THE EFFECTS OF USING DIGITAL LITERACY IN THE ELEMENTARY CLASSROOM

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ABSTRACT
The purpose of this mixed methods study is to determine the effectiveness of digital literacy in the elementary classroom. Researchers measured student growth and performance due to the effects of digital literacy. Past studies have found that the implementation of digital literacy provides many positives as well as few limitations on student learning. For this research study, two elementary classrooms researched. These classrooms, a fourth grade and kindergarten classroom, are from the same school district but have different student populations. In each classroom, a group was exposed to digital literacy consistently while the other group did not. Researchers collected quantitative data to determine the effects of digital literacy and how it enhanced student learning. The results showed no major benefit when using digital literacy tools in the classroom. Further recommendations for this study would be to extend the research to a full year, rather than six weeks as well as provide more digital tools for students to use. Another recommendation for this study was to expand the research population to an entire primary grade level rather than two classes.
Keywords: Digital literacy, Elementary Education, Reading, Technology implementation

INTRODUCTION

As many of us know, the style of teaching and the curriculum being taught is constantly changing. Educators are continually being pushed to keep up with the times and to always look for the next best thing to implement in the classroom. Because of this, it is no surprise that the use of technology is becoming essential in teaching. Also, with the generation of students we are teaching today, they need to be taught differently. Today's students have changed and grown up differently. They are no longer the students that the educational system was created to teach. (Prensky, 2001). It is necessary for teachers to implement technology in the classroom to engage learners in various types of literacy in the 21st century classroom environment. (Hett, 2012). This study will highlight the effects of implementing digital literacy in the K-5 classroom.

Previous studies have found that students gain greater comprehension and fluency of texts when the texts are online, or e-readers, rather than printed texts (Vaughn, 2016). These online texts allow students the option of highlighting, voice recording, audio narration, practicing of fluency, and the ability to breakdown words into decodable chunks (Dalton, 2014). Studies have also found that there is greater student engagement when technology is involved. For example, providing students with technological tools to conduct common searches can make students more interested in the topic (Hamilton, 2016). The implementation of technology can also make learning more engaging by allowing student choice and creating a more student-centered environment (Thiele, Mai, & Post, 2014).

Research has shown that students today process information differently from students in the past. (Prensky, 2001). To meet the needs of today's students, teachers need to implement digital literacy into the elementary classroom. The problem is that not all teachers are implementing digital literacy into their teaching and making it accessible for their students, even though it has been proven to be beneficial when educating students.

While there have been studies on the use of digital literacy, it is important that the research on this topic is continued so the effects can be observed in different school settings. Also, technology is constantly changing and

advancing. New technology tools and resources for the classroom are continually becoming available. Because of this, certain tools being examined in the research may have not been available or implemented in research studies of the past.

The primary purpose of this study was to determine the effects of digital literacy by measuring student growth and performance. This study took place over a semester in both a kindergarten and 4th grade classroom. The kindergarten classroom participating in the research study was from a small, non-title one school while the 4th grade classroom was be from a larger, title one school. By using both a kindergarten and 4th grade classroom, data was used to compare the two research groups in order to show the effectiveness of digital literacy depending on age level.

To properly measure the impact of digital literacy, students were monitored using running records to measure accuracy in reading and words read per minute. To measure student engagement, an on/off task form was utilized. This study aimed to answer the following questions: (1) to what extent did digital literacy improve student growth and performance? (2) are the effects of digital literacy different when compared between intermediate and primary grade levels? (3) does the use of using a digital technology tool for reading, increase the engagement of students?

This study was intended to prove to teachers and administrators the effects of implementing digital literacy in the elementary classroom. Understanding the use of digital literacy in the classroom would provide a higher level of engagement in the classroom, more accurate reading, and possibly a higher fluency rate. Furthermore, this study aimed to bring awareness to teachers by proving the impact digital literacy can have in an elementary classroom and hopefully encourage educators to make the effort to incorporate technology into their teaching and student's learning.

