorrectly responded to prompt #5 “Where is the title of the book.” Prompts #6 “Where is the last word on this page,” #7 “Point to a space between two words,” #8

"Turn the page" were answered correctly. Prompts #9 "Show me the beginning of the book" and #10 "Show me the end of the book" were answered incorrectly.

Prompt Responses: Intervention with Ebooks

As with the printed books, intervention included the use of dialogic readings of *Bruce's Big Move* by Ryan T. Higgins (2019), *The Sun is a Peach* by Sara Cassidy (2020), *We Don't Eat Our Classmates* by Ryan T. Higgins (2021), *The Panda Problem* by Deborah Underwood (2019), and *Little Tree* by Loren Long (2016) During these readings, the investigator, again, asked a series of five prompts. Data was taken in the same manner as printed books with the initial responses of the participants being the only point of data collection. Feedback was provided afterwards by the investigator as well. The number of correct items were divided by the total number of trials to equate a percentage. Figures 8-12 show line graph analyzation of the intervention days.

Child 1 obtained 80% accuracy (4/5 trials) on Day 2, the initial day of intervention. However, on Day 3, the child received 60% accuracy (3/5 trials) revealing a slight decrease from the previous day. Yet, by Day 4, the child had increased back to the original 80% accuracy (4/5 trials).

Child 2 began at 60% accuracy (3/5 trials) on Day 2 with ebook reading. On Day 3 of intervention, the child rose to 80% accuracy (4/5 trials) with print awareness prompts on an ebook. Day 4 saw this 80% accuracy (4/5 trials) remain.

Child 3 had static data for the entirety of the study. The participant started intervention on Day 2 with 80% accuracy (4/5 trials) and remained at this level of accuracy for Days 3 and 4 of the study.

Child 4 saw an increase of accuracy in ebooks. The participant started at 40% accuracy (2/5 trials) for the initial day of intervention. On Day 3, the child had raised accuracy to 60% (3/5 trials) and then to 80% (4/5 trials) on Day 4.

Finally, Child 5 also saw an increase with ebook intervention. The child started intervention with 60% accuracy (3/5 trials) with ebook prompts. On Day 3, the child remained at 60% accuracy (3/5 trials) with ebooks. Lastly, Day 4 data showed the participant achieved 80% accuracy (4/5 trials).

Prompt Responses: End of Intervention with Ebooks

Regarding the end of intervention session, the participants were asked the same 10 questions in the same order as day one/baseline data collection session. No feedback or cueing were provided to ensure pure data. This section will focus on end of intervention data.

Child 1 achieved the participant obtained 90% accuracy (9/10 trials) during ebook end of intervention data collection. Child 1 correctly answered prompts #1 “Show me where to start reading,” #2 “Point to a letter,” #3 “Where is the first letter on this page,” #4 “Show me a word on this page,” #5 Where is the title of the book,” and #6 “Where is the last word on this page?” Prompt #7 “Point to a space between two words” remained the only prompt child 1 answered incorrectly. Prompts #8 “Turn the page,” #9 “Show me the beginning of the book,” and #10 “Show me the end of the book” were all answered correctly.

Child 2 also saw improvement from baseline receiving 50% accuracy (6/10 trials) with ebook reading. The participant correctly responded to prompts #1 “Show

me where to start reading" and #2 "Point to a letter." The child incorrectly answered prompt #3 "Where is the first letter on this page?" Child 2 correctly answered prompt #4 "Show me a word on this page" and #5 "Where is the title of the book?" The participant incorrectly responded to prompts #6 "Where is the last word on this page" and #7 "Point to a space between two words." Prompt #8 "Turn the page" was answered correctly but prompts #9 "Show me the beginning of the book" and #10 "Show me the end of the book," were answered incorrectly by Child 2.

