Technology's Impact on Student Achievement in Eighth-Grade English Language Arts

By Morgan Miske

Submitted in Partial Fulfillment of the Requirements for the

Degree of Master of Education

May 2020

Graduate Programs in Education

Goucher College

Table of Contents

List of Tables i

Abstract ii

I. Introduction 1

Overview 1

Statement of Problem 1

Hypothesis 1

Operational Definitions 2

II. Review of the Literature 4

Why Become Digital? 4

Growth of the Digital Footprint in the Classroom 7

Effects of Technology Integration Within the Classroom 10

Summary 11

III. Methods 13

Design 13

Participants 13

Instrument 14

Procedure 14

IV. Results 16

V. Discussion 18

Implications of the Study 18

Theoretical Consequences 19

Threats to Validity 19

Connections to Previous Studies and Existing Literature 20

Implications for Future Research 21

Conclusion 21

References 23

List of Tables

1. Means, Standard Deviations and *t*-Statistic for Literary Comprehension and Analysis scores under Technology and Paper Conditions

Abstract

The purpose of this study was to determine whether instructional technology and student one-to-one devices had a positive impact on student achievement in English Language Arts. The measurement for this study was provided through the eighth-grade curriculum guide and teacher resources provided by Harford County Public Schools. The assessment consisted of 12 multiple choice questions about the literary components within the text. It was determined that there were no significant differences in performance when students utilized technology in a standard eighth grade English Language Arts classroom. The mean test scores of the control group (Mean = 10.69, SD = .93) did not differ significantly from the mean test scores of the treatment group (Mean = 10.75, SD = 1.00) [$t(69) = .28$, $p = .78$]. Implications for future research and recommendations for future research are discussed within the study.

CHAPTER I

INTRODUCTION

Overview

Technology has had an immense impact on our society within the past decade. All levels of education are trying to keep up with the technological advancements in instructional tools available. As a teacher in the middle school level, the researcher has seen an increase of instructional technology professional developments, the roll out of one-to-one device in different grade levels and has implemented a digital curriculum in their classroom. In the 2017-2018 school year, the one-to-one device initiative was rolled out to the eighth grade in Harford County Public Schools, which is the county and grade level that the researcher teaches. In the 2018-2019 school year, Harford County rolled out the initiative to the sixth grade. The rapid implementation of student technological use within the classroom piqued the researcher's interest on the impact technology has on student engagement and success.

Statement of the Problem

The purpose of this study is to determine whether instructional technology and student one-to-one devices has a positive impact on student achievement in English Language Arts.

Hypothesis

The null hypothesis for this study is that there will be no effect on student achievement in the English Language Arts classroom with the implementation of instructional technology and one-to-one devices.

Operational Definitions

Achievement

To measure achievement within the classroom, the researcher utilized the curriculum-provided test to assess comprehension and analysis of a text to assess mastery in content to the students who received instruction. Both the control group and the treatment group were given the same test. However, the treatment group was given the test in its online format whereas the control group was given the test in a hard copy format.

Dell Latitude 3189

The Dell Latitude 3189 is the device that all students in eighth grade in Harford County Public schools receive to use throughout the school day. Each student is assigned a specific laptop for their educational use when they arrive to school and they return it at the end of the school day. The Dell Latitude 3189 is the device that all students in the treatment group will be using for their instruction. This device functions as a normal laptop and also has a touch screen/tablet mode that students can utilize. Students in the control group will not have access to their laptops during English Language Arts instruction for the experiment.

Dependent Variable

The dependent variables were the students' engagement in the lesson and their level of achievement of objectives. These variables were assessed through the use of a curriculum-provided assessment on material presented during the targeted lessons on "My Favorite Chaperone."

Harford County OneDrive

The Harford County OneDrive is a digital platform where students can save their online work as well as share documents. Only students in the treatment group will be saving documents to their OneDrive. Students in the control group will not be utilizing their device.

Houghton Mifflin Harcourt

Houghton Mifflin Harcourt is the textbook students will be utilizing. Both the control group and the treatment group were given the same text. However, the treatment group is given the text through its digital platform whereas the control group is given the text through the hard copy textbook format.