LITERATURE REVIEW

When looking at past research, it has been found that there are many benefits to using digital literacy in the elementary classroom. These benefits include increased student engagement, improvement in fluency, increased knowledge of technology tools, and exposure to the outside world. There are minor setbacks when using digital literacy in the classroom such as taking away from the content of the curriculum as well as inappropriate use.

INCREASED ENGAGEMENT

When looking at what is considered a good classroom environment, one of the key factors is student engagement. When students are engaged in a lesson, they are motivated to learn and go deeper into the content. Using digital literacy in the classroom is a great way to do that. In the article, *Citizenship in a Digital World,* the author explains how the use of digital literacy can provide engagement for young students. The author states, "Today's children are rarely satisfied with using only the library's print materials and online databases. With the increasing sophistication of digital technologies, even young students can bypass the local librarian to search for resources, tools, and information online through common search engines" (Hamilton, 2016, p. 11). The author goes on to discuss how providing students with technological tools to conduct common searches can make students more interested in the topic.

IMPROVED FLUENCY IN READING

Nowadays, teachers are moving on from the times when children can only read stories from printed text books. There are many online stories that allow students to read, listen, and even makes notes and highlight areas while reading. According to the article written by Vanessa Vaughn, there are several benefits to student learning when digital text is incorporated in the classroom. One study of kindergartners from the article found that, when comparing e-readers and printed text, students' comprehension and fluency was much greater on texts provided on e-readers (Vaughn, 2016). She also added benefits from a study of second grade students that indicated the use of technology tools such as highlighting and notetaking proved to be more engaging for students, and made the reading experience more rewarding (Vaughn, 2016). In both cases, students are showing more growth and being given the opportunity to work with technological tools in class.

INCREASED KNOWLEDGE OF TECHNOLOGY TOOLS

With implementing technology in the classroom, students will gain many ideas and resources to use that could also benefit them in the future when applying for jobs. There are many technology tools and resources available for students and teachers to use, each having their own benefits. Google Drive is an example of a technology resource that has positive impacts on the classroom. There are many options with Google Drive, such as Google Docs, Presentations, Sheets, Classroom, etc. Google Docs specifically is a program much like Microsoft Word, where students can type on a blank document. Since Google Docs can be "shared" with other users, it allows for

collaboration over a document. Students can work on one document simultaneously from different digital devices. There is also an option for commenting on the document, where users can chat and share ideas through comments. Another great example of a technology tool that can be implemented in the classroom are blogs. As Hagler stated, "Blogs/chat/instant messages can be used to motivate students to write" (Hagler, 2013, p. 19). The author then goes on to talk about how students will spend more time thinking about what they are writing because they know it will be read by others, not just the teacher. A positive the author, Hagler, mentioned is that teachers can teach students how to blog in a professional manner, thus helping them later down the road with professional endeavors involving blogging. Through these technology tools, students are collaborating and learning through teamwork. These are important qualities, according to Hagler, as she stated, "Learning to collaborate and be a team player is frequently at the top of the list of skills employers desire in their employees" (Hagler, 2013 p. 20).

CONNECTING TO THE OUTSIDE WORLD

Not only does technology connect students with each other, but it also connects them with others in the outside world as well. The use of technology helps with exposing students to different cultures, ways of living, religions, beliefs, values, and much more! Just as it was stated, "Teachers and students alike can be miles apart, across oceans and continents, and they can share, collaborate, and create information with the touch of a keyboard, click of a mouse, or via video using their handheld mobile device" (Thiele et al 2014, p. 80). There are many possibilities with exposing students to the outside world through implementing technology in the classroom.

SETBACKS TO USING DIGITAL LITERACY

Although there are many proven benefits to using digital literacy in the classroom, some researchers have found setbacks to using this form of technology. For example, studies have shown that the use of digital literacy takes away value from the text and content. Researcher, Eileen Honan, found that teachers have to spend a lot of time teaching the technological tools, and the students become so consumed with using them properly, that students are losing the focus on the actual content (Honan, 2008).

