New Dimensions of Reading

A Case Study Examining the Effect of the iPad on Student Reading

Methods and Procedures

The major focus of this case study will be to examine changes in student reading caused by the tools (see definition of terms for tools) made available to the reader via the iPad that are not otherwise available via hard copy books. The data selected will be used to design a case study describing the impact of the iPad on student reading.

Research Questions

The questions tested in this study on the effect of the iPad on student reading is:

1. Will student reading be enhanced while using the iPad, and if so in what way?

2. How will students learn to manage the information available to them?

3. Will teacher assessment of student reading become easier and more accessible, if so in what way?

4. Will students prefer to read using the iPad?

Sample Selection

The sample was obtained from one of four fourth grade classrooms at The School at Columbia University a K-8 elementary school. 15 students and 1 teacher participated in the study. The classroom in which this study takes place has 15 students and 1 teacher. Roughly half of the students are children of Columbia University faculty and the other half are from the surrounding neighborhood of sections 3 and 5 (Harlem and the Upper West Side).

Instruments

The instruments used to determine if the iPad changed the way students read were:

Teacher observations and written reflections

Student Surveys

A rubric evaluating student performance

Reading responses written by students

Notes about the book entered by students

A running record (fluency evaluation)

Procedures

The study took place in a fourth grade classroom with 15 students. The students were split into three reading groups often referred to as book clubs. First, three book clubs were conducted in which the class was broken up into thirds based on reading ability. Each group was matched with a book at their instructional level. The book clubs were based on an author study of Kate DiCamillo. The three books chosen were: *Because of Winn Dixie*, *The Magician's Elephant* and *Tiger Rising*. Each book club participated using the e-book version of the books on the iPad. Throughout October and November three book clubs were held during the hour to hour and a half already designated for reading in the school day. The teacher used the iPad for read aloud during the first 15 minutes. She read *The Miraculous Adventures of Edward Tulane* by Kate DiCamillo. The goals of the fifteen minutes were three-fold:

1. To expose the students to the author Kate DiCamillo in which their subsequent book clubs would all involve books from this author.

2. To teach reading strategies relevant to the curriculum.

3. To teach the students how to use the tools available to them on the iPad in a

natural way as the opportunity arose while reading the book.

Before the reading period two students who shared the role of "technologist" as their class jobs, checked out 10 iPads from the school's library and unplugged the remaining 5 iPads designated to the classroom. The transition to book clubs was seamless as one group remained on the carpet with the teacher while the other two book clubs went to independently read the assigned pages in their book club book. While at their seats, students read the assigned reading on their iPads and used the tools to various degrees. While meeting with the teacher, the book club participants shared their thoughts about the book and what they learned through the use of tools on the iPad.

At the start of each book club, the teacher evaluated student use of the iPad using a rubric (see appendix 1). The teacher later wrote reflections at the end of each week. When students were finished with this book club, the teacher evaluated them once more using the same rubric to chart their progress. After that the students went onto another book club with hardcopy books. After the second book club, students were asked to fill out a survey (see appendix 2) about their experience. Throughout the study, the teacher periodically wrote reflections. Based on the observations, reflections and assessments of the teacher, she made instructional decisions and noted changes she would make in future iPad book clubs.

Results of the Case Study

Research Questions

The following questions will be answered in a case study. The questions examined in this study are:

1. Will student reading be enhanced while using the iPad, and if so in what way?

2. How will students learn to manage the information available to them?

3. Will teacher assessment of student reading become easier and more accessible, if so in what way?

4. Will students prefer to read using the iPad?

Overview

The study took place in a fourth grade classroom with 15 students. The students were split into three reading groups often referred to as book clubs. First, three book clubs were conducted in which the class was broken up into thirds based on reading ability. Each group was matched with a book at their instructional level. The book clubs were based on a Kate DiCamillo author study and used three of her books: *Because of Winn Dixie*, *The Magician's Elephant* and *Tiger Rising*. Each book club participated using the e-book version of the books on the iPad. Throughout October and November three book clubs were held during the hour to hour and a half already designated for reading in the school day. The teacher used the iPad for read aloud during the first 15 minutes. She read *The Miraculous Adventures of Edward Tulane* by Kate DiCamillo.

Results

Will student reading be enhanced while using the iPad, and if so in what way?