Independent Variable

The independent variable is the implementation of technology. For the treatment group, it is their use of one-to-one device whereas with the control group it is their non-use of technology for instruction and assessment.

Lexile

A Lexile is a numeric representation of reading ability. Both the control group and treatment group have students of similar lexiles ranging around the texts lexile rating of 790L.

OneNote

OneNote is a Microsoft Office digital instructional tool used as the primary source of instruction for the treatment group. Students have digital notebooks that are organized by the researcher through the platform, and activities and lessons are distributed to the students on a daily basis. There is a "collaborative space" in their notebook where students are able to work in groups with other students through their device.

CHAPTER II

REVIEW OF LITERATURE

This literature review explores the rationale for adopting a digital curriculum and the one-to-one device initiative. It analyzes the shift in teaching, comparing the arguments for and against the digital wave within an academic setting. The multiple amounts of resources teachers have utilized within the classroom are also discussed. Section one discusses the rationale for utilizing digital recourses. The second section includes analysis of how technology has been implemented thus far within the school setting. Section three discusses the impact of the implementation of technology and in section four a summary is provided.

Why Become Digital?

Students react differently depending on what they value most. This reaction can be intrinsically or extrinsically based. Intrinsic rewards are those in which a student is motivated through their own desire for success and growth. For example, graduating high school/college, getting all A's on a report card, and a positive note from a teacher are all ways a student could be intrinsically rewarded. In contrast, an extrinsic reward is one where a student is physically given something in turn for their positive academic performance such as money, candy, or a homework pass. Teachers utilize both reward systems in order to motivate students within their classroom. Whole brain teaching methods utilize intrinsic and extrinsic rewards for students using class vs. class competition and teacher vs. class for a whole class reward and a ticket system for individual rewards.

Teachers implement these systems for students to be aware of self-regulation. For example, if a student is off task and distracting others from their work, a teacher would put beads in "the teacher jar" versus "the student jar," putting the teacher in the lead. This is a visual and

auditory reminder to the students to get on track. The use of a digital platform removes this extra tool because the self-regulation aspect is embedded. According to Delen and Liew (2016), "In an online platform, when students use strategies that are related to self-regulation, they can regulate their personal functioning and benefit from the online learning environment by changing their behaviors accordingly" (p. 24).

Technology is continuously expanding and enriching our everyday lives at home as well as in the classroom. Students are able to adapt easily to the technological changes within the classroom because according to Delen and Liew (as cited in Oblinger, 2003), "technology is assumed to be a natural part of the environment" (p. 38). Therefore, it is natural for students to gravitate and feel more comfortable with the use of technology within the classroom.

Online information learning of English deserves more attention because of the multitude of resources an online platform offers. In addition, the impact technology has on our students on a daily basis and their knowledge of such technology should translate into the classroom in a collaborative manner between teacher and students. Steel (as cited in Trinder, 2017) concluded "as we consider learning for the future, it is crucial to partner with students to build a picture of emergent technology practices beyond the classroom" (p. 409). The reason this conclusion was met was due to the availability of cheap technology students have within and outside the classroom. This shifts the "mediated learning" from teacher-focused to student-focused, which is how education has shifted, due to the emergence of collaborative learning and teachers being viewed as proctors.

Online learning has also been noted to impact students with Autism Spectrum Disorder (ASD) in a positive manner. Omar and Bidin (2015) completed a study on students with ASD to understand the type of impact multimedia graphics and text has on these students with regard to

reading, especially the use of computer programs that utilize color within their multimedia displays. “Colors have powerful influence enhancing memory performance with them designing multimedia interface is request to build up application computer-based program (CBP) in appropriate way can suit their special needs as autistic disabilities” (Omar & Bidin, 2015, p. 995). They go even further to indicate that even though the results of their study solely focus on students who have ASD, the use of multimedia tools can be useful for children who have other disabilities, not limited to ASD. Overall, they found that the evidence within the study, “supports the effectiveness of using computer-based intervention to teaching reading comprehension to children with autism” (p. 995).

