CHAPTER ONE: INTRODUCTION

Statement of the Problem

According to Dale (2017), electronic books are a growing market; despite this, studies into the quality of this literature for children are relatively few (Korat & Shamir, 2004; Yokota & Teale, 2014). Just as research ~~have~~ has shown the importance of choosing quality printed children's literature for literacy development (Bang, 2000; Haugland & Wright, 1997; Sulzby, 1985; Sipe, 2007), researchers (e.g., Labbo & Kuhn, 2000; Yokota & Teale, 2014) consider the selection of quality e-books for children to be equally important.

Up to this point, much of the research conducted on quality was for electronic books (e-books, digital books) designed for use on desktop computers along with a mouse (Bus, Takacs, & Kegel, 2014; De Jong & Bus, 2002; Salmon, 2013; Smeets & Bus, 2013), and this technology is becoming increasingly outdated. In fact, research on e-books for use on desktop computers has demonstrated the importance of quality. For example, the interactive nature of certain electronic books (e.g., dictionary, text-to-speech highlighting, hotspots) has the potential to either support or distract young readers. However, ~~Little~~ little research, ~~however,~~ has been conducted on e-books designed for mobile platforms (e.g., tablets and mobile devices), which offer increased access to multimodal (e.g., seeing, touching, hearing, shaking/moving, speaking) features. In fact, 95% of families with kids between zero and eight years old have access to smartphones

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(Common Sense Media Census, 2017); they are using mobile devices[1] for a number of activities such as reading, listening to music, entertainment, and playing games (Common Sense Media Census, 2017). These mobile multimodal devices allow for interactions that were not available on desktop computers at the time the previously cited research was conducted. As such, an updated study on digital books (the current term used to describe all types of e-books) should reflect how technology has advanced from studies of e-books read on desktop computers using a mouse to the interactive mobile devices being used today. As reading conventions in the digital world change to reflect new technology, the ways readers negotiate meaning through interactive features also change (Knobel & Lankshear, 2014). More research focused on interactive features (e.g., touch drag, or shake to activate an animation/text/link,; drag, shake, animations, music options,; and games) found in digital books designed for mobile devices is critical, especially since because the previous work has been was conducted with outdated technology (i.e., desktop computers and mouse). That is, we need to understand how current touch screen mobile technology changed the reading experience in order to someday better understand reading development in the digital age. To that end, more needs to be understood about the features readers encounter on these touchscreen mobile devices by way of a content features analysis in order to potentially gain insights into how children are reading digital books. The present study will examined the unique features of purposefully selected

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[1] For the rest of this paper, the term mobile devices will include, but not be limited to, devices such as iPads, Amazon Kindle, iPhones, and Google phones.

high-quality digital books used on multimodal ~~(e.g., touchscreen, hotspots)~~ mobile devices (e.g., iPad or Kindle) that are based upon well-known stories in children's literature. It ~~will be~~ was limited to narrative texts and ~~will~~ explored the multimodal interactive features of those selections.

Research Foundation

Few studies have evaluated or defined the *quality* of digital books as a potential means of supporting young children's reading development, and most of those that have, used platforms such as CD-ROMs and desktop computers. Both are now ~~e~~obsolete in today's fast-paced mobile world (De Jong & Bus, 2003; Korat & Shamir, 2004). As researchers are beginning to examine digital books, consensus is developing around the understanding that the quality of the content and how interactive features (e.g., hotspots, games, media) interact with that content are key factors in these digital tools' ability to support literacy learning (Bus~~, Takacs, Kegel~~ et al., 2014; De Jong & Bus, 2002; Korat & Shamir, 2004). In picture books, the term *high-quality* refers to well-designed picture books that elicit and engage children in making meaning through words, illustrations, and book designs (Lambert, 2015; Yokota, 2013). The components of what defines a high-quality picture book~~s~~ alongside interactive features present in digital books are what determines the quality of the story in a digital format.