The teacher in the classroom assumed that if the students learned how to use the tools made available to them and then consistently made use of those tools independently, that their vocabulary, background knowledge and overall understanding of the book would be enhanced. Therefore, a rubric was made to assess the students' *variety of tools* used, their *efficiency of use* and the *quality of their notes*.

Variety of Tools

The variety of tools made available to the reader on the iPad are: The dictionary, locations, Google, highlighting, text size and note taking. By the end of the book club 93 percent of the students were using two or more of the tools consistently. 87 percent, all but two students, made progress in this area by increasing one level on the rubric. This means that when comparing the results of their performance at the beginning of the book club to the end of the book club, all but two students increased the variety of the tools they used when reading. One student stayed at the first level and the other began at the second level and sustained his growth there.

The student who was evaluated at the first level, primarily used one tool throughout the book club. Starting at level one and not increasing might be attributed to the student's opinion of the iPad. In the survey, "Your Opinion About the iPad" this student stated: "I like paper copies because iPads are electronics, and if you have to much of them, you could get addicted. But, you can make notes and highlight." Here the student reveals her

own concerns about technology while at the same time acknowledging two of its tools. When asked if reading from the iPad helps you to read, the student said that it was the same as a hardcopy book, "Because its the same words, just on a iPad." Acknowledging the availability of tools but not their ability to actually help the reader, demonstrates a disconnect in this students understanding. If students do not recognize, for instance, that finding out the definition of an unknown word, can help the reader understand the book better, it makes sense that they would not utilize this function. Until they do, the tools on the iPad will remain in the background and the device will operate in the same way as a hardcopy book.

 The other student who did not show progress but started at level two and continued to use those tools solely throughout the book club, had a very different opinion about the iPad. This student felt the iPad helped him to read. When asked why he stated: "… because if I need to I can look a word up in the dictionary. If I have a question i can right it down and than answer it." When asked if the iPad makes him want to read more books than reading from a paper book he explains, "…there are a lot of cool features that are very useful and at the tips of my fingers." The student's attitude toward the iPad's usefulness might be the reason this student began using two of the tools consistently from the beginning. He was one of 25 percent in the class that began the book club at a level two. In fact all of the students that began their book club at a level two in using a variety of tools responded positively to questions regarding attitude towards technology in the survey titled: "Your Opinion About Using the iPad." This intimates a positive correlation between positive attitude towards technology and using it effectively.

Analyzing Each Group in the Variety of Tools Category

When analyzing the differences in the groups, the teacher made some very interesting observations. Although the whole class was studying one author, the groups were developed largely on reading ability and matched with books that were within their Zone of Proximal Development (Vygotsky, 1962). The first group was not yet meeting grade level expectations in reading, the second was on grade level and the third above grade level expectations.

Predictions of Performance

The teacher expected the first group to need the most direction and scaffolding, the second group to focus on a few tools and the third group to utilize the functions of the iPad to the greatest extent. What she found was a surprise in all cases.

Group One

Interestingly, group one benefited most from increasing the text size of the book. They were overwhelmed by all of the tools available to them on the iPad as they were still honing their reading skills. Many of the students in this group were still working on fluency. The increase in text size dramatically changed their speed of reading and decoding skills. This feature alone made such a drastic difference in the student's ability to read fluently, and consequently, understand more of the text, the teacher focused on trying to encourage the independent use of the text increase tool. This was more difficult then anticipated considering the students themselves were admittedly impressed with their own reading. One student even recorded her voice reading with the normal text size

and compared it to a recording of her voice reading the enlarged text and was surprised how different she sounded. The teacher conducted a running record to compare one child's fluency with regular text size to a larger text size. The results were significant: With the 2nd smallest font size, she read approximately 86 words per minute. Her fluency was choppy with 7 repetitions, 3 omissions, 1 miscue ("revealed" for "relieved") and 3 self-corrections. With a separate passage using the 3rd font size, just one size larger, she read approximately 117 words per minute. Her fluency was much smoother and more accurate with 4 repetitions and no miscues. Her performance went up three grade levels just by increasing the text size once. Despite the success, the students felt, they were hesitant to independently use the text tool. The teacher speculated that this being the first book club and at the beginning of the school year where classroom community was still being developed, the students felt self-conscious in needing to read larger font text. The stigma that easier books have larger text may have discouraged them. As far as using the other tools, the students struggled to connect the tools with a reading strategy. For instance, using the notes feature to write a question first requires the student to independently ask questions while they read. The teacher concluded that first the students' metacognitive literacy skills would need to be developed in order for the students to be able to employ the tools used to enhance those skills. In other words, the students would need to think first about questions or predictions they have before they could consider the tools they might use to employ those skills.