Another setback researchers have found when using digital literacy is the misuse of online tools. Inappropriate relationships and cyberbullying have been reported when students have the ability to explore on their own (DeCoskey, 2011). To counter this issue, it is necessary teachers are supervising and teaching students proper digital citizenship skills before online use.

SYNTHESIS OF PAST RESEARCH

It is important to consider why digital literacy needs to be implemented into the elementary level classroom. According to Don Tapscott, "This generation, the Net Generation, is the first generation to grow up digital" (Tapscott, 2014). Because of this, our student's brains are processing differently. Author, Marilee Sprenger, uses the term "digital brain" to describe how students are learning. Her research has found that today's students are used to being connected with technology and multitasking (Sprenger, 2009). With the changing of student learning, educators need to start meeting the new needs of students. This can be done using digital literacy.

As proven by the research, there are many benefits to implementing digital literacy in the elementary classroom. Those benefits include an increased student engagement, greater comprehension and fluency in reading, the exposure to technology tools, and the ability to connect students to the outside world. Each of these benefits has its own advantage to enhancing the learning environment. When a classroom takes the initiative to implement digital literacy, the research proves positive outcomes in student learning.

Along with these benefits of using digital literacy, there are limitations as well. Some researchers have found that using digital literacy can take away from the content of the curriculum. For example, if a student focuses more on how to use the technology tool, it may take away their focus on the actual content. Another limitation that was found in past research was the misuse of digital literacy. This included inappropriateness and cyberbullying.

Research studies show that there are many possibilities that digital literacy can bring to a classroom to enhance the learning environment. There are many positives to implementing technology, as well as a few limitations. Although these setbacks bring awareness and concern, research has proven that the benefits of using digital literacy outweigh the limitations. Technology implementation will not only enhance the classroom, but also provides lifelong learners in the community.

METHODOLOGY

For this study, researchers used an approach that involves quantitative data collection (Plano Clark & Creswell, 2010). The quantitative data was collected and analyzed through the use of a casual-comparative research

approach. The study was conducted in two different schools in the same district in Central Illinois. The research site consisted of 16 elementary schools in the district. One school chosen for the study is a Title 1 school, and according to Illinois Interactive Report Card (IIRC), the total percentage of low-income students was 48.8%. The demographics of the school include 73.1% Caucasian, 15.6% Black, 5.4% Hispanic, 5.2% Multiracial, 0.2% Asian, 0.2% American Indian, and 0.2% Pacific Islander. For the second school in the study, the percentage of low-income students was 15.1%. The demographics of the second school consist of, 85.9% Caucasian, 8.6% Asian, 2.7% Multiracial, 1.6% Black, 1.1% Hispanic, and 0% of American Indian or Pacific Islander. The participants in the study were involved a classroom of fourth grade students from the Title 1 school, and a kindergarten class from the other participating school.

INSTRUMENTATION

Data was collected through running records, and anecdotal notes that were taken on each student. The running records were measurement tools for data that was provided by the district. The protocol for collecting data through these tools involved the researcher conferencing with students individually throughout the study. For the running records, students participating in the study were asked to read a section from a reading on a digital tool, while the researcher completed the form. In addition, other anecdotal notes were taken by the researcher during the individual conference time, or during a small group, for example, guided reading.

To measure student engagement during the study, the researchers conducted an on/off task form for individuals participating in the study. When using this form, researchers observed one student that is reading on a digital tool to a student who is reading in a book. Every thirty seconds, the researcher marked if the student is on task or off task. Off task behavior included out of seat, talking to others, fidgeting, or anything else that is not reading. The researchers recorded data for fifteen minutes. After collecting the data using the on/off task form, researchers compared student engagement between students who were reading on a digital tool to those who are reading in a book.

Assessments such as running records was administered by the researchers individually for each student participating in the study. The on/off task form was administered by the researchers during the study. The running records was recorded using a digital copy of the text with one group of participants, as well as a printed copy for the other group. Data was collected evenly between the two different groups of participants. This means the group using digital literacy and those who are not would have the same amount of data collected. The data collected throughout the study was used to analyze and determine the effectiveness of using digital literacy in the elementary classroom.

