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To the Graduate Council:

I am submitting herewith a dissertation written by Christine Kay Patti entitled "ONLINE WRITING ASSESSMENTS, ESLs, AND THE ONE-TO-ONE INITIATIVE." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

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ONLINE WRITING ASSESSMENTS, ESLs, AND THE ONE-TO-ONE INITIATIVE

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Christine Kay Patti
May 2019

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Dedication

To Marc, Chris, and Emily

Acknowledgements

This has been quite a journey - fulfilling, challenging, and providing me with an eventful roller coaster ride. I'd like to thank the following individuals for their support along the way. To Dr. Lisa Yamagata-Lynch, my Chair, your guidance, advice, and encouragement is much appreciated and helped motivate me to reach the end of this work. Thank you to Dr. Biddix, Dr. Morrow, and Dr. Smaldino for your feedback, guidance, and willingness to assist me in this process. Thank you to Kortney Jarman and Cary Springer for answering all of my questions and providing support and encouragement. Thank you also to Dr. Jaewoo Do, Brenda Murphy, Lisa Shipley, Dr. Anne Skutnik, and Dr. Natalia Ward.

Abstract

The increasing number of English as a Second language students in US schools has provided new challenges in today's classrooms. In addition to learning the language, culture, and curriculum of US schools, these students are also, in many cases, encountering technology for the first time. This lack of exposure creates a perfect storm as school systems adopt online assessments which in part, evaluate students for grade promotion. While technology exposure in schools is on the rise, so is the number of schools adopting a one-to-one program, where students are provided a laptop or other device for use, in many cases, at school and at home. The school district at the center of this study began its one-to-one program in 2013 using a gradual distribution method where interested schools applied to the one-to-one cohort. Annually, a handful of schools, elementary, middle, and high, would be selected from the yearly applications; thereby providing devices to students in the selected schools, while those schools not selected would continue to share, in many cases, a school computer lab or other technology resources. With research lacking, in particular on the ESL population, the goal of this study was to determine if students who had the opportunity to access technology at a one-to-one school had an advantage over those who did not have this same access when it came to their online writing assessment scores. This study analyzed pre-assessment survey data regarding technology access and use along with assessment scores from 380 ESL students who participated in yearly writing assessments during the 2014-2015 school year. The study employed Chi-square and Logistic regression analyses. Although, the results showed no significant relationship between successful online writing assessment scores and one-to-one membership, computer access outside of school, and computer use in school; results did show significant relationships between successful online writing assessment scores and Internet access at home, computer use outside of school, and grade

level, respectively. Although this study provided some mixed results, providing students with experiences with technology will benefit students in their future educational and employment opportunities.

Keywords: ESLs, one-to-one, 1:1 initiative, online writing assessments, equity

Table of Contents

| | |
|--|----------|
| Chapter One Introduction to Study | 1 |
| Statement of the Problem..... | 2 |
| Purpose of the Study | 3 |
| Significance of Study..... | 4 |
| Research Questions | 5 |
| Definitions..... | 6 |
| Delimitations..... | 7 |
| Overview of the Study | 7 |
| Conclusion | 7 |
| Chapter Two Literature Review..... | 9 |
| Equity | 9 |
| No Child Left Behind..... | 11 |
| One-to-One Initiative | 12 |
| Beginnings of One-to-One | 13 |
| One-to-One Advantages..... | 14 |
| One-to-One Disadvantages | 15 |
| Technology Challenges..... | 16 |
| One-to-One Access | 17 |
| One-to-One and Achievement | 18 |
| One-to-One and Writing | 19 |
| One-to-One and Assessment..... | 21 |
| ESL Students..... | 22 |

| | |
|---|-----------|
| ESLs and Assessments..... | 23 |
| ESLs: Language and Anxiety | 24 |
| ESLs: Digital Divide and Inexperience | 25 |
| ESLs: Distractions | 27 |
| Positionality Statement | 28 |
| Investigator Experience | 28 |
| Interests, Bias, and Positionality | 28 |
| Conclusion | 29 |
| Chapter Three Methodology..... | 31 |
| Research Design..... | 31 |
| Procedure | 32 |
| Data Collection | 34 |
| Participants..... | 35 |
| Measures | 37 |
| Data Cleaning Procedures..... | 38 |
| Analysis Plan | 41 |
| Analyses..... | 42 |
| One-to-One Membership | 43 |
| Technology Access: Computer Access Outside of School..... | 43 |
| Technology Access: Internet Access at home | 44 |
| Technology Usage: During School..... | 44 |
| Technology Usage: Out of School..... | 44 |
| Students' Grade Level..... | 44 |

| | |
|---|-----------|
| Chapter Four Results | 46 |
| Data Analysis | 46 |
| Chapter Five Summary and Discussion..... | 54 |
| Summary and Discussion..... | 55 |
| One-to-One Membership | 55 |
| Technology Access | 56 |
| Computer Use | 59 |
| School Level | 61 |
| Predicting Success | 62 |
| Recommendations and Implications | 63 |
| Limitations | 67 |
| Future Research | 69 |
| Conclusion | 69 |
| References..... | 71 |
| Appendixes..... | 86 |
| Appendix A..... | 87 |
| Appendix B | 88 |
| Appendix C | 90 |
| Appendix D..... | 91 |
| Vita | 92 |

List of Tables

| | |
|---|----|
| Table 1. Frequencies Groups for Computer Use at School and Outside of School..... | 40 |
| Table 2. Frequencies for Prompt1415Scaled..... | 40 |
| Table 3. Frequencies for P1415WACat..... | 41 |
| Table 4. Frequencies One-to-One Membership and Writing Assessment Score..... | 47 |
| Table 5. Computer Access Outside of School and Writing Assessment Score..... | 48 |
| Table 6. Internet Access at Home and Writing Assessment Score..... | 48 |
| Table 7. Computer Use at School and Writing Assessment Score..... | 50 |
| Table 8. Computer Use Outside of School and Writing Assessment Score..... | 50 |
| Table 9. School Level and Writing Assessment Score..... | 52 |
| Table 10. Logistic Regression - Variables in the Equation | 53 |
| Table 11. Classification Table for Logistic Regression..... | 53 |

CHAPTER ONE

INTRODUCTION TO STUDY

While the use of technology in education, including its use to determine the level of student achievement, seems to be ever-expanding, technology's impact on achievement is not well researched. This is in part, due to inequitable disbursement and use of technology (Cole & Sauters, 2018; National Education Association, 2008). This discrepancy between the availability and access to technology presents an unclear challenge to schools and state education officials in that they are not able to clearly differentiate whether differences in assessment results are truly the result of students' knowledge and skills or if experience with the technology has impacted their scores. If the scores are impacted by lack of experience with assessment technology, they would then be accepting unfair scores for students based on a technology access and experience variable that is out of the students' control.

This study examined how disparities in technology access are affecting English as a Second Language (ESL) students' standardized testing performance. This study focused on a county located in the Southeastern region of the United States (US) which used a gradual distribution method of adoption of the one-to-one laptop initiative. The overarching research question for this study was whether ESL students who are members of a one-to-one school do better on the online writing assessment than those who are not. Through quantitative analyses, this question was addressed by focusing on the achievement scores of ESL students taking online writing assessments, student grade level, self-reported pre-assessment survey responses regarding use of computers, both at school and out of school, computers ownership, and Internet access at home, as well as determining whether there is an association between their online writing assessment scores and their one-to-one membership status. The findings from this study

addressed whether or not ESL students with daily access to technology perform better on online writing assessments than students without the same daily access through the school's one-to-one laptop initiative adoption.

Statement of the Problem

The English as a Second Language (ESL) student population in the US has increased dramatically over the last decade (Carhill-Poza, 2017; Odo, 2012). ESL students, in many cases, enroll in school with little to no knowledge of the English language nor technology. In 2014, the school system that is the focus of this dissertation research, began to give students the state writing assessment online. While the move to online writing assessments has been gradual, educators are finding that students are not possessing adequate technology skills and experience (Lee & Spires, 2009). This technology background is necessary for students to become productive members in today's culture (Cole & Sauers, 2018; van Dijk & Hacker, 2003; Vigdor, Ladd, & Martinez, 2014), and would be needed to successfully complete an online writing assessment.

In addition to the changes in the cultural diversity of students in classrooms and high-stakes testing, educators will teach students content, the English language, and the technology skills needed for the mandatory state online assessments. Online writing assessments ask students to draft longer responses to questions that require more skill than simply selecting a multiple-choice answer; therefore, educators are having to instruct students on much more than just using a mouse. Odo (2012) found most research conducted on online assessments was with point-and-click type assessments versus writing (typing) assessments. He believed that assessment developers and those using assessments should be aware of the experience of test-takers' computer knowledge and skills.

Writing essays on a computer for the online assessment will be a new experience for many students who have traditionally written their essay responses using a pencil and paper. Fortunately, when it comes to the writing on laptops, Zheng, Arada, Niiya, and Warschauer (2014) found students did better and were more productive. Other research indicates students who have daily access to the necessary technology and are exposed to composing their work on the computer, write better on the computer than when writing handwritten responses. This can be seen through actions such as editing (Corn, Tagsold, & Argueta, 2012; Jett, 2013; Li, 2006). Other research shows ESL learners' writing created on the computer tended to receive higher scores (Lee, 2004; Vowles, 2017). This could mean that students who are members of a one-to-one school may have a competitive edge when it comes to the high-stakes assessments (Kennedy, Rhoades, & Leu, 2016) and in turn, may have better assessment scores.

Purpose of the Study

When research shows ESL students write better and receive better scores when working on computers, getting technology into the hands of students would appear to be a logical priority; however, providing technology experiences to students is a continual challenge for educators (Ogletree, Ogletree, & Allen, 2014). One solution to the lack of technology has been for schools to adopt one-to-one technology initiatives. For many students, this initiative provides access to technology where they might otherwise have limited access at school and no access at home.

One-to-one initiatives really began to take hold in the US in 2002, when the state of Maine instituted its program. Nine years later, the county at the center of this study began its own one-to-one initiative in 2011. The district administration asked individual schools to apply for one-to-one initiative membership, then selected a handful of these schools each year to participate as funds permitted. Each member high school and middle school provided each

student with a laptop computer for their use at school and at home. Elementary member schools were provided mobile laptop carts to be shared and rotated among all grade levels. Schools that have yet to adopt the one-to-one initiative must use the technology issued to the school, i.e., a computer lab, to prepare to take these online assessments.