Group Two

Interestingly, the only group that had students reach level three by using all of the tools consistently was group two. This was surprising as it was assumed that the group that would reach the highest level would be the students in group three as their reading ability is above grade level expectations. Statistically it has been shown that students performing in the middle of the class usually plateau and make the least amount of progress. However, it was group two that demonstrated the most interest in using all of the tools to enhance their reading and subsequently their understanding of the books was enhanced. Their minds were open to using each tool to enhance their reading experience. The teacher speculated that the students were still developing higher level reading skills and did not have a rich bank of background knowledge. The students were not yet set in their ways to go about understanding the text. As they developed new strategies they employed new tools to push their learning further. They were not afraid to take risks and often used the tools to enhance the student discussion during the book club. For instance in a reflection the teacher wrote about the second group sharing specific parts of the text to prove their opinions, she stated: "The Magician's Elephant group is also getting quite proficient with using the Location finder to direct each other to sections of the text for discussion. They are pros!"

Group Three

The students who excel are above grade level expectations excel because of the reading strategies they developed early on and continued to hone over the years. This group reads a large number of books every year. They are very comfortable using the strategies that

have worked for them thus far. Almost all of the students in this group began at level one and all of them progressed to level two. Anecdotes from the teacher suggest that they were less willing to stop reading to confirm definitions of unknown words, research places relevant to the book, or stop to write a note. 100% of the group liked highlighting and notes as it helped them to remember what to say during book club as opposed to gathering new knowledge. When they did use the tools, the students often saw it as a break from the book or a separate activity, while group two stayed connected to the text throughout their use of the tools.

		Variety of Tools					
		Level 1		Level 2		Level 3	
		Primarily relies on 1 tool		Uses two tools consistently		Can use all of the tools consistently	
		Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Group 1	Student 1	√			√		
	Student 2	√			√		
	Student 3	√			√		
	Student 4	√			√		
	Student 5	√			√		
Group 2	Student 6			√	√		
	Student 7			√			√
	Student 8			√			√
	Student 9	√			√		
	Student 10	√	√				
Group 3	Student 11			√	√		
	Student 12	√			√		
	Student 13	√			√		
	Student 14	√			√		
	Student 15	√			√		

How will students learn to manage the information available to them?

In the second part of the rubric, the teacher evaluated the students on the effectiveness of their use of the iPad tools. In all groups she looked to see if the exploration of tools eventually led to using those tools more effectively. She wanted to see if the students became more discerning when choosing to use an iPad feature or if they stopped every time something was remotely unfamiliar. Other students, she hoped, would stop more and identify unfamiliar words or places thus increasing their vocabulary and background knowledge. Her evaluation took into consideration the students' choices while reading in the book club and while reading independently at their seats. Often one of the first questions she asked when they met was, "What did you learn while reading at your seat and how did you learn it?"

The teacher found the effectiveness of tools increased once the students became more familiar with the iPad and its features. Eventually, the text and utility of the features stood out and the newness of the technology slipped to the background. For instance, in one reflection the teacher wrote: "The novelty of reading on the iPad is diminishing somewhat and the students are focusing on the content of the text during our book club discussions. The conversations are beginning to feel more like "typical" book club discussions than they did in the first week or so when we were still getting used to reading digitally. One big difference that we've noticed is that there are not page numbers to refer to, rather "locations." Each group is experimenting with how to most efficiently use locations to direct each other to sections of the text. We've noticed that notes and highlights are listed in the book menu and are relatively easy to find, depending on how

many there are. We are also experimenting with the Location find feature, which zooms us straight to the section we want. It's a bit different than just saying, "the bottom of page 17," like we would with a paper book, but it allows students to maintain the personalized text size that they have chosen."

