

The Effects of Digital Media and Print Media on the Performance of a 4th Grade ELA Class

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### **Abstract**

The purpose of this study was to determine if students perform better when a lesson is taught using digital media rather than print media. The sample consisted of students from a selected fourth grade ELA class in Northeast Tennessee. The study was completed over a two-week span. In the first week, the students were taught a unit using only print media, then assessed at the end of the week. In the second week, the students were taught a similar unit using only digital media, then assessed at the end of the week. Each students' scores were compiled into a spreadsheet and compared using a paired t-test. There was a significant difference in scores when students were taught using digital media ( $p=.001$ ). The results indicate that the use of digital media significantly increases student performance.

**IRB**

Date: February 3, 2020

From: The Institutional Review Board (IRB) at Milligan College

Re: *The Effects of Digital Media and Print Media on the Performance of a 4th Grade ELA Class*

Submission type: Revised Submission

Dear Lucy,

On behalf of the Milligan College Institutional Review Board (IRB), we are writing to inform you that your study *The Effects of Digital Media and Print Media on the Performance of a 4th Grade ELA Class* has been approved as expedited. This approval also indicates that you have fulfilled the IRB requirements for Milligan College.

All research must be conducted in accordance with this approved submission, meaning that you will follow the research plan you have outlined here, use approved materials, and follow college policies.

Take special note of the following important aspects of your approval:

- Any changes made to your study require approval from the IRB Committee before they can be implemented as part of your study. Contact the IRB Committee at [IRB@milligan.edu](mailto:IRB@milligan.edu) with your questions and/or proposed modifications.
- If there are any unanticipated problems or complaints from participants during your data collection, you must notify the Milligan College IRB Office within 24 hours of the data collection problem or complaint.

The Milligan College IRB Committee is pleased to congratulate you on the approval of your research proposal. Best wishes as you conduct your research! If you have any questions about your IRB Approval, please contact the IRB Office and copy your faculty advisor if appropriate on the communication.

Regards,

The IRB Committee

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## **Chapter One**

### **Introduction**

Technology in the classroom is constantly developing. In earlier years, it was unheard of to use a large amount of technology. Just 18 years ago, in 2001, teachers were bringing their concerns about the lack of funding for technology in the classroom. In 2001, a group of teachers went to congress to testify about how important technology use is within the classroom. Even eighteen years ago, the teachers noticed how much easier it was on the students and the work being put in within the classroom. In their argument, they explained that it gives the students more opportunities to learn, do different types of classwork, and more extensive research because the students have many more resources available (U.S. Congress 2001). Now, many classrooms have a 1:1 ratio with technology, meaning each student has their own laptop or tablet they can use. This opens up to the discussion of whether or not a blended learning environment is actually beneficial to students' overall performance.

When we discuss the differences between a blended learning environment, a print-only environment, and a digital-only environment, it is important to note which practices have been successful and which practices are not successful. Print media has proven to be successful when students are working towards a specific goal. Although digital media has decreased the use of textbooks over time, recently, different use of textbooks has been introduced. Instead of textbooks being full of information that may bore someone, they are written to allow the readers to solve clues throughout to keep their interest (Peterson, 2008). When teachers use technology, it is important that they know what they are doing. Students' attitudes towards the effectiveness of how their teacher's use of technology and performance in the classroom has a strong

correlation with one another (Owoh, 2016). A blended learning environment has proven to be successful in research. When teachers incorporate a blended learning environment into their everyday schedule, it has been shown to increase overall student performance and test scores (Anthony, 2019).

The first variable we will examine in this study is the use of media in the classroom, this includes digital media and print media. Since digital media in the classroom has become such a large part of classroom instruction in recent years, it is important to look at the impact it has had on students' academic ability within the classroom. As a result of print media having such a large role in instruction for many years, it is important to compare previous research with the newfound impacts of digital media on scores.

The next variables that will be examined in this study are formative and summative assessment scores. When scores are brought up, it includes all assignments, along with quiz and test scores. Although the State conducts testing every year to make sure all standards are being covered, this study will not include a look into the impact of technology on state test scores. Scores are important for this study because they include a lot of the information needed to determine how effective technology is in the classroom. The study will be completed with some lessons being taught with strictly print and some lessons strictly digital. Scores of assignments, formative assessments, and summative assessments will be compared with one another. The comparison of the scores will determine if the introduction of technology is benefiting students or negatively impacting students.