This study looked at a county that has implemented a gradual roll-out of technology, while employing state online writing assessments to evaluate ESL students, and indirectly evaluate their educators and schools. The focus was to provide new evidence of a relationship between ESL students' technology access and their individual performance on the online writing assessment. Specifically, the data could show whether online writing assessments scores for ESL students is statistically different depending on technology access while also considering membership with a one-to-one school, Internet access, computer ownership, grade level, and technology usage, both in and out of school. Having this knowledge, schools are better able to represent ESL students' achievement as well as provide evidence of the significance technology access may have on future achievement.

Significance of Study

When it comes to assessments, schools and students across the country are compared against one another and in some cases their results can affect student grade promotion. Unfortunately, ESL students are challenged from the moment they arrive in a United States school as they begin to learn a new language and culture. And now with the addition of online assessments, ESL students must add technology to their list of content and skills to know in order to succeed.

As we have all experienced, learning something new can take time. ESL students, while working on their English, will also be familiarizing themselves with the technology hardware

and its vocabulary, all of which are needed for their online assessments. Additionally, students who are lacking technology experiences are compared to those who have access in an ever-increasing technological environment and are at an even greater disadvantage when it comes to assessments that assist in determining their future placement in schools. A study on ESL students in particular is needed as there is little research that focuses on them (Bailey & Heritage, 2014). Additionally, Zheng, Warschauer, and Farkas (2013) found little research had been completed which focused on “at-risk learners” with regard to technology and Kennedy, Rhodes, and Leu (2016) struggled to find many quantitative studies that could draw conclusions about laptop use and learning. Yet our schools are continuously increasing the requirement, i.e., online assessments, for students to be able to use technology. Supporting this view, Dela Rosa (2016) found few resources for teachers and schools when attempting to integrate technology into their teaching. Without research to determine the influence of technology use, it seems unfair to allow technology to play such a significant role in their education.

Research Questions

Research Question 1

Does a significant relationship exist between student one-to-one membership and successful test performance among ESL students as measured by the online writing assessment?

Research Question 2

Does a significant relationship exist between ESL students’ reported amount of technology access (computer and Internet) and successful academic test performance among ESL students as measured by the online writing assessment?

Research Question 3

Does a significant relationship exist between ESL students' reported amount of computer usage (in and out of school) and successful academic test performance among ESL students as measured by the online writing assessment?

Research Question 4

Does a significant relationship exist between ESL students' grade level (middle or high) and successful academic test performance as measured by the online writing assessment?

Research Question 5

How does the probability of an ESL student receiving a successful score on the online writing assessment change when taking into account their one-to-one membership, technology access, technology usage, and grade level?

Definitions

ESL student: a student who received a qualifying score on the state language proficiency assessment or WIDA assessment

One-to-One initiative: each student in a one-to-one school receives a laptop or tablet for use at school and at home

Online writing assessment: the writing portion of the state yearly assessment

Transition student: a student who has received a passing score on the ELDA or WIDA assessment and is now monitored by ESL teachers but does not receive ESL services. This student is considered in transition for two years and if s/he continues to progress, is exited.

Waived ESL student: a student whose parent elected for his or her child to not receive ESL services

Delimitations

Data for this study was taken from the state-wide writing assessment for the school years 2013-14 and 2014-15 in the focus county. These specific testing years were selected over more recent years assessment data due well publicized testing issues. During the 2015-16, 2016-17, and 2017-18 school years many counties saw testing halted and in some cases abandoned. When this occurred, students in these counties were administered the yearly assessment using paper and pencil. Use of this data would provided an additional challenge to overcome, due to the inability to determine which students completed an online assessment and those who completed paper and pencil; therefore, altering the scope and focus of this study. Additionally, the study focused on students at the middle and high school levels. These school levels have similar access, individual laptops for each student, compared to those at in the elementary grades, where the one-to-one membership schools share a laptop cart among the grade level.

Overview of the Study

This study is organized within five chapters. Chapter One includes an introduction to the study along with an explanation of the study's significance and research questions. Chapter Two provides a review of literature detailing the one-to-one initiative, online writing assessments, and ESL students. Chapter Three outlines the methods used in the study including a description of the population, data cleaning, and procedures. Chapter Four describes and illustrates the results of the study. Chapter Five discusses the results, limitations to the study, and future research.

Conclusion

The environment of accountability, especially with the growing population of ESL students, begs for a closer examination of online assessment achievement and student technology access and usage. In order to make these accountability efforts fair, research needs to examine

whether or not students' access to technology along with technology skills and experiences impact the results of these assessments (Odo, 2012). Carhill-Poza (2017) recently reinforced this idea as "both the linguistic demands of the new standards and the use of technology to address them are relevant areas of concern for teachers of the growing population of emergent bilinguals in the U.S. and abroad" (p. 111). This study will examine if there is a relationship between ESL student's scores on the end-of-year performance online state writing assessments and their school's one-to-one member status, grade level, as well as their self-reported survey responses regarding Internet access, usage in and out of school, and computer ownership. Understanding these relationships will help determine if access impacts ESL students' achievement given the increasing presence and use of technology throughout our educational system.

CHAPTER TWO

LITERATURE REVIEW

This literature review will begin with a brief discussion of how equity serves as the overarching notion behind the need for this study. Following this section, the literature review will provide a review of the regulation, No Child Left Behind, which initiated the accountability measures surrounding the use of assessments in education. The review of literature will also provide past and current history and research on the one-to-one initiative as well as the ESL students, the subjects of this study, and how technology has been shown to impact this population.

Equity

“The experience of injustice need not be an accepted fact of life.”
(Adams, 1965, p. 297)

Equity by definition is where all is fair, and discrepancies do not exist. Adams (1963, 1965) believed individuals who perceive an advantage, will in turn feel unjustly treated and perceive a deficit. However, equity is not always seen. And the idea that inequity exists in our education system even today is hard to hear and accept. It is through this idea of equity that this study will focus as it concerns the technology students receive during their education and the impact it may have on their achievement.

Our education system is built on the idea of equal opportunity for all students; however, discrepancies sadly exist, especially when it concerns the access to technology and the impact it may have on student’s achievement. Research (Duncan & Murnane 2011; Harris, 2015; Lewis, Eden, Garber, Rudnick, Santibañez, & Tsai, 2014; Warschauer, 2000) has shown that inequities continue to exist, and the lack of technology can negatively impact achievement long-term. In a 2018 report, the Organization for Economic Co-operation and Development (OECD), posed a

similar concern, questioning whether learners have the equivalent opportunities for achievement. Lazenby (2016) strongly felt that “a particular set of obstacles should, or should not, be allowed to differentiate the individuals’ achievement” (p. 67). Other strong opinions include, Cole and Sauers (2018) with their study of one-to-one programs, where they interviewed school superintendents. Simply stated by one participant “you have to support equity and every kid has an equal opportunity. So, if they don’t have that, then I think we’re just discriminating” (p. 209). These resources alone show this issue of equity of technology has been and continues to be a problem. When school systems provide tools to some, but not all, and use the same measurement to assess, student achievement may be unfairly impacted.

The US has seen a rapid increase in the numbers of ESL students enrolling in schools over the last ten years (Carhill-Poza, 2017; Odo, 2012). Many of these students arrive in their new US school without knowing the language. The county at the focus of this study began its online assessments in 2013, all the while many of the ESL students who were enrolled in school were lacking not only English, but technology skills and experiences as well. Educators, in spite of these educational weaknesses, worked to acclimate and prepare their students for success in their classrooms.

Much of Adams’ (1963, 1965) work focused on business and the workplace, citing numerous examples of wage and employment inequities. Additionally, he notes that his theory is applicable in many different environments where an “exchange” occurs. This exchange can take many forms including knowledge transfer, money, goods, services, etc. This is the case with the current environment where one-to-one technology is being provided to some students, but not all as schools continue to assess in the same manner. When schools, educator tenure, and student retention are on the line, the measures used to assess achievement should include equivalent

school preparation, resources, and tools. If inequities do exist, determining their impact on student achievement is a necessity and must be remedied to create a level and fair playing field for all ESL students.

No Child Left Behind

For a state in Southeastern United States, online writing assessments began during the 2013-2014 school year. All students enrolled in a school were required to complete an assessment online, including ESL students and those with special needs. The accountability measures placed on schools, educators, and students by the No Child Left Behind Act, added great pressure to ensure student success. Challenges such as the digital divide, illustrate access and experience issues with technology for some students, yet academic goals had to be met for students to advance to the next higher grade.

The NCLB Act was passed into law in 2001 and provided assurances for creating “outcome and accountability measures” (Menken, 2010, p. 122). These new measures placed outcome goals for all students to show annual yearly progress (AYP) and to reach a specific measure of proficiency by 2014 (Gándara & Baca, 2008). These scores not only determine the achievement of students and impact their promotion or retention, but with the accountability measures built into the NCLB law, teachers and schools feel even greater pressure to ensure students perform well or risk consequences from both state and federal agencies (Menken, 2009).

When it comes to language proficiency, research (Cummins, 1999) says social language may take one to three years for ESL students to gain proficiency and five to ten years for proficiency in academic language. Yet schools, which are required to test and are accountable for ESLs progress, assess these students in a language in which they may not be proficient and use benchmarks meant for students proficient in English (Menken, 2009). There is a concern about

progress, or lack thereof, of students, especially ESL students, who have to achieve better scores each year (Li & Suen, 2012) according to NCLB requirements. Students are sadly expected to take and succeed on an assessment that was created for those who are proficient in English. Research has noted some students may receive lower scores on an assessment that are not necessarily due to their lack of knowledge. Rather, it may be simply due to the fact they are not proficient in the language in which the test is written (Heubert & Hauser, 1999). With equivalent standards for English speakers and ESL students, it is truly a challenge for ESL students to progress and be promoted to the next grade at equal rates even when some have only been enrolled in a US school for a short amount of time. ESL students who take these assessments, which are in many cases in a language they are just getting to know, do not do well enough to meet the standards set by NCLB and do not meet the yearly goals laid out by this legislation (Beckman, Messersmith, Shepard, & Cates, 2012).

Assessments provide a great service for school administrations and allow them to assess whether students are making adequate progress and to evaluate an educator's teaching. Assessments, however, are not without their own deficiencies. These assessments may not be able to provide a fair opportunity for ESL students to adequately represent their knowledge as compared to their peers. With the increasing diversity of student populations, assessments should be evolving to adequately assess these students. Research has stressed the need for assessments to change; thereby making them more sensitive to the various cultures represented within the student population and providing other kinds of assessment opportunities that meet the needs of the student (Ntuli, Nyarambi & Traore, 2012).