RESULTS

The purpose of this study was to determine the effects of digital literacy by measuring student growth and performance in the elementary classroom. The results were as follows.

RESEARCH QUESTION ONE: To what extent did digital literacy improve student growth and performance, and the effects of digital literacy comparing intermediate and primary grades?

The following data was collected during a 6-week period in a kindergarten and 4th grade classroom. Running records were used to measure reading accuracy and words read per minute. The book levels listed are used from the Fountas and Pinnell assessment. This assessment is used in grades K-5 at all of the schools in the district in question. The book levels start out at level A and continue all the way to level Z. Each grade has separate levels that students are required to meet by the end of the year. As book levels increase, the level of difficulty increases. In kindergarten students are required to read at book level C by the end of the year, while at the 4th grade level, students are expected to be reading at book level U/V by the end of the year. Students are able to move book levels throughout the year based on their reading accuracy and comprehension score. Book levels are included in the results to show the academic level of the student used in the research.

Figure 1: Running Records of Kindergarten Classroom Student Participants

Name	Date	Book Level	Accuracy	WPM	Medium
Student 1	9-Feb	G	96%	62	Book
	10-Mar	G	97%	50	Book
Student 2	8-Feb	G	95%	23	Book
	6-Mar	G	100%	64	Book
Student 3	10-Feb	C	90%	11	Book
	16-Mar	C	93%	15	Book
Student 4	10-Feb	C	88%	13	Book
	2-Mar	C	94%	33	Book
Student 5	9-Feb	G	98%	43	Book
	10-Mar	G	99%	60	Ipad
Student 6	9-Feb	G	92%	39	Book
	6-Mar	G	92%	27	Ipad
Student 7	13-Feb	C	88%	14	Book
	13-Mar	C	92%	17	Ipad
Student 8	10-Feb	C	90%	8	Book
	27-Feb	C	91%	11	Ipad

Figure 2: Running Records of 4th Classroom Student Participants

Name	Date	Book Level	Accuracy	WPM	Medium
Student 1	1-Feb	O	98%	100	Book
	8-Mar	O	98%	120	Book
Student 2	3-Feb	S	98%	96	Book
	16-Feb	S	99%	100	Book
Student 3	2-Feb	S	96%	74	Book
	16-Feb	S	96%	76	Laptop
Student 4	2-Feb	O	95%	38	Book
	23-Feb	O	96%	37	Laptop

The results showed that on average, the kindergarten students reading from a book instead of an iPad had a greater increase in reading accuracy. Students that used only books showed an average of a 3.75% increase in accuracy, while those that used ipads showed an average of a 1.5% increase in accuracy. The overall data showed that all students either stayed the same or increased their reading accuracy when they used a digital literacy tool. Words per minute among the kindergarten students did not show the same trend, although 75% still showed an increase. The tool they used, whether book or iPad, did not result in a difference in the data (Figure 1).

In figure 2, The results for the 4th grade students showed that, the average increase of reading accuracy was identical between the group that used books and the group that used laptops. Overall, 75% of 4th grade students increased their words per minute. This data reflects the use of both a book and a laptop.

RESEARCH QUESTION TWO: Does the use of using a digital technology tool for reading increase the engagement of students?

The following data was collected during a 6-week period in a kindergarten and 4th grade classroom. On/off task forms were used to measure engagement during specific timed intervals.