Child 3 also saw an increase from baseline. The participant received 70% accuracy (7/10 trials) in ebook reading. Child 3 correctly answered prompt #1 "Show me where to start reading" and prompt #2 "Point to a letter." The participant answered prompt #3 "Where is the first letter on this page" incorrectly. Child 3 answered prompt #4 "Show me a word on this page" and prompt #5 "Where is the title of the book" correctly. The child then answered prompt #6 "Where is the last word on this page" incorrectly. Child 3 correctly answered prompts #7 "Point to a space between two words" and #8 "Turn the page." Prompt #9 "Show me the beginning of the book" was answered incorrectly. Lastly, prompt #10 "Show me the end of the book" was correctly answered.

Child 4 also saw an increase from baseline by obtaining 80% accuracy (8/10 trials) for ebook reading at end of intervention. The participant incorrectly answered prompt #1 "Show me where to start reading." Prompts #2 "Point to a letter," #3 "Where is the first letter on this page," #4 "Show me a word on this page" and #5 "Where is the title of the book" were answered correctly was answered by the

participant. Prompt #6 “Where is the last word on this page” was answered incorrectly by the child. Child 4 answered prompts #7 “Point to a space between two words,” #8 “Turn the page,” #9 “Show me the beginning of the book,” and #10 “Show me the end of the book” correctly.

Finally, Child 5 increased from baseline by receiving 70% accuracy (7/10 trials) in the ebook format. The participant correctly answered prompt #1 “Show me where to start reading” and prompt #2 “Point to a letter.” Prompt #3 “Where is the first letter on this page” was answered incorrectly by the participant. Child 5 correctly answered prompts #4 “Show me a word on this page,” #5 “Where is the title of the book,” and #6 “Where is the last word on this page.” Prompt #7 “Point to a space between two words” was incorrectly answered by the child. Prompt #8 “Turn the page,” was answered correctly, however, prompt #9 “Show me the beginning of the book,” was answered incorrectly. The final prompt, #10 “Show me the end of the book” was answered correctly.

Chapter 5: Discussion

During the current study, investigators sought to examine ways in which format may support print awareness in preschool aged children. The study took place in a private preschool with five participants. This chapter delves into a deep discussion concerning the results of this research question as well as possible limitations and concluding thoughts. Data revealed every participant increased from the initial baseline session to the end of intervention session regarding print awareness skills. Figures 3-12 document the increase of accuracy compared between the two sets of

data. Data suggest there was more accuracy with printed books, however the most important note is that intervention yielded success regardless of format.

Discussion of Results

Given parental consent, each participant was pulled out of regular classroom activities to participate in an individualized book reading involving ebooks and traditional paper books. Five participants were involved based on meeting the criteria of being preschool aged, attending LaFontaine Nature School, and having signed parental consent. Individuals were excluded if they did not meet age requirements or were not attending the private preschool where the study was conducted. Students were exempt if parental consent forms were not signed as well. Some guardians may have felt their child did not need additional reading services and would not benefit from this study, did not wish for their children to be pulled from class activities, or simply missed the deadline for paperwork signatures which may account for low participation rate. Additionally, investigators felt a small group would best fit the need of the study given the experiment utilized a collective case study design.

Continuing with the importance of the design chosen, it was critical for the team to find a unique approach that differed from previous literature. One way the investigative team incorporated a different approach was through use of a collective case study design. In large studies, such as Willoughby et al. (2015) which looked at 94 participants a wide range is viewed, it is challenging to focus on individual change. The current study heavily focused on the individuality and overall response to intervention throughout the study. This perspective allows for a closer and deeper look into how

each student performed which would prove beneficial for parents/guardians and professionals such as educators.

Moreover, a new perspective was brought to the discussion of emergent literacy by solely focusing on print awareness. Shamir and Shlafer (2011) and Ihmeideh (2014) both included print awareness in their studies regarding ebooks along with other areas of emergent literacy such as vocabulary and phonological awareness. However, the current study maintained only print awareness to hone this skill and provide a well-rounded approach to learning more about the specific skill acquisition concerning ebooks and printed books.