One-to-One Initiative

In the fall of 2002, Maine became one of the first states to implement a one-to-one laptop

program for its students. Following on their heels, several other states implemented their own programs where each student would receive a laptop for use at school and, in most cases, at home (Warschauer, 2006). Early statistics by Snyder, de Brey, and Dillow (2016), showed that student to laptop ratio was at 6.6:1 in 2000; the most current statistics show this measure has narrowed to 5:1 in 2015 (Herold, 2015). The one-to-one initiative has begun the overall push to bring technology into the classroom, but it's just the beginning. Federal agencies, including the US Department of Education, are working toward the inclusion of online textbooks in the classroom. (Federal Communications Commission, 2012). The use of computers in education has broadened the avenues for teaching and learning for educators and students (Dunleavy, Dextert, & Heinecket, 2007), and has changed how students are assessed. Additionally, the National Assessment of Educational Progress (NAEP) used computers to conduct its latest research (Zheng et al., 2014) and states who have adopted the Common Core State Standards have begun testing with computers.

Beginnings of One-to-One

Microsoft and Toshiba began the trend of technology in schools with their technology programs that began in the 1990s. In May of 2002, the Maine Learning Technology Initiative (MLTI) appears to have been one of the first to implement a one-to-one program among all of its seventh and eighth graders. On its heels were several other states who also began their one-to-one initiative, including Michigan's Freedom to Learn (FTL), Texas' Technology Immersion Pilot (TIP), and Pennsylvania's Classroom for the Future (CFF) (Zheng et al., 2014).

After these initial one-to-one programs, many more states began to investigate technology in their own classrooms. Michigan's Freedom to Learn grants during the 2005-2006 school year also provided a device to all of its sixth graders (Lowther, Inan, Ross, & Strahl,

2012). West Massachusetts implemented a three-year program in 2005 for five of its middle schools where all educators and students received a device (Bebell & Kay, 2010). In addition to these examples, Littleton Public Schools in Colorado also began a one-to-one program providing all of its fifth grade through tenth grade students a device during the 2009-2010 school year (Warschauer, Zheng, Niiya, Cotton, & Farkas, 2014; Zheng, et al., 2014). Between the years 2008-2010, Birmingham, Alabama provided all first through fifth grade students a laptop. Saugus Union School District in California provided laptops to all fourth-grade students for the half of the 2008-2009 school year, then provided them to all fourth-grade students for the full year the following year (Warschauer, et al., 2014).

The laptop programs have developed essentially two types of distribution techniques. The first is what Howard and Rennie (2013) termed as a saturation model where all students are provided a device without regard to educator practice or application. The other technique they describe is a diffusion model where an educator's interest is relied upon for integrating technology into the classroom. The county of focus in this study however, has adopted a gradual saturation model where a handful of schools each year are added to the cohort of schools providing laptops for their students based upon the county's selection process from individual school applications.

One-to-One Advantages

One-to-one programs bring many advantages as well as disadvantages to students, educators, and schools that are making the move to this type of technology adoption. One of the first advantages for the one-to-one program is students' use of a laptop during school hours and the ability for the student to bring the laptop home (Storz & Hoffman, 2013). This additional time allows for students to become more familiar and more experienced with the technology

(Corn, Tagsold, & Patel, 2011; Goodwin, 2011; Greenwood, 2007; Lei & Zhao, 2008) which they might otherwise not be able to do once they leave school. Bird's (2009) research noted students without technology access at home were found to match the skill level of those who were participants in a one-to-one program and were allowed the technology in their home.

In addition to these advantages, research is also finding that students appear to write more and are more motivated to write with the use of a laptop (Bebell & Kay, 2010; Goodwin, 2011; Warschauer & Ames, 2010). There has also been an academic benefit in that students have shown to have made significant strides in their achievement when involved this type of program (Bebell & Kay, 2010). Students also recognize the importance of experiences and practice with technology. Zheng et al. (2014) interviewed students in Colorado. One student acknowledged that students need technology as they will be faced with opportunities to use it in future jobs. Also noted by this student was the need for practice with technology because they will become better typists and good computer troubleshooters, which are both very helpful skills in the business world. To further validate the advantages, Tamim, Bernard, Borokhovski, Abrami, and Schmid's (2011), analyzed research over a period of 40 years and determined that "the average student in a classroom where technology is used will perform 12 percentile points higher than the average student in the traditional setting that does not use technology to enhance the learning process" (p. 17).

One-to-One Disadvantages

As beneficial as many of these advantages appear to be, there are other opinions which do illuminate some disadvantages of using one-to-one technology in the classroom. One of the disadvantages of this type of program is that technology learning is not automatic nor guaranteed. Some research has shown that in order for a one-to-one program to make an impact,

educators must develop new ways of teaching and use the technology in their daily practice (Bebell & Pedulla, 2015; Goodwin, 2011; Harris, 2010). Additionally, even though students as part of a one-to-one school may have access to a laptop 24/7, the type of skills learned while out of school differ greatly from those skills that may be used in school (Storz & Hoffman, 2013). Students may become experienced with the skills and technology for social interaction, but do not have the experiences to become proficient at the skills needed for the classroom (Lee & Spires, 2009), and having laptops as a tool may not be enough to influence all students to become proficient at writing (Jett, 2013).

Technology Challenges

As mentioned, not all students have equivalent technology skills nor experiences. The one-to-one program in the focus county further illustrates this as some students will have everyday access and others will have much more limited access. With the addition of one-to-one initiatives and the availability of more affordable technology, schools continue to improve connectivity throughout buildings and provide students experiences with and skills for using technology that will help them be successful. With the explosion of technology use and online assessments, new standards and expectations of computer literacy are needed in order to level the playing field for all students (Lindqvist, 2015; Odo, 2012).

The majority of research, as noted by Odo (2012), has focused on students who have completed online assessments which included true-false and multiple choice-type questions. These questions strictly require students to become proficient at using a mouse to point and click. Current assessments, such as the writing assessments at the focus of this study, are asking students to compose lengthy type-written responses. However, students are not necessarily receiving adequate keyboarding experiences to become proficient at typing. Wilcox, Jeffrey, and

Gardner-Bixler (2016) recently noted in their research on writing and Common Core, that in addition to little writing instruction happening in classroom, there was no evidence of students practicing on or becoming familiar with the computer. Students who do receive adequate training in keyboarding tend to perform better on these assessments (Li, 2006).

One-to-One Access

Much of the research available appears to focus on the one-to-one programs and equity as separate topics; however, a few researchers have looked into the topic as a whole. Harris (2010) and Zheng et al. (2013) believed that all children regardless of socioeconomic status should be allowed to participate in a one-to-one program, which would provide them experiences with which they might not otherwise be involved. Participation in a one-to-one program is further supported by Ryan and Lewis's (2017) research indicated that "in limited English households, only 53 percent owned or used a desktop" (p.5). The advantages for such a program have proved to be beneficial, and while there are some disadvantages as well, there is still a question of the fairness with which these programs are implemented. Educational agencies should be,

ensuring that the affordances of digital technologies are available to all school students.

The issue takes on growing importance as the landscape of one-to-one computing shifts to incorporate 'bring your own device' (BYOD) programs, raising new questions of equity, effective practice, and integration. (Howard & Rennie, 2013, p. 360)

In addition to the physical access to a computer, there are also issues with access to resources via the Internet. Not surprisingly, recent research has found low percentages of Hispanics have home broadband access or own computers (Anderson, 2017; Ryan, 2018). This study will help to investigate further how the access to a one-to-one program may have any influence or relationship to the writing achievement scores of ESL students and help answer

Zheng, Warschauer, Lin, and Chang's (2016) concerns for considering these programs' impact and the policies that help shape the implementation of these programs.

One-to-One and Achievement

Any new teaching method or tool integrated into an educational system should be something that is going to bring about improved learning and, especially in this environment of accountability, improved test scores. However, Storz and Hoffman (2013) would say the research does not always indicate that technology, or more specifically one-to-one programs, end up improving student achievement. While this may be the case in their research, many others have found that the one-to-one programs are positively impacting student achievement (Harper & Milman, 2016; Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011).

Not only does the research show that one-to-one programs positively impact student achievement, but this is especially true for those from lower socio-economic status (SES) and other culturally diverse groups. Although not firm in their findings, Lin, Shao, Wong, Li, and Niramitranon (2011) did find programs such as these may reduce the achievement gaps. Suhr, Hernandez, Grimes, and Warschauer (2010) also provided research that students from diverse SES and cultural backgrounds tended to improve their achievement scores—although this improvement came after students had used the laptops for a second year. Comparison studies using students with laptops and those without showed that students who had laptops improved their English-Language Arts (ELA) achievement scores (Zheng et al., 2013).

Although the focus of these laptop programs is the infusion of technology into the school day, additional research shows that the use of technology outside of school is an even better predictor of achievement gains among students. Shapley, Sheehan, Malone, and Caranikas-Walker (2010) as well as Bebell and Kay (2010) both found that when students have access to

computers at home, which many one-to-one programs provide these days, their achievement appears to be positively impacted. The Abell Foundation (2008) also determined that the increased access and use caused higher achievement scores. Jett (2013) makes an astute observation in that “if students are restricted to day-user status while their peers have access to computer technology at home, there is a significant potential for the perpetuation of the achievement gap” (p. 166). This, above all else, is the focus of this study – do those students who are members of one-to-one schools have a distinct advantage over those who are not members when it comes to their online writing achievement scores?

One-to-One and Writing

The focus of this study centers on the task of writing and whether those who have daily access to computers have an advantage over those who do not. Therefore, examining students’ access, usage, and ownership of computers, and the results of writing for assessment purposes may produce significant information. While there are advantages and disadvantages in every case, there are different benefits to the addition of technology to writing. Researchers have found that students have indicated that they feel more positive about the act of writing (Bebell & Kay, 2010; Warschauer et al., 2014). Zheng et al. (2014), noted in their interviews with students that they truly felt writing was an exhausting activity as compared to typing on the computer. In some cases, these students said the physical act of writing took too long and was not as easy as composing on the computer. Students believe the laptops make the physical act of writing easier and more efficient than writing with paper and pencil (Carraher, 2014; Storz & Hoffman, 2013). Warschauer et al. (2014) interviewed students who experienced the use of laptops in school. These students unequivocally indicated the laptops changed their views of writing, specifying in one case, “I used to not like writing but now I keep looking at the time and inside I am saying,

‘Is it time for writing yet?’” (p. 53).

