USING AN INTERACTIVE LITERACY TEXT TO INTEGRATE COMMON CORE LEARNING STANDARDS FOR UPPER ELEMENTARY STUDENTS

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Haily Mae Dunn
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CERTIFICATE OF APPROVAL

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______________________________________________
DATE

______________________________________________
Dr. Russell L. Kahn, PhD
Thesis Advisor

______________________________________________
Dr. Steven Schneider
Second Reader
Abstract

This project produced a literacy book, or an interactive chapter book, for grades four and five, with the object of creating a more hands-on, motivating, and engaging reading experience. By applying Human-Centered Design (HCD) principles, this book has the potential to enhance the literacy experience, while incorporating technology into the classroom. Furthermore, this paper discusses certain advantages and disadvantages of interactive reading for fourth and fifth grade students; some advantages may include motivation, engagement, and increased reading levels, while disadvantages may include distraction and confusion. Finally, this paper examines how these books correspond with the newly implemented Common Core Learning Standards.
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Project Introduction and Research Questions

By definition, a textbook is one that is used in schools to promote formal study of a subject. An “interactive” textbook is a textbook that involves interactive media including, but not limited to, digital print, animation, audio-visual aids, and media comprehension. Interactive storybooks grasp similar characteristics, while focusing more on children’s books and short stories.

The purpose of this project is to blend the ideas of an interactive textbook and an interactive storybook, to create an interactive literacy book, or an interactive chapter book, for students in grades four and five that has the potential to enhance and motivate students in reading. The idea of this project is to design a prototype demo of a previously existing literacy book, which will include three to five chapters of the book, and will showcase visual aids, word recognition, media comprehension, and interactive vocabulary. The goals in creating this project include promoting engagement by the user, enhancing the reading experience for students, and encouraging students to be independent learners through interaction with the text. Other goals of this prototype are to design with both students and teacher in mind, and creating a tool that is self-motivating. This prototype will be designed using Human-Centered Design (HCD) theory, touching on each component to ensure a positive learning experience for students, and ultimately aiding teachers in providing differentiated instruction within the reading curriculum.

The research questions outlined in this project include:

1. How can Human-Centered Design (HCD) theory help shape the creation of interactive literacy books?
2. What advantages and disadvantages could interactive literacy books have on student learning and motivation?

3. How do interactive literacy books tie into the Common Core Standards?

4. What components could be added to interactive literacy books to make them most beneficial to student learning and deeper understanding of the text?

5. What are some of the learning outcomes that could come from using interactive literacy books opposed to reading traditional literature?

The first focus of this project is to find which aspects of Human-Centered Design theory can help shape the creation of interactive literacy books. Coherence, inclusiveness, malleability, engagement, ownership, responsiveness, purpose, panoramic, and transcendence are all outlined in Cooley’s (1999) theory of Human-Centered Design. He states that in order to be effective, each of these must somehow be incorporated into the functioning system. The prototype created must include several of these aspects, according to Human-Centered Design, in order to be an effective tool in enhancing the reading experience for students.

The second focus of this project is to discuss advantages and disadvantages interactive literacy books could have on student learning and motivation. Several studies have been done on the effects interactive textbooks have on student progress. There are both positive and negative aspects related to the use of these books in the classroom. Although several advantages have been taken note of, there are also disadvantages to consider when implementing interactive books into a classroom curriculum.

The third focus of this project is to decipher how interactive literacy books coincide to the Common Core Standards of education. As teachers, it is important that lessons
within a curriculum correspond with the requirements of the state. Since the recent implementation of the Common Core Learning Standards, it is considered necessary to relate written lessons back to these standards, and have reasoning behind that what is being taught in the classroom. The interactive literacy books discussed in this project must relate back to the necessary standards in order to be compatible with the curriculum.

The fourth focus is to discuss what components could be added to interactive literacy books in order to create the highest level of thinking and understanding of a text that would be most beneficial to students. The opinions of professionals within the field were taken into consideration in compiling this prototype to ensure proper use of these books to make them utilizable in the classroom setting. Several factors needed to be taken into consideration when assembling this prototype due to the needs of the student. It is key that these books enhance learning and motivate readers in order to be effective. “Students will likely be more motivated to read when they have reading goals that are based on accurate assessments, established in consultation with their teachers, and supported over time” (Serravallo, 2014).

The fifth and final focus of this project is to decide what learning outcomes could potentially come from using interactive literacy books. Because this prototype was not tested on students, it is difficult to say exactly how exactly students would be effected on a learning scale, however, throughout this paper, reference will be made to predictions of student learning outcomes through using these books. It also needs to be assessed what sets interactive literacy books apart from traditional literature books, and what differences interactive books could have in learning outcomes.
Upon completion of the prototype, the final demo videos of the interactive literacy book will be presented to three literacy collaborative professionals working with fourth and fifth grade students, to determine the effectiveness these books may have on the motivation and reading experience of this aged student. The views of these professionals will determine the success of the implementation of these books in the classroom.

**Background**

As the Common Core has been implemented into classrooms across the United States, the curriculum has become more rigorous and challenging to both students and teachers. The ELA, or English Language Arts, curriculum especially has become much more structured and regulated. As more is require of students, it is becoming increasingly difficult for some students to keep up and stay on course.

In order to enhance the reading experience for students, teachers are always looking for new and innovative ways to keep students connected and motivated, which has proven to be somewhat difficult. As interactive textbooks continue to grow in universities and colleges, it has been questioned whether or not they would be effective in elementary classrooms.

This project is designed to introduce a new idea, or twist, into the traditional fourth and fifth grade reading curriculums. Instead of interactive textbooks for college students, or interactive storybooks for young children, this project merges the two, to create an interactive literacy, or chapter, book for fourth and fifth grade students. This addition to the reading curriculum has the potential to motivate students to interact with the text and gain a deeper understanding through hands-on media comprehension, vocabulary overviews, understanding of fluency, and mini-lessons throughout the text.
Students would be able to guide their own reading, relying less on teachers to monitor them. Interactive literacy books could potentially be more engaging, and therefore more accessible to students. This project outlines the design of an interactive literacy book and the potential effects it could have on student reading, and overall learning.

Methods

The prototype for this project was created using iBooks Author, an Apple application available on Mac computers. The first several chapters of the book *Tuck Everlasting* by Natalie Babbitt were used to create this prototype, so that time and effort could be put into the compilation of the interactive book, oppose to writing and revising a book that may not be considered fourth and fifth grade reading level. As the researcher is not an author, it was more reasonable to use an already publish piece of children’s literature in order to ensure proper use of the program and proper creation of the interactive literature. Since iBooks Author did not provide all necessary means to create the interactive version of the book, other key features were implemented using a demo tool, so that the features behind the design could still be portrayed.

Three professional literacy collaborative teachers reviewed this prototype individually before and during compilation, and then again when the prototype was finished. Due to copyright laws, the prototype could not be published. Therefore, it was not viewed or used by students, only the three professionals mentioned. Any and all ideas for this prototype were written up during interviews, and then implemented during compilation. No drawings or sketches exist for the prototype.
Literature Review

Literacy has become one of the most, if not the most, important aspect of our education. As Larson (2010) puts it, “Reading instruction is undergoing tremendous transformations.” As students venture from grade to grade, they are required to be “on-level” for each grade they advance to. It has been found that some students have a difficulty staying at their expected level due to their reading capabilities and comprehension. As Larson discusses, text used to be seen as written-down messages and symbols in books, magazines, and newspapers, but today, text is much more than that.

One advance in communication technology in our classrooms that could promote “higher-level” reading is interactive books (also referred to as e-books, digital books, and interactive textbooks). These interactive books give students the opportunity to explore beyond what a traditional textbook can, and allows students to follow along through interaction and communication as the book progresses. There are several programs that allow teachers to create these interactive textbooks and provide a different style learning experience to their students.

Moorefield-Lang (2013) describes the interactive textbook as one that is “instructionally or educationally based and is provided in a digital format.” Furthermore, students are able to “immerse themselves in images with interactive captions, rotate 3D objects, and quiz themselves with chapter reviews,” (Rivero, 2013), as well as “answer questions with immediate feedback” (Encheff, 2013). Students are also able to highlight, take notes, and find definitions with just the swipe of a finger. These fully digital textbooks are saturating the market and becoming increasingly more popular in universities around the world. Not only that, but they are slowly entering elementary
classrooms as a way for students to become more involved and hands-on during lessons (Moorefield-Lang, 2013). Moorefield-Lang discusses how e-textbooks are a way for students to collaborate through a lesson, share notes, and also allows professors to add notes that they deem important for students to know and understand. “If students are creators, they will gain a greater knowledge.”

Many of the large printing companies, like Pearson, McGraw-Hill, and Houghton Mifflin Harcourt are joining in, and publishing their own versions of these e-Textbooks (Rivero, 2013). Not surprisingly, Apple seems to be the leader to this new route, as they partner with these companies to create these textbooks. Rivero (2013) states that in 2010, digital textbooks accounted for only 1% of books, however it is estimated that by 2014, they will account for 18.8%, eventually leading to the decline of book-bag carrying students, as they all “‘turn the page’ to multi-touch textbooks.” Besides Apple, there are several service providers contributing to the rise of these e-textbooks, including PBS Learning Media, Discovery Education, and World Book Classrooms. Because these textbooks are no longer in “book format” where we physically turn pages, it must be remembered that new devices are needed to read these e-textbooks. Google Nexus 7, Kindle Fire HD, iPad mini, Galaxy Tablet, and Nook HD are a few of the devices in which certain e-books can be displayed (Rivero, 2013). Through certain studies, it has been proven that “cost, weight, accessibility, convenience, and ease of searching” were all positives that came from using e-textbooks (Moorefield-Lang). Not to mention, carrying all books at once, on one device, makes for a much easier and lighter load for students. As textbooks become a thing of the past, these full-screen experiences with interactive diagrams, photos, and videos (Rivero, 2013), are providing students with an
experience that allows them to take learning into their own hands and immerse themselves in reading on a new and different level.

As studies have been conducted to determine the learning effect of e-books versus textbooks, it has been mentioned that appropriate e-book learning systems could achieve a better learning experience for students, according to Haung, Liang, Su, & Chen (2012). As the younger generations have grown up with technology, it is likely that their behaviors toward technology are much more open and adaptive than some older generations. In today’s society, tablets are considered more flexible and accessible than paper-based texts (Haung et al, 2012). Because of this, using them as a personalized learning tool could be very beneficial to students of all ages, but more precisely elementary students. According to Haung et al, a series of studies were conducted with younger children in regard to e-book reading. The studies showed that vocabulary, word recognition, and phonological awareness all improved through the reading of an e-book. It was also found that the e-books main benefits included narration, animation, sound effects, and improvement in comprehension. Haung et al states that e-books could potentially support literacy development by providing access to stories, book processing, multimedia, and interactivity. Schugar, Smith, & Schugar (2013) add, “e-books have the potential to change the way our students read and consume text because of their interactivity and convenience.” The benefits of engaging readers through sound, video, and narration are immense, and differentiating instruction is by far a positive of teaching through use of e-books. Although a relationship has not been identified between e-books and comprehension, according to Schugar et al (2013), several other benefits have been closely analyzed. It is important to understand the effects e-books can have on students,
as it is equally important for teachers to be aware of these effects, in order to provide guidelines and policies to using an e-book, or digital textbook.