Modeling Effectiveness of Use

The teacher assumed that the students would have a difficult time learning how and when to use the various tools in the beginning. To help make that initial period go a little easier, the teacher modeled how to use the tools while reading aloud The Miraculous Journey of Edward Toulane. While reading, the teacher modeled how and when to use the tools using a "think aloud" technique where she shared what she was thinking with the students. For instance, when the teacher came across a word she did not know, she "thought aloud" about what she thought the word might mean based on specific context clues. Then she said, "Maybe I should use the dictionary to find out if I'm right or not. All I have to do is touch the word and then touch "dictionary". Oh look! There are many things this word could mean. Which definition makes sense in this story…" Similarly, there were times when the teacher modeled that using a tool would take away from the momentum of the book and not worth using. For instance, when a character in the book brought up two constellations the teacher mentioned that she had never heard of them, one child said he did not know what a constellation was. A quick Google search led them to the Andromeda constellation and visually explained both what a constellation was and what the Andromeda constellation looked like. The teacher then said, "I think I can keep

reading now. I don't need to look up Pegasus. I can infer that it is a constellation of a flying horse." The students nodded in agreement at the teacher's two teaching points.

Analyzing Each Group in the Effectiveness of Use Category

Group One

Students in this group were engaged in the book and excited to be reading in a book club. They were very interested in using the tools, but did not quite know how to incorporate them into their reading. At first the students in this group either mostly read or mostly used tools. They did better when they could focus on either reading or using one of the features. Besides, the text size increase, the other tool that would have helped this group tremendously is the dictionary tool. However students in this group were not inclined to stop for an unknown word. Additionally, two of the students mentioned that the dictionary tool was challenging. One student said she never seemed to understand the definition because it was too hard to read. The teacher took this to mean that the dictionary explanation was difficult for the student to comprehend due to complex syntax and vocabulary. The other student referred to the numerous definitions that were difficult to choose from. Both of these students demonstrate difficulty with general dictionary skills that are not just relevant to the iPad. The students ran into problems using a hardcopy dictionary as well. Additionally, understanding dictionary definitions and using context clues to choose a relevant definition are both skills that are important for readers to build. In all cases with this group, the teacher found that exploration of tools did not result in the students independently developing effectiveness use.

Group Two

This group was able to stay balanced by grounding themselves in the text while using all of the features of the iPad. The teacher found that this group was very interested in using the tools to help them build background that they were lacking. For instance, they enjoyed finding images on Google to help them envision the text. While the first group did not stop independently to find the definition of a word or inquire about the setting, the second group was on the lookout for words and places they were unfamiliar with. While this mindset is responsible for the success of this group, it also contributed to some sidetracking. They would search every time something was unfamiliar rather than first ask if it was essential to the text. The students in this group were not discerning enough to look up things that were only going to significantly increase their understanding. The overuse of this tool was, however, not much of a distraction from the book and with time became less of an issue. In most cases with this group, the teacher found that exploration of tools did cause the students to independently develop effectiveness of use. Following is a reflection from the teacher illustrating the process of building background knowledge: "The students came to the meeting today having Googled unfamiliar places, people, and objects from the chapter. A few had looked up images of a fishmonger and catfish. All of them had attempted to find out more about Baltese, the setting of the story. Results included a mountain that didn't seem related to the text and information about the book The Magician's Elephant itself. When we highlighted "Baltese" in the text together, we found similar results that indicated that Baltese is a fictional city. One site had an interview with the author, Kate Dicamillo. In the interview, she mentioned that, though

Baltese is fictional, she once saw a movie set in Bruges, Belgium, and was struck by how similar the city of Bruges was to the city of Baltese she had in her mind. That immediately set us off on a search of Bruges and the students found tons of images of gorgeous stone buildings, waterways, and the like. With a text such as The Magician's Elephant, which contains a lot of unfamiliar language and some fantastical events, it is great to have some concrete images to help students envision the setting as they read."

Group Three

Students in group three would often discuss if something was worth researching first before going ahead and using one of the features. If group three was unsure if they should spend the time to research something, they asked if the unknown information was vital to the text. For example, during one meeting some of the group was searching for images of parakeets to see what Willie May's parakeet looked like. Student 13 said, "Why does that have any significance? It's just a parakeet." Student 14 responded, "It's minor, but it's cool." During that same meeting, most of the group was searching for "Sorley," a town in the text. When student 13 and the others searched for "Sorley" using Google and Google Maps, they found "McSorley's Ale House" which was not what they wanted. Student 13 suggested trying "Sorley, Florida" and got no relevant results. After a minute or so of unsuccessful searching, student 13 said, "Okay, we should just ignore that. We're not going to find it." Student 15 suggested adding Sorley to the list of places in the setting, but student 13 said "No," and the group decided it was not significant enough. Student 13 then redirected the conversation to the relevant

ideas from the parakeet/Sorley section of the text: Willie May had set her parakeet free after seeing caged animals in the zoo in Sorley. The group discussed and debated inferences from the text and made predictions based on those ideas. In most cases with this group, the teacher found that exploration of tools did cause the students to independently develop effectiveness of use.