Researchers also found students were more productive writers when working on the computers (Bebell & Kay, 2010; Freiman, Beauchamp, Blain, Lirette-Pitre, & Fournier, 2010; Suhr, Hernandez, Grimes, & Warschauer, 2010; Zheng et al., 2014), tended to communicate better using technology tools (Lei & Zhao, 2008; Mohamadi, 2018; Storz & Hoffman, 2013), and tended to edit and revise their work more when using the laptop during their writing (Corn, Tagsold, & Argueta, 2012; Jett, 2013; Lei & Zhao, 2008). Additionally, students’ writing appeared to improve (Lowther, Inan, Ross, & Strahl, 2012; Suhr, Hernandez, Grimes, & Warschauer, 2010; Warschauer et al., 2014; Zheng et al., 2014). Students’ writing also demonstrated a greater sophistication when laptops were used than when writing without (Mouza, 2008). Bebell and Kay (2010) found,

high achieving students’ writing quality was seen to benefit most from the one-to-one laptops with nearly 60% of educators responding that their high-achieving students’ writing quality had improved, although at-risk and/or low achieving students and traditional students were seen to improve by nearly as many educators. (p. 29)

Zheng et al. (2013) also noted at-risk students did experience greater gains on their writing scores than those who were not considered at-risk.

Student writing can be seen across the curriculum as writing using technology and online assessments is on the increase. Gillard (2011) believes one-to-one programs positively impact many areas, but writing appears to be the area seeing the greatest improvements. Recent research by Tallvid, Lundin, Svensson, and Lindström (2015) found students using and becoming comfortable with technology “correlates positively with the activities in all types of use” (p. 246). Zheng et al. (2016) also determined the writing achievement of students who used laptops

showed significant gains over those who did not have laptops, further solidifying the idea that laptops provided beneficial experiences for the writing process. Additionally, Clarke (2016) found that laptops can be quite beneficial when preparing for assessments, especially with the transition from traditional paper and pencil tests to the online assessments.

One-to-One and Assessment

The implementation of new assessments to meet the demands of the ever-increasing accountability for a student's progress brought about by the No Child Left Behind Act of 2001, has in a way aligned itself with the one-to-one technology initiative. Students in many areas are being asked to give up the traditional paper and pencil assessments for online assessments. These online assessments add a new dimension to the assessment landscape with new advantages as well as challenges.

Bebell and Kay (2010) researched seventh graders who were part of a one-to-one program over a two-year period. They noted that those students who used the laptop computers over this time wrote longer essays which, in the end, were scored higher than those students who were asked to perform the same assessment using the traditional paper and pencil-type assessment. Others have come to similar conclusions where those who have had practice with the technology have done better and outscored those students who have not (Vowles, 2017).

The majority of research, including Odo (2012), has focused on students who have completed online assessments which included true-false and multiple choice-type questions. These questions strictly require students to become proficient at using a mouse to point and click. Mohamadi (2018) also noted research surrounding technology and assessment is “not well-documented” (p. 29). Current writing assessments, which are the focus of this study, are asking students to compose lengthy type-written responses. However, students are not necessarily

receiving adequate keyboarding experiences to become proficient at typing. Students, in a study by Andrei (2014), acknowledged they were challenged by their ability to type. Educators involved in the study recognized this challenge and its impediment on student's success, added typing practice to their curriculum to better prepare their students.

The focus of this study's discussion is the writing achievement of ESL students. Much of the research says that students who are involved in one-to-one programs do better on their assessments; however, Warschauer and Ames (2010) felt the amount of knowledge, experience, and the testing environment would place a lot of pressure to perform on the student that simply did not have the language skills nor technology skills to meet the challenge of the technology environment let alone an online testing environment. They believed most students require a lot more support to be successful in these types of environments. Zheng et al. (2013) also found a positive relationship between students' use of computers and their test scores.

ESL Students

The exponential growth of the ESL population has added a new dimension to our educational system. Along with the change in technology in the classroom, educators are trying to educate this diverse student population and the additional challenges that they bring to the classroom. ESLs, who in some cases have been in the country just days, will be assessed the same as those who have lived in the US their entire lives. ESL students will be assessed, in many cases, before mastering or becoming comfortable with the language. ESL students can take years to master social language and many more to learn academic language (Cummins, 1999), which is needed to successfully take these assessments. The scores received by these students may then reflect their inexperience with the language more so than their content knowledge (Alavi, 2014; Kopriva, 2012).

Many ESL students come from a very transient lifestyle and may have breaks in their education or may have very limited school experiences; therefore, may not be as equipped with adequate background knowledge for school experiences. This coupled with the possibility of fewer, if any experiences with technology (Storz & Hoffman, 2013), could lead to issues with successfully taking these assessments (Menken, 2009). The NCLB laws require schools to show the progress of these students using these assessments; however, those schools, serving large populations of ESL students, are struggling to show progress and successful assessment scores and are thereby identified as failing and risk penalties under these laws (Menken, 2009).

The NCLB laws hold schools and teachers accountable for the progress students make year to year. However, with the increasingly diverse population that we are seeing in our schools today, this can make the goal of adequate progress for all students a challenge. With the recent addition of online testing, educators will be further taxed to provide not only academic content but also technology experience in order to be prepared for online assessments. Research by Gándara and Baca (2008) found that ESL students are capable of meeting the same goals as their English-speaking counterparts when provided adequate support and time to make the same strides. Unfortunately, these students are immediately immersed in the testing environment and are expected to meet these standards. This in turn, may reflect poorly on the schools and teachers of these students, especially for schools with a larger percentage of ESL students (Petterway, 2006).

ESLs and Assessments

When it comes to assessments, schools and students across the board are compared against one another and in some cases their results can affect student grade promotion. Many ESL students face numerous obstacles including language and technology as they begin their US

education. Additionally, if students who are lacking technology experiences are compared to those who have access in an ever-increasing technological environment, they are at a further disadvantage, especially when it comes to assessments that determine their future placement in schools. With little research available with regard to ESL students and technology, our schools continue to increase the requirement, i.e., online assessments, that students be able to use technology. Without research to determine the actual impact of technology's use, it seems unfair to allow technology to play such a significant role in their education.

It is hoped that this study will show whether ESL students' writing achievement is impacted with online assessments as well as whether membership with a one-to-one school produces better assessment results than those ESL students who are not members of a one-to-one school. By showing the impact, schools may be able to better represent ESL students' achievement as well as provide evidence of the significance technology access may have on future achievement.

ESLs: Language and Anxiety

Online writing assessments are provided to ESL students in English, even though many are still working toward proficiency. When students are working to understand this new language during the exam, they are likely trying to translate the content from English, into their native language for understanding, and then back to English if the test question requires a written response. All of this takes additional time and creates additional stress. Much of this stress, isn't experienced by their English-speaking peers. They are also challenged with and take additional time to try to find the appropriate words or phrases to properly respond to the question. This challenge can also create a higher level of anxiety for the student; thereby further impacting their ability to adequately compose a response (Beck, Llosa, & Fredrick, 2013).

With these pressures, ESL students face obstacles in simply understanding terminology and cultural nuances they may be unfamiliar with and are beyond content they may have encountered in the classroom. This, too, takes additional time for students to work through and may cause further anxiety (Petterway, 2006). Additional research (Smith, 2011) has also shown that anxiety can affect ESL students. With the added pressure of being timed, ESL students are compelled to quickly to translate, comprehend, and compose an adequate response to a prompt. This response, in many cases, may not adequately represent the students' knowledge and skill.

Beyond these obstacles surrounding ESL students' language and technology proficiency, other issues provide additional stress. On a similar strain, researchers Young, Shermis, Brutton, and Perkins (1996) found ESL students who are not proficient with technology are simply uneasy at the thought of taking a test online. Placing students in a position to use unfamiliar resources to take an assessment, will likely impact their performance. Using an unfamiliar computer may also cause students to experience increased stress simply from their disdain for technology (Ricketts & Wilks, 2002).

ESLs: Digital Divide and Inexperience

ESL student success on the online assessments is further hindered by students' lack of access and exposure to technology which may further negatively impact their online assessments scores. This scarcity of technology, also referred to as the digital divide, illustrates the lack of equity of resources and experiences for, in this case, ESL students (van Dijk & Hacker, 2003). The digital divide was evidence of unequal access to technology, and the US took measures to improve the access. Research by Warschauer and Matuchniak (2010) investigated the digital divide and found the increasing availability of computers and Internet was the cause of a shrinking divide. But as they looked closer, they found the methods used to collect some of the

data regarding technology use was flawed. They discovered that early researchers had relied on data from surveys conducted over the phone. This type of data gathering “disproportionately exclude[d] marginalized groups, such as those who do not speak English or those who [could not] afford phone service” (p. 219). This data did not adequately represent those without a phone nor whether individuals could not respond due to language difficulties, making the conclusions of a shrinking divide inaccurate. Current research seems to illustrate a continuation of this divide. Perrin (2017) writes that when it came to a computer and Internet access, Hispanics, as late as 2016 continued to lag behind whites by 23%. Anderson (2017) research for the Pew Hispanic center found “nearly half of all households don’t have home broadband or a computer” (p. 2).

This imbalance has made technology access a priority as seen by the swift growth of one-to-one programs across the United States. Adoption of such programs can provide students with the skills and experiences to meet the needs and become successful these students’ adult lives (Cole & Sauers, 2018). Research indicates computers are not owned by many students, few have access to them at home (Fairlie, 2007), and Latino families tend to share an individual computer versus those in families whose race is white (Warschauer & Matuchniak, 2010). Perrin (2017) noted that Hispanics were one group who would benefit greatly with home technology access. He noted that only 60% of Hispanics owned a computer. And finally, Howard, Busch and Sheet (2010) noted that without educational opportunities as well as well-paying jobs, individuals will continue to be unable to afford technology and continue to fall behind in technology knowledge and skills. This in turn, will help perpetuate the digital divide.

This technology discrepancy exposes the fact that there are specific groups that are not getting any exposure to technology. Therefore, they do not gain experience and will struggle with becoming technologically proficient and become successful in today’s classrooms. This

lack of exposure limits students' experiences for participating in online assessments in either their native or second language (Pitoniak, Young, Martiniello, King, Buteux, & Ginsburgh, 2009). However, the motivation behind the one-to-one initiative is to benefit learners without access and provide them with opportunities to gain skills and experience that will benefit them throughout their education as well as in the future (Cole & Sauers, 2018).

When students participate in online testing, they will need to have some familiarity with the technology to be successful. For writing assessments, students will be expected to type. According to Warschauer et al. (2014), educators are using technology with ESL students in their writing, online research, and other academic projects and computer assessment results show that that these students are experiencing success (Zheng et al., 2014). However, ESL students are lacking experience with typing and therefore, this lack of experience is impacting their ability to be successful (Chan, Bax, & Weir, 2018). Higgins, Russell, and Hoffman (2005) noted that those students with "lower computer skills" (p. 27) had markedly lower scores on the assessments than those with better computer skills. Smith (2011) noted that proficiency with English, previously believed to be the source of poor scores, isn't necessarily correct. Rather, lack of awareness and experience with technology may likely be the real cause. Including opportunities for authentic assessment options or completing assessments on other devices, such as mobile devices, with which they be more familiar may help eliminate these.