However, there are those that disagree with the digital shift. They argue that the rationale for digital learning is weak and based off of incorrect data. The National Education Policy Center, located in Boulder, Colorado, collected data on virtual schools, blended schools, and traditional schools to compare the impact of a digital curriculum. Areas assessed were performance rates and graduation rates. Virtual schools continuously under preformed compared to blended schools with traditional schools in the lead. For example, in regard to performance, “37.4 percent of full-time virtual schools received acceptable performance rating, compared with the 72.7% acceptable ratings for blended schools” (Molnar et al., 2017, p. 6). In terms of on-time graduation rate, 43.4 percent of virtual school students graduated on time, compared to the 43.1 percent of blended schools, falling .3 percent lower than virtual schools. However, both schools’ on-time graduation rates are significantly lower than the national average of 82.3 percent of students, providing evidence for the overall argument that the use of multimedia and virtual learning does not have a positive impact on students’ learning.

Darrell M. West (2012), author of, *Digital Schools: How Technology Can Transform Education* pushes back on this argument, citing educator John Dewey in saying, "if we teach today's students as we taught yesterday's, we rob them of tomorrow" (p. 1). West describes how there are a plethora of resources out there to supplement and positively impact a student's education in order to keep with Dewey's philosophies from 1915 because he believes Dewey's philosophy is still relevant today. Dewey's primary stance within his philosophy is that the education system needs to adapt to societal needs. West offers different resources that contribute to that philosophy.

Growth of the Digital Footprint in the Classroom

Due to the impact that technology has on an individual's everyday life and how there has been a rise in students having their own personal devices, schools have implements a "BYOT" policy within their schools. However, it was a slow process getting there. A national survey was completed in 2007 by Obringer and Coffey, in which they found that the majority of high schools had a policy in place for cell phones, since 68% of students brought cell phones to school every day. However, these policies were geared toward not using their phone in school and repercussions for doing so. As technology continues to grow and the use of cell phones continues to become more commonplace, the number of students bringing cellphones into school rises, and these policies which once restricted the use of any cellular device adapted and changed along with our societal views on technology's impact on education. This, in turn, evolved into the Bring Your Own Technology (BYOT) era where students are encouraged to bring their own devices to school versus being reprimanded for doing so. This means that students can bring in their own device, whether it is a smart phone, e-reader, or laptop, and utilize it at the teacher's discretion to supplement and enrich their learning.

The use of BYOT has raised questions of concern between positive educational impact and distraction within the classroom. In addition, teacher readiness for this change was a concern as well. Where students are privy to the technological advances since they are growing up through the changes, many teachers are just learning how the technology works. A study completed in 2013 by Ismail, Azizan, and Azman reported whether or not teachers are ready to use mobile phones as a pedagogical tool. Through a quantitative survey, they found:

> The respondents mostly did not view mobile phones as effective teaching-learning tools for school education system, even outside classroom setting. Even though a positive correlation was found to be significant between the respondents' perception on mobile learning and their frequency of sending SMS in a day, not all respondents were keen toward the future perspective of mobile learning for teachers' profession. (p. 45)

This reinforces the theory that teachers are not ready to implement the use of cell phones within their classrooms, even though they see the benefit in doing so. Their reluctance is due to the fact that they are not comfortable with the technology at hand.

Another technological tool that has become popular in schools are Smart Boards, which have replaced the traditional chalk boards. These smart boards help alleviate some of the stressors that teachers felt with students using their own personal devices. The Smart Board allows teachers to utilize different online platforms without the use of cellular devices because the Smart Boards come with instructional tools that one can hand out to their students to complete surveys or activities digitally. The only issue with this is that the school needs to fund those extra devices. A study within The European Journal of Contemporary Education (2016) discusses the benefits of utilizing Smartboards and all of their features to enhance learning within

the classroom. What they concluded was that with the use of the smart board, lessons were more relevant and engaging. They want Smart Board technology to become more widespread and then, "with this increased awareness, it is expected that prospective teachers will integrate technologies, such as the interactive smart boards, into their classes when they begin their teaching career" (Günaydin, & Karamete, 2016, p. 120). They recommend teachers to "be encouraged to use technology, particularly smart boards, in their classrooms" (p. 120).