### **Statement of the Problem**

The impact of technology in the classroom has been researched for quite a while now. It has been debated by many and looked into for years. There are some questions about whether or not technology is beneficial to students since it takes away some of the face to face interaction and the skill of handwriting. Although society has turned to a strong use of technology, classrooms are still struggling to find a balance between the use of digital media and the use of print media. Therefore, the problem of this study is to examine how the use of print and digital media affects the overall student performance based on test scores.

### **Purpose of the Study**

The purpose of this study is to determine how the use of print and digital media affects overall student performance.

### **Significance of the Study**

Student performance and growth is important because that is how teachers are graded and how schools are graded. Each year, students take TCAPs and the scores from these tests become a direct reflection of how well the teacher provides content. A teacher must constantly be changing the way the content is delivered, so there are growth and gains with all students in the classroom. The benefits of technology use in the classroom have long been discussed. In 2016, an article was written discussing a study completed about the cognitive impact of technology on students. The study concluded that technology has a great impact on students. It creates a higher

cognitive achievement and raises their performance in this classroom. This study will be completed to determine the importance of technology in the classroom, which will also include print and how these two mechanisms will affect student performance.

### **Limitations**

The study is limited by the following factors:

1. All participants come from the same school and the same grade, therefore results are not generalizable to other schools.
2. Some students do not have access to technology at home, so the ability for technology to increase their level of performance may be affected.
3. The materials used for this study were designed by the researcher and not tested for reliability and validity.

### **Definition of Terms**

1. Blended Learning: A classroom that includes a 50/50 mix of print media and digital media.
2. Digital Media: All learning is completed on a computer. Computer-based learning.
3. Formative Assessment: Short assessments given throughout lessons to determine the students' grasp of the material.
4. Growth: How much higher the student scores get each time they take a test.

5. Performance: Overall student performance is determined by scores of formative and summative assessments. and motivation.
6. 1:1 Ratio with Technology: A classroom where each student has their own tablet or iPad.
7. Print Media: Using textbooks, paper books, notes, and worksheets to teach a lesson. Paper-based learning.
8. Summative Assessment: An assessment given at the end of each lesson to show the teacher what the students know, and what the teacher may need to go back over the next day.
9. TCAP: A Tennessee standardized test, given at the end of every school year to determine student growth and gains over the school year. This test includes questions based on standards taught during the school year.

### **Overview of the Study**

This research study consists of five chapters. Chapter one provides an introduction, statement of the problem, the purpose of the study, the significance of the study, the limitations, important terms, and an overview of the study. Chapter two contains a review of the literature related to the study. Chapter three contains a list and description of the research methods used in the study. Chapter four explains all of the findings of the study. Lastly, chapter five contains a summary of the findings, a short review of the findings, conclusions, and recommendations for a future study.

## **Chapter 2**

### Review of the Literature

#### **Introduction**

This study is being completed to determine the effectiveness of digital media and print media on student performance. When the researcher is determining the effectiveness of performance, they will look at test scores related to the material that has been taught. Print media has been an effective tool for instruction for years, while digital media is more of a recent introduction to instruction in the classroom.

Over time, there has been a question of the effectiveness of technology in the classroom. There are arguments that it has a small impact on student performance, and there are arguments that it has a high impact on student performance (Chauhan, 2017). In fact, many classrooms have moved to a one-to-one model with technology, meaning, each student has their own device they use. The device may be a laptop or tablet, but more and more classrooms are moving towards that model (Harris, Al-Bataineh, & Al-Bataineh, 2016).

Along with the one-to-one model, teachers are integrating technology into everyday tasks for the students. Teachers are opting to use a blended learning model, where they use technology and print interchangeably. The blended learning model has been proven to increase student engagement. Student engagement is easily done when there are a lot of changes in the daily classroom routine (Graham, Halverson, 2019). Overall, the use of technology has a positive impact on student performance. When students are able to research their work and use different search engines (Google, Bing, Yahoo!) to complete their work, they are expected to do better in an English class (Canton-Mayo, Garcia-Martin, 2019).