Some opportunities are also provided to children through the online learning communities available through e-books. Students are able to share thoughts and opinions about what they have read, and reflect on their experiences, while enhancing vocabulary. Additionally, through the research of Haung et al, it has been discovered that appropriate e-books support children’s learning and offer a visible learning process in which a printed book cannot offer. Because of this, it is important to recognize ways in which these digital features either increase or decrease the motivation of student readers (Schugar et al, 2013).

It has also been found that although teachers believe it is important to integrate technology into the classroom, several teachers are lacking in this area (Schugar et al, 2013). Because of this, it is important for teachers to know and understand the advantages and disadvantages of using digital books in the classroom. As discussed above, although classrooms are often teacher-based, some teachers give students a chance to become independent learners through deeper understanding and opportunities that allow them to teach each other, which is also known as student-based learning. It is, however, important for students to be introduced to the technology, so teachers can be confident their students are following the guidelines for e-book use. This may be one disadvantage of using e-books; students may not understand the full extent of the use of technology. Familiarizing students with the basics supports the student in becoming more confident in their usage. Schugar et al (2013) recommends a specific routine to help teachers and students get acquainted with digital text, since many students are used to reading
traditional literature. Turning on the device, orienting the screen, demonstrating how to open the app or e-book, and setting expectations for students use can enhance comfort levels between both teacher and student. Schugar et al (2013), discusses several disadvantages of using e-books however they do say “e-reading does have a place in the 21st-century classroom.”

With all of the research on technology in the classroom, “learning resources should be adaptable to individual needs and preferences” (Coelho, 2013). With that being said, teachers are the designers of learning experiences in an environment in which a student can work independently and freely. It is important that learners are able to build their own knowledge through several different approaches. Digital books can be considered one of these approaches. There are several different types of learners who all need an interchangeable approach in order to have an effective learning experience (Coelho, 2013). By integrating digital books into a student’s learning, they may be able to cover several approaches in one step. It has been discussed that digital books are able to provide several methods of learning through reading. By allowing students to explore these different methods, teachers are giving them the opportunity to set their own goals and interact with the books to gain a deeper, more meaningful, understanding of its content, while enhancing student enthusiasm (Coelho, 2013). According to Coelho (2013), there are several advantages to interactive textbooks, including formatting, symbolic text, graphics, navigation, and several other features that are not available through traditional textbooks. It has been suggested that the support that can be provided by an interactive textbook is highly beneficial to both student and teacher. Not to mention, the overall changes that it could bring to education is exciting and reassuring.
Moorefield-Lang puts e-books into perspective for teachers when she says, “You have everything ready for your classes. You know what you want to teach—your subject, curriculum, ideas. You have looked at different textbooks and other resources. But no single book meets your needs. Well, the answer is simple: you write your own.” Applications, such as iBooks Author, make it easy to create and publish your own textbook. Using iBooks Author to create a textbook allows students to become engaged, while being able to interact with the book (Moorefield-Lang, 2013). Though it is necessary for the writer to also be the editor and proofreader, which may take a great deal of time, it can give a sense of satisfaction to a teacher who is able to create a book that students will be able to learn from, gain important knowledge, and completely immerse themselves into, creating and enhancing a shift from teacher-based learning to independent-based learning.

First released in 2012, iBooks Author was an Apple creation used to create an education-themed book (Caldwell, 2013). After uncovering some of its flaws, Apple has introduced a newer version, iBooks Author 2.0, which has upgraded tools, templates and options, according to Caldwell. This application can be used for multiple other purposes, besides textbooks, which can be an important feature for teachers looking to immerse their students in grade-level literature. Other features of iBooks Author include Photo Book, Antique, and Cookbook (Caldwell, 2013), allowing people to create different styles and types of books. As a teacher, being able to add creative touches to your own books for students allows you to create a digital classroom library, allowing students to explore and interact with their literacy books, providing a level of deeper thinking.
Beyond this, the improvement of writing and understanding content is another positive aspect of the program (Encheff, 2013).

There are several characteristics that have become the key to the authenticity of learning and being able to successfully implement lessons in a classroom. Among these are creating activities revolving around real-world problems, where students are able to solve and present to an audience, answer open-ended questions, collaborate with others, and guide their own projects (Encheff, 2013). Each of these can be done using e-textbooks because students are able to immerse themselves into the text and create their own independent learning based on their approach to the book. Beyond this, using these e-books still cover Common Core Standards, as a regular literacy book or textbook would.

Human Centered Design is a system that incorporates several characteristics into its design to make it fully functioning and user-friendly. These features, or characteristics, include coherence, inclusiveness, malleability, engagement, ownership, responsiveness, purpose, panoramic, and transcendence (Cooley, 1999). Combined, these features contribute to a greater overall system that can enhance usability of a product. In relation to interactive books, the concept of human center design can be grasped and used within its design to enrich learning and experience.

Coherence is the underlying meaning of something. It is meant to be evident and understood (Cooley, 1999). The meaning behind an interactive book would be similar to that of a paperback version of the same book. The content covered would be portrayed from the start and evident what it is being used for. Inclusiveness is how a system invites the viewer into the system and makes one feel as though they are a part of the community.
In an interactive book, the system would be both inviting and entertaining for a student, and they should easily feel immersed into the system by answering questions, asking questions, taking notes within the system, and becoming part of the system as they engage in active reading. Malleability describes the opportunity to mold a situation to what the user wants (Cooley, 1999). It sculpts the system to their needs. Interactive books can portray this feature through options such as note taking, highlighting, bookmarking, and making the book their own. By engaging in the book’s environment, the user can become one with the book. Similarly, engagement is the idea that the user is being invited into the system (Cooley, 1999). They feel welcome and what to participate in the book. If an interactive text is interesting and inviting, most students would want to get involved. Additionally, the motivation that comes from being able to use technology may aid in the engagement of reading an interactive book. Ownership could be one area of human centered design that proves to be somewhat difficult for the student. Ownership describes the belonging and inclusion in creating the book (Cooley, 1999). Though the teacher (or a company) would ultimately be the one who felt the most ownership to the book, one way the student may feel they have created pieces of this book is by adding in their own notes and ideas, similar to malleability. Responsiveness is also an important piece in human centered design. Responsiveness is the general idea that one can make the system respond to what they are doing (Cooley, 1999). If the system is user-friendly, then a student should be able to communicate their needs to the system fairly easily. Students also need options as they go through the book and change certain aspects as they see fit. Panoramic and transcendence are very similar features when it comes to human centered design. Panoramic allows the user to take a deeper view of
something and transcendence is when the system encourages the user to go even further than that (Cooley, 1999). In interactive books, students can click on different areas that bring them to yet another area to do more research on a topic (panoramic), and then links leading to even more information can allow the student to explore outside of the book itself (transcendence). Finally, purpose is described as the system being capable of responding to what the user has in mind for the system, and then encouraging them to go further with it (Cooley, 1999). The purpose of an interactive text is to teach or aid in literacy skills, so when students have the option to lead their own learning through the numerous tools at their fingertips, it leads to a sense of independence in the classroom.

The ways in which students experience human-centered design could potentially have a large impact on design education (Zoltowski, 2010). Assessing student learning through human-centered design could aid in the understanding of the impact and effectiveness of an educational program. By including human-centered design in her study, Zoltowski (2010) was able to understand the relationships between education and human-centered design. By incorporating human-centered design into an interactive textbook, it is possible that a deeper understanding could be found on understanding how interactive books aid in student learning.

As technology continues to erupt and expand, it is important that the rest of the world follows suit. “The e-book wave is upon us,” (Hoffman, 2013). It is possible that digital textbooks are on their way to becoming the next big thing in education, not only for universities, but for elementary and high-schools, as well. These digital books show us “richness, flexibility, adaptability, and flair” (Hoffman, 2013), and are well on their way to providing an improved, more independent style to reading and literature. Not only
could students benefit from this in the classroom, but also in the developing world around them as they become more knowledgeable, more informed, and more self-reliant when it comes to learning. It is important that teachers understand both advantages and disadvantages of using e-books in their classroom in order to implement them properly, if they so chose.

**Conclusions from Literature Review**

As stated above, there are several characteristics that have become the key to the authenticity of learning and being able to successfully implement lessons in a classroom. Among these are creating activities revolving around real-world problems, where students are able to solve and present to an audience, answer open-ended questions, collaborate with others, and guide their own projects (Encheff, 2013). Using interactive textbooks allows students the opportunity to immerse themselves in a text and gain a deeper understanding of what they are reading about. Through several studies, it has been concluded that positive outcomes have been found in using interactive text. When interactive textbooks were used in a classroom, it can be concluded that a majority of the time, students were effected in a positive way.

With the exception of one, all studies reference interactive text in a positive light. That which did not, simply highlighted some of the disadvantages that interactive text may have in the classroom setting. It was stated however, that if rules and guidelines were developed, there was no guarantee that these problems would occur.

Although this literature review was conducted solely on interactive textbooks, it can be stated that the expectations of interactive literacy books would be very similar. Aside from the different age levels, these books would have similar features, concepts,
and rational, besides being used in a slightly different context. The overall thoughts behind them are considered parallel.

**Project Background**

In order to prepare for the proper construction of an interactive literacy book, it was important to gain specific knowledge on the requirements of the fourth and fifth grade Common Core curriculum. As New York State has adapted to these requirements, it was necessary to include these elements within the interactive book’s overall design. Since the book *Tuck Everlasting* by Natalie Babbitt was the basis of this prototype, a common understanding and background of the book was critical in conducting interviews. In order to discuss major elements of the interactive book and what need to be included, it was equally important to discuss the overall background of *Tuck Everlasting* to ensure proper means goes into the interactive version of the story.

Interviews were conducted before and during the compilation of this prototype to ensure proper use of the Common Core Standards. Three specific interviews were conducted, at different times, with three different literacy collaborative teachers, in order to discuss design elements, the advantages and disadvantages these books may have in a classroom setting, and the specific concepts that would be represented in this prototype. These interviews took place at the beginning of the prototype compilation. The three literacy collaborative teachers suggested similar ideas of what to incorporate into the prototype and what would help student learners to be more successful. Among those suggestions were vocabulary, relating back to mini lessons (similes, metaphors, theme, character mapping), breaking words down into syllables for students to sound out, chunking words, and scaffolding and modeling.
A second interview, that was conducted during compilation, allowed interviews and researcher alike to gain a better understanding of the interactive book and what design features should be included. As it was discovered that iBooks Author was unable to provide tools for all ideas implemented in this book, a demo version is shown in certain sections to show what the books potentially could do. This second round of interviews was a more hands-on, informative experience, as the interviewees were able to view the prototype, make suggestions and comments, and ask their own questions to the researcher that would be answered and interpreted.