ESLs: Distractions

With the growth and spread of technology, it seems to impact every aspect of our lives. This type of environment does not bode well for focus, but rather a distracted population who feels the need to be electronically connected at all times. Providing easy access in a one-to-one environment makes keeping students focused can be a challenge. According to research by

Wood, Zivcakova, Gentile, Archer, De Pasquale, and Nosko (2012), students who participate in too many technology-related tasks simultaneously, will decrease their ability to be successful at the tasks; therefore, activities involving technology need to be very focused so that students' attention can be centered on the content of the activity. Additionally, they noted that when students participated in activities that were unassociated and lacked relevance, students became overloaded and learning was negatively impacted.

Positionality Statement

With the ever-increasing pressure on teachers and schools to make sure all students (U.S. Department of Education, 2010), including ESL students, are making adequate academic progress, it is not surprising that all avenues to further this goal should be explored. As the writer of this study, I wanted to gain further insight into online writing assessments and their relationship to the one-to-one initiative and technology access. It has been my hope that these ideas will broaden the base of knowledge on these students may be a catalyst for more research dedicated to improving the performance of ESL students.

Investigator Experience

As stated earlier, I was employed as an ESL teacher several years. I began as an ESL assistant in an ESL classroom, then continued my teacher education and earned my K-12 ESL certification and was hired as a full-time ESL teacher. While I worked in this full-time position, my ESL students took the 2013-14 online assessments in my school. This position required me to provide state-approved accommodations for ESL students during the online writing assessments.

Interests, Bias, and Positionality

My job as a teacher, as well as a mother, increased my desire to be an advocate for these students. In this position, I had contact with these students' parents and worked to build

relationships with them to assist with their child's education. On many occasions in the past, ESL teachers have had to step in and advocate for our ESL students on various occasions, including understanding homework, assisting them with signing up for summer school, or helping them to access resources available to students and families. My strong desire for fairness and equity has pushed me to advocate for and look to improve the opportunities afforded to these students.

As an ESL teacher for over four years, I worked with students from a wide variety of backgrounds, cultures, languages, and experiences. In addition to assisting these students in learning US culture in US schools, I worked with them as they took US assessments. These students, in some cases, were coming from war-torn areas of the world where they had not been able to attend school for a period of time. Some of them may have enrolled in our school for just a week before the assessments were given. The challenge then was to not only acclimate them quickly and understand the English language, but to grasp the technological skills that would be needed to sit down for a number of hours and compose a well-thought, well-structured response to an essay prompt. We were not a one-to-one school, so the responsibility was on me and the classroom teacher to find time to get these students in front of the computer they were to use to take the upcoming assessment.

Conclusion

In an environment of high-stakes testing, teachers and students are under enormous pressure. However, when students, notably ESL students, are faced with additional challenges, including lacking English proficiency and technology experiences, the high-stakes testing becomes even more difficult. The county at the focus of this study adopted a one-to-one laptop distribution model that provides limited students, each year, access to a laptop of their own for

use in the classroom and at home. Banerjee and Duflo (2009) suggested that in order for students and schools to advance, they need to analyze how the different groups perform on the same type of treatment, in this case, those who had adopted one-to-one and those who had not and their performance on the online writing assessments. It is hoped that this study will show if there are deficiencies, including usage, Internet access, and ownership among students who have adopted the one-to-one laptop program and those who have not, and determine if the students are provided with equal opportunity to find success on these online assessments.

CHAPTER THREE

METHODOLOGY

This chapter will provide an overview of the materials and methods for this study. Information will include research questions with null and alternate hypotheses, a description of the participants, and procedures for data collection and analysis.

Research Design

This study relied on quasi-experimental research design to determine whether ESL students who attend a school that is a member of the one-to-one initiative do better on their online writing assessments as compared to those students who do not attend these schools. In many cases where elements of experimental design are not met, studies can be deserted or left undone (Campbell & Stanley, 1963). Quasi-experimental studies occur when some of the experimental elements, such as randomization, are not met, but still allow for the study to take place. In the case of this study, randomization of groups was not an element that could be met (Creswell, 2014) due to the acquisition of the pre-existing data set from the focus county. Lacking this element isn't crucial, but it does lessen the ability to generalize to a greater population (Campbell & Stanley, 1963) as there may be some uncontrolled for variables that may impact the results.

Quasi-experimental designs may not be ideal to many researchers, but they can still provide and contribute helpful information. Even though studies such as this may have contributing results, these results must be approached with caution, especially in the case of determining causation (Becker, Aloe, Duvendack, Stanley, Valentine, Fretheim, & Tugwell, 2017; Campbell & Stanley, 1963). The results of this study should be followed by more studies where the results can be repeated and tested more vigorously (Campbell & Stanley, 1963).

ESL students' scores on the online writing assessment in schools who have adopted the one-to-one initiative were compared with those who have not yet adopted the initiative. Relationships were also examined between technology access (school technology usage, Internet access, computer ownership, and home technology usage) as well as grade level and successful performance on the writing assessment. The variables used focused on student online writing assessment scores, one-to-one membership, grade level, and pre-assessment survey data, including self-reported technology use and access.

Procedure

In order to determine whether or not ESL students' achievement is impacted, student and writing assessment data was acquired from the focus county for the years 2013-14 and 2014-15. The focus county required an application to be submitted outlining the study, timeframe, and data requirements, along with rules for data use and post study results reporting. In my initial conversations with the individual in charge of these requests, I was informed that students' SES would not be available to me; however, I was encouraged to request all data I believed relevant for the study. The data requested for this study included demographic data, including but not limited to, gender, grade, age, language, length of time in the US, receiving special services, etc.; student online writing assessment scores; one-to-one school membership; and pre-assessment survey data, including self-reported technology use and technology access. Requested data included writing assessments scores of all students from 2013-14 and 2014-15 and self-reported pre-assessment responses from all students regarding technology ownership, Internet access, and usage that was collected prior to students beginning the assessment. The requested data for this study included information from student profiles as well as assessment data used for both student promotion and teacher evaluations. While all data may not be perfect, due to the purpose and use

of this data, it was deemed reliable. Efforts will be taken during the data cleaning process to ensure the veracity of the data and exclude any data that is questionable.

Data was drawn from all students who took the state-wide writing assessment for the school years 2013-14 and 2014-15 in the focus county. These years were selected due to the testing issues the state has encountered during administration of the test over the last three years. During the 2015-16, 2016-17, and 2017-18 school years have all seen testing halted and in some cases students did not complete the test online, but instead took them using paper and pencil. Use of these scores would have been a challenge due to inability to determine which students completed an online assessment and those who completed paper and pencil. Due to these issues, the 2013-14 and 2014-15 testing years best represented assessments that were completed online with few issues by students in the county. Also, due to the limited number of grades and students represented in the 2013-14 testing data, grades five, eight, and eleven, the 2014-15 school year was the used in all analyses as it provided scores for all ESL students in grades six through eleven.

Data was received in an Excel spreadsheet, where survey data was delimited and string data was changed to numeric. Data was then added to SPSS and then checked and cleaned following Tabachnick and Fidell's (2013) and Morrow and Skolits' (2015) guidelines. Descriptive statistics were utilized to further understand the makeup of the participants in this study and to examine the various grades and other groupings (gender, language, etc.) of students. Students' inclusion in this study is based solely on student's enrollment in the county school during the 2013-14 and 2014-15 school year. Writing scores were based on a four-point scale across four writing elements, including Development, Conventions, Focus and Organization, and Language.

Data Collection

In order to collect data from the focus county, a request for research was completed and submitted. The request required a description of the study, including intended purpose, study timeframe, population, data collection procedures, confidentiality statement, projected value, and in this case, due to the use of current data, an Excel spreadsheet with the desired fields. Once approval was gained from the focus county, I applied and later received IRB approval from the University of Tennessee. Upon IRB approval, data was available for access to the researcher. Data included raw scores for each element assessed for each prompt (Tennessee Department of Education, 2013a, 2013b) (see Appendix C and Appendix D). Each element, language, development, conventions, and focus and organization, received a score from one to four. The highest score for a single prompt was sixteen and the lowest was four. Additionally, data included self-reported pre-assessment responses regarding technology access and usage. The assessment data was drawn from all ESL students who took the state-wide writing assessment for the school years 2013-14 and 2014-15. These school years are the focus of this study as they are the first years of the the online assessments and they also represent the years of online testing that were not cut short due to testing issues. During the last three years, testing was interrupted or discontinued or students had to trade in their online test for a traditional paper and pencil test.

Students' scores reflected their competency for answering essay questions. Each student received an overall score for their responses, based on a four point scale. Each prompt could earn the student a total of sixteen points. In some cases, where students chose not to complete the writing prompt, the writing provided by the student was unintelligible, the response was written in a language other than English, or the written response was too limited to evaluate. In these three cases, students received a letter, rather than a score, A, B, C, or D respectively. Criteria for

inclusion in the study will be an overall score for the writing assessment as well as responses for the pre-assessment survey (Data Management Office, personal communication attachment, November 27, 2017) (see Appendix B).

Participants

At the center of this study were active 6th-11th grade ESL students in in the focus county. ESL students are defined as those students who have taken and received a qualifying score on the TELPA or WIDA when they were initially enrolled in the county. Active, transition, and waiver students were included in the study. The elementary grades were excluded due to their lack of participation in the online writing assessments (K-2nd) and their lack of receiving an individual laptop for school and home use (3rd -5th). Students are assigned to the school of attendance based on school zoning regulations and/or parent request for student to be assigned to a different school than what the student is zoned for; therefore, assignment to a one-to-one school or a non-one-to-one school is based solely on county educational administration and not the researcher.

Randomization of participants in each of the groups, which is ideal in experimental studies and allows for a greater ability to generalize to larger populations (Creswell, 2014), could not be achieved with this study. Therefore, it is not recommended to find causation within results nor will these results be generalizable to larger populations without further study (Beck et al., 2017; Campbell & Stanley, 1963; Shadish, Cook, & Campbell, 2002). Students involved, were enrolled in the focus county; all one-to-one school membership is based on yearly county selections completed through an individual school's application. Once qualifying students were identified, analyses were conducted to find relationships between groups of ESL students, one-to-one members and non-members, and students' composite writing score, and pre-assessment

survey (Data Management Office, personal communication attachment, November 27, 2017) responses regarding, technology access and computer use frequency.