Multiple counties across Maryland as well as the nation have adopted the one-to-one initiative for digital devices. "These increasing efforts for one-to-one projects have been mainly focused on three major goals: prepare students for the future workforce, improve students' skill and achievement, and increase the quality of instruction" (Inan & Lowther, 2010, p. 937). This means that students receive a device to implement digital curriculum or tools within the classroom. Some schools are going farther than the state-wide initiatives. They have created programs that allow students and teachers access to their own devices at a price that is reasonable in addition to providing a check out option for students who cannot afford to purchase their own laptop (Inan & Lowther, 2010). For example, Harford County Public Schools are in their second year of implementation; they are using a duel grade level system per year until each grade level has their own set of laptops. For the 2016-2017 school year, tenth-grade language arts piloted the program since Integrated Language Arts purchased a digital textbook with online features and additions across secondary schools. Due to the program's success, the 2017-2018 school year had tenth-grade and eighth-grade students across the county receive laptops to implement digital techniques within the classroom. This school year, sixth and fifth grades have received laptops. The secondary Social Studies department has converted to an online curriculum as well as Science. They utilize ItsLearning in their daily lessons with online supplemental recourses. The

math program is blended for the below/on grade level courses where they have laptop work days and then workbook work days. All of this is another example as to how our education system is continuously morphing into a digital age where technology is utilized as a tool to help students meet their educational goals.

Effects of Technology Integration Within the Classroom

Blended instruction changes the entire dynamic of the classroom. “Formal, institutional learning spaces now exist in a variety of hybrid forms such as blended or flipped classrooms which combine face-to-face and online instruction” (Trinder, 2017, p. 402). Whereas traditional classrooms are teacher-centered, blended classrooms are student centered. Harper (2018), an adjunct faculty member at George Washington University, completed a study on the impact of blended learning and concluded that the use of technology within the classroom enhanced collaboration between students and staff. In addition, teachers who utilized technology were using it purposefully to enhance their lessons and student interest in exploring content on their own. The blended learning platform allows students to attain information in various ways, which helps with different learning styles in addition to their interest in content. The use of digital resources allows teachers to present materials to students in an authentic manner; the students then reference other digital multimedia on their personal devices for school work (Trinder, 2017).

As noted earlier, West (2012) discusses a range of sources beneficial to the digital age classroom. He believes the resources he studied allow people to achieve a goal of collaborative learning between students, staff, and community.

> Imagine an educational system in which pupils master vital skills and critical thinking in collaborative manner, social media and digital libraries connect learners to a wide range

> of informational resources, student and teacher assessment is embedded in the curriculum, and parents and policymakers have comparative data on school performance. (pps.1-2)

Implementing the use of different technological platforms then personalizes learning in order to meet students' needs (West, 2012). West also argues that the use of these platforms will enhance student interest which then promotes involvement, engagement, and overall student satisfaction with these approaches.

As our society continues to become more technologically dependent, so will our classrooms to support Dewey's theory of an adaptive education system being proactive for our students. This change should be beneficial within the classroom as long as it is used appropriately. Fletcher (2018) completed an action research project on the use of digital tools within the classroom as well. Within his research, he noted that the success of digital tools and their effectiveness are based on how comfortable the teacher is at implementation of the technology, as well as having the focus of technology use be supplemental, not the focus of the lesson.

Summary

This literature review examined the arguments for and against digital learning as well as the process to becoming fully integrated in technology. The differences between traditional, blended, and virtual teaching were analyzed and the benefits of each were noted. The different types of technological tools for teachers, students, and cooperative learning use were discussed as well as effective ways to implement them. While some argue that the rationale for implementing one-to-one devices and other technology within the classroom is based off false data, others argue the benefits outweigh the risks. This is why the topic of digital technology

within the classroom needs continuous research, especially as our dependency on technology continues to grow.