Research was also conducted on Human-Centered Design in order to assure proper usage and implementation into the prototype. After careful consideration of the components of Human-Centered Design, and given the distinct features available within the iBooks Author application, it was unfortunate that not all aspects of Human-Centered Design could be displayed in the prototype; however, each aspect was reflected upon, and what could be used in the prototype, was inputted.

Project Design

One main prototype was created using iBooks Author. The use of the book *Tuck Everlasting* by Natalie Babbitt played an important role in the ability to create this interactive book. Although it cannot be published in iBooks Author due to copyright laws, the advantage of taking a book that was already written was vital for this project. To use an already published book was ensuring that the grade level suited fourth and fifth grade students, and was at an approved and appropriate reading level. It also ensured that there were no spelling or grammatical errors within the text. By using published children’s literature, time was used to focus on what could be included in the digital,
interactive copy of the book, rather than the researcher using a majority of time to write her own book.

iBooks Author is a program that allows the user to choose from certain templates and create interactive reading. An Apple creation, “iBooks Author application (app) is a free piece of software that allows you to create multi-touch textbooks that use, among many other things, video, interactive photo galleries, voiceovers, diagrams and tables, and 3-D objects” (Lucking, AL-Hazza, Christmann, 2013). Oftentimes, the program is used to create textbooks, focusing on certain subject matter, however, this project focuses on the ability to create a literature book and potentially use it in the classroom setting.

The development of the prototype was designed to incorporate Human-Centered Design theory, and attempts to address coherence, inclusiveness, malleability, engagement, ownership, responsiveness, purpose, panoramic, and transcendence (Cooley, 1999). Using these features allow the prototype to be more engaging for students, and therefore be seen as a successful learning tool in the classroom.

An addition to each of the following features that should be mentioned upfront is that the child’s teacher will be able to view reports and statistics based on what the child is reading in the interactive literacy book. As the child reads, each move will be tracked and traced. Following each reading session, a report will be sent to the child’s teacher through a specific file that allows the teacher to see exactly how a given student is progressing. This will be the assessment piece that a teacher will need to view the development of a student’s reading. Although it is not clear exactly how this file will be created or what exactly it will show, this is an essential addition to the interactive book, as it allows the teacher to assess the students using these books.
Furthermore, the Common Core Learning Standards for English Language Arts and Literacy states students who are college and career ready should be able to demonstrate and exhibit certain aspects of reading, writing, speaking, listening, and language. This prototype demonstrates and agrees with several of these key design considerations. Students should be able to demonstrate independence; they build strong content knowledge; they comprehend as well as critique; and most relatable to this interactive literacy book, students use technology and digital media strategically and capably (Common Core Curriculum, 2014). Each of these considerations correspond with the outcomes in which interactive literacy books will provide and prepare students to master the standards of reading and language.

In addition to these books being added to the classroom “library” it is important to note that an introduction of these books would need to be given to each classroom in which they exist. Students should not be expected to know automatically what these books are capable of, nor what features they possess. It would be necessary to have whole-class training for both teachers and students, whether separate or together, would be up to the classroom teacher. If a teacher was to receive training, he or she should be able to adequately forward this information on to students in order for them to fully understand and abide by the program. “It’s important to look at student work and behaviors closely to determine what goal or goals will make the biggest difference in a student’s reading engagement” (Serravallo, 2014).

**Conceptualization**

The program iBooks Author was used as a basis for the interactive literature book prototype, however, even after careful consideration of which program to use, it did not
have all the features necessary to highlight or design exactly what came to mind. As a result, demonstration videos were created to show a comparable idea. Within each of the five follow sections, the features of the interactive book are highlighted with photo screenshots, video links, descriptions that include their incorporation of Human Centered Design theory, relation to the Common Core Standards, and how the feature relates to interactive technology. It is important to note that since iBooks Author did not have all of the tools necessary to complete the full version of the prototype, demo videos were created to show other features that the books would/could potentially ensure.

Table A: Comparison of Traditional Literature and Interactive Literature

<table>
<thead>
<tr>
<th>Key Feature</th>
<th>Traditional Literature</th>
<th>Interactive Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decoding/Word-Chunking</strong></td>
<td>Students have to break up the word using their own knowledge of word-chunking</td>
<td>Students will be able to click on the word to view it in a separate screen, broken down into syllables</td>
</tr>
<tr>
<td><strong>Vocabulary Recognition</strong></td>
<td>Students use context clues to find the definition of the word or look it up in a dictionary</td>
<td>Students will be able to click on the bolded word to view the definition in a separate screen</td>
</tr>
<tr>
<td><strong>Fluency</strong></td>
<td>Students must ask for assistance in understanding fluency and the way text should be spoken</td>
<td>Students will be read, in order to hear how the text sounds aloud, then will read back to the book as a form of practice</td>
</tr>
<tr>
<td>&quot;Mini-Lesson&quot; Assessment</td>
<td>Depending on the classroom mini-lesson, students usually use post-it notes to mark certain areas in their books that they can revisit later</td>
<td>Students find and highlight sentences within the interactive book and drag and drop into sectioned folders to show their knowledge of figurative language</td>
</tr>
<tr>
<td><strong>Reading Comprehension</strong></td>
<td>Teachers prepare questions for students</td>
<td>Several methods are used within the book to assess comprehension</td>
</tr>
</tbody>
</table>
Feature One: Decoding/Word-Chunking

Demo Video: http://www.screencast.com/t/mlcxiq8a

As children read through a text, the goal is for them to gain an understanding of the text and comprehend what the story is saying. Sometimes, while reading, however, children get stuck on words, making it difficult to follow through the text. If words are skipped or misread, the child may be missing the meaning of that particular sentence, which could ultimately affect the understanding of the whole book, especially if they are experiencing major difficulties with pronouncing words, or word chunking. Word chunking is being able to break the words into parts in order to sound out the individual sounds. By doing this, the child is able to recognize smaller sounds they have learned, and then place them all together to make one word. “The limits of young children's developing word recognition ability make it difficult to provide challenging content in the books they read on their own” (Beck & McKeown, 2001). Because it is oftentimes difficult for children to
recognize larger words, it makes it even more difficult for them to understand the meaning behind the text.

**Description of Feature**

Through this interactive literature book, children would be able to click on any word throughout the book, and a small pop-up box would appear over that word. Similar to Figure 1, the word would be chunked, or broken down, into syllables, so the child could sound out each syllable, then slowly say the word as a whole. Since any word would be accessible to be clicked on, these words would not have any special characters or typefaces. A child could click on each word, if need be, to assist in sounding out the word, or breaking it down, and then move on to the next word. The reason for this is so that students have the ability to feel comfortable within the text and know that it is there to help and guide, and not hinder. One of the main goals of these books are to increase reading levels and comprehension, and if there are certain hindering features, it is not allowing the child to get the most out of the book. Furthermore, in allowing children to click on each word they struggle with, they [may] begin to gain a confidence and start reading them on their own. Additionally, if there is a word that the child clicks on, and that same word appears later in the story and they click again, there will first be a pop-up message that tells the child to “GIVE IT A TRY”, giving them the indication that they have already asked for help on this word, and that they should be able to recognize it, having already been assisted with it earlier in the text. This way, the child does not become too reliant on the features of the book, which would defeat the purpose behind this interactive text. These features make this book interactive because a child can command the book in a familiar way in order to receive immediate results and
information they need. By clicking on words that are unsure of, the child is able to give a command and receive immediate feedback.

**Connection of Feature to Common Core Standards**

Foundationally, by fourth grade, students should be able to apply grade-level phonics and word analysis skills in decoding words. They may use letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar words within the context (*Common Core Curriculum*, 2014). Similarly for fifth grade, students need to know and apply grade-level phonics and word-analysis skills in decoding words (*Common Core Curriculum*, 2014). This feature allows students to apply their knowledge to decode words by chunking them, using what they already know about letter-sound correspondences and syllabication patterns. In using this feature within the interactive book, students become more independent in this standard, and it is the hope that using this feature will allow students to grow in this particular area. The Common Core Reading Standards push foundational skills for grade level, which is why it is important to also include a feature like this one in the interactive book.

**Human-Centered Design and Decoding**

According to Mike Cooley (2001), a system must include each of nine qualities in order to make it a fully functioning system. These qualities include coherence, inclusiveness, malleability, engagement, ownership, responsiveness, purpose, panoramic, and transcendence. The qualities included within this word chunking feature are coherence, inclusiveness, malleability, engagement, responsiveness, and panoramic. Coherence is described as the embedded meaning, or the understanding of what one is able to do or
accomplish. By clicking on a given word, it becomes clear through the pop-up box that the obvious meaning of the feature is to help a child break down a word and chunk it into syllables. This feature is made clear and precise, and gives a clear meaning of what a child can accomplish within that feature. Inclusiveness describes an invitation and feeling as though one is a part of the system. It makes one feel invited in to activities and feel comfortable with what they are surrounded by. When a child is able to click on a word they are having difficulty with, they feel safe in using this feature because it is more inviting to solve the problem by one’s self, than to ask for help. By creating an environment in which the child feels secure and safe to “ask questions” (to the system), they are invited in, making inclusiveness an important quality in the interactive book.

Malleability is the ability to sculpt one’s own environment to suit one’s own needs. To click on a word and be assisted with breaking it down makes this feature malleable. Since there is no limitation as to which words can be clicked on for assistance in breaking down to word, the child does not get stuck with which words are available to chunk and which ones are not. The child can suit their own needs and mold their own environment within the interactive book by clicking only on the words they need assistance with. This makes it best for each individual user, as some students may need help with certain words, and others may need help with other words. Although the system is created as one, the user is able to manipulate which features they use in particular. Engagement is a key factor to each feature of the interactive literacy book. Since one major goal of this book is to engage a child, it is highly important that all aspects of the book are able to engage the reader. Engagement is the sense that one is invited to participate in the system. Much like inclusiveness in this case, engagement is the ability for the readers to take control and
involve themselves in the system. The symbols and tools within the book allow the user to engage themselves in the use of this book, another aspect that makes this book interactive. When a user can involve themselves in the system and shape how the system responds to their needs, not only is the system considered interactive, but it also is considered engaging. When a system responds to the users needs, it is also considered a responsive system. This feature specifically represents responsiveness because the book is able to respond to the reader’s specific requirements. The fact that the pop up box comes up immediately proves that the system is responding to one’s needs and demonstrates how the user is running the system. When the interactive book responds to the child through their command, it is displaying its responsiveness. Finally, the word-chunking feature can be shown through the Human Centered Design theory through its panoramic. This describes the window through which one can take a wider view. In clicking on a given word, a pop-up box appears. This is the panoramic view. This window shows a different level of the book, one which is not available through a traditional version of the book. The child is able to expand their view, in this case, of a word in particular, and use it to better understand the text. They are confident in expanding their boundaries within the book because it allows them to be more independent. Human Centered Design theory incorporates several qualities into one system in order to make it fully functional. The word-chunking feature alone makes the interactive literacy book close to fully functioning on its own, using six of the nine qualities.
Feedback

In the interviews conducted, the three interviewed teachers felt that this feature was one of the best features of the five. None of the interviewees had negative comments about this particular feature, but their positive feedback was endless. Although it cannot be proved, because this tool was unable to be used in a classroom setting, it can be hypothesized that this feature would enhance reading levels by allowing students to be completely independent in breaking down words on their own and inserting them into sentences. Although the book as a whole works together to motivate students, this feature has the ability to prompt that independence and motivation.