The participants consisted of a total of 380 ESL students for the 2014-15 school year, consisting of 281 middle schoolers (124 sixth graders, 92 seventh graders, and 65 eighth graders) and 99 high schoolers (40 ninth graders, 38 tenth graders, and 21 eleventh graders). When analyzing the birth country of the students that participated during the 2014-15 school year, students represented forty countries. The majority of students, 48.9%, were born in the United States. The next highest proportion represented by Mexico with 11.1%. The analysis of gender shows that of the 380 students during the 2014-15 school year, 191 were female and 189 were male. While there was an array of different languages represented in our sample, the native language, represented by 36 different languages, with the greatest percentage among the students was Spanish (56.1%). Additionally, students' home language was represented by 35 languages; Spanish was also the predominant language spoken at home among students from the 2014-15 testing year.

As requested, basic demographic information, such as birth country, gender, writing scores, etc., were included in the county's data file. In addition, I received information on SES for each student. Due to my earlier conversation with the county and my understanding that SES information would not be shared, I felt it would be a breach of trust with county and I could not in good faith use this information in my study. Furthermore, the five research questions did not focus on SES. This was in part a result of the early knowledge that this data would not be available to me. If permission could be obtained for adding SES to this study, it would certainly further our understanding of these ESL students and the role this variable may play in their academic success.

Measures

Each student who participated in the online writing assessments during the years of focus, were asked to complete a pre-assessment survey (Data Management Office, personal communication attachment, November 27, 2017) prior to beginning their assessment (see Appendix B). ESL students received read-aloud accommodations where the supervising instructor read each survey question along with the answer options. Students would then mark their response. This study focused on four questions within this survey and how they related to students' one-to-one membership:

How often do you use a computer at school for writing assignments (homework, stories, reports)?

Do you have access to a computer outside of school?

Do you have Internet access at home?

How often do you use a computer outside of school for writing assignments (homework, stories, reports)?

Two of the questions regarding access to a computer and Internet needed a yes or no response. These responses were coded 0 for no and 1 for yes in SPSS. The other two questions regarding frequency of computer use inside and outside of school required students to select from four options: almost every day, once or twice per week, once or twice per month, and rarely or never. These responses were coded one through four in Excel then reverse coded to best represent the frequency of use. In an effort to simplify this frequency, I further collapsed the categories of use into two (see Table 1). The “almost every day” and “once or twice per week” options were collapsed into a new category called “often. The “once or twice a month” and

“rarely or never” options were collapsed into a category called “rarely.” These were each coded one and zero, respectively, in SPSS.

Additionally, students received a raw score of one through four for each element assessed for each writing prompt. Each writing prompt was scored using a rubric (Tennessee Department of Education, 2013a, 2013b) (see Appendix C and Appendix D). Past scoring rubrics provided students with a score of below basic (1), basic (2), proficient (3), and advanced (4) for development, focus and organization, language, and conventions. Due to my past experiences with these students, I found the majority of students fell into the below basic category in the past. After reviewing students’ scores, I chose to collapse the scores into two categories (see Table 3), “successful” and “unsuccessful.”

Data Cleaning Procedures

In order to best analyze the data, I used the twelve steps of data cleaning Morrow (2015). In the first step, I created a codebook. This helped to keep my variables organized and clearly defined while working through the process of analyzing the data. In the second step, I created a data analysis plan. This plan acted as a map to outline the analyses conducted and also helps when needing to repeat any analysis in the future. In the third step, I performed analysis of the frequencies for each variable, which according to Morrow (2015), will “be done in order to check for initial data errors and get a quick look at your data” (p. 1). The fourth step of data cleaning included checking for coding mistakes in the data. This step is imperative, due to the fact that all further analyses run will be based on this data. During this step, it was determined that one student did not have any classification for ESL status and the language listed for both native and home was English. Due to these indicators provided by the focus county, this student listed should not have been included in the data set as an ESL student and was deleted from the

participant group. Upon examination of the writing assessment scores, it was determined that some students were not given a numeric score for their response. Rather, some students were given a letter, A, B, or D, which indicated the student did not provide a response (A), the response was unintelligible (B), or the response was too limited to evaluate (D). Additionally, the focus county noted students who did not respond to their writing prompt in English were given a letter C. No students included in the data set received this score. Twenty-two students, however, had no scores nor letter designations for either prompt 1 or prompt 2, leaving blank scores without explanation. Those students who received a letter score for a prompt or did not receive a number nor a letter were eliminated from the population. Step five focused on modifying and creating variables. In this step, I modified the string data in the ESL status variable to be represented numerically, and created a new variable, ESL_STAT1415r. I also recoded the four response options for computer use at school (SR1415_Q9) and computer use outside of school (SR1415_Q12) (see Table 1). These two new variables represented students' computer use frequency at two levels, rarely and often (SR1415_Q9FREQ and SR1415_Q12FREQ). I then created a total score variable for each prompt (P1_1415TOTAL and P2_1415TOTAL), a variable for the total writing assessment score (Prompt1415TOTAL), and a scaled (composite) score was also created by dividing the total score by eight (Prompt1415SCALED) (see Table 2). A grouping variable (P1415WACat) based on those scores, unsuccessful (<1.5) and successful (1.5 and above), these scores defined scores as unsuccessful or successful (see Table 3). For the sixth step of data cleaning, I ran frequencies and descriptives for a second time. In step seven of data cleaning the issue of outliers is addressed. For this set of data, it was determined there were no outliers: however, if there were outliers, they could be dealt with using techniques such as winsorizing, transforming, or deleting. The eighth step is assessing normality. This step analyzes

Table 1. Frequencies Groups for Computer Use at School and Outside of School

| Source | Frequency of Use | Count | Revised Frequency | Count |
|-----------------------------------|-------------------------|-------|-------------------|-------|
| Computer Use At School | Almost Every Day | 138 | Often | 266 |
| | Once or Twice Per Week | 128 | | |
| | Once or Twice Per Month | 73 | Rarely | 112 |
| | Rarely or Never | 39 | | |
| Total | | 378 | | 378 |
| <hr/> | | | | |
| Computer Use Outside of School | Almost Every Day | 169 | Often | 268 |
| | Once or Twice Per Week | 99 | | |
| | Once or Twice Per Month | 77 | Rarely | 110 |
| | Rarely or Never | 33 | | |
| Total | | 378 | | 378 |

Table 2. Frequencies for Prompt1415Scaled

| Source | Scaled Score | Count | Percentage |
|------------------|--------------|-------|------------|
| Prompt1415Scaled | 1.00 | 167 | 43.9 |
| | 1.13 | 32 | 8.4 |
| | 1.25 | 27 | 7.1 |
| | 1.38 | 28 | 7.4 |
| | 1.50 | 46 | 12.1 |
| | 1.63 | 8 | 2.1 |
| | 1.75 | 25 | 6.6 |
| | 1.88 | 16 | 4.2 |
| | 2.00 | 16 | 4.2 |
| | 2.13 | 1 | .3 |
| | 2.25 | 4 | 1.1 |
| | 2.38 | 3 | .8 |
| | 2.50 | 4 | 1.1 |
| | 2.63 | 2 | .5 |
| | 2.75 | 1 | .3 |
| Total | | 380 | 100.0 |

Table 3. Frequencies for P1415WACat

| Source | Category | Count | Percentage |
|------------|--------------|-------|------------|
| P1415WACat | Unsuccessful | 254 | 66.8 |
| | Successful | 126 | 33.2 |
| Total | | 380 | 100.0 |

the distribution of the data. The ninth step is to deal with the missing data in the data set. Students included in the analyses were enrolled in a school within the focus county. In the tenth step of data cleaning, I examined the cell sample size, which met the requirements of both Chi-square and Logistic regression requirements. In step eleven of data cleaning, I evaluated frequencies and descriptives for a third time. The twelfth final step of data cleaning is assumption testing, which vary and are specific to each analysis. Chi-square's assumptions of independent observations were met based on individual scores for each participant and frequencies were greater than five. Logistic regression assumptions of adequate number of cases, dependent variable had two levels, independent variables were ordinal, independent observations, and absence of multicollinearity, were all met.

Analysis Plan

To prepare the data for analysis, I began by delimiting the survey responses within the received Excel data file. I also converted, using VLOOKUP, the string variables to numeric, including birth country, native and home languages, one-to-one status, etc. Once complete, the data was imported to SPSS 25 statistical software package. I began by running a frequency analysis and descriptive statistics on all variables. The variables of interest were gender of each participant (gender), birth country (BC_Code), native language (NL_Code), home language (HL_Code), school name for year of study (SCHOOL1415), age of student during study year

(AGE_1415), one-to-one membership for year of the study (O_O1415), school level (SCHLVL1415), student grade during year of study (ST_GRADE1415), school SES status (SCHSES1415), student SES status (STUSES1415), student IEP status (IEP1415), student ESL status (ESL_STAT1415), 2014-15 survey Q9-12 (SR1415_Q9, SR1415_Q10, SR1415_Q11, SR1415_Q12), 2014-15 prompt 1 development score (P1_DEV1415), 2014-15 prompt 1 conventions score (P1_CON1415), 2014-15 prompt 1 focus and organization score (P1_FO1415), 2014-15 prompt 1 language score (P1_LANG1415), 2014-15 prompt 2 focus and organization score (P2_FO1415), 2014-15 prompt 2 development score (P2_DEV1415), 2014-15 prompt 2 conventions score (P2_CON1415), 2014-15 prompt 2 language score (P2_LANG1415). Additionally, these analyses showed descriptive statistics such as mean, standard deviation, minimum and maximum values, range, skewness, kurtosis, etc.

Analyses for this study consisted of Chi-square analyses and a Logistic regression (see Appendix A). These analyses were selected due to the predominance of categorical data and these analyses would be helpful in determining relationships among those students who were member of one-to-one schools and those who were not based on their online testing scores as well as survey responses.

Analyses

Data requested for this study encompassed both academic data as well as more personal (non-identifying) data such as birth country, native language, home language, computer ownership, language spoken, age, etc. Descriptive statistics were utilized to further understand the makeup of the participants in this study. Additionally, analyses included Chi-square and Logistic regression. All analyses were tested to alpha level of .05. The analysis plan document outlines the study's research questions, source of data, and analysis selected along with variables

selected for the analysis (see Appendix A). Descriptive data was not included in the analyses. It was primarily used to gain a picture of the ESL students involved in the study. This exclusion was in part due to its ability to identify individual students, i.e., birth country, language, etc., which would have violated IRB requirements for student privacy and anonymity. SES was also excluded from any analysis due to the initial understanding that this data would not be made available to me and use of the data could have violated my agreement with the county as well as IRB requirements.

Chi-square analysis was run to determine if a significant relationship exists between the following variables and writing assessment scores.