One of the first e-book evaluations on digital book features and their impact on the quality of the book was conducted by Labbo and Kuhn (2000). They evaluated two CD-ROM storybooks that were replicated from well-known print picture books, *Stellaluna* (Cannon, 1996) and *Arthur's Teacher Trouble* (Brown, 1994). Labbo and

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Kuhn's content analysis (2000) was informed by Mandler and Johnson's (1977) notion of story structure (e.g. setting, problem, characters, resolution) and Armbruster and Anderson's (1984) constructs of considerate or inconsiderate texts. Considerate texts are written in ways that support ~~students'~~ students' comprehension, as opposed to inconsiderate texts. This can be seen in regard to structure, audience appropriateness, coherence, and unity. Within the considerate and inconsiderate constructs, the terms integral (vital or corresponding actions), incidental (additional or plausible actions), and incongruent (disparate and illogical actions) describe ~~the~~ whether the features were supportive in meaning-making (Labbo & Kuhn, 2000). The framework was initially designed to evaluate content area~~-~~ and text structure to determine if they were supportive or nonsupportive of comprehension. Labbo and Kuhn's study adapted the Armbruster ~~Ambruster~~ and Anderson's (1984) considerate and inconsiderate framework to apply it to whether e-book features would assist young children in "following or remembering the story" (Labbo & Kuhn, 2000, p. 191). ~~Since~~ Because teachers select and mediate the story for young children, the concept of considerate texts allows for a better understanding in the role of the text and how children make meaning. However, since children can interact with digital books independently, whether or not these texts are considerate or inconsiderate takes on greater importance, even for the youngest school-aged learners. This framework allowed the researchers to characterize aspects of the digital books by utilizing the structures found within traditional texts; as such, they "considered anything that was related to the story structure to be considerate and

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anything that was not related to the story structure to be inconsiderate" (Labbo & Kuhn, 2000, p. 192).

Labbo and Kuhn (2000) adapted the terms considerate and inconsiderate (Armbruster & Anderson, 1984) to indicate the quality of both the content and the interactive features available on current commercial digital books and how these texts potentially ~~to~~ support reading development. For example, Labbo and Kuhn ~~(2000)~~ found 84% ($n = 201$) of the multimedia effects in the electronic version of *Stellaluna* were considered to be either integral or incidental; as such, they designated this e-book a considerate text. In contrast, only 44% ($n = 165$) of the multimedia features in *Arthur's Teacher Trouble* were either integral or incidental~~,~~; therefore, they classified it as an inconsiderate text. ~~The authors of the study designated the books in this case study as considerate and inconsiderate depending upon the outcome of their analysis.~~

This classification seemed to be confirmed by the retelling of one of their focus students, Roberto, who engaged in "rich chains of affect and cognition when reading *Stellaluna*, but … in nonconnected and passive attentive behaviors when interacting with the story-incongruent multimedia features of *Arthur's Teacher Trouble*" (Labbo & Kuhn, 2000, p. 201).

Labbo and Kuhn's (2000) findings substantiated their claim that when the story incorporated a high percentage of incongruent features, Roberto's retelling did not connect to the story grammar. When Roberto was presented with a high percentage of integral features, such as those found in *Stellaluna*, on the other hand, he was able to make meaning that paralleled the narrative structure. The authors argue that, as a

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kindergartener, Roberto was developing his sense of story structure, (a critical component of school literacy) and that only the considerate text aided this type of reading development. ~~Since~~ Because researchers continue to turn to these findings, an updated evaluation of this approach to determine if they are applicable to currently available digital books and their interactive features would serve to inform the field, especially if we are to understand how these features may impact reading development.

Theoretical Framework

The present study ~~is~~ was framed with ~~the~~ an overarching theoretical question: ~~of, how~~ How do the affordances of digital books change the nature of reading? In order to better understand the potential impact of digital books, we must first understand the role of technology's effect on literacy and how it has transformed literacy today. *Literacy*, as defined by Knobel and Lankshear (2007), is the act of reading, writing, decoding, and encoding print to create meaning for understanding. The term literacy shifted to include advances in technology. One way to describe this shift is through the terminology *new literacies* (Knobel & Lankshear, 2014):

> As social practices mediated by digital technologies, new literacies differ
> fundamentally from conventional print literacies on the basis that their
> inscriptions are rendered in pixels on screens rather than by impressions on paper,
> by means of digital code rather than material analogue means (whether printed
> and illustrated/imaged/diagrammed by hand, typewriter, or press). (p. 98).

Knobel and Lankshear (2014) indicate such changes can be seen in multiple ways, including the presentation of text on pixelated, encoded screens that allows for

multimodal experiences (e.g., seeing, touching, hearing, shaking/moving, speaking). This process of reading and engaging with a story on a screen is unlike the traditional ink and paper impression. As reading conventions in the digital world alter in response to the technological advancement, how the reader negotiates meaning may also change. These changes can be seen through inclusion of interactive features (e.g., dictionary, text-to-speech highlighting, hotspots) and hypertext (e.g., nonlinear digital text that allows readers to explore one interactive segment to the next) (Reinking, 1997). The new literacies theoretical lens that underpins this research has the potential to address how digital books have changed reading with their interactive multimodal features on mobile devices.