Feature Two: Vocabulary Recognition

Demo Video: http://www.screencast.com/t/a2Mc4lEPqWwA

(Figure 2: Example of Vocabulary Definitions within the Text)

Oftentimes while reading, a place that many people tend to get stuck is on words they don’t know the meaning of. This is especially true for children because they have not necessarily developed the tools needed to uncover the meaning of these words (for example, using the context clues around it to find its meaning). Since many words within
a book give definition to the overall context, skipping words where the meaning is not understood can hinder one's ability to comprehend the text. “The acquisition of vocabulary is an obvious focus for any program aiming to enhance children's literacy, because of the strong, well-documented relationship that vocabulary has to reading proficiency in particular and school achievement in general” (Beck & McKeown, 2001). Since understanding vocabulary is so significant to the reading experience, it is vital to include a feature where students can understand vocabulary they struggle with, without having to consult a paper dictionary that would disrupt their reading.

**Description of Feature**

Through the interactive literacy book, there will be a feature that is very similar to the word-chunking feature; only this feature will involve vocabulary. When children come across words that they are unsure of the meaning to, it is common for them to skip it, possibly missing the meaning. If children were given the option to click on a vocabulary word to gain a deeper understanding of the meaning, they would be more likely to understand the context it is being spoken in. Depending on the level of the book and the reading level of the student reading the book, approximately 1/5 of the words would be definition accessible. These words would be bold so the reader was aware that the words could be clicked on, and a similar pop up box would come onto the screen as it did in the word-chunking feature. This definition would pop up over the word and give the reader the chance to read it as many times as necessary. To take the feature one step further, the definition of the word could potentially be inserted into the sentence. In Figure 2, the feature is shown, and the example of the word “balmy” is highlighted. If this interactive book was actually created, the words would be bold instead of highlighted. The sentence
reads, “a balmy spring.” Students would be able to click on the word balmy, and as in Figure 2, the definition pop-up box would show up above the word. The student could highlight and drag that definition over the word balmy, and it would be replaced, so the child could read, “a pleasantly warm spring” in its original’s place. This would allow the child to visually see the vocabulary definition in the sentence and read it as a replacement. This feature would allow the child to confidently read along and not miss the purpose of the text. By clicking on the word to discover the definition, a child may feel more in charge and empowered to read due to the confidence they feel in not having to ask for help or an explanation. This feature is considered interactive because, like the word-chunking feature, the response of the system is immediate to the child’s needs. When a child gives the book a command, they automatically receive feedback from the system, in the form of what they require in order to fully understand. The command in this case is clicking on the word for a definition, and the system responds by showing a pop-up box with the definition inside. The system supports the user and the user’s requests.

**Connection of Feature to Common Core Standards**

In both the fourth and fifth grade curriculum, it is required that students are able to determine the meaning of words and phrases as they are sued in the text, including those that relate to characters and figurative language (*Common Core Curriculum, 2014*). By using this feature, students will be able to use the meaning of the word to understand the deeper meaning of the text, which will lead to uncovering their relation to characters and language. Eventually, students also need to make connections, describe the point of view of the author, explain how the overall
structure fits together, and describe different piece of the story (characters, settings, or events). By knowing and understanding how definitions fit into the context of the story, these requirements are easier to comprehend. When a child understands the words and their meaning within a story, they are more likely to understand the overall concepts of the book.

**Human-Centered Design and Vocabulary Recognition**

Human Centered Design theory plays a large role in the vocabulary feature, as well. Of nine qualities, six of them are included within this particular feature. Very similar to the reasons of the word-chunking feature, they include coherence, inclusiveness, engagement, responsiveness, purpose, and panoramic. Coherence is when the embedded meaning is clarified. When one asks what the point of the feature is, it is easily understood what the obvious meaning is. In this feature, it is clear when the pop-up box opens that the meaning of the feature is to give the definition of a word. When it pops onto the screen, the user is easily able to understand what they can do with it, and how it works. Inclusiveness is when a system invites the user in and makes them feel like a part of the program. The ability for the user to drop the definition into the book allows them to feel as though they are in control and are being invited to participate in the “activity” at hand. By making the user feel like part of the system, they feel empowered that the system is responding to their individual needs. This feature is also engaging because, as with the word-chunking feature, the user is being invited into the system and able to participate with it. The user is not just watching what is happening, but they are taking part in it. By clicking and dragging the definition, they have the power over the system and are able to involve themselves when needed. This engages the user to move forward,
because it is as if they have full control over not only the speed of their reading, but also the manner in which they are reading. Malleability is not included in this feature, as it is in the word-chunking feature. The user does not get to choose the specific words they can see the definition to. Instead, certain words are already bold, and they can only see the definition to those words. For this reason, the user is not necessarily able to sculpt the environment; in a way, it is already sculpted for them. This is a major difference between the word-chunking feature and the vocabulary feature. Responsiveness, is however a quality within the vocabulary feature. As the user clicks on the bold words, the system responds to their needs, and a pop-up box automatically is displayed on the screen. This is the way the system responds to the user’s environment and how quickly it is able to respond. Since it pops up immediately after clicking, it makes the system more user-friendly and responsive. Another feature that is included within the vocabulary feature is purpose. Purpose describes how the system responds to the user’s needs and reasons for using the system. It identifies what the user has in mind, and then encourages them to go beyond. When the definition is displayed on the screen, it allows the user to insert it into the book itself. By doing this, it is allowing the user to understand the full definition, as well as what the sentence is trying to relay. When the user can get to this level of understanding what the text is relaying, they are able to go deeper and gain a deeper understanding of the text. As discussed, the Common Core Curriculum requires students to go beyond and make connections, understand relations, and explain the overall structure. If a child knows the definition of a word, they are able to make sense of the text as a whole, eventually leading to these Core requirements. The child reading the book is ultimately able to learn more by using this feature and going beyond. Lastly, panoramic
describes the window through which one can take a wider view. Again, like the word-chunking feature, the pop-up box provides a panoramic to the user. If a child is unsure of a definition, this pop up gives them a different view and allows them to expand their knowledge and apply this definition to the book. They are able to gain a better understanding through the use of this feature, and even become more confident in their reading as they locating this new knowledge. Human Centered Design incorporates each of these qualities into the vocabulary feature to make it more accessible and motivating to the user. This feature is one that has a major impact on the reader and their understanding of the interactive book in which they are reading. As a whole, this feature incorporates several qualities of Human Centered Design to enhance the book’s usability and effectiveness.

**Feedback**

As with the word-chunking feature, the vocabulary feature had similar feedback from the three professionals interviewed. There was no criticism regarding the vocabulary feature, and all agreed that it was an important feature within the interactive book. Students do not have this opportunity when reading traditional literature; they would have to use a dictionary, and would not be able to overlap the word and definition to read it within the text. Because of this, the interactive book has an advantage to a traditional literature book in this area. One collaborative professional thought that the idea of being able to insert the definition into the book was a great idea and would help the students to really uncover the meaning of the sentence overall. In correspondence with the Common Core Curriculum, it is vital that in order to comprehend the text, one must be able to understand the content. As with the word-chunking feature, it can be hypothesized that
this feature would increase comprehension of the story’s message and meaning because of the understanding of the words themselves. This feature alone could greatly increase engagement and motivation of students, as they would become independent self-learners and gain a sense of confidence.

**Feature Three: Fluency**

Demo Video: [http://www.screencast.com/t/u0WvqiZxK2](http://www.screencast.com/t/u0WvqiZxK2)

![Figure 3: Fluency Example]

Many students struggle with fluency while reading. Fluency, in reading, is being able to speak easily and smoothly as one reads through the words of a book. Being fluent allows a reader to easily flow through a book with little or no disruption, while understanding the meaning of both punctuation and word use. When a reader does not understand fluency, it is difficult for them to follow along with the overall story. “It is mentioned that if students have a good sense of what constitutes reading fluency, they are more likely to succeed in developing fluency” (Rasinski, 2014). Since fluency is another important aspect of reading, incorporating a feature within the interactive literacy book that aids in correcting or assisting with fluency, can promote readers to gain a deeper understanding of the overall feeling of the text and what the author is trying to convey.
Description of Feature

Within the interactive literacy book, there will be a feature that will be available for use throughout the book. This feature will assist the reader with the fluency portion of the story. Although the feature is available for any of the text, it will be limited in usage. A child will have the option to use the feature for a certain length of text (approximately 100 words, maximum), and only so many times in an allotted period (three times in one half hour). This way, the child is not taking advantage of the feature, and is still trying to read on their own. This feature is useful in that the program assists a child in understanding fluency. In Figure 3 above, it is shown that a majority of this page of text is conversation. This may confuse a child, because they could be unsure of what the punctuation means. By using the fluency tool, a child can click on a “starting point” and an “ending point” which will be represented by a small hand within the “options row” along the top of the application. By using this hand, the child can click these points, and the application will read this section to them. While reading, the words and punctuation will change to a different color than in the original text. For example, in using the text in Figure 3, the words and punctuation would no longer be black, as it would be if the child chose to read the text on their own. The text may change to blue and the punctuation to red (or perhaps different colors would be chosen). This way, the reader is able to see why the text is read the way it is. An author uses punctuation to convey meaning, so by showing the reader how the text sounds when read aloud, it is also showing the child why the punctuation is there. The application can show us what the voice should be doing as it hits each of those punctuation marks, and it will slowly teach the child what each punctuation mark is used for. Furthermore, once the child listens to the section(s) that
they choose, they have to read it back to the program. There will be a recording feature within the program that tracks the reader’s voice, and gives a percentage of correct reading at the end. The child will be able to listen to the recording, and it will show where the child is reading correctly, and where they need improving. The feature will also contain a pop-up box (not pictured) in which will highlight the punctuation within each section they choose. They can click on each punctuation mark in order to view what the mark is used for, and in what context, as well as what their voice should sound like when reading through those marks. This will allow the child to gain a better understanding of the punctuation and how it is used, ultimately improving reading fluency. This feature is interactive in that it responds to the user. The reader is able to communicate with the application almost as if they are having a conversation. The communication taking place between human and machine, in this case, shows the depth of both command and response, and their relationship with one another.