There has also been pushback from resistant teachers as to whether or not they should incorporate technology into their everyday lessons. Many teachers who have been teaching since before technology was integrated so heavily into the curriculum, do not think it benefits students, because they have taught for so long, the concept does not make sense to them. With the resources and the implementation of technology put into place, it is almost impossible not to use some sort of technology to teach lessons. Many teachers are initially nervous to integrate technology into their lessons because it seems like a huge task. Teachers also do not feel like there is enough support within their schools to adequately bring technology into their lessons (Whitt, 2019). Technology can be intimidating at first thought, but over time, it becomes such a big part of everyday life that it becomes nearly impossible to not integrate it into instructional time.

Technology provides ways for teachers to differentiate in ways they have not ever been able to. There are programs in place that provide content based on student's reading and writing levels. One program used is Freckle, students take an initial diagnostic test, and it places them on a level based on their scores. As students go through the program, it moves them up by level and continuously upgrades the rigor (Reid, Faust, 2018).

This literature review will examine the use of technology in the classroom. The researcher will review literature based on the influence of technology and print media on student performance.

### **Print Media**

Print media has been the main tool for instruction in schools for many years. There are many uses of print media in the classroom. Students can read textbooks, short stories, and

complete worksheets in order to use print media in the classroom. Textbooks are a good tool for students to have when reading about different researched aspects of education. There are different uses for narrative books in the classroom. Many teachers use them for interactive read alouds, in order to teach a standard or about a certain topic. Interactive read alouds are done in order to teach a subject using a specific book. Teachers choose books based on rigor and Lexile levels for their students. When they choose the book, they write questions to ask throughout the book, in order to promote higher-level thinking, and effectively teach the content. Interactive read alouds have been proven effective to teach content to the students. The books used in interactive read alouds can be used as anchor texts throughout a unit. Interactive read alouds increase reading comprehension with students because students are asked leveled questions throughout the book. They also increase the reading level and fluency for readers, because the students are hearing the book as it should be read (Wright, 2018).

Teachers also can provide worksheets for students to complete as an activity after a lesson or for homework. The use of worksheets in an ELA class allows students to highlight important parts of passages, and it also allows them to do more manipulation with tasks provided to them. The use of print manipulatives allows students to complete tasks to comprehend what they are working on because they can manipulate the material in a way that suits their learning style (Aggarwal, Gardner-McCune, Touretzky, 2017). Digital media is another way to improve student performance in the classroom.

### **Digital Media**

Along with print media, there are several different ways to incorporate technology into the classroom in order to improve student motivation. Technology can be included in regular

instruction in many ways, such as Kahoot!, PowerPoints, Nearpod lessons, and Google Suite. These different uses of technology allow students to explore subjects in ways they would possibly not explore without technology.

PowerPoints and Nearpod lessons are very similar, but the key difference between the two is that Nearpods allow for more interaction between the students and with the teacher. PowerPoints are used to explain the content and provides a visual for note-taking. Nearpod lessons do that, but they also include games, short answer questions, and multiple-choice questions throughout the lesson in order to check for understanding by the students (Delacruz, 2014).

Google Suite allows students to complete assignments and view lessons from home at their own pace. Students can complete graphic organizers after lessons, type papers, and view lesson materials from home, or during a time when they are not busy in class. The function and purpose of Google is to provide more independence in students' educational experiences (Baker, 2018).

Kahoot! is a great tool to gauge student understanding. Kahoot! is an online quiz game, which allows students to interact with their devices by answering questions. The teacher creates a quiz, and students interact with it by choosing an answer on their devices (Spence, 2019).

Overall, technology has a positive effect on student performance, and there are many options that allow students to further their learning. There is a strong effect on student achievement, due to the use of print media and digital media.

### **Student Achievement**

Student achievement is a major part of the debate of whether or not technology should be used in the classroom. When researchers look at student achievement based on technology, they want to know exactly how students are performing in the classroom, and what their interests are regarding technology. It has been argued that technology poses a major distraction to students and that it has no place in the classroom. Some research shows that when students have access to technology all the time, even if it is being used for instructional purposes that it still has a negative effect on students because it does impose such a major distraction on their learning (Taneja, Fiore, Fischer, 2015). It has also been argued that technology increases student motivation. Some researchers say that students work better with technology present because it increases intrinsic motivation and extrinsic motivation. When students are provided technology and the proper tools to complete what they need to complete, they perform better than they would without. Many schools fund computer programs that allow students to accelerate their learning by giving them opportunities they would not have at home. This funding pays for programs that increase reading motivation, math motivation, and some of the programs funded increase rigor based on how a student is performing. Researchers have seen an increase in students wanting to further their education on the use of technology by them be providing access to it in schools. Technology allows students different types of experiences, like being able to do research on a topic. Instead of students needing to use the library to complete research, schools are getting closer and closer to students just being able to do all of their research online. In fact, many teachers are seeing an increase in the level their students are thinking about different things because of their access to different resources. One teacher even said, “Students start