Printed Books Discussion

As seen in the baseline, intervention, and end of intervention data, all participants improved in their print awareness skills over the week intervention. The greatest increase in baseline versus end of intervention data was seen with Child 4 who rose from 40% accuracy to 100% accuracy with intervention data. Data suggests dialogic intervention with printed book versions increased accuracy in print awareness skills.

Although all students saw an increase in these skills, it is evident a majority of students routinely responded incorrectly to certain prompts at end of intervention data collection. These prompts included #3 “Where is the first letter on this page,” #6 “Where is the last word on this page,” #9 “Show me the beginning of the book,” and #10 “Show me the end of the book.” Due to time constraints, it may be extrapolated

that intervention was not long enough for participants to perform new skills independently and would have benefited more from extended intervention.

Prompt #3 “Where is the first letter on this page” was answered incorrectly by four of the five participants during printed book reading. Equally concerning, prompt #6 “Where is the last word on this page” was missed with four out of five participants in printed book reading at end of intervention. This prompt was targeted during intervention by use of finger highlighting. The investigator would also point to the first or last word and identify them as well. This drop in performance for these two prompts may be attributed to the lack of exposure in the weeklong study. Although a majority of the prompts were likely targeted in classroom instruction or dialogic reading with a parent/guardian, providing the child with previous knowledge and exposure, these particular questions may be exempt from this assumption. Additionally, this may have been targeted in the intervention readings before end of intervention was conducted, but this was limited exposure as it was brief intervention periods during a week’s time. Limited experience and lack of previous knowledge for the investigator to build upon may contribute to the decline in performance regarding these prompts.

Prompt #7 “Point to a space between two words” was hypothesized to be a difficult question for the participants for the same lack of exposure reasoning as prompts #3 and #6. However, only two participants missed this prompt in paper book readings. Again, it is theorized that a lack of exposure attributed to those who incorrectly responded to this prompt. Yet, for the participants who answered correctly,

their success may be due to understanding this print awareness concept. Another suggestion may be that this was an estimate by the participants. On two occasions anecdotally, two students told the investigator they didn't know the answer. When told to make their best guess, both participants answered correctly adding to the theory that some answers may have been the child's estimate.

With prompt #9 "Show me the beginning of the book," a theory for the majority of students missing this prompt is the vocabulary used. Students may not be familiar with the "beginning" of the book due to the word being used to describe it. This prompt, as well as prompt #10 "Show me the end of the book," may have proven difficult for most students as it required them to navigate the ebook via iPad independently as well. Students may need additional independent practice turning back pages/specifically locating the front of the book. During intervention, the investigator pointed to the front of the book and identified it but did not allow for individual and independent practice locating this page of the book. This lack of experience may have impacted the students regarding this specific question and impacted the results.

Ebooks Discussion

As with printed book data, ebook data collection reveals that dialogic reading is a successful intervention. Ebooks saw increases in accuracy with the greatest being 30% accuracy (3/10 trials) at baseline to 80% accuracy (8/10 trials) at end of intervention. With ebooks, a majority of students missed prompts #3 "Where is the

first letter on this page" and #6 "Where is the last word on this page" at end of intervention data collection.

Prompt #3 "Where is the first letter on this page" was missed with three out of five participants in ebook end of intervention data collection. Prompt #6 "Where is the last word on this page?" also missed with three out of five participants. These prompts were targeted during intervention by use of audio highlighting during ebook reading. As with printed book, the same theories are attributed to this decrease in accuracy. Limited exposure and time constraints on the study may be the most accurate theory as to why this drop in performance was so prevalent with this prompt. Additionally, the use of MackinVia may have been a new system for the students. This form of ebook may have been an introduction and thus more time may have been warranted to better understand the system.

Strengths and Limitations

As mentioned previously, a collective case study design brought forth a new perspective to add to previous literature. With this design, each student's results were evaluated and interpreted individually providing a unique outlook on comparing printed book and ebook print awareness skills. Providing this individualized approach can supply insight tailored to one-on-one intervention or with parent/child dialogic reading involving print awareness skills.