**Connection of Feature to Common Core Standards**

According to the Common Core Learning Standards, both fourth and fifth grade students need to be able to read with sufficient accuracy and fluency to support comprehension. These students need to be able to read grade-level text with purpose and understanding *(Common Core Curriculum, 2014)*. Through this feature, students will gain a deeper understanding of punctuation, which will lead to reading with purpose. When a child understands that a question mark at the end of a sentence means that a question is being asked, they can read the sentence in that manner, and comprehend what they are reading. By using voice cues dependent upon punctuation, a child is able to read with ease and purpose. Additionally, fourth and fifth grade students need to be able to use context to
confirm or self-correct word recognition and understanding, rereading as necessary. This feature completely corresponds with this standard as students are assisted with reading for understanding and are able to self-correct as they reread back to the program. These foundational skills are necessary in order to advance in reading.

**Human-Centered Design and Fluency**

Human Centered Design is highlighted several times within this feature; of nine qualities in all, eight are touched on. Coherence, inclusiveness, malleability, engagement, responsiveness, purpose, panoramic, and transcendence are all emphasized within the fluency feature. Coherence, or the obvious meaning of what is possible, is shown clearly through the “fluency option.” Once students understand what this option is used for, whether it is described to them by a teacher or a technology coordinator in an introduction of this application, a child will be able to understand the uses of this feature. It will be clear to them that they can click on a section and it will be read aloud to them. They will understand what the feature is showing them through the different colors of the text and punctuation, as well as the pop-up boxes and additional parts of the feature. In using this system, inclusiveness would also be represented. A user should feel invited in as they are read to. When a child is having a difficulty understanding certain material, it is appealing to know that there is help available. This interactive book provides help and assistance to a child in need of it, and makes the child feel comfortable and encouraged as they are assisted though the book. Malleability is the ability to sculpt the environment to suit one’s personal needs. By choosing the sections, paragraphs, or chunks that they need assistance with, a child is shaping the environment of the system. They are able to mold that environment to complement upon what is best for them and how they read through
the book. Although there are some limitations (such as how many times they are able to use the feature), overall the child is able to choose where they need support. As discussed as a part of each of these features, engagement is one of the most powerful for this prototype. Similar to inclusiveness, engagement is a sense of being invited to participate. It is being able to take part in the system, not just watching. When the child is given the chance to read (and record) the paragraph that has just been read to them, they are engaging in the system. The tools available to participate in the system are continual, as the user is given several options to assist them in their fluency. Furthermore, the reader has the option to click on a pop-up box, similar to that of the word recognition and vocabulary features, to aid them in understanding each punctuation mark. By clicking on each punctuation mark and learning more about it, the child becomes more engaged as they gain a deeper understanding of the context. This system responds to the users needs, incorporating responsiveness into the system, as well. How fast the system responds to one’s needs and requirements is key in a system because wait time can create confusion and chaos. By responding when the user clicks the “fluency” button, the reader is able to continue on in their reading with the guidance they need. When they need to know what a certain punctuation mark means, they are able to click on it to find out. The system responds to the needs of the user, showing the ways it is both interactive and cooperative. Purpose, panoramic, and transcendence all go hand in hand within the fluency feature. Purpose encourages the user to go beyond, panoramic is the window through which the user takes a wider view, or is able to better understand something, and transcendence pushes the user to move beyond that window. In using the fluency feature, the user is encouraged to go beyond by reading the passage back to the system. When the user needs
assistance, they are able to click on the pop-up box, which represents the panoramic aspect of the feature, and click on punctuation they are having difficulty with, going beyond the norm of the feature, and representing transcendence. By clicking on the punctuation, the user is prompted to another screen that gives them more information about that punctuation mark and more examples that they can click on to dig deeper into their understanding. Each of these qualities contributes to the overall effectiveness of the fluency feature and allows it to function as an imperative piece of the interactive literacy book.

**Feedback**

Through a deeper look at this feature, it was discussed and analyzed that using different colors to represent text and punctuation would most adequately benefit the reader. Originally the text would be highlighted as it was read from the application to the user, however, through feedback from the three literacy collaborative teachers, it was discussed that this was a much better and more efficient approach. All three teachers agreed that punctuation has meaning, and that voice should be *shown* to the student in a more meaningful way. The reasons behind their reading allow a child to dive deeper into their learning (and their reading) and recognize different aspects of that reading. This feature has the potential to increase engagement by reading to the student and encouraging them to read back, in order to fully understand how fluency affects reading.
Feature Four: “Mini-Lesson” Assessment

Demo Video: http://www.screencast.com/t/YhaPt7bze

(Figure 4: What a “Mini-Lesson” may look like within the text)

Part of the new reading curriculum is teaching students small bits of information at a time. These small bits are known as mini-lessons and come at the beginning of a lesson to showcase an important aspect of reading. Mini-lessons range from understanding punctuation to sentence structure to figurative language. In the fourth and fifth grade curriculum, figurative language is a high focus due to its fairly new entry into grade level books. Figurative language is one of several main focuses in literacy and is continually touched upon throughout a school year. Figurative language is describing something by comparing it to something else and can be done in several ways including similes (comparing using “like” or “as”), metaphors (states a fact by comparison by drawing a verbal picture), personification (giving human characteristics to inanimate objects), alliteration (repetition of the same initial sound), hyperbole (an extreme exaggeration), onomatopoeia (use of a word to describe a sound), clichés (an expression that is used so often it has become commonplace), and characterization (describing someone or something using detail). Although there are several aspects to figurative language, these are the main eight touched upon at the fourth and fifth grade level. Figurative language...
can be weaved into many aspects of the human language and are oftentimes found in literature to enhance meaning and descriptiveness. The idea of a mini-lesson is to instill a concept for a student to look out for during independent reading time. If similes are introduced in a mini-lesson, the students will look for similes in their own reading that day, and mark where they find examples. The same concept can be carried into this interactive literacy book. Mini-lessons can be integrated into the books to make them hands-on and collaborative with classroom activities.

**Description of Feature**

Folders within the application would represent the mini-lesson feature. Unlike Figure 4, these folders would be inside the application and would stay along the side of the application the duration of the book. This way, the reader would be able to consistently drag and drop sentences into these folders, which would also be sent in a progress file to the classroom teacher after each use of the interactive book. Figure 4 shows these folders along the right side of the page, simply as a model for the “drag and drop feature.” This feature would require the child to first highlight the sentence with their cursor and then drag the sentence into the correct folder. There would be one folder for each of the figurative language elements discussed above: simile, metaphor, personification, alliteration, hyperbole, onomatopoeia, and clichés. The user could drag the sentence into the appropriate folder and watch the sentence “vanish” into the folder. As stated by Mary Allen, a literacy collaborative teacher, in the final interview, “this is a great feature because the kids love being able to drag and drop things and watch them disappear.” In the beginning of the book, several examples would be pre-highlighted for the reader, and they would simply have to decide which category it belonged. As the book progressed,
however, there would be less highlighted sentences, and the student would start having to find them on their own. This would allow the student to become more independent and gain a better understanding of each type of figurative language element and how it is used. This feature is interactive because, once again, the system is responding to the user. There is communication between the system and the user throughout the entirety of the book, as the user is able to find, highlight, drag, and drop the sentences into their designated folder. This is different from traditional literature in the sense that the child cannot interact with a paperback book. There is no response from the paperback book, nor is there a relationship involving both sides. The connection is made from child to book, but not from book to child; whereas in the interactive literacy book, there is a constant relationship stemming from both system and user.

Connection of Feature to Common Core Standards

The Common Core Learning Standards state that fourth and fifth grade students alike must be able to demonstrate the understanding of figurative language, word relationships, and nuances in word meanings. They must be able to explain the meaning of similes and metaphors in context, recognize and explain the meaning of idioms, adages, and proverbs, and demonstrate the understanding of relationships between particular words (Common Core Curriculum, 2014). This mini-lesson feature allows students to perform these tasks and meet these standards within the interactive literacy book, and gain a deeper understanding as to how figurative language is intertwined within a text. Being able to identify these relationships increases a child’s understanding of the text itself and puts them on the right path to being college or career ready (Common Core Curriculum, 2014).
Human-Centered Design and “Mini-Lesson” Assessment

Human-Centered Design has had a constant affiliation with this interactive literacy book. The shaping of this book has been around Human-Centered Design and Mike Cooley's theory that if a program or application possesses certain qualities, it makes it a functioning, working system. The mini-lesson feature shows inclusiveness. This feature invites the user in and makes them want to participate in the activities. The “drag and drop” tool within this feature makes it inviting and entertaining to participate. It is also engaging. It attracts the user and involves them in the system. Not only do they see what is happening, but also take part in it as they control the tools available. The system in this case, is also responsive. It responds to the user as they control which folder the sentence is released into. It responds to their needs as a user and follows commands when given. The system is also capable of responding to the user's purpose. The system understands what the user needs and encourages them to go further. By highlighting sentences, the system is pushing the user to learn more about it and go further. Equally so when the sentences are no longer highlighted and the user must locate them; the system is encouraging the user to continue and showing the value of the specific information. Each folder represents the panoramic view. These folders, each representing a separate element of figurative language, can be opened to see its contents. This pushes the user to apply the information in new ways. Each sentence is recorded in the folder, as the user becomes more confident in locating the necessary information. Each quality of Human Centered Design theory contributes to the overall position of a system. When these qualities are put together, the system becomes fully functioning. By
putting several of them together, like this feature accomplishes, one can see the effectiveness it has on each part of the system.

**Feedback**

In collaboration with three literacy collaborative teachers, this mini-lesson feature was adjusted somewhat to fit a child’s needs. Though it originally fit the curriculum, the later version fits both the curriculum and the needs of the reader. In first creating this feature, it was decided that the feature would highlight sentences throughout the book to aid students in finding each type of figurative language. It was later decided that starting off with highlighting of these sentences in the beginning of the book, then gradually decreasing the amount of highlighting would further benefit the student due to their lack of dependence upon it. As the book nears the end, there will be no highlighted figurative language and the reader will have to find these examples completely on his or her own.