brainstorming and it snowballs.”, proving that the use of technology allows students to continuously add onto their thinking, thus creating higher-level thinkers in the grand scheme of things (Southern Regional Education Board, 2002). Students are able to choose their personal learning experience when using technology, which causes them to have high achievement. Students not only benefit from the use of technology, but teachers do too. When their students are engaged in the content, they are more likely to have high achievement over the year (Thorton, 2018). Overall, the use of technology has been proven to increase student achievement. Although many factors increase motivation, there are also factors that affect implementation.

### **Factors Affecting Implementation**

There are a few factors of implementing technology in the classroom that causes teachers to not want to take the leap to fully bring technology into the classroom. Many school systems do not properly fund technology integration, which means that teachers will opt to not utilize technology because they do not have the proper funds to use it. Some teachers do not feel properly equipped to integrate technology. Many school systems have technology coaches who come around to assist and teach other educators about the uses of technology, but some schools do not have the proper funding or ability to bring someone into the school system to help teachers implement technology. Many teachers note a lack of equipment as the reason they do not use technology regularly in the classroom. This means that they have a limited amount of devices, such as tablets or laptops, or they do not have any items they could use to implement technology. Teaching students how to use technology can be time-consuming and rather mundane, as the process of teaching students how to use different programs can be redundant.

Some students have not had proper exposure to technology, so teaching students how to use technology can be difficult, especially if they are not using it when they get home at the end of the school day (Dinc, 2019). Some argued that student use of technology at home would have a negative effect on their performance in school, but it was found that student use of technology at home does not have a negative effect on their technology use at school (Luft, 2018).

Another barrier to not utilizing technology in the classroom is the fact that many parents fear the lack of security. There have not been many implementations of cyber-security laws regarding the safety of students when they use their computers. There have been several issues where student use of technology has almost caused a breach in security. In Pennsylvania, students' laptops that were brought home had tracking software installed on them, and the school system was caught spying on students. Also, in Virginia, a third party company leaked the student directory of an entire school, which was left completely unprotected. Also, a school in Chicago posted a significant amount of student information online. Many of these security issues happen when there is a lack of funding in the school systems. Although there are some potential risks to integrating technology into everyday instruction, when schools fund proper software to avoid breaches in security, the risk of student information being leaked is extremely low (National Education Association, 2019). The factors that affect implementation, also determine teacher use of implementation, depending on the number of support teachers receive.

### **Teacher Support**

In many school systems, teachers are not implementing technology due to a lack of support from their particular school systems. Many teachers are unable to integrate technology

into their instruction because of poor infrastructure. When school systems do not have proper funding, they potentially struggle to keep their schools updated with the latest materials needed to function properly. When schools have poor infrastructure, or when schools are outdated, they are unable to support a strong enough WiFi signal in order for teachers to properly integrate technology into their lessons. In some cases, schools just do not have the proper resources to house all technology needed. Many schools only have a computer lab, and students are expected to fill in the gaps in technology by bringing their own technology. In most instances when the schools are lacking the necessities to properly integrate technology, the areas surrounding them are highly impoverished. When students are expected to fill in the gaps of the lack of technology in the classroom, that still only covers a small percentage of students. Even when there is a large percentage of the proper funding to include a large number of devices into schools, teachers lack the professional development to be able to incorporate the use of technology into the classroom. The lack of professional development based on technology can make teachers feel ill-prepared to face technology integration, so they choose to opt-out. Many teachers lack the self-efficacy to introduce new types of technology into regular instruction because they feel as if there is no research to back-up that technology benefits students. Teachers will then choose to stick with their old methods of teaching, especially if they still work well. This especially happens when state testing comes into play because teachers do not want to negatively affect their students' achievement by including something in their regular instruction that may not actually help the students to be more successful. Although many school systems are increasing the level of technology use, teachers still become hesitant to use technology. Teachers who have been teaching for a long time may feel frustrated if they are not digitally literate. Some teachers even