Background: Initial Pilot Study

Given our understanding of the importance of quality children's books (Bang, 2000; Sipe, 2007; Sulzby, 1985), I felt it important to explore the framework presented by Labbo and Kuhn (2000) with the most recent iteration of digital books read on mobile devices. As part of this process, I conducted a pilot study (Ly, 2016) investigating whether features in multimodal digital books read on mobile devices (i.e., iPad) would support meaning making for young children according to these guidelines. I conducted a content feature analysis of four purposefully selected texts to determine whether they could be classified as considerate and inconsiderate (Armbruster & Anderson, 1984). Of the four popular digital books titles I explored, two of the four books, *Curious George and the Firefighters* (84% integral and 16% incidental; Tribal Nova, 2014) and *The Going to Bed Book* (27% integral and 55 % incidental; Loud Crow Interactive, 2011).

were designated considerate, ~~where as~~whereas two others, *Little Red Riding Hood* (28% congruent and 24% incidental; Nosy Crow, ~~2014~~2013) and *The Three Little Pigs* (4% congruent with 6 % incidental; Tabtale, 2014), were designated inconsiderate. This present study ~~adds~~added to the growing research ~~that indicates~~indicating that the quality of content and features matters in multimodal digital books as well as in printed books. As such, my aim ~~is~~was to continue this line of inquiry to determine whether or not high-quality digital books with their multimodal interactive features support~~, or do not support~~ the narrative in the story.

Purpose of the Proposed Study

~~————~~This ~~proposed~~study ~~aims~~aimed to update and extend Labbo and Kuhn's (2000) research by analyzing and evaluating the quality of currently available commercial digital books on multimodal devices (i.e., iPad). The titles ~~will be~~were selected purposefully and ~~will be~~were electronic versions of high-quality children's books that are often found in pre-school through second grade classrooms. The selections ~~will also be~~were also compatible with mobile platforms and devices (Apple or Android). ~~Such~~The content feature analysis ~~will~~contributed to the overarching theoretical question~~:~~, ~~how~~How have digital books affected the nature of reading? In particular, the present study ~~will~~focused on how text that integrates interactive features on mobile platforms may affect the story narrative and how these features support comprehension. This broad question ~~will~~guided the study's more specific questions~~of~~:

1. What are the types of interactive features found in e-book versions (digital books) of high-quality printed books that are currently available on mobile devices?
2. What interactive features from the considerate/inconsiderate framework (i.e., integral, incidental, and incongruent) are still effective for e-book classification, and do these terms need to be modified for current digital books?
3. How can the findings from the content feature analysis inform the development of an evaluative tool that helps teachers decide whether an e-book would readily support students' understanding of story grammar?

The answers to these questions will contribute to our current understanding of the features present in the types of digital books that are being used in classrooms and libraries across the country. Additionally, the study will informs the field about the interactive features found in digital books, which may serve to better understand how reading development has changed.

A selection criteria process will be was followed to identify available high-quality e-book versions of printed children's books. This method will determined the quantity of texts currently available on the market that are both high-quality versions of printed children's books and offered in digital form. A content feature analysis will be was conducted on the number of digital books available for commercial purchase. Examining high-quality print versions of children's books in digital form will allowed me

to identify and gain insights into the types of interactive features and thus ~~be able to~~ determine whether the framework ~~Kuhn and~~ Labbo and Kuhn (2000) identified is still valid as a means of identifying considerate and inconsiderate texts.

Significance—

Currently, research conducted by Chera and Wood (Chera & Wood, 2003~~,~~; Wood 2005), Korat and Shamir (2007, 2008, 2012), and Segal-Drori, Korat, Shamir, and Klein (2010) indicates that~~,~~ when digital books designed for use on desktop computers, which are antiquated technology, are developed with the guidance of a literacy researcher, they can be used to support literacy learning. Research on commercial versions of these books, on the other hand, has produced mixed findings. However, no research has conducted a content analysis on multimodal mobile digital books with their interactive features. In fact, the last content analysis of digital books on any platform was conducted ~~over~~ more than ten years ago (Labbo & Kuhn, 2000; De Jong & Bus, 2002; Korat & Shamir, 2004). At that time, digital books were read on desktop computers using a mouse, whereas current digital books are being read on mobile devices that allow for a touchscreen multimodal experience. As technology advances, it is imperative that research reflects currently available features; in the case of digital books, this means looking at texts that are read on different platforms (e.g., mobile phones, tablets) and offer multimodal features (e.g., seeing, touching, hearing, shaking/moving, speaking). Critically, this includes looking at how these interactive features can be characterized as supporting the development of story structure, especially for young learners (Labbo & Kuhn, 2000).