After careful consideration of how to create this feature, there was a unanimous vote to incorporate this “take-away” effect. It is believed that it will have a much more positive outcome for the student, as they will not rely so heavily on being assisted. Overall, it is suggested that this feature will increase the motivation of a child as they read through the book, as they attempt to locate figurative language on their own. It was mentioned that the “drag and drop” tool within the feature would be an intriguing and stimulating activity for children of this age group. This feature engages the child as it makes them stop and think while they read.
Feature Five: Reading Comprehension

Demo Video: http://www.screencast.com/t/qyBq0AuwBguj

Reading comprehension is the most important aspect of reading a book. If the book cannot be comprehended by the reader, there is really no point in reading the book at all. Comprehension is the single most important piece of reading literature because it allows readers to grasp the story, understand the author’s intentions and meaning, and gain knowledge using evidence, reasoning, and thought. When a child is unable to comprehend aspects of a book, they are missing out on important details and ideas that the author is trying to portray. Furthermore, Common Core Standards require students to be able to comprehend several aspects of a book or story, so not understanding what a book is about is not allowing the child to fulfill important requirements. By incorporating a comprehension piece into the interactive literacy book, it is ensuring that the reader is gaining adequate knowledge and understanding of the book as it progresses. “Many elementary and middle school students need support with understanding characters, main ideas, and figurative language, to name a few challenges” (Serravallo, 2014). Through this feature, students will be guided in the right direction when it comes to
comprehension goals.

**Description of Feature**

This feature is a difficult one to describe due to the variety and inconsistency of its contents. Figure 5 and Figure 6 above show the idea behind the comprehension feature. The idea is that the reader will be able to recall information from the text and then take it one step further using details, understanding, and knowledge to answer a question or write a response. Due to the intensity of the Common Core Learning Standards, it is difficult to describe exactly what these questions will be made up of. They will rely considerably on the book itself, the level of the reader, and the grade the reader is in. These comprehension questions will include some multiple choice (that requires thinking), activities, and written response questions that show that the reader knows what is happening in the story. These comprehension responses will be set up in a variety of ways, requiring thought and processing by the reader. The reader’s goals have to be taken into consideration when they are answering these questions or writing responses. This is one of the only features of the book where the child will be “on their own” and have to really think in order to move on to the next section (chapter) of the book. They will not be able to move on until a response has been recorded and submitted to the teacher file, though they will be able to go back into the chapter for support.

**Connection of Feature to Common Core Standards**

There are several standards within the outlined Common Core Learning Standards for English Language Arts and Literacy for fourth and fifth grade students pertaining to comprehension. Specifically, fourth grade students must be able to refer to details and
examples within a text when explain said text when drawing inferences; they must
determine the main idea of a text using supporting details; explain events, procedures,
ideas, or concepts based on specific information within a text; describe the overall
structure of events, ideas, and concepts within a text; compare and contrast accounts from
the same topics, as well as differences in focus; they must interpret information visually,
orally, or quantitatively and explain how that information contributes to the
understanding of the text; explain how an author uses reasons and evidence to support
points made within a text; integrate information from two texts and be able to speak
knowledgably about the topic; and read or comprehend informational texts with
scaffolding at the high-end range by the end of the school year (Common Core
Curriculum, 2014). Furthermore, fifth grade students need to be able to do all of the
above, as well as quote accurately from a text when explain the said text; explain
relationships or interactions between two or more individuals, events, or ideas; analyze
multiple accounts of the same event or topic, noting important similarities and differences
in point of view; and use evidence and reasoning in support all points (Common Core
Curriculum, 2014). This feature attempts to cover several of these standards, though not
all of them are discussed within the description of this feature.

**Human-Centered Design and Reading Comprehension**

Human Centered Design requires that certain aspects of a system be present in order to
function as a whole. As discussed with the other features of this interactive literacy book,
several of these qualities are present in each feature. Each has been discussed in fine
detail how the qualities pertain to that particular feature and why they are considered part
of the system. The comprehension feature, however, is different because of its variety.
There is no single way to describe each quality of Human-Centered Design, even though it is still present within this important feature. Coherence is present in the comprehension feature because it will be clear what the task at hand is. Whether a written response, a multiple choice, or an activity, the meaning will be clear, and the user will be able to carefully and clearly follow what is intended of them. Each comprehension piece will also display inclusiveness. The user will be invited in to the activity and feel as though the system is user-friendly and usable. The system will also be engaging upon entering, as the user will be invited to participate and use the tools available to answer the response. They will be able to engage themselves into the system and take part in each comprehension piece, as they will be required to communicate with the system to answer the question. The user will be able to take ownership for parts of the system as well, as they will be able to save their response. There will be no time constraints, although the assessment will show how long it took to complete. It is the goal that the user will feel a sense of belonging when completing the comprehension for that chapter. Responsiveness will also be present in this aspect of the system because the system will respond to the user’s needs. The user will be able to change the font and type of their response question and will respond to the user as any fast type document would (such as Microsoft Word). The system responds according to what is typed, as well as how the user chooses to manipulate the machine. A panoramic quality will also be indicated within this feature. If the user needs to return to the book for details or quotes, they may widen their screen to do so in order to locate their necessary means. They will be able to expand and apply information in new ways using the comprehension feature. Several aspects of Human
Centered Design will be present within this feature, however, it is difficult to pinpoint exactly how, due to the inconsistencies of questions at the end of each chapter.

Feedback

Several ideas were discussed during the interviews with the professional literacy collaborative teachers. Since comprehension does not reflect a simple recall of the text, it is key that students are challenged at the end of each chapter during the comprehension assessment. Students must go back to the text in order to answer questions and complete comprehension assignments, as many of the standards require students to accurately quote or give specific details in a response. With the vast array of comprehension questions and responses, it is difficult to focus on one aspect within the feature. A suggestion that was made for the comprehension feature was to incorporate compare/contrast responses. This would require a more detailed, prepared amount of research to decide how this could be built-in to the system. Overall, the interviewees promoted the idea of the comprehension feature, but would like to see more. Because each comprehension piece is dependent upon the reading level, the book being read, and the grade level of the reader, it is difficult to show exactly how this feature would be effective. However, the goal would be that the child would be engaged and actively involved in whatever the comprehension feature proposed.

Findings

Three literacy collaborative teachers viewed the prototype and demonstration videos. They commented that they believe these books would have a positive impact in the classroom because of their involvement with technology. They stated that successful
implementation of interactive literacy books would increase student motivation and engagement. These books are a “different” way of teaching and reading, and although it cannot be proven that reading levels would increase for all students, it was predicted by the interviewed teachers that students’ comprehension and ability to read more difficult texts would rise because of the engagement and accessibility these books might provide. Since the books coincide with the Common Core, the three teachers said it is very possible for them to be implemented into the curriculum as an alternative to traditional reading.

The three literacy collaborative teachers suggest that if classroom teachers had to create these interactive literacy books, it could have negative effects, considering the amount of time one book would take to complete. Due to the tedious planning and creation of these books, it seems reasonable that teachers not be asked to create interactive books on their own. A plan of action would be necessary, in which a publisher created these books, and availability was given to classroom teachers in order for classroom implementation to be considered.

**Conclusions**

The purpose of this project was to develop a prototype and demo for a potential interactive literature book. This interactive literature project was designed as a blend of interactive textbooks, becoming more common in the college/university setting, and interactive storybooks, common for younger aged children. By creating this prototype, it gives students in the middle-school levels a chance to explore their independent reading books on a deeper level, and more interactive scale, which has the potential to increase reading levels and abilities, as well as increase motivation and potential learning
outcomes. By incorporating features such as word-chunking and decoding abilities, vocabulary recognition, fluency, lesson assessment, and reading comprehension, these interactive books could be a positive addition to a curriculum. Although the books may not be considered “better” than traditional books, they are simply different. They incorporate technology into the classroom, which is not only required for teachers, according to the Common Core Curriculum, but most children enjoy using technology, so additional advantages includes engagement and motivation, while privacy has been added to the reading experience. Disadvantages, however, include distraction and confusion. If a child is unable to comprehend the system, it may be difficult and confusing for them to navigate through the book. Also, some children have the potential to become distracted and get off course by all the features available within the book.

When interviewed, all three literacy collaborative teachers agreed that these books could be more engaging and motivating, if done well. Besides this, these books may touch upon things that teachers are not able to get to in their lessons, including improving fluency. The child has support at their fingertips, which makes these interactive literacy books more easily understood and comprehended.

By incorporating Human Centered Design principles into this project, the system as a whole becomes much more functional and useable. These interactive literacy books have the potential to truly engage students who have a difficult time with reading, or expand the reading process to those who are higher in reading levels and need more of a challenge. These books could potentially be more or less interactive depending on the child’s ability level, and could potentially allow for gifted and talented students to create
additional features and go far beyond what a traditional paperback book allows. These books have the potential to be a huge success in the classroom.

In creating this project, it was a goal to construct an interactive literature book, but further more, to go in depth with a more independent reading approach. As it corresponds and meets several ELA and Literacy Common Core Standards, these books have great potential, and ultimately could change the present reading curriculum for more than just fourth and fifth grade students.
References


Rivero, V. (2013). Digital Textbooks: Show me the Future! *Internet@Schools, 20*(3), 12-16.


Appendix

Appendix A: Key Features of Interactive Literacy Book

Figure 1: Word-Chunking/Decoding Feature
This feature would allow the reader to click on a word to aid in breakdown and decoding.

Figure 2: Vocabulary Recognition Feature
This feature would allow the reader to click on a word to aid in defining a word.
Figure 3: Fluency Feature

This feature would allow the reader to choose a starting and ending point in the text, in which would be read aloud to them. In turn, they would then have to record themselves reading the same section, in order to prompt independence and understanding.

Figure 4: “Mini-Lesson” Assessment Feature

This feature would allow the reader to highlight sentences, and then “drag and drop” into a folder that represented a certain aspect of figurative language.
Figure 5: Reading Comprehension Feature

This feature would appear at the end of each chapter of the book. This is just one (simple) example of what a comprehension question may look like. Comprehension questions throughout the book may be very different and ask for different context. Some questions may be written responses; some may be an activity; others may involve greater thinking. The above it would appeal more toward fourth and fifth grade students. However, if the comprehension question were multiple choice, it would involve a much higher level of thinking than this question requires.

**This question was generated purely for a visual example only**
Appendix B: Comprehensive Description of Common Core Learning Standards

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (“the Standards”) are the culmination of an extended, broad-based effort to fulfill the charge issued by the states to create the next generation of K–12 standards in order to help ensure that all students are college and career ready in literacy no later than the end of high school.

The present work, led by the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA), builds on the foundation laid by states in their decades-long work on crafting high-quality education standards. The Standards also draw on the most important international models as well as research and input from numerous sources, including state departments of education, scholars, assessment developers, professional organizations, educators from kindergarten through college, and parents, students, and other members of the public. In their design and content, refined through successive drafts and numerous rounds of feedback, the Standards represent a synthesis of the best elements of standards-related work to date and an important advance over that previous work.