consider it frustrating based on the amount of time it actually takes to integrate technology into the actual instruction. If a teacher is not digitally literate, preparing lessons can take a significantly higher amount of time than if the teacher is just using print media. They believe it is just easier to stick to the typical status quo. Overall, the main reason teachers are refusing to use technology is a lack of funding and lack of training on how to properly integrate different technology methods into instruction (Harrell, Bynum, 2018). In a study completed where teachers were given proper training in how to use technology in the classroom, teachers explained they were more likely to use technology in the classroom after going through the study because they felt more comfortable integrating technology after going through the proper training (Akbulut, Altınışik, Tatlı, 2019). Support varies depending on the school system, and how teachers want to incorporate technology into instruction. Differentiation is also positively influenced by the use of technology.

### **Differentiation**

With the use of technology, teachers are able to differentiate their instruction better than they ever have. There are several programs that create content based on their progress in class, and achievement throughout the school year. When technology is integrated, teachers can focus lessons directly on individual students. Since one of the main uses of technology is to allow students to be more independent in their learning (Doug, Feist, 2018).

Technology allows students to work together, students can be paired with an accountability partner to complete assignments, which can make the students work better and in return earn higher grades. Accountability partners are typically given based on ability, so when a

student is struggling, they would be paired with a partner who is not struggling and can help to better explain the content. Technology also allows students to apply their knowledge in different ways by including different programs, which can require students to think differently about specific subjects. When teachers include technology into their daily instruction, they can assign different tasks to students to complete, based on their individual ability. One way students can use their skills in different ways to complete their work is by providing an option to type up answers to an assignment or to record themselves giving an answer to an assignment.

Differentiation is such a key piece to instruction, and since technology allows students to complete assignments based on their individual ability, it has changed a lot of the way that instruction is provided to students (Smith, Throne, 2007). Along with the positive effects it has on differentiation, technology also has an effect on student engagement.

### **Student Engagement**

Students are constantly exposed to technology inside the classroom and outside the classroom. Often, children are seen on tablets and phones in public. It is almost impossible to engage students without using technology because it is used so heavily in their everyday life. When teachers use technology in the classroom, it keeps students engaged by giving them something to relate to. Without technology, there is a pretty significant gap in the engagement of students in the classroom. When technology is included in the instruction, students have something tangible they can be searching through and interacting with while the content is being presented. When researchers looked at student behavior when technology is being utilized in instruction, they noticed a significant increase in students being heavily engaged in the content. There are arguments that technology negatively affects students in the classroom because there

are some unhealthy effects of technology use. Research has found that when technology is used to present a goal to students, then it has a lot of healthy effects. When students are engaging with the content presented to them, it is proven to have healthy effects. Students are more likely to remember the content presented to them if they are constantly doing hands-on work, which is how technology lessons are often presented to students (Gessner, 2019). In a study done to question students' opinions on how technology engages them, students strongly approved the use of technology in the classroom. They claimed they felt like they could be more creative, and they claimed they felt more engaged during lessons when they were able to use technology during them. Students claimed to struggle to follow technology-based lessons, such as PowerPoint, and actually flat out said they hate teacher-directed PowerPoint lessons. There are programs with the same outline as PowerPoint, but allow students to create their own learning experiences throughout the lesson, so they feel like they are creating something (Hughes, Read, 2018). In many schools, students are provided with their own devices to use in the classroom on a regular basis, which is another reason why technology has a positive effect on student learning.

### **One-To-One**

One-to-one in the classroom allows students to have their own devices to complete work on their own throughout the day. The use of personal devices increases efficiency and self-motivation because it allows students to work at their own pace, and provides many options on how to complete their work. One-to-one use of technology allows teachers to provide quick and efficient feedback on assignments using tools such as Canvas or Google Docs. Many teachers already use both of those programs, because it allows them to communicate with the

students better. One-to-one provides a more independent learning experience for students since they can complete work on their own (Abrams, Barnes, Conklin, Dumke, Hoover, Varier, 2017).