		Effectiveness of Use					
		Level 1		Level 2		Level 3	
		Use of tools is exploratory		Use of tools is purposeful		Use of tools enhances understanding	
		Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Group 1	Student 1	√			√		
	Student 2	√			√		
	Student 3	√	√				
	Student 4	√	√				
	Student 5	√			√		
Group 2	Student 6	√			√		
	Student 7	√			√		
	Student 8	√			√		
	Student 9	√			√		
	Student 10	√	√				
Group 3	Student 11	√			√		
	Student 12	√			√		
	Student 13	√					√
	Student 14	√			√		
	Student 15	√			√		

How will the features of the iPad impact teacher assessment?

The notes feature allows teachers to look at all the notes of the students in her reading group at a glance. When a book is purchased once, you are able to share it on up to eight devices. Therefore, when a student enters a note, everyone else with the book can read that note because it is a shared book. This allows the teacher to click on the notes feature

and see all of the notes compiled at once. The teacher in this study was then able to see what her students were thinking about the book and how to push them further in their thinking. Following is an example of how the teacher used the notes to change her instruction written in a reflection:

"We continue to use our Reader's Notebooks to record our responses to quotes from the text. These get our conversations going, along with the resources that the iPad provides, in particular the notes and highlights features. I have noticed that we are often able to view each other's notes, which is so valuable to me as the teacher. As I get ready to meet with a group, I can see what notes students have written as they read. I am seeing a lot of wonderings and connections, particularly with group one and group two. Being able to see these notes before and during the meetings has given me a heads up about how deeply students are reading and potential discussion topics that can help them get to the next level of comprehension. The volume of notes in the third group is a bit lower and tend to be "noticings" related to the themes we have identified and related to things in the text that have surprised them. This makes me think they are ready to talk about "disconnects" with the text! I haven't yet figured out if I can see notes from individual students, but that would be helpful as well."

The teacher found that many of her book club discussions would now begin with a comment or question her students had entered on a note written during independent reading. Time was often lost trying to identify the student that had written the note and often there were other notes that she wanted to follow up with individually, but was

unable to. "One of the students came up with a way for us to tell who made which notes - put our names or initials at the end of the note. Of course! This will help me be able to follow particular student's responses to the text." The opportunity to individualize instruction even more became possible with this added strategy.

During book club meetings, the teacher found that the students had already been reading each other's notes. This enhanced their own understanding of the book as they realized that their notes were being read by others and discussed during book club. When thinking about even further potential this feature could hold, the teacher thought about adding her own questions for the group using the note feature. This would prompt thinking and her students could either answer the question by adding a note, highlighting evidence to support their answers or just discussing the answer in the book club.

Analyzing the Quality of Notes Category

The quality of notes changed little from the notes written on post it notes and placed in a hardcopy book, as was the procedure in the classroom before the iPad was introduced. There is not much variation between the groups in this category and the low scores in the first group is not surprising as their focus was still on basic reading skills. However, even this group made significant progress as their comprehension of the text increased throughout the book club. For instance, the notes in the beginning were superficial ie. I love dogs just like her. Later the notes became more sophisticated. Some students even searched for a theme, "She really loves her mom and the sine of loneliness is in this chapter." In a reflection written by a student in group two, she wrote that the notes

feature was most helpful because, "…it helps me to be productive that gives me smaller ideas that turn into bigger ones." Interestingly, the notes feature took on a social aspect as students began to read each others questions or comments and responding. This enhanced the conversation when the group came together as they had already read many of the opinions and questions of the group; therefore, their discussion picked up at a higher level rather than working up to the heart of the conversation.