One-to-One Membership

Null Hypothesis: One-to-one membership and online writing assessment scores are not significantly related to each other.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternate Hypothesis: One-to-one membership and online writing assessment scores are significantly related to each other.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

Technology Access: Computer Access Outside of School

Null Hypothesis: Writing assessment performance and computer access outside of school are not significantly related to each other.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternative Hypothesis: Writing assessment performance and computer ownership are significantly related to each other.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

Technology Access: Internet Access at home

Null Hypothesis: Writing assessment performance and home access to the Internet are not significantly related to each other.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternative Hypothesis: Writing assessment performance and home access to the Internet are significantly related to each other.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

Technology Usage: During School

Null Hypothesis: Writing assessment performance and school technology use are not significantly related to each other.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternative Hypothesis: Writing assessment performance and school technology use are significantly related to each other.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

Technology Usage: Out of School

Null Hypothesis: Writing assessment performance and out of school technology use are not significantly related to each other.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternative Hypothesis: Writing assessment performance and out of school technology use are not significantly related to each other.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

Students' Grade Level

Null Hypothesis: Writing assessment performance and students' grade level are not

significantly related to each other.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternative Hypothesis: Writing assessment performance and students' grade level are significantly related to each other.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

A second type of analyses, Logistic regression was run, which helped to determine the probability of a relationship between students' writing assessment score and the following variables.

Null Hypothesis: There will be no relationship between writing assessment performance and each variable: one-to-one membership, technology access, technology usage, and grade.

$$H_0: \bar{x}_1 = \bar{x}_2$$

Alternative Hypothesis: There is a significant relationship between writing assessment performance and each variable: one-to-one membership, technology access, technology usage, and grade.

$$H_1: \bar{x}_1 \neq \bar{x}_2$$

CHAPTER FOUR

RESULTS

The following section outlines and organized the results for the analyses used for the five research questions. For the first four research questions Chi-square Test of Independence analyses were run to determine if there was a relationship between students' writing assessment score to each of the following: one-to-one membership, computer access outside of school, Internet access at home, computer use in school, computer use out of school, and grade level during the 2014-15 school year. The fifth question involved a Logistic regression for each of the earlier stated variables and students' online writing assessment score. It was used to determine which of the variables would be the best predictors of a successful writing assessment score.

Data Analysis

Research Question 1: Does a significant relationship exist between student one-to-one membership and successful test performance among ESL students as measured by the online writing assessment?

Null Hypothesis: One-to-one membership and online writing assessment scores are not significantly related to each other: $H_0: \bar{x}_1 = \bar{x}_2$

A single Chi-square test of independence showed that one-to-one membership and the total writing assessment score for ESL students enrolled during the 2014-15 school were not significantly related, $\chi^2(1) = 2.676, p = .102$ (see Table 4); therefore, this analysis failed to reject the null. Students' successful online writing assessment scores are not related to their one-to-one membership.

Research Question 2: Does a significant relationship exist between ESL students' reported amount of technology access (computer and Internet) and successful academic test

Table 4. Frequencies One-to-One Membership and Writing Assessment

| Source | Writing Assessment Score | |
|-----------------------|--------------------------|-------------|
| | Unsuccessful | Successful |
| One-to-One Membership | | |
| Yes | 34 (57.6%) | 25 (42.4%) |
| No | 220 (68.5%) | 101 (31.5%) |
| Total | 254 (66.8%) | 126 (33.2%) |

$$x^2 = 2.676, df=1, p = .102$$

performance among ESL students as measured by the online writing assessment?

Null Hypothesis: Writing assessment performance and computer access outside of school are not significantly related to each other.

The first Chi-square of independence showed that computer access outside of school and the total writing assessment score for ESL students enrolled during the 2014-15 school year were not significantly related, $x^2(1) = 3.07, p = .080$ (see Table 5); therefore, this analysis failed to reject the null. Students' successful online writing assessment scores are not related to students' accessing a computer outside of school.

Null Hypothesis: Writing assessment performance and home access to the Internet are not significantly related to each other: $H_0: \bar{x}_1 = \bar{x}_2$

The second Chi-square of independence showed that Internet access at home and the total writing assessment score for ESL students enrolled during the 2014-15 school year were significantly related, $x^2(1) = 6.380, p = .012$ (see Table 6). The null hypothesis is rejected, having Internet access at home is related to successful online writing assessment scores. These results showed that students with Internet access were more likely to be successful, in fact, 36.1% of the

Table 5. Computer Access Outside of School and Writing Assessment Score

| Source | Writing Assessment Score | |
|-----------------------------------|--------------------------|-------------|
| | Unsuccessful | Successful |
| Computer Access Outside of School | | |
| Yes | 207 (68.3%) | 96 (31.7%) |
| No | 111 (78.7%) | 30 (21.3%) |
| Total | 318 (71.6%) | 126 (28.4%) |

$\chi^2 = 3.07, df=1, p = .080$

Table 6. Internet Access at Home and Writing Assessment Score

| Source | Writing Assessment Score | |
|-------------------------|--------------------------|-------------|
| | Unsuccessful | Successful |
| Internet Access at Home | | |
| Yes | 198 (63.9%) | 112 (36.1%) |
| No | 55 (79.7%) | 14 (20.3%) |
| Total | 253 (66.8%) | 126 (33.2%) |

$\chi^2 = 6.380, df=1, p = .012$

students who had Internet access at home were successful compared to only 20.3% of the students without Internet access at home. These results appear to identify an additional avenue of research as well as a resource, if made available to students at home, that may provide them experiences which positively influence students' online writing assessment scores.

Research Question 3: Does a significant relationship exist between ESL students' reported amount of computer usage (in and out of school) and successful academic test performance among ESL students as measured by the online writing assessment?

Null Hypothesis: Writing assessment performance and computer use at school are not significantly related to each other: $H_0: \bar{x}_1 = \bar{x}_2$

The first Chi-square of independence showed that computer use during school and the total writing assessment score for ESL students enrolled during the 2014-15 school year were not significantly related, $\chi^2(1) = .025, p = .873$ (see Table 7); therefore, this analysis failed to reject the null. Computer use at school and successful online writing assessment scores are not related.

Null Hypothesis: Writing assessment performance and computer use outside of school are not significantly related to each other: $H_0: \bar{x}_1 = \bar{x}_2$

The second Chi-square of independence showed that computer use outside of school and the total writing assessment score for ESL students enrolled during the 2014-15 school year were significantly related, $\chi^2(1) = 5.366, p = .021$ (see Table 8); The null hypothesis is rejected. Students' successful online writing assessment scores are related to students' computer use outside of school. Students who use computers outside of school were more likely to be successful. The results showed that 41.8% of the students who reported using a computer outside of school often were successful compared to only 29.5% of the students who reported they rarely use a computer outside of school.

Table 7. Computer Use at School and Writing Assessment Score

| Source | Writing Assessment Score | |
|------------------------|--------------------------|-------------|
| | Unsuccessful | Successful |
| Computer Use at School | | |
| Rarely | 178 (66.9%) | 88 (33.1%) |
| Often | 74 (66.1%) | 38 (33.9%) |
| Total | 252 (66.7%) | 126 (33.3%) |

$\chi^2 = .025, df=1, p = .873$

Table 8. Computer Use Outside of School and Writing Assessment Score

| Source | Writing Assessment Score | |
|--------------------------------|--------------------------|-------------|
| | Unsuccessful | Successful |
| Computer Use Outside of School | | |
| Rarely | 189 (70.5%) | 79 (29.5%) |
| Often | 64 (58.2%) | 46 (41.8%) |
| Total | 253 (66.9%) | 125 (33.1%) |

$\chi^2 = 5.366, df=1, p = .021$

Research Question 4: Does a significant relationship exist between ESL students' grade level (middle or high) and successful academic test performance among ESL students as measured by the online writing assessment?

Null Hypothesis: Writing assessment performance and students' grade level are not significantly related to each other: $H_0: \bar{x}_1 = \bar{x}_2$

The results of the Chi-square of independence showed that ESL students' grade level and the total writing assessment score for ESL students enrolled during the 2014-15 school year were significantly related, $\chi^2(1) = 8.620, p = .003$ (see Table 9). The null hypothesis is rejected, students' grade level is related to successful online writing assessment scores. Middle school students were more likely to be successful than high school students. The results indicated 37.4% of the students who were in middle school were successful compared to only 21.2% of the high school students. These results may warrant further investigation into the practice and preparation students receive at each of these levels as well as other factors, i.e., length of time in a US school, prompt difficulty, etc., that may play a role in students' success.

Research Question 5: How does the probability of an ESL student receiving a successful score on the online writing assessment change when taking into account their one-to-one membership, technology access, technology usage, and grade level?

Null Hypothesis: There will be no relationship between writing assessment performance and each variable: one-to-one membership, technology access, technology usage, and grade: $H_0: \bar{x}_1 = \bar{x}_2$

The null hypothesis is rejected as there is a relationship between successful online writing assessment score and school level, Internet access and computer use out of school. The Logistic regression analysis examined the successful online writing assessment scores with one-to-one

Table 9. School Level and Writing Assessment Score

| Source | Writing Assessment Score | |
|--------------|--------------------------|-------------|
| | Unsuccessful | Successful |
| School Level | | |
| Middle | 176 (62.6%) | 105 (37.4%) |
| High | 78 (78.8%) | 21 (21.2%) |
| Total | 254 (66.8%) | 126 (33.2%) |

$$\chi^2 = 8.620, df=1, p = .003$$

membership, school level, technology access, and computer use in and out of school. The analysis was significant, $\chi^2(3, N=380) = 24.67, p < .001$, with three variables included in the model: school level, Internet access, and computer use out of school (see Table 10). The likelihood of a middle school student being successful on the online writing assessment is 2.857 times greater than a high school student ($\text{Exp}(B)=2.857$). Those with Internet access at home were 2.300 times more likely to be successful on the online writing assessment than those who do not have Internet access at home ($\text{Exp}(B) = 2.300$). Those students who use a computer outside of school are 1.855 times more likely to have a successful online writing assessment score than those who do not have access to a computer outside of school ($\text{Exp}(B)=1.855$). This model, however, is a rather weak model in that only 26.4% of the successful students were correctly predicted (see Table 11).