One-to-one usage always falls back on student engagement, when students have something of their own, they are more likely to be motivated and engaged in the classroom. The approach of one-to-one devices also improves teacher-student relationships. This happens because students feel more equal with their teachers when they have access to their own devices in school. It creates an autonomous environment for teachers and students because teachers feel like they can relate better to their teachers. It removes a barrier that would otherwise be there without the benefit of technology on the students' side. When students and teachers share a positive environment, it creates a healthier environment for the classroom overall (Bushell, Higgins, 2017).

### **Conclusion**

Overall, digital media and print media have different effects on student performance in the classroom. Print media offers important aspects to instruction that have a positive impact on students' ability to comprehend texts and read texts fluently. In interactive read alouds, students have a better opportunity to use higher-level thinking skills. With digital media, students have many opportunities to create learning opportunities for themselves. It provides different ways to differentiate instruction and has been found to increase student motivation overall because students use technology so heavily in their everyday lives.

There are many uses for both digital media and print media in the classroom setting, and oftentimes, the use of either print media or digital media depends on the class and the unit being taught. If a teacher starts a unit on food chains, they may choose to include an interactive read

aloud with an anchor text, and then have the students complete a graphic organizer in order to show how food chains work by using Google Slides through the Google Suite. The uses for both have a high impact on student growth and achievement. Throughout the research, it will be determined which has the highest impact on student performance.

### **Chapter 3**

#### **Methodology and Procedures**

The use of technology has become more and more popular in schools around the country and across different grade levels. The purpose of this study was to determine whether the use of digital media affects academic performance, compared to a traditional classroom of print media. Based on a review of the literature, there is evidence that technology can increase student motivation and engagement, but there is also significant evidence that print media has a positive effect on student growth. This chapter includes information about the population of the school in which this study was conducted, as well as procedures for selecting participants. This chapter also includes methods, procedures for the study, and descriptions of data collection instruments and procedures.

#### **Population**

The population for this study was comprised of elementary school students from a Northeast Tennessee public school. The school was made up of 527 students from kindergarten to fourth grade. 78.7% of students were white, 9.7% of students were Hispanic/Latino, 5.5% of students were Asian, 5.3% of students were black/African American, 0.4% of students were Native Hawaiian/Pacific Islander, and 0.4% of students were Native American or Alaskan. 15.4% of students were economically disadvantaged, 14.4% of students had a documented disability, and 6.6% of students were English language learners.

#### **Sample**

The sample for this study was comprised of students in a selected fourth grade English language arts classroom. Since this classroom was an ELA classroom, the students transitioned

throughout the day, so the teacher taught the same lesson 3 times. The class size as a whole was twenty-seven boys and twenty-nine girls. All students in the sample were taught half of a unit using only print media and the other half of the unit using only digital. All students were given the same materials for the lessons. The students' performance on their summative assessments was evaluated for print media and digital media.

### **Data Collection Instruments**

The data collection instrument used in this study was a paired t-test that showed the scores from the print media part of the unit and the digital media section of the unit. Students were tested after the print media section, and students were tested after the digital media section of the unit. The assessment the students were given was designed to be completed during class time. They had to earn a grade of at least 80% accuracy to achieve mastery. The paired t-test allowed the researcher to be able to compare the scores of the students from the print media assessment and the digital media assessment. Students were allotted 45 minutes to complete the assessment and extra time as needed. Early finisher activities were available to students who completed their work before allotted time as up.

### **Procedures**

Before this study began, all participants had permission to participate via an informed consent form signed by a parent or legal guardian. This form explained that all student records would be kept confidential and that no mental or physical harm would come to their child. The consent form also explains the purpose and key points of the study, so the parent or legal guardian would have an understanding of what to expect. Parents and guardians were also

informed that they had the right to withdraw their child from the study at any time without penalty.

The sample used for the study were taught lessons using strictly print media and lessons using strictly digital media. After each lesson, they were given an activity to complete related to the material that was taught. At the end of the first half of the unit, the students were given an assessment, and at the end of the second half of the unit, the students were given an assessment. These assessments helped determine which form of instruction has a stronger effect on student performance.

### **Research Question and Hypothesis**

**Research Question:** Do students perform significantly better when a lesson is taught using digital media rather than print media?