		Quality of Notes					
		Level 1		Level 2		Level 3	
		Notes are sparse or non-existent.		Notes demonstrate an understanding of the book.		Notes demonstrate an enriched understanding of the book through the use of tools.	
		Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Group 1	Student 1	√			√		
	Student 2	√	√				
	Student 3	√	√				
	Student 4	√	√				
	Student 5	√			√		
Group 2	Student 6	√			√		
	Student 7	√			√		
	Student 8			√	√		
	Student 9	√			√		
	Student 10	√			√		
Group 3	Student 11	√			√		
	Student 12			√	√		
	Student 13		√	√			√
	Student 14	√			√		
	Student 15			√	√		

Will students prefer to read using the iPad?

In a survey that each student filled out independently, students were asked if they felt the iPad should be used in the classroom for reading 74% of the students said that it should.

13% said that it shouldn't and 13% said that both should be used. The majority of the students credited the features on the iPad as allowing the reader to do more. Student's who said it shouldn't be used said, "No because it is technology and technology can be addicting." And, "No because I think its better to read on a paper instead of on a screen." One student who said both are good explained, "The iPads have a lot of useful tools to use while reading but it is much more expensive than a book." The other student said she liked to experience both.

In order to understand which features were most beneficial, the students filled out a survey rating their favorite tool. When asked which tool they found to be most useful, 73% of the students rated the note and highlighting feature as the most useful. This is interesting as these are both input tools. Meaning, they are tools in which the reader inputs information rather than receives new information such as the dictionary or Google feature, which gives out information. One response that captured the reasoning behind the majority was, "they helped you to show what your thoughts are to other people."

At the end of the book club some students offered advice for other fourth graders thinking about using an iPad for reading, the responses were largely positive. In case the reader is interested in reading with an iPad, it makes sense to list them here:

"It is good for readers who want to know more and more about a book."

"I would say to use an iPad because you can do some stuff on an iPad that will go quicker then using a paper book."

"Look carefully with the ipad because you might miss something very important and go to settings and put on popular highlights and turn it on so the you can see popular highlights that might help you understand the book."

 "if you do not know what a word is always look it up."

 "Use all the tools that the i-pad is capable for."

"The advice I have is if you don't understand something then either read it over or make a note about it."

"I would tell them it is easier to use the I-Pad but it can also be more complicated."

"Always use the things you can do on the IPad."

Limitations of the Study

It was difficult to find every book in the e-book format. For instance, when wanting to

replicate the study with books from the historical fiction genre, it was difficult to find e-

book versions of them. Additionally, there were not enough iPads in the classroom to use

at the teachers' and students' whim. This took much planning and foresight on behalf of

the teacher and the librarians in which 2/3rds of the iPads for this study were borrowed.

Lastly, it was impossible to measure the year long impact of the iPad on the students

reading as they did not each have their own iPad for independent reading in school and at

home.

Summary and Conclusions

This investigation began with the proposition that technology plays an important role in schools and in the education of children. Furthermore, a review of the literature indicated that the technological tools chosen, pedagogy and leadership, are all equally important in the successful implementation of technology in schools. This study attempted to find out if the iPad is a technological tool that would benefit the literacy teaching and learning program in schools using its e-reader functions. There are many e-readers on the market, but the iPad was chosen for its unique Google function. This allows the readers to increase their background knowledge merely by clicking on the word in the e-book and then clicking Google. Three fourth grade reading groups, representing three levels of literacy development in a fourth grade class were the subjects of the study. Four data points were collected, illuminating their use of the e-reader function on the iPad: Students were surveyed for their opinion toward technology and the iPad; they were evaluated on their use of the e-reader functions on the iPad: The *Variety of Tools* they used, the *Effectiveness of their Use* of these tools and the *Quality of the Notes* they took; in addition, information was collected on how the iPad helped the teacher in her analysis of students' reading behaviors. Specifically The study addressed the following questions:

1. Will student reading be enhanced while using the iPad, and if so in what way?
2. How will students learn to manage the information available to them?

3. Will teacher assessment of student reading become easier and more accessible, if so in what way?

4. Will students prefer to read using the iPad?

Summary

This summary will first discuss the overall findings of the study and then specifically discuss the investigative results of each reading group. Finally recommendations for further study and instruction will be presented.