CHAPTER III

METHODS

The purpose of this study was to determine the impact of the use of technology when utilized in the English Language Arts classroom. The variables in place are the students' achievement among students who use 1:1 device for instruction/performance tasks and students who do not use 1:1 devices for instruction/performance tasks. Between these variables, the type of instruction (digital vs. non-digital) served as the independent variable. Students' achievement was the dependent variable. Student's culminating assessments submitted by the curriculum specialists were compared.

Design

A quasi-experimental study utilizing a convenience sample was used in order to determine whether the use of digital resources had an impact on student achievement in English Language Arts.

Participants

Participants for this convenience sample study were selected from two of the researcher's standard English Language Arts classes at a public school in northern Harford County, Maryland. These classes were selected because the students have similar demographics, are of the same ability levels based off of the Maryland Comprehensive Assessment Program scores (MCAP) and Scholastic Reading scores (Lexile), and all students are in the eighth grade. The control group consists of 35 students, and the treatment group consists of 36 eighth-grade students. The study included 36 male students and 35 female students. Fifty-eight of the students selected are Caucasian, five are Hispanic, five are Asian, and three identify as multiple ethnicities. Two students have individualized education plans.

Instrument

The study spanned one story taught within the curriculum. Students were tested on comprehension knowledge of the story as well as analysis of literary techniques that the authors used within the stories to convey a certain theme/tone/mood. The assessment was provided through the curriculum guide and teacher resources. The assessment consists of 12 multiple choice questions about the literary components within the text. The assessment was given in early February of 2020.

The assessment items used were valid in regard to content because the stories as well as their assessments were provided by the county. In addition, the assessments are represented within the eighth grade Common Core State Standards (CCSS). The standards that were assessed were RL8.1 cite textual evidence to support analysis and inferences, RL 8.2 determine a theme or central idea, and RL8.3 analyze how dialogue propels action and reveals character.

Procedure

Two standard Language Arts classes were chosen for this study. These two classes were selected because the students share similar Lexile and MCAP assessment scores. The students were not told that they were being compared to another group. The group that received the curriculum through hard copy textbooks and handouts was the control group whereas everything was converted into a digital format for the treatment group. The treatment group received instruction solely through their one-to-one computers provided by the county and whole class discussion.

The story students read and analyzed was “My Favorite Chaperone” by Jean Davies Okimoto. One class was given the Harford County curriculum for this story, presented through independent and collaborative work without utilizing technology. Students analyzed the story

within the hard copy textbook as well as photocopied versions of the story so that they could highlight and take note of events in order to participate in class discussions. The treatment group received instruction through OneNote, Socrative, Kahoot!, Houghton Mifflin Harcourt online (HMH), and other online resources. Students had a collaborative space on OneNote to add additional recourses to supplement concepts that we discussed within the story. Socrative was used as a formative assessment tool so the students' understanding of the text could be measured.

At the end of analyzing the story, both the control and treatment group were administered the assessment in two different forms. The control group received the assessment provided by HMH as a hard copy, and the treatment group was administered the assessment online. The mean of each classes score were compared to determine whether the students who received a completely digital curriculum had a higher average than the control group that received instruction traditionally.

CHAPTER IV

RESULTS

The purpose of this study was to examine the impact of instructional technology and student one-to-one devices on performance in English Language Arts. The two classes that were studied were standard English Language Arts classes that have a combined average Lexile score of 1202 and a proficient average MCAP score of 773. One class completed a short story study using instructional technology to read the text and learn concepts. They then completed an online assessment involving high-level multiple choice questions provided by the Houghton Mifflin Harcourt reading curriculum online whereas the other group used a paper format for instruction as well as assessment.

An independent sample *t*-test was conducted with the independent variable being the implementation of technology. The treatment consisted of the use of one-to-one device, and the control group acted as such due to their non-use of technology for instruction and assessment. The dependent variables were the students' engagement in the lesson and their level of achievement of objectives. The dependent variables were assessed through the use of a curriculum-provided assessment on material presented during the targeted lessons on "My Favorite Chaperone."