Figure 3: On/Off Task Records of Kindergarten Classroom Student Participants

Book/Ipad	On Task	Interval	Percent on Task	Overall Average % on Task
Book Student #1	11	24	45.83	**Book Students- 55**
Book Student #2	14	24	58.33	
Book Student #3	19	24	79.16	
Book Student #4	11	30	36.67	
Ipad Student #1	16	24	66.67	**Ipad Students- 76.67**
Ipad Student #2	21	24	87.5	
Ipad Student #3	19	24	79.16	
Ipad Student #4	22	30	73.33	

Figure 4: On/Off Task Records of 4th Classroom Student Participants

Book/Ipad	On Task	Interval	Percent on Task	Overall Average % on Task
Book Student #1	26	30	86.66	**Book Students- 86.67**
Book Student #2	24	30	80	
Book Student #3	28	30	93.33	
Book Student #4	26	30	86.67	
Laptop Student #1	20	30	66.67	**Laptop Students- 85.83**
Laptop Student #2	27	30	90	
Laptop Student #3	30	30	100	
Laptop Student #4	26	30	86.67	

Figure 3 shows that in the Kindergarten classroom, students who used technology to read were on average about 20% more on task than those that used a book. Figure 4; However, shows that the same did not hold true for the 4th grade classroom, where only a 1% difference exists, with those reading a book actually being more on task than those reading from technology. Overall, when analyzing the reading accuracy of all kindergarten students, the results proved that all students either stayed the same or showed an increase of their reading accuracy when they used a digital tool. Fluency did not show the same results, although, the majority of students displayed an increase in words read per minute. Analyzing the engagement data revealed that kindergarten students that used technology were on task an average of 20% more than those that used a book. In comparison, the results from the reading accuracy of 4th grade students showed that there was no increase or decrease when using either a digital tool or a book. Fluency results showed that all students, regardless of whether they utilized a digital tool or regular book, increased their words read per minute. In addition, students that used technology showed 1% less engagement than those who read a book.

DISCUSSION

The purpose of this study was intended to determine the effects of digital literacy by measuring student growth and performance. The research was based around the following three questions: To what extent did digital literacy improve student growth and performance? Are the effects of digital literacy different when compared between intermediate and primary grade levels? Does the use of using a digital technology tool for reading, increase the engagement of students? What follows is a discussion of the results.

RESEARCH QUESTION ONE: To what extent did digital literacy improve student growth and performance?

To address this research question, data was collected through the use of running records to examine both reading accuracy and the number of words read per minute. This data was collected over a 6-week period in both a kindergarten and a 4th grade classroom. Students who were examined were at various reading levels at the beginning of this study.

Based on the results that were collected, the researchers do not believe that the research question was adequately addressed. While the results that were collected certainly do not show that using a digital tool was detrimental to

student learning, they also do not show that they were beneficial. It is difficult to draw any sort of significant conclusions about the use of a digital tool for reading alone and its effect on student growth and performance.

When the results were examined for reading accuracy, a clear trend emerged for the kindergarten students. While all students seemed to show an increase in their reading accuracy throughout the course of the study, the students who used a book actual showed a larger increase in accuracy than those reading with a digital tool, which in this case happened to be an iPad. Students that used only books showed an average of a 3.75% increase in accuracy, while those that used iPads showed an average of a 1.5% increase in accuracy. Examination of the data collected for words read per minute for the kindergarten students were similar in their regards to helping answer our research question. While 75% of the students that we tested showed gains in their abilities for words read per minute, there was no distinguishable difference between those students who read from a book versus those who read from an iPad. In fact, there were equal amounts of students who showed increases as well as decreases in their words read per minute in each group.

When the results were examined for reading accuracy and words per minute for the students in the 4th grade classroom, trends similar to what was seen in the kindergarten classroom were revealed. 75% of the students in the 4th grade classroom increased their words read per minute during the study, with equal numbers of students showing increases using books and digital tools for reading. In addition, an examination of reading accuracy communicated an equal average increase between the students using a digital tool and those reading from a regular book. One thing worth noting here is that the equality of the results of the two groups of 4th grade students may be attributed to the fact that these students do not have as much room for growth, and an assumed smaller variability in their performance due to their advanced age in comparison with the kindergarten students.