As specified by CCSSO and NGA, the Standards are (1) research and evidence based, (2) aligned with college and work expectations, (3) rigorous, and (4) internationally benchmarked. A particular standard was included in the document only when the best available evidence indicated that its mastery was essential for college and career readiness in a twenty-first-century, globally competitive society. The Standards are intended to be a living work: as new and better evidence emerges, the Standards will be revised accordingly.

The Standards are an extension of a prior initiative led by CCSSO and NGA to develop College and Career Readiness (CCR) standards in reading, writing, speaking, listening, and language as well as in mathematics. The CCR Reading, Writing, and Speaking and Listening Standards, released in draft form in September 2009, serve, in revised form, as the backbone for the present document. Grade-specific K–12 standards in reading, writing, speaking, listening, and language translate the broad (and, for the earliest grades, seemingly distant) aims of the CCR standards into age- and attainment-appropriate terms.

The Standards set requirements not only for English language arts (ELA) but also for literacy in history/social studies, science, and technical subjects. Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too must the Standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines. Literacy standards for grade 6 and above are predicated on teachers of ELA, history/social studies, science, and technical subjects using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields. It is important to note that the 6–12 literacy standards in history/social studies, science, and technical subjects are not meant to replace content standards in those areas but rather to supplement them. States may incorporate these standards into their standards for those subjects or adopt them as content area literacy standards.

As a natural outgrowth of meeting the charge to define college and career readiness, the Standards also lay out a vision of what it means to be a literate person in the twenty-first century. Indeed, the skills and understandings students are expected to demonstrate have wide applicability outside the classroom or workplace. Students who meet the Standards readily undertake the close, attentive reading that is at the heart of understanding and enjoying complex works of literature. They habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and digitally. They actively seek the wide, deep, and thoughtful engagement with high-quality literary and informational texts that builds knowledge, enlarges experience, and broadens worldviews. They reflexively demonstrate the cogent reasoning and use of evidence that is essential to both private deliberation and responsible citizenship in a democratic republic. In short, students who meet the Standards develop the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in language.

June 2, 2010 (Taken directly from NYS P-12 Common Core Learning Standards for ELA & Literacy Handbook)
### Appendix C: Five Key Features Connection to Common Core Standards

<table>
<thead>
<tr>
<th>Key Feature</th>
<th>Relation to Common Core Learning Standard</th>
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</table>
| Decoding/Word-Chunking           | **Grade 4:**  
  CCSS.ELA-LITERACY.RF.4.3  
  Know and apply grade-level phonics and word analysis skills in decoding words.  
  CCSS.ELA-LITERACY.RF.4.3.A  
  Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.  

**Grade 5:**  
  CCSS.ELA-LITERACY.RF.5.3  
  Know and apply grade-level phonics and word analysis skills in decoding words.  
  CCSS.ELA-LITERACY.RF.5.3.A  
  Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.  

| Vocabulary Recognition           | **Grade 4:**  
  CCSS.ELA-LITERACY.L.4.4  
  Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.  
  CCSS.ELA-LITERACY.L.4.4.A  
  Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.  
  CCSS.ELA-LITERACY.L.4.4.B  
  Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *telegraph, photograph, autograph*).  
  CCSS.ELA-LITERACY.L.4.4.C  
  Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.  

**Grade 5:**  
  CCSS.ELA-LITERACY.L.5.4  
  Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.  
  CCSS.ELA-LITERACY.L.5.4.A  
  Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.  
  CCSS.ELA-LITERACY.L.5.4.B  
  Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *photograph, photosynthesis*).  
  CCSS.ELA-LITERACY.L.5.4.C  
  Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.  

<table>
<thead>
<tr>
<th>Grade 4:</th>
<th>Grade 5:</th>
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<tbody>
<tr>
<td>CCSS.ELA-LITERACY RF.4.4</td>
<td>CCSS.ELA-LITERACY RF.5.4</td>
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<tr>
<td>Read with sufficient accuracy and fluency to support comprehension.</td>
<td>Read with sufficient accuracy and fluency to support comprehension.</td>
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<tr>
<td>CCSS.ELA-LITERACY RF.4.4.A</td>
<td>CCSS.ELA-LITERACY RF.5.4.A</td>
</tr>
<tr>
<td>Read grade-level text with purpose and understanding.</td>
<td>Read grade-level text with purpose and understanding.</td>
</tr>
<tr>
<td>CCSS.ELA-LITERACY RF.4.4.B</td>
<td>CCSS.ELA-LITERACY RF.5.4.B</td>
</tr>
<tr>
<td>Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</td>
<td>Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</td>
</tr>
<tr>
<td>CCSS.ELA-LITERACY RF.4.4.C</td>
<td>CCSS.ELA-LITERACY RF.5.4.C</td>
</tr>
<tr>
<td>Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</td>
<td>Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</td>
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<tr>
<th>Grade 4:</th>
<th>Grade 5:</th>
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<tr>
<td>CCSS.ELA-LITERACY L.4.5</td>
<td>CCSS.ELA-LITERACY L.5.5</td>
</tr>
<tr>
<td>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</td>
<td>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</td>
</tr>
<tr>
<td>CCSS.ELA-LITERACY L.4.5.A</td>
<td>CCSS.ELA-LITERACY L.5.5.A</td>
</tr>
<tr>
<td>Explain the meaning of simple similes and metaphors (e.g., as pretty as a picture) in context.</td>
<td>Interpret figurative language, including similes and metaphors, in context.</td>
</tr>
<tr>
<td>CCSS.ELA-LITERACY L.4.5.B</td>
<td>CCSS.ELA-LITERACY L.5.5.B</td>
</tr>
<tr>
<td>Recognize and explain the meaning of common idioms, adages, and proverbs.</td>
<td>Recognize and explain the meaning of common idioms, adages, and proverbs.</td>
</tr>
<tr>
<td>CCSS.ELA-LITERACY L.4.5.C</td>
<td>CCSS.ELA-LITERACY L.5.5.C</td>
</tr>
<tr>
<td>Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).</td>
<td>Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.</td>
</tr>
</tbody>
</table>
Reading Comprehension

Grade 4:
CCSS.ELA-LITERACY.RL.4.1
Refer to details and examples in a text when explaining what the
text says explicitly and when drawing inferences from the text.
CCSS.ELA-LITERACY.RL.4.2
Determine a theme of a story, drama, or poem from details in the
text; summarize the text.
CCSS.ELA-LITERACY.RL.4.3
Describe in depth a character, setting, or event in a story or drama,
drawing on specific details in the text (e.g., a character's thoughts,
words, or actions).
CCSS.ELA-LITERACY.RI.4.8
Explain how an author uses reasons and evidence to support
particular points in a text.

Grade 5:
CCSS.ELA-LITERACY.RI.5.1
Quote accurately from a text when explaining what the text says
explicitly and when drawing inferences from the text.
CCSS.ELA-LITERACY.RI.5.2
Determine two or more main ideas of a text and explain how they
are supported by key details; summarize the text.
CCSS.ELA-LITERACY.RI.5.3
Explain the relationships or interactions between two or more
individuals, events, ideas, or concepts in a historical, scientific, or
technical text based on specific information in the text.
CCSS.ELA-LITERACY.RI.5.8
Explain how an author uses reasons and evidence to support
particular points in a text, identifying which reasons and evidence
support which point(s).
Appendix D: Consent Form

Consent Form for Haily Mae Dunn

Can interactive literacy books provide a deeper meaning to fourth and fifth students through engagement and interaction?

You are being invited to participate in a research study. Please take a few moments to read the explanations that follow to help you decide whether to participate or not.

Description of Study

This study will be done to discuss the effectiveness of a prototype interactive textbook that aids in student learning and understanding of reading.

Risks and Discomforts

We believe there are no known risks associated with this research study; however, a possible inconvenience may be the time it takes to participate in the study.

Possible Benefits

A major benefit of participating in this study is that your feedback will aid in the development of an interactive textbook for students in grades fourth and fifth, and potentially increase their understanding and deeper meaning of a given text.

Confidentiality of Records

The researcher will keep all records in a secure location. Only the researcher will have access to the information provided. At the conclusion of this study, the researcher may publish their findings. Information will be presented in summary format and you will not be identified in any publications or presentations without your consent in writing.

Contact Information

If you have any questions about this research, you may contact Russell L. Kahn, PhD, Associate Professor Information Design and Technology at SUNY Polytechnic Institute, 100 Seymour Road, Utica, NY 13502, by phone at (315) 792-7438 or by email at russ@sunyit.edu.

Statement that Research is Voluntary

Participation in this research is voluntary. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate.
When signing this form I am agreeing to voluntarily enter this study. I have had a chance to read this consent form, and it was explained to me in a language, which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. I understand that I can withdraw at any time. A copy of this signed Informed Consent Form has been given to me.

Statement of Consent

I have read the above information, and have received answers to any questions I have asked. I freely consent to take part in the study.

Your Signature: ___________________________ Date: ________

Signature of Researcher: ___________________ Date: ________
Appendix E: Request for Expedited Review of Research Certification Form

FORM A-1
SUNY Institute of Technology
Request for Expedited Review of Research Certification Form

Research activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in the allowable categories of research may be approved by the IRB through the expedited review procedure. Activities listed should not be deemed to be of minimal risk simply because they are included on the list. Inclusion on the list merely means that the activity is eligible for review through the expedited review procedure when the specific circumstances of the proposed research involve no more than minimal risk to human subjects.

Use this form to indicate the category of research which you think may qualify for expedited review. Follow the instructions and submit the completed form and any other required documents electronically to: IRB@sunyit.edu.

Researcher or Faculty Member Name – Russell Kahn, Ph.D

Student Researcher Name – Haily Mae Dunn

Title of Proposal - Interactive Textbook/Interactive Storybook: A Fourth and Fifth Grade Experience into Tuck Everlasting by Natalie Babbitt

INSTRUCTIONS:
1. Please answer the three Expedited Review Criteria questions by placing a checkmark in the appropriate boxes.
2. Identify, by checkmark, the Expedited Review Category that applies to this research activity.
4. Complete and attach Form A-3 Consent Form.

EXPEDITED REVIEW CRITERIA

1. The research is no more than minimal risk.
   ☒YES ☐NO
2. The research is not classified.
   ☒YES ☐NO
3. Identification of the subjects, and/or their responses might reasonably place them at risk of criminal or civil liability or may be damaging to the subject (s) financial standing, employability, insurability, reputation or be stigmatizing.
☐ NO
☐ YES (If YES, have reasonable and appropriate protections been implemented so that risks related to invasion of privacy and breach of confidentiality are no greater than minimal? Describe these protections.)

ELIGIBLE CATEGORIES

☐ 1. Clinical studies of drugs and medical devices only when condition (a) or (b) is met.

(a). Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required.