The mean test scores of the control group (Mean = 10.69, SD = .93) did not differ significantly from the mean test scores of the treatment group (Mean = 10.75, SD = 1.00) [$t(69) = .28$, $p = .78$]. (see Table 1). Therefore, the null hypothesis that there would be no effect on student achievement in the English Language Arts classroom with the implementation of instructional technology and 1:1 devices was retained.

Table 1

Means, Standard Deviations and t-Statistic for Literary Comprehension and Analysis scores under Technology and Paper Conditions

Condition	N	Mean	SD	t-statistic
Technology	35	10.69	0.93	.28(NS)
Paper	36	10.75	1.00	

NS = non-significant at $p \leq .05$

CHAPTER V

DISCUSSION

The purpose of this study was to determine whether instructional technology and student one-to-one devices have a positive impact on student achievement in English Language Arts. Their performance was measured through the use of a standard assessment provided through the Harford County English Language Arts Curriculum textbook, Houghton McDougal Harcourt. The control group was provided instruction and assessment through hard copy materials, and the treatment group was taught using instructional technology and one-to-one devices. The treatment group was also assessed digitally. It was determined that there were no significant differences in performance when students utilized technology. The null hypothesis that there would be no effect on student achievement in the English Language Arts classroom with the implementation of instructional technology and one-to-one devices was retained.

Implications of the Study

When reviewing the results, there was no evidence to suggest that providing students with instructional technology within the classroom was more effective than the traditional paper version for students to meet with success in the English Language Arts classroom. Furthermore, the results do not demonstrate a difference in students assessing digitally versus traditionally with a pencil and paper. The data suggests that an educator should examine the effectiveness of introducing technology within the classroom and what role the technology is going to play since accessing and interacting with the information through technology was not found to be more effective than traditional paper methods.

Nevertheless, this researcher observed some positive benefits of technology that were not reflected in the performance on the dependent variable. The researcher noted that students were

more motivated when technology was a component of their learning. Students were more on task and liked the different features that digital learning provided, such as sharing documents and working on them at the same time (cooperative learning) and typing responses versus writing. Students were also more engaged with real time results with digital study tools. Additionally, students in the treatment group completed work at a quicker pace than the control group. The students within the control group had less enthusiasm than the treatment group about writing by hand versus having an opportunity to type.

Theoretical Consequences

Inan and Lowther (2010) indicate that the implementation of instructional technology and digital learning achieves three distinct goals, one of which being student achievement. The results of this study call to question this theory due to the non-statistically significant difference between the control and treatment group. This study did not provide statistical evidence that technology integration promoted higher student achievement in English Language Arts than more traditional methods.

Threats to Validity

There were several threats to validity within this study. One threat to internal validity was the amount of distraction that the one-to-one created for the treatment group. Some students were asked to close out of additional browsers during instruction because they were looking up things that were not content-related, things for their own entertainment, or on their school email. This is a clear threat to validity since the students who needed to be redirected were not fully engaged in the instruction that was taking place.

Attendance was an issue during this study. Influenza, in addition to a stomach virus, spread throughout the school during the time of this study, and several students had to make up

the work missed, regardless of whether it was digital or hard copy. This is a threat to internal validity since some students were not able to partake in the digital or hard copy cooperative learning components of the lessons.

An additional threat to validity could be the type of instruction that took place prior to this study. The integration of technology was not new to the researcher's students since their mathematics, science, and integrated language arts curriculum are all digital. Furthermore, students were accustomed to the digital resources that were implemented due to previous short story studies. On the other hand, students who have become accustomed to online work may have found the traditional paperwork boring. While previous experience limits the validity threats related to novelty and difficulty using technology, it also limits the ability of the results of the study to generalize to the impact of newly introducing technology since the students' expectations of how learning takes place did not change with the use of technology since they were already familiar with instructional technology and their one-to-one device.