Previous studies have shown that the use of a digital tool can have vast benefits when it comes to reading comprehension and fluency. Furthermore, previous research has found that students gain greater comprehension and fluency of texts when the texts are online, or e-readers, rather than printed texts (Vaughn, 2016.) These online texts allow students the option of highlighting, voice recording, audio narration, practicing of fluency, and the ability to breakdown words into decodable chunks (Dalton, 2014). However, it is entirely possible that simply reading in a digital format, without the use of special features such as the ones listed above, does have as larger benefit. According to the article written by Vanessa Vaughn, there are several benefits to student learning when digital text is incorporated in the classroom. One study of kindergartners from the article found that, when comparing e-readers and printed text, students' comprehension and fluency was much greater on texts provided on e-readers (Vaughn, 2016). She also added benefits from a study of second grade students that indicated the use of technology tools such as highlighting and note taking proved to be more engaging for students, and made the reading experience more rewarding (Vaughn, 2016). It appears as though when students read from a digital device without the use of tools that enhance the reading experience (highlighting, chunking, etc.) the benefits may be reduced.

Another variable that may have an effect on the results of the study was the familiarity the students have with the technology that is being used. The students in the kindergarten class that were part of the study had not previously used an iPad for reading, and the unfamiliarity with the device could be a major factor in terms of their reading accuracy. Previous research on this topic seems to agree with this result. Studies have shown that the use of digital literacy takes away value from the text and content. Researcher, Eileen Honan, found that teachers have to spend a lot of time teaching the technological tools, and the students become so consumed with using them properly, that students are losing the focus on the actual content (Honan, 2008).

The length of the study could have played a large role in the increases and decreases that were seen in these students. The data that was collected over a 6-week period. Growth in reading accuracy and fluency takes time, and it is possible that given a longer period of time, more growth would have been seen in the students who were tested. Research would seem to agree. A study was conducted by Armstrong, Campos and Johnson over a 24-week period which utilized a leveled library using levels created by Fountas and Pinnell. Post intervention data indicated an increase in student reading fluency scores, student understanding of how to choose an appropriate book to read independently, and an increase in student silent reading time during the school day. It is concluded by the researchers that a leveled library provides a chance for all students to strengthen their reading fluency on a daily basis with minimal teacher intervention (Armstrong, 2001).

RESEARCH QUESTION TWO: Are the effects of digital literacy different when compared between intermediate and primary grade levels?

When analyzing the results of reading accuracy and fluency, the data shows that grade level, whether intermediate or primary, did not make a difference when using digital literacy. At the kindergarten level, using a

book actually showed more increase in reading accuracy than reading on the iPad, although both showed an overall increase. When comparing 4th grade students reading a book versus reading on an iPad, the data shows that the increase for reading accuracy is identical. Neither tool proved to have a greater impact.

The new understanding is that while kindergarten did show a slightly a greater increase in reading accuracy when using a digital tool than 4th grade showed, grade level does not seem to be a factor when analyzing the impact of digital literacy. When beginning the research and collection of data, comparing the primary and intermediate level was a main focus. Kindergarteners and fourth graders have a large age gap and it was thought that factors such as experience with technology, reading ability, and ability to be independent could have an effect on the data. However, the data shows that these variables did not have an impact.

Previous research findings refuted this study's findings. A study done by Vanessa Vaughn in 2016 showed that when kindergartners read using digital tools compared to printed text, students' comprehension and fluency was much greater (Vaughn, 2016). The findings of this research did not support the same results. When considering why this might be, the length of the study's intervention might have played a role. This study was conducted over six weeks which might not have been enough to show growth. If the study was implemented over a full year, the results may have shown digital literacy to be more beneficial. If warranted, the next step in this study would be to focus on one grade level, rather than trying to compare intermediate to primary levels. This study showed that the age of students does not affect the benefits of digital literacy. It would be interesting to concentrate on one grade level, for a longer period of time, to see if results would differ.

RESEARCH QUESTION THREE: Does the use of using a digital technology tool for reading, increase the engagement of students?

To measure student engagement with digital literacy in the classroom, students were observed by the classroom teacher using an on/off task form. Students were observed for 15 minutes, with the teacher recording student behavior every 30 seconds. The purpose of the on/off task survey was to determine the percent of time students were on task, as well as off task, during a 15-minute duration.