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It is the case that digital tools, such as digital books, are being read both in and out of classrooms. Yet, a lack of understanding of what makes a selection text considerate or inconsiderate for young readers makes it difficult to select digital books that may contribute to their reading development. It is important to identify the types of interactive features that contribute to supporting reading comprehension in an e-book. As such, a the content feature analysis will served to further understanding of how these features aid in supporting high-quality digital texts. Being able to identify these features will assists in the selection process. The proposed This study's content feature analysis may provides support to teachers and parents in determining whether a given e-book is considerate or inconsiderate and, therefore, worthy of purchasing. The answers to the research questions posed in my study will provide valuable insights into the interactive multimodal features of digital books read on mobile devices and how these features may or may not support meaning-making for young children (Labbo & Kuhn, 2000). Exploring each of the questions identified above will add to the limited research on the types of content and unique interactive features read on multimodal mobile devices that are being offered in digital books currently available to the public. Lastly, in order to someday address the ways features affect reading development, more needs to be understood about the features found in digital books, and my study will add to that body of knowledge.

Definition of Terms

Book apps appear as icons on mobile devices (e.g., phones, tablets) and are used to describe digital books (Bacon, ~~2014~~2013; Baker, 2015).

Considerate texts use structure and content to support students' comprehension; if a text uses structure (i.e., is the text structure suited for the content?), coherence (i.e., does it make sense the way it is written?), audience appropriateness (i.e., will the targeted audience understand the text and concepts?), and unity (i.e., is the text is written with one focus and is not distracting?), ~~to~~ it supports comprehension (Labbo & Kuhn, 2000).

Comprehension is defined as a dynamic process that occurs simultaneously between the reader (person actively trying to make meaning), text (object that requires meaning making), and activity (purpose for reading) (RAND Reading Study Group, 2002). We read to create meaning for understanding (Knobel & Lankshear, 2014).

Digital affordances, ~~or~~ are actionable possibilities created by the digital environment (Gibson, ~~1970~~1977), that are unavailable through traditional texts and include text-speech highlighting, read-to-me and read-to-self options, and various music and sound effects (Yokota & Teale, 2014).

Digital ~~Divide~~ divide is the widening gap of access to digital devices and Internet between the underprivileged poor to the middle class and wealthy Americans.

Electronic books (basic e-books) are digital objects with text and content that may integrate printed book features (Vassiliou & Rowley, 2008) and can be read on any device, or e-reader, such as a Kindle or Amazon Nook, and those options that are available are minimal (e.g., the ability to annotate, highlight, access a dictionary, or change font size).

Enhanced e-books are electronic books that offer the ability to altering text (e.g. highlighting or changing text), text-speech highlighting features, basic visuals (e.g., static illustrations), sound, music, and access to hotspots, or animation activated by touch or the use of a mouse (Bacon, 20142013).

Hotspots are either animations or text or links to a text file or document in a different location. These can be activated when a reader clicks on them either with a mouse or by touch (Larson, 2009).

Inconsiderate text is when is a text in which elements such as structure, coherence, audience appropriateness, and unity are missing or fail to support comprehension (Labbo & Kuhn, 2000).

Interactive digital books (IDB) have features such as read-to-me, read-by-myself, and play-with-me modes, and they also have interactivity options (e.g., touch, drag, shake, etc.), animation, a variety of music options, games, and numerous (five or more)

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hotspots per screen (McKenna, Labbo, Conradi~~Conrade~~, ~~and~~ & Baxter, 2011; Roskos & Burstein, 2012; Smeets & Bus, 2012).

New Literacies was introduced to account for the shift in reading that has resulted from the introduction of technology. As reading has changed to include current advances in technology, the forms that are on offer include being able to read with multimodal experiences (e.g., seeing, touching, hearing, shaking/moving, speaking) (Knobel & Lankshear, 2014).