The e-reader on the iPad was found to be a useful technological tool for literacy development. The iPad was used during read aloud and reading strategy lessons. It was seamlessly integrated into the preexisting curriculum. Instruction on how to use the features on the iPad coincided with reading strategies already integral to the traditional reading curriculum. Upon examining each reading group, it was surprising to see how differently each group used the iPad. Active readers readily used more of the features on the iPad whereas passive readers were most successful with one or two tools.

Overall findings:

1. Will student reading be enhanced while using the iPad, and if so in what way?

Student reading was enhanced because of the features of the e-reader on the iPad. Tools that benefited each student the most depended on their needs as a reader. For instance, students who were working on fluency made significant gains using the text enlargement

tool, whereas students who sought to increase their background knowledge used the Google function most often.

2. How will students learn to manage the information available to them?

The novelty of the new technology wore of quickly. There was a learning curve as to the use of the tools on the iPad for a brief time period before they became beneficial to student reading. Students who were more independent were better able to manage the information available to them while students who were less independent needed more monitoring and scaffolding from the teacher.

3. Will teacher assessment of student reading become easier and more accessible, if so in what way?

Teacher assessment was improved because she was able to see all student notes at a glance in the notes section of the book. This is possible because when an e-book is purchased it can be shared and read on eight devices at a time. When students add notes, everyone who has the book on their iPad has access to those notes. This allowed the teacher to make more targeted instructional decisions for the reading group and individual students.

4. Will students prefer to read using the iPad?

Overall students preferred to read using the iPad and missed the features available to them on the iPad when they switched back to hardcopy books. 87% of the students said

that iPads or a combination of both iPads and hardcopy books should be used for reading in the classroom.

Following is a summary of the findings for each reading group:

Group One

This group was working towards meeting grade level expectations in reading. Most of the students in this group were passive readers. They were refining their fluency skills and beginning to use higher level thinking skills such as stopping when coming to an unknown word and trying to figure out its meaning. It was found that these readers:

- Were overwhelmed with all of the tools and their attempts resulted in some superficial use.

- When focusing on just one tool students were able to integrate that tool into their reading more authentically.

- The text enlargement tool made the greatest impact on these students. When students increased the text size of their e-book their fluency dramatically improved including their rate and inflection.

- The quality of notes became better over time largely because students were reading each other's notes and discussing them during the time the reading group came together to talk about the book.

Group Two

This group was meeting grade level expectations in reading. They consisted mostly of readers who were actively making sense of the book and using some higher level thinking

skills independently. Although, the students in this group did not have a large bank of background knowledge they were consciously doing all they could to supplement this with relevant outside information. In this investigation it was found that these readers:

- Immediately made the connection between the features of the e-reader and the higher-level reading skills they were working on.

- Used all of the tools authentically and understood the book better because of them.

- Accessibility of the features did not guarantee meaningful use, and students sometimes spent too much time trying to find out information that wasn't always vital to understanding the book. Providing an excellent opportunity for critical reading instruction.

Group Three

This group was above grade level expectations in reading. They had been using higher level reading skills for many years and they had a wealth of background knowledge to bring to their reading. Although the students could comprehend the text fully, they were hesitant to break from the mold and try new tools to enhance their reading. In this investigation, it was found that the readers:

1. Used one or two tools consistently.

2. Managed their time using the tools very well.

3. Read each others' notes beforehand and began the book club discussion sparked by the comments in the notes.

Recommendations for Further Research

1. Give students iPads to use for independent reading in school and at home.

2. Continue to conduct book clubs in the classroom using the iPad.

3. Facilitate a pre-assessment on vocabulary and background knowledge, and after an extended period of time, a post assessment to look for growth in these areas.

4. For advanced readers, focus on non-fiction. This will challenge them to use the tools more frequently as they will not be able to rely on their background knowledge as much.

5. Have students keep a word and definition log of all the new words they have learned.

6. For readers still working on fluency, set the expectation that they will increase their text size for the entirety of the book club and independent reading time.

7. Conduct a pre and post fluency assessment.

8. Introduce each tool one at a time and provide students with guided practice on how to use that tool.

9. Each time a tool is mastered its use should be incorporated into the new tool being taught so that they build on one another and are not learned in isolation.