**Research Hypothesis:** Students perform significantly better when a lesson is taught using digital media.

**Null Hypothesis:** Students do not perform significantly better when a lesson is taught using digital media.

## **Chapter Four**

### **Data Analysis**

Technology usage in the classroom has become more and more popular in recent years. The purpose of this study is to determine if students perform better when a lesson is taught using digital media rather than print media. This study was conducted at a public elementary school classroom in Northeast Tennessee in a selected fourth grade ELA classroom with a one-to-one laptop to student ratio.

### **Collection of Data**

Data for this research was collected at a public elementary school in Northeast Tennessee in a selected fourth grade ELA classroom. This selected fourth-grade classroom consisted of fifty-six students, who transition to a 90-minute ELA block during the day. This data was collected over a two-week span. In the first week, the students were taught a unit using only print media, then assessed at the end of the week. In the second week, the students were taught a similar unit using only digital media, then assessed at the end of the week. Each students' scores were compiled into a spreadsheet and compared using a paired t-test.

### **Findings**

#### **Results for the Research Question**

**Research Question:** Do students perform significantly better when a lesson is taught using digital media rather than print media?

A paired-samples t-test was conducted to evaluate whether there was a significant difference in student performance between the use of print media and digital media. The use of

digital media and print media was the test variable and the grouping variable was whether not there was a significant difference in student performance when digital media is used over print media. When the students were taught using print media, their performance was significantly lower ( $M=67.02$ ,  $SD=12.418$ ) then when students were taught using digital media ( $M=86.27$ ,  $SD=8.213$ ). The test was significant,  $t=-9.702$ ,  $p=.001$ . Therefore the null hypothesis was rejected. Students were more likely to perform better when taught using digital media than print media.

## **Chapter Five**

### **Discussion**

The purpose of this study was to determine how the use of digital media versus print media affects student performance in a selected fourth grade ELA classroom. The results were examined using a paired t-test. This chapter contains a summary of the findings, interpretation of findings, limitations, recommendations, and conclusions from this study.

#### **Summary of the Findings**

The research question, “Do students perform significantly better when a lesson is taught using digital media rather than print media?” was analyzed using a paired t-test. The results indicated that there was a significant difference when students are taught with digital media rather than print media ( $p=.001$ ). Therefore, the null hypothesis was rejected. The results are found to be consistent with current literature that suggests that students are more engaged when technology is utilized, which gives them a higher chance of having higher achievement over the course of the school year (Thorton, 2018).

#### **Interpretation of the Findings**

The existing body of literature contains a significant amount of research devoted to measuring student performance based on the use of digital media. When technology is implemented in the classroom, students are able to choose their personal learning experience, which allows them to have a positive learning experience. Technology encouraged engagement in materials, thus raising student achievement (Southern Regional Education Board, 2002). Technology also provides more opportunities for teachers to differentiate by allowing them to focus better on individual students. By teachers being able to focus on individual students, it

gives them more opportunities to help raise student performance during the school year (Doug, Feist, 2018).

The current literature also suggests that student engagement plays a major part in student performance. Often times, children are on phones and tablets in public places and at home, which is how they stay engaged. Teachers utilizing digital media in the classroom engages students by providing them with something they use on a regular basis outside of school. Without technology, there is a gap in the engagement of students in the classroom, causing a drop in student performance (Gessner, 2019). This is consistent with the research by providing reasoning on why students perform higher when being taught using digital media.

### **Limitations of the Study**

One limitation that remained consistent throughout the study is that all students come from the same school, classroom, and grade. The duration of this study was two-weeks, which consisted of a unit taught using print media and a unit taught using digital media. While the results could remain consistent if this study was done in another school and with another grade, there is no way to know, which could affect the internal validity of the study.

Another limitation is that the materials used for the study were designed by the researcher and not tested for reliability and validity. This could have caused there to be inconsistencies in the data results.

### **Recommendations**

1. This study should be replicated across a wide variety of age groups and grade levels to determine how different populations perform when using digital media versus print media.

2. This study should be conducted using different subjects to determine how students perform when different subjects are taught using digital media versus print media.
3. Teachers should continue to use print media as a general teaching method. It does not have a negative effect on academic performance as indicated throughout this study.

### **Conclusions**

The purpose of this study was to determine the effects of student performance when they are taught using digital media versus print media. Results of the paired t-test determined that digital media does have a significant effect on student performance. Educators should consider whether digital media can be included in lessons as, at least in this small sample, students showed increased academic performance.

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