(b). Research on medical devices for which:

1). an investigational device exemption application (21 CFR Part 812) is not required; or,

2). the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

☐ 2. Collection of blood samples by finger, heel, or ear stick, or vein-puncture as follows:

(a). From healthy, non-pregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550ml in an 8 week period and collection may not occur more frequently than 2 times per week; or

(b). From other adults and children considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

☐ 3. Prospective collection of biological specimens for research purposes by noninvasive means.

☐ 4. Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devise are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications.)

☐ 5. Research involving materials (data, documents, records, or specimens) that have been collected or will be collected solely for non-research purposes (such as medical treatment or diagnosis). (NOTE – some research in this category may be exempt from the HHS regulations for the protection of human subjects (45 CFR 46.101 (b) (4)). This listing refers only to research that is not exempt.)
6. Collection of data from voice, video, digital, or image recordings made for research purposes.

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE – some research in this category may be exempt from the HHS regulations for the protection of human subjects (45 CFR 46.101 (b) (4)). This listing refers only to research that is not exempt.)

8. Continuing review of research previously approved by the convened IRB.
   (a) Where:
      (1) The research is permanently closed to the enrollment of new subjects.
      (2) All subjects have completed all research related interventions;
      AND
      (3) The research remains active only for long term follow up of subjects; OR
      (b) Where no subjects have been enrolled and no additional risks have been identified; OR
      (c) Where the remaining research activities are limited to data analysis.

9. Continuing review of research, not conducted under an investigational new drug application or investigational device exemption where categories two (2) through eight (8) above do not apply but the IRB had determined and documented at a convened meeting that the research involves no greater than minimal risk and no additional risks have been identified.

<table>
<thead>
<tr>
<th>FOR IRB USE ONLY</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
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<tbody>
<tr>
<td>Risks to participants are minimized by using procedures which are consistent with sound research design and do not unnecessarily expose participants to risk.</td>
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<tr>
<td>Risks to participants are minimized whenever appropriate, by using procedures already being performed on the participants for diagnostic or treatment purposes.</td>
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<td></td>
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<tr>
<td>Risks to participants are reasonable in relation to anticipated benefits, if any, to participants, and the importance of the knowledge that may reasonably be expected to result.</td>
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<tr>
<td>Selection of participants is equitable, taking into account the purposes of the research, the setting in which the research will be conducted, the special problems of research involving vulnerable populations, the selection criteria, and the</td>
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Informed consent will be sought from each prospective subject or the subject’s legally authorized representative, in accordance with, and to the extent required by regulations.

When appropriate, the research plan makes adequate provision for monitoring the data collected to ensure the safety of participants.

When appropriate, there are adequate provisions to protect the privacy of participants and to maintain the confidentiality of data.

When some or all of the participants are likely to be vulnerable to coercion or undue influence, such as children, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons, additional safeguards have been included in the study to protect the rights and welfare of these participants.

**If the reviewer answered NO to any of the above, the research activity cannot be approved through the Expedited review procedure.**

1. Risk Evaluation: No Risk  Minimal Risk
2. Consent Form: Required  Waived
3. Child Assent:  Less than 18 years of age  N/A
4. Regulatory requirements of subparts B and/or D satisfied
   YES  No  N/A
5. Request for Expedited Review:  Approved  Not Approved
   *(refer to Full IRB)*
6. Expedited review categories:

7. I certify that I do not have any conflict of interest related to this research or my review of the research.

8. Comments:

Reviewer 1 Name/Date:

Reviewer 2 Name/Date:

Reviewer 3 Name/Date:
PROPOSAL FOR RESEARCH INVOLVING HUMAN SUBJECTS

SUNY Institute of Technology
Marcy Campus, P.O. Box 3050
Utica, New York 13504-3050

Title of Research: Can interactive textbooks and storybooks provide a deeper meaning to fourth and fifth students through engagement and interaction?

Submitted by: Haily Mae Dunn

Date: October 6, 2014

Please complete the following and return this form to the IRB committee via humansubjects@sunyit.edu. You may also direct any questions you have to this same e-mail address. Note that grant proposals for research involving human subjects must be reviewed and approved by the committee before submission to the funding agency.

1. Title of proposal
Interactive Textbook/Interactive Storybook: A Fourth and Fifth Grade Experience into Tuck Everlasting by Natalie Babbitt

2. Objectives of Research Study
Provide a summary statement of the proposal including the generic problem or question to which the study is addressed (not specific hypothesis or procedures) written in language understandable to a layperson.

Literacy Collaborative has grown in elementary schools as the Common Core has grown and expanded. As students are tested in new areas, it has become very important to focus on higher level thinking and deeper meaning in the books they read. For some students, it can be difficult to involve themselves in books due to the differences in their reading levels. By making reading more engaging and interactive for students, can students gain that deeper understanding and find more meaning in the books they are reading? This study intends to provide the prototype of the cross between an interactive textbook and an interactive storybook to allow students to dig deeper into their learning and gain a better understanding through their readings.

For training grant proposals, indicate who (other than the trainees) will be responsible for contacting and informing subjects: N/A
3. Subjects
Describe the requirements for a subject population, including age range, sex, and number. Explain the rationale for using in this population any special groups such as prisoners, children, the mentally disabled, or groups whose ability to give voluntary informed consent may be in question. It should also be understood that investigators must indicate what measure they will take to protect the right of minors, (persons who are 17 or younger), e.g. parental consent, approval by school administrators, etc.

a. Requirements for subject population
I will be creating a prototype of an interactive textbook, which will not require the observation of children. I will instead be consulting with literacy collaborative coaches at Whitney Point School District in Whitney Point, NY, as well as administration.

b. Rationale for using this population
I will be consulting literacy teachers in my research for ideas and protocol on literacy classroom standards. Administration will be consulted for questions on experience of the subject as well. I will not be observing students during this research process, as this is a mock-up, using a published book that I will not be able to publish myself due to Copyright laws. This mock-up will be an example of what could be used in a literacy classroom.

c. Measures to be taken to protect human rights of subject
I will protect the rights of those I interview, and again, will not be using this in a classroom setting, so children will not be involved. I will be sure that the interviewees grant me permission to use their statements in my research.

4. Procedures
In this section, please provide a general description of the procedures followed during the course of the investigation, including any experimental tests or manipulations to be used. Also provide a description of the experiences of subjects during participation in the experiment, including instructions given to subjects, the nature of the tasks they are required to perform, informational or interpersonal feedback which subjects receive, the total time required for participation and the locale of the experiment.

*Note: The IRB operates under the assumption that NO research involving ANY risk to the welfare of subjects can be performed by student researchers. Research involving risks to subjects may be performed by faculty, but only in those cases where the IRB is satisfied that the benefits of the research warrant the level of risk involved.*

a. Procedures followed by researcher
I will set up interviews with three literacy consultant teachers, as well as a separate interview with administration. I will record these interviews via my iPhone, given consent, so that I am able to revisit them later.
Using the information I collect, I will create a prototype of an interactive text book that includes important aspects of literacy discussed in my interviews.

b. Experiences of subject during participation in the experiment
The subject (literacy collaborative teachers and administration) will be able to do a walk-through of the given interactive textbook and comment on strengths and weaknesses according to the Common Core Standards.

c. Instructions given to subjects
Please review the presentation, click on the application link and begin reviewing prototype of interactive textbook. Discuss your experiences with your peers and relay any feedback you find necessary.

d. The nature of the tasks they are required to perform
Clicking, viewing, and interacting with the interactive textbook. Open ended discussion reviewing the application.

e. Informational or interpersonal feedback which subjects receive
Subjects will receive a clear description of the purpose of the interview. I will then ask them questions, to which I will update them with the continuing steps of the project.

f. Total time required for participation
Thirty Minutes for each interview.
One hour for final presentation.

g. Locale of the experiment
Interviews: Online/Email/In-person
Final Presentation: Whitney Point Central School District Conference Room

h. Procedures for maintaining confidentiality
Interviewee will sign a participation consent form

i. Debriefing Procedures
I will provide a letter to participants thanking them for their involvement and giving them a contact in which they can reach me for further questions and comments.

j. Procedures which mitigate against risk to research subject
Describe necessary procedures for protecting against or minimizing potential risks to subjects with an assessment of their likely effectiveness.

There will be no risk involved in this research.
5. Consent
A copy of the consent form given to each subject must be attached. The consent form must contain the following pieces of information. Please restate this information below.

a. Describe the informed consent procedures to be followed, including how and where informed consent will be obtained.
Participants will be emailed in advance discussing times and dates in which interviews will take place. The consent form can be signed in person before the interview.

b. Name and number of the experiment
Can interactive textbooks and storybooks provide a deeper meaning to fourth and fifth students through engagement and interaction?

c. Objectives of the experiment
This section may resemble #3 above, but need not reveal any information that would undermine the validity or obviate the effectiveness of the experimental procedures.

The purpose of this experiment is to discuss how interactive textbooks could aid in students understanding and participation.

d. Procedures
Provide a general description of the types of tasks and experiences the person can expect during his or her participation in the experiment.

If you agree to take part in this study, you will be asked a series of general interview questions about your background and area of expertise based on literacy collaborative and the Common Core Standards. Your feedback will aid in the design of this interactive textbook. During the final presentation, participants will interact and discuss the interactive textbook prototype.

e. Risks and Benefits
A statement of the level and nature of positive and negative incentives associated with participation in the experiment.

You may not directly benefit from this research; however your participation in the study may result in the understanding and ability to provide students with meaningful, interactive alternatives for reading and engaging in deeper understanding.

We believe there are no known risks associated with this research study; however a possible inconvenience may be the time it takes to complete the study.

f. Withdrawal Option
Provide a statement to the effect that the subject is free to withdraw his or her consent and to discontinue participation in the experiment at any time.
Subject participation in this study is completely voluntary. If you agree to be in this study, but later change your mind, you may withdraw at any time. There are no penalties or consequences of any kind if you do not participate.

g. Date and signature of the subject

h. Potential Benefits
Assess the potential benefits to be gained by the individual subject, as well as benefits that may accrue to society in general, because of the planned research.

We believe there are potential benefits associated with this research study to the participants by engaging in discussion relating to interactive reading and literacy for children.

6. Risks to Research Subjects
Describe and assess any potential risks -- physical, psychological, social, legal or other -- and assess the likelihood and seriousness of such risk. If methods of research create potential risks, describe other methods, if any, that were considered and why they will not be used.

Potential physical risk: None
Potential psychological risk: None
Potential social risk: None
Potential legal risk: None
Other potential risks: None

Analyze the risk-benefit ratio: Because there is little risk involved, the benefits exceed the risks

7. Anticipate report to the committee
Provide an indication of the expected nature of a brief report of the outcome of the experiment (e.g., abstract from a standard research report) to be submitted to the committee upon completion of the research.

I will provide an abstract to my thesis of the outcome of the educational field interview discussions to the IRB upon completion.