Implications for the Practice of Educational Leadership

Administrators should consider iPads for their school. Although the iPad has many functions, literacy education is a great place to start. Administrators should begin their iPad initiative in classrooms where successful literacy programs already exist. Initially, only teachers already interested in using the technology should begin to use it. Once ample time has been given for experimentation and integration into the pre-existing curriculum, it would be beneficial for these teachers to present their work to the

remaining faculty. Eventually school-wide professional development would be most helpful in making this technological tool a school-wide initiative. Professional learning communities dedicated to the implementation of iPads in the literacy program involving peer observations and continued research would sustain growth and further development. Predicted benefits administrators might find are:

- Students reading more books independently due to the ease of purchasing and choosing books through the Amazon application.

- Students can write reviews about books and experience writing for a larger audience interested in their book.

- An increase in student vocabulary and background knowledge, potentially improving test scores.

- Potentially higher-level student discourse due to the note feature, and the ability students have to read each others comments.

- Teachers may be able to push the learning of individual students better and differentiate instruction according to student understandings relayed through their notes.

- A decrease in spending on books as one book can be shared on eight devices.

- The potential for the iPad to be used in many other subjects in an endless capacity.

Conclusions

This study and some of the other initial studies that have been done about e-readers and tablet computers are just the beginning. More studies will need to be done to further explore the potential of the iPad. The reality is that technology is a part of our lives and our students' futures. Administrators and teachers who incorporate the iPad into their school wide technology initiative will find that it is a tool with a vast capacity for teaching and learning. Like all tools in the classroom, their potential for learning is in the eye of the beholder. The intention of this study is to illuminate the iPad as an e-reader, and its potential to push our students' learning further. Accessibility does not guarantee meaningful use; therefore, teachers will need to use this device purposefully and thoughtfully. It will also not cure student reading difficulties or be the magic wand to wave over poorly performing literacy programs. It will however, enhance the already established reading curriculum by allowing students to have access to tools that deepen their understanding of the book. The findings from surveys, observations, teacher reflections and evaluations were that students with positive attitudes toward technology benefited the most from the iPad. It is up to the leaders and teachers of schools to espouse a positive attitude toward new technology and encourage authentic technology use in classrooms. Hopefully the information in this study will encourage administrators and teachers to incorporate the iPad into their school's reading program and further contribute to this research.

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Appendix 1 iPad Rubric

Student Name:_____   Date:_____

Book Title:_____

	Level 1	Level 2	Level 3
Variety of Tools	Primarily relies on 1 tool	Uses two tools consistently	Can use all of the tools consistently
Effectiveness of Use	Use of tools is exploratory	Use of tools is purposeful	Use of tools enhances understanding
Quality of Notes	Notes are sparse or non-existent.	Notes demonstrate an understanding of the book.	Notes demonstrate an enriched understanding of the book through the use of tools.
Transfer of Tools	Is able to transfer one or no tools to a variety of genres.	Is able to transfer some tools to a variety of genres	Is able to use of all tools to a variety of genres

Your Opinion About Reading with the iPad

Hello 4A!
I am wondering what you think about reading with the iPad. You have each had at least one experience reading with the iPad so far and so now it's time for you to think about how its been going. Please do your best explaining yourself in detail on each of these questions. I really appreciate your help!
Thanks,
Ms. Chechak

Your username (**kchechak@theschool.columbia.edu**) will be recorded when you submit this form.
Not **kchechak**? Sign out
* Required

How often do you use technology in your classroom? *

○ Once a month

○ Once a week

○ Almost everyday

Do you think the iPad should be used for reading in the classroom? *
Explain why or why not

Now that you have read in a book club with the iPad and with a paper book please compare your experience? *
What's the same and what's different

In your book club with the paper book, what tools did you miss from the iPad? *
Tools: dictionary, notes, google, highlight, text size etc...

Appendix 2 Student Surveys (page 2 of 2)

Do you think reading from the iPad helps you to read: *

☐ better

☐ the same

☐ worse

Why?

[   ]

Does the iPad make you want to read more books than reading from a paper book? *
If so, why do you think that is?

[   ]

What advice do you have for other fourth graders thinking about reading with an iPad?
This question is optional- if you have time.

[   ]

☑ Send me a copy of my responses.

(Submit)

Appendix 3 Student Reading Response

Name:_____   Date:_____

      Title of Book_____

Today I used:
- ☐ The Dictionary
- ☐ Google
- ☐ Notes
- ☐ Highlighting
- ☐ Search

Today the most useful tool for me was_____ because I learned

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

What made you want to use that tool or strategy?

_____

_____

_____

_____