Connection to Previous Studies and Existing Literature

The results of this study failed to show that student achievement is higher with the use of instructional technology within an English Language Arts classroom. This is consistent with the findings of Fletcher (2018), Sansalone (2019), and Smyth (2019). All of their findings from their own research found that technology did not increase student achievement through various grade levels. Fletcher studied eighth-grade history students in a suburban school. Smyth studied fifth-grade students in a suburban city, while Sansalone studied ninth-grade Language Arts students in a Title I feeder school. These researchers' observations were also similar with regard to motivation and engagement increases with the use of digital tools. Smyth states, "They were

visibly excited and were anxious to start working" (p. 15). Sansalone comments, "Overall, students seemed more interested in using technology rather than paper and pencil" (p. 19).

Implications for Future Research

Based on the results of this study, it is recommended for future research to continue to consider the impact of instructional technology and one-to-one devices on student achievement in English Language Arts. It is recommended to have a broader range of reading and writing ability and different ages so that results would generalize to a larger group of people.

The long-term effects of technology could be researched to determine whether there is an impact on achievement once mastery of the digital tool is reached. This would allow the researcher to determine the difference between achievement of students who are not comfortable with technology versus the achievement of students who are comfortable with technology and use it on a daily basis in the classroom.

Researchers might consider a different type of assessment for achievement. Since English Language Arts can be broken into reading and writing, there could be a written assessment separate from a reading assessment. This may allow the researcher to determine whether instructional technology and one-to-one devices impact achievement in one part of the content more than the other.

Conclusion

The purpose of this study was to determine whether instructional technology and the use of student one-to-one devices had a differential impact on student achievement in English Language Arts as compared to traditional paper methods. It was determined that there were no significant differences in performance when students utilized technology in a standard eight-grade English Language Arts classroom. Although the researcher did not find a significant

difference in achievement with students who utilized the digital resources, she observed increased on-task behaviors and apparent increased motivation. Future researchers should consider student engagement and motivation when utilizing technology in the classroom. With counties and districts implementing digital curriculums within their schools, teachers should familiarize themselves with the digital tools available in order to differentiate for their students and promote engagement.

References

Denle, E., & Liew, J. (2016). The use of interative enviroments to promote self-regulation in online learning: A literature review. *European Journal of Contemporary Education*, 15(1), 24-33.

Fletcher, A. (2018). *The impact of using computers and technology on engagement and achievement in an 8th grade social studies unit* (Unpublished action research paper). Goucher College, Towson, MD.

Günaydin, S., & Karamete, A. (2016). Material development to raise awareness of using smart boards: An example of design and development research. European Journal of Contemporary Education, 15(1), 114-122.

Harper, B. (2018). Technology and teacher-student interactions: A review of empirical research. *Journal of Research on Technology in Education*, 50(3), 214-225.

Inan, F.A., & Lowther, D.L. (2010). Laptops in the K-12 classrooms: Exploring factors impacting instructional use. *Computers & Education*, 55(3), 937-944.

Ismail, I., Azizan, S. N,. & Azman, N. (2013). Mobile phone as pedagogical tools: Are teachers ready? *International Education Studies*, 6(3), 36-47.

Molnar, A., Miron, G., Gulosino, C., Shank, C., Davison, C., Barbour, M., (2017). *Virtual Schools in the U.S. 2017*. National Education Policy Center. Retrieved from: http://nepc.colorado.edu/publication/virtual schoolsannual-2017.

Oblinger, D.G., & Hawkins, B.L. (2006). The myth about IT security. EDUCAUSE Review, 41(3), 14-15.

Obringer, S. J., & Coffey, K. (2007). Cell phones in American high schools: A national survey. *Journal of Technology Studies*, 33(1), 41-47.

Omar., S., & Bidin, A. (2015). The impact of multimedia graphic and text with autistic learners in reading. *Universal Journal of Educational Research,* 3(12), 989-996.

Sansalone, A. (2019). *The impact of instructional technology on the reading achievement of high school students* (Unpublished action research paper). Goucher College, Towson, MD.

Smyth, J. (2019). *The effects of reading modality and student choice on reading comprehension in fifth grade students* (Unpublished action research paper). Goucher College, Towson, MD.

Trinder, R. (2017). Informal and deliberate learning with new technologies. *ELT Journal,* 71(4), 401-412.

West, D. M. (2012). *Digital schools: How technology can transform education*. Washington, D.C.: Brookings Institution Press.