The results of this study showed that there was not enough data to fully answer the research question when measuring student engagement in the classroom for all students. The results proved that there was a larger percent of students on task using an iPad in kindergarten, but the results did not prove to have a similar trend in the 4th grade classroom. Because of this, we can draw the conclusion that kindergartners were on task more when using technology during reading, based on the data. The researchers could not; however, prove the same in the 4th grade classroom since the data showed students were on task more when reading a book. The data shows that reading on a technology device proves to be more engaging in the kindergarten classroom than the 4th grade elementary classroom.

In the kindergarten classroom, the results indicate that on average, students who read a book were on task 55% of the time. The results showed that on average, students who read on an iPad were on task 76.67% of the time. This shows a 20% difference with students who were on task using technology, compared to students who were on task reading a book. In comparison, in the 4th grade classroom, the results showed that there is not much of a difference of engagement with reading a book, versus reading on a laptop. On average, students reading a book were on task 86.67% of the time, while students reading on a laptop were on task 85.83% of the time. This shows about a 1% difference of students who were on task more when reading a book, compared to students who were on task using technology during reading.

The underlying cause of these trends may be due to student exposure to technology in school. The students in 4th grade have had greater years of exposure to technology in the classroom, while the kindergarten students have only had exposure during their first year in the elementary classroom. Also, the students in the 4th grade classroom were on the laptops throughout the day. They use it for other subject areas such as writing, math, science and social studies. The kindergarten students used the iPads throughout the day as well, but on a rotation, so not every single student is on the iPad each day.

Previous studies have shown that engagement is increased when students are exposed to a technology tool in the classroom. In the article written by Boni Hamilton, she provides many approaches to incorporating technology in the classroom. She also mentions that students today not being satisfied with printed texts (Hamilton 2016). The author then went on to provide information about how students are using technology more and more, and it is also providing them with more freedom, which could lead to engagement. Hamilton findings could explain the cause of the engagement shown in the kindergarten classroom in this study which points toward more freedom in their choice of books in the iPad.

As mentioned earlier, Vaughn reported on the benefits of implementing technology tools in the classroom. Vaughn study proved that the use of technology tools with features such as highlighting and note taking proved to be more engaging for students (Vaughn, 2016). This findings in this study seems to agree with Vaughan findings as the kindergarten classroom students were more engaged.

A study by Thiele, Mai, and Post focused on the implications of technology in a 21st century student centered classroom. The authors shared that education is changing with the times, and that this generation of students is to be considered "tech-savvy." It was stated in the article that students are selectively tech-savvy, with a greater comfort level for social media and entertainment compared to a curriculum tool designed for learning (Thiele, et al., 2014). These findings of Thiele, Mai, and Post study could explain why the 4th grade students in this study did not show a difference with engagement with technology compared to using books. The students might have been more engaged if the reading program involved some sort of social media, or another form of entertainment.

Future research studies should focus why was the kindergarten classroom more engaged when reading on an iPad, compared to 4th graders reading on a laptop? What technology tool or program could the teacher implement to receive greater engagement? Another variable to consider is the population of students involved, as well as the length of time the study took place. Both of those are variables that could potentially lead to different results.

CONCLUSIONS

The research about implementing digital literacy in the elementary classroom proves that using a digital tool for reading does not have an impact on reading accuracy or fluency but does prove to be beneficial for student engagement. The purpose of this research was to discover whether the use of technology for reading showed benefits to student achievement including accuracy, fluency and student engagement. Trends in the data indicated that the use of a digital tool for reading did not show significant results, with the exception of student engagement. Student engagement in kindergarten increased by 20% while using an iPad for reading compared to a paper book. The data showed there was a larger increase of engagement among the younger students, compared to the older students. Although the data does not show a significant increase in reading achievement, it does not appear to be detrimental in any way. There was no significant difference in fluency and reading accuracy results when comparing students using an iPad/laptop versus those using a book.

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