Another strength of the current study is incorporating a focused view on print awareness. Previous literature has accompanied print awareness along with other features of emergent literacy skills, but to the current team's knowledge, no studies

have revolved around print awareness, only in comparison between ebooks and printed books. Print awareness is a crucial step in literacy learning and is an indicator of future success in reading, making the need for this study great.

Although these strengths are present within the current study, limitations are also relevant. The most prevalent limitation being lack of diversity. Of the five participants, only one student represented a race other than Caucasian and only one student was male. Students who do not identify as a Caucasian female may find altering or differing results. Furthermore, only one student received speech therapy services for an articulation disorder. Students with other types of developmental delays may also have altering or differing results.

Continuing, lack of diversity may also be seen in the socioeconomic status of the participants' families. Although no formal survey was conducted to ask the parents/guardians of their income, the study took place at a private pre-school in which tuition is paid. Inferences can be made assuming the participants were not in a low socioeconomic group, although again, no formal evaluation of this was made. This may impact students being predisposed to the ebook reading if they had this technology readily available. Students with low socioeconomic status may show a lack of understanding or slower acquisition when given a tablet if the students have not had access to one. Furthermore, the MackinVia system presented the same form of ebook during every reading session. Since this study may have been the students first exposure to this system, they may not harbor the skills or background knowledge to operate it to the best of their ability. This may have hindered results.

The study was also heavily limited by time constraints. Although the weeklong timeframe fit best into scheduling and allowed for students to not be pulled out so frequently, it also hindered potential further success. As referenced above, some prompts were theorized to be answered incorrectly due to lack of exposure in which case more time to provide instruction and intervention would have proven beneficial. Furthermore, newly developed skills concerning print awareness may have needed more time to be reinforced before independent success could be measured accurately. Understanding how students preformed with print awareness prior to exposure would have yielded a greater knowledge as to how this study impacted this skill.

Implications

Further research is needed regarding print awareness comparisons in printed books and ebooks. Specifically, research should be geared toward individual sessions over a greater length of time. A longer period to conduct intervention may result in differing data and ultimately provide a deeper understanding of how different formats can impact print awareness in preschool aged students. Replication of this study is encouraged with an addition of a greater time period and the inclusion of a more diverse student population. In addition, it may prove beneficial to arrange printed book reading one session and ebook reading the next session. This may alleviate participant apprehension to reading the same story twice in one session and improve enthusiasm in participating as well as possibly improve accuracy in responses.

Future studies may also wish to conduct research regarding what is taught in classroom curriculum concerning print awareness. Knowing the participants foundational would allow the researcher to build upon existing knowledge and identify intervention prompts that target developing skills. This could be done by developing a print awareness screener and administering it to participants. It would prove beneficial to survey how parents/guardians normally read to their children and the frequency of those readings to also determine skills that may already be in place. Future research may also want to include a mix between ebook and printed book readings. Although text features such as word highlighting and auto-narration were implemented in ebook readings in the current study, future research may want to expand upon this. Multiple text features such as animated story telling, illustrations, different fonts, and even coloring may differ between printed and ebook readings. This may impact results in future studies. Additionally, student and parent preferences should be taken into account via survey or questionnaire.

Conclusion

Data suggest that students benefit from a dialogic reading approach with both printed and ebook readings. The results from this study suggest that preschool age students can achieve success in print awareness readings but may achieve higher accuracy with printed books.

The study solidifies dialogic reading as a successful form of intervention as all participates saw gains in a week. Although growth was seen with all students, the study recognizes its limitations and suggests the need for future replication and

expansion of this study. Replication and expansion of this study may result in a better understanding of print awareness acquisition in preschool aged students when given ebooks and printed books.

These findings yield greater questions and ultimately provide a pathway for future research. This research recognizes its limitations in time, population/participants, methodology, and design. The research team greatly encourages future research, expansion, and duplication of the current study. Due to increasingly online instruction, it is vital professionals and parents/guardians know evidence-based instruction methods especially concerning reading abilities. Ultimately, to improve literacy development across America, preschool students need literacy rich environments and dialogic reading experiences to foster their emergent literacy skills.

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