Table 10. Logistic Regression - Variables in the Equation

| | <i>df</i> | Sig. | Exp(B) |
|--|-----------|-------|--------|
| Step 3 | | | |
| School Level SY1415 | 1 | <.001 | 2.857 |
| Internet Access | 1 | .013 | 2.300 |
| Frequency of Computer Use Out of School | 1 | .015 | 1.855 |
| <i>Entered Step One: School Level SY1415</i> | | | |
| <i>Entered Step Two: Internet Access at Home</i> | | | |
| <i>Entered Step Three: Frequency of Computer Use Out of School</i> | | | |

Table 11. Classification Table for Logistic Regression

| Observed | P1415WACat | | Percentage Correct |
|--------------------|--------------|------------|--------------------|
| | Unsuccessful | Successful | |
| Step 3 | | | |
| Unsuccessful | 222 | 29 | 88.4 |
| Successful | 92 | 33 | 26.4 |
| Overall Percentage | | | 67.8 |

CHAPTER FIVE

SUMMARY AND DISCUSSION

This study sought to answer an over-arching question, do one-to-one students have an advantage over students who are not part of a one-to-one program. The participants in this study were in a unique position in that some of them were members of one-to-one schools and others were not. Yet all students were participating in the newly introduced online writing assessment as an element of the yearly testing to assess their learning and determine promotion to the next grade. In Chapter One, I listed five questions which served to focus and guide this study:

1. Does a significant relationship exist between student one-to-one membership and successful test performance among ESL students as measured by the online writing assessment?
2. Does a significant relationship exist between ESL students' reported amount of technology access (computer and Internet) and successful academic test performance among ESL students as measured by the online writing assessment?
3. Does a significant relationship exist between ESL students' reported amount of computer usage (in and out of school) and successful academic test performance among ESL students as measured by the online writing assessment?
4. Does a significant relationship exist between ESL students' grade level (middle or high) and successful academic test performance as measured by the online writing assessment?
5. How does the probability of an ESL student receiving a successful score on the online writing assessment change when taking into account their one-to-one membership, technology access, technology usage, and grade level?

Using Chi-square analyses, I studied the relationships between specific variables and students' online writing assessment scores as well as utilized a predictive analysis, Logistic regression, to determine if any of these variables could predict students' successful online writing assessment scores. This chapter will discuss the results of each of the research questions, implications, and future research recommendations.

Summary and Discussion

One-to-One Membership

With regard to one-to-one membership and successful online writing assessment scores, the Chi-square analysis showed that these two variables were not related. Simply being a member of a one-to-one school does not mean that students will have successful online assessment scores. This study relied on previously collected data from a school system which limited the ability to assign students to any groups. The number of students in this study who were one-to-one members (59 students) were outnumbered by those who were not (321 students). That being said, the result of .102 is certainly not a measure that is significant at the .05 level, but it is a result that warrants additional studies with a similar population where groups are more similar in size.

The first research question focused on answering whether those students who were members of a one-to-one school do better than those who were not. This question was addressed by a Chi-square analysis which found that these students did not have an apparent advantage by being members of a one-to-one school. As noted earlier, the numbers of students in one-to-one schools fell far below the numbers of students in non-member schools. The Phi coefficient for this analysis was .084. This is smaller than the threshold of .20, which according to Cohen (1988), is the threshold for a small effect size. This result further supports the results of this

analysis. This study provided further support to Storz and Hoffman's (2013) research and does not necessarily indicate that the one-to-one technology leads to improved achievement.

Therefore, the implementation, infrastructure preparation, and expenditures of a one-to-one initiative in a county, especially one with a large number of ESL students, may not be worth the cost nor the effort to raise achievement.

These study results show a successful score on the online writing assessment does not necessarily depend on whether a student has 24/7 laptop access. In spite of the contrasting results to others' research, it must be noted the positive impact such programs do make on students. This includes Kennedy, Rhoades, and Leu (2016) and their ideas that students involved in one-to-one programs have a competitive edge and Harper and Milman's (2016) research indicating these students' achievement [in general] would be positively impacted. As educators, we want to assist our students with learning content that will help them in the future. Both Cole and Sauers (2018) also note the value these programs play on students learning skills and knowledge needed as they enter adulthood. The OECD (2018) also indicated the continuing need for education to develop practical skills, including the use of technology devices to acquire information and to communicate with others. These ideas and goals focus education on the foundation of technology try to prepare them for technology, which in many cases, may not even be invented yet. Overall, the implementation of a one-to-one program may not influence assessment scores, but the value of experience and skills gained may be worth it in the long run as students learn the knowledge and skills they will need to be successful in the future.

Technology Access

Technology access was in part related to a successful online writing assessment score. The Chi-square analysis was used to determine if there was a relationship between a successful

online writing assessment score and computer access outside of school. The results indicated that having computer access outside of school was not significantly related to successful online writing assessment scores. The second Chi-square analysis focused on determining if there was a relationship between a successful online writing assessment score and Internet access at home. In this case, however, Internet access at home was related to successful online assessment scores. Those students who had access to the Internet in their home was related to successful online writing assessment scores. This access may provide students with resources and experiences with content that positively impacts their online writing assessment score.

Technology access proved to be a double-edged sword. Computer access outside of school, does not appear to relate to successful online writing assessment scores. The survey (Data Management Office, personal communication attachment, November 27, 2017) provided students in this study (Appendix B) asked them whether they had access to a computer outside of school. In this study, many students, 141 (31.76%), indicated they did not have access to a computer outside of school; however, the question did not differentiate between other devices that do provide similar experiences and skills to a computer, i.e., tablet, iPad, or smartphone. Ryan and Lewis (2017) indicated in their study that around half of limited English proficient households owned a computer; however, technology in some form is not necessarily lacking. Students without a device provided through a one-to-one program nor having a computer that is accessible outside of school are nevertheless, still gaining access and experience. Perrin (2017) noted nearly equivalent ownership and use of smartphones among whites, blacks and Hispanics. Additionally, CDW (2011a) found that “94% of students said they use technology to study or work on class assignments at home” (p. 4). Luckily, students appear to acknowledge the importance of technology skills in order to be competitive for future job opportunities (CDW,

2011a; Zheng et al., 2014). Their use outside of school will potentially help shrink the divide described by Howard, Busch, and Sheet (2010) and would therefore provide practice with ever-changing technology skills through the use of these other devices.

The other element of technology access, Internet access, did return a contrasting finding. Internet access at home is related to successful online assessment scores. Out of the 379 students who responded to the survey question regarding Internet access at home, 69 (18%) indicated they did not have access. This result, although not inferring causation, may indicate the importance of having access to the Internet outside of school. Anderson's (2017) research for the Pew Hispanic center found that among low income families "nearly half of all households don't have home broadband or a computer" (p. 2). However, Internet access via smartphone technology, the manner in which many groups, such as Blacks (15%) and Hispanics (22%), gain online access appears to be double the rate of others when mobile phones are identified as their only avenue of online access (Perrin, 2017).

Considering the growing percentage of users relying on smartphone technology for their online access along with the results of this study, this could initiate a move to encourage curriculum content and activities that can be easily accessed via this type of Internet connection. This would allow students who are members of school systems which do have computers to provide to students the ability to utilize them as they were meant to, namely to communicate with others outside of school and access to content they may not necessarily be able to acquire via a smartphone, etc. This move, however, may be counter to the research of Vigdor et al. (2014) research which indicated that achievement, especially in math and reading, decreased when Internet service was introduced into the home while at the same time indicating contrasting results for when exploring time devoted to homework.

Computer Use

The results of the analyses on computer use in school and computer use out of school also provided mixed results. The first of the Chi-square analyses was to analyze whether there was a relationship between successful online writing assessment scores and computer use in school. Analysis results showed computer use in school does not relate to successful online writing assessment scores. The second of the Chi-square analyses evaluated whether there was a relationship between successful online writing assessment scores and computer use in outside of school. This analysis, unlike the first, showed the use of a computer outside of school was related to successful online writing assessment scores. These contrasting results may be related to the activities students participate in as well as the amount of time students spend on the computer at school. Initially, this result seems counter to the one-to-one concept of utilizing technology throughout the school day and increasing the experiences that support content and provide technology skills needed for success in the 21st century; however, it does indicate that use outside of school may benefit students; therefore, may positively impact students' assessment scores.

Computer use, as indicated by students' survey results, returned mixed results. The results of the analysis of computer use at school showed use at school does not relate to successful online writing assessment scores. The results of this survey question appear to indicate that a large percentage of students are rarely using technology in school. Unfortunately, these results further illustrated the research by Wilcox, Jeffrey, and Gardner-Bixler (2016) and Andrei (2014). These studies did not observe students and teachers participating in activities that would allow them to become more proficient on and familiar with the computer. In general, "it may be that one-to-one laptop programs are only as effective—or ineffective—as the schools that adopt them" (Goodwin, 2011, p.79). The reasons why they are not participating in

technology-based activities are unclear, although it could be a result of educators not feeling comfortable with nor having developed new ways to use technology in their practice (Bebell & Pedulla, 2015; CDW, 2011b; Goodwin, 2011; Harris, 2010).

In contrast to the results for computer use in school, computer use outside of school showed that such use was related to successful online writing assessment scores. CDW (2011b) determined many of today's instructors, less than half, assigned work that incorporates technology. This may be in part due to instructor knowledge or assumption of students' home life regarding inadequate access, either to a computer, the Internet, or both, to complete work of this nature. This result could also be a misunderstanding or interpretation of the definition of computer. During school, and in the case of one-to-one schools, students will typically use desktop or other laptop devices in class or during their school-assigned technology time. Out of school computer use may be interpreted as something entirely different. Students may rely not only on computers and laptops, but also on handheld devices such as tablets, iPads, and smartphones. As discussed earlier, smartphone technology is a primary source for online access for many (Anderson, 2017; Perrin, 2017; Ryan, 2018; Ryan & Lewis, 2017). In many cases, students don't participate in activities at home that mimic the activities they may participate in at school (Storz & Hoffman, 2013); however, students' at-home technology activities appear to provide experiences that complement the online assessment environment. In either case, teachers may want to engage students with similar activities similar to those they are participate in at home and make use of the handheld access avenues that so many students have available to them (Joyce, 2018).

School Level

An additional Chi-square analysis was run to determine if there was any relationship between students' school level and successful online writing assessment scores. It was found that school level appears to be significantly related to successful online writing assessment scores. This variable was the most significant variable in relation to the others studied. Middle school students are much more likely to have a successful online writing assessment score than students who are in high school. Although the results of this analysis showed that school level has a significant relationship with successful online writing assessment scores, one should err to the side of caution and not infer causation. It is likely the prompts used for middle school and high school were different; therefore, those students in high school may have been provided more difficult writing prompts than those provided to middle school students during this testing year and may have potentially impacted scores for both levels.

School level, middle and high school, was significantly related to successful online writing assessment scores. The results for students in middle school showed that 37.4% were successful on the online writing assessment compared to only 21.4% in high school. This begs the question as to why. Additionally, do students receive more writing instruction and practice in middle school? Were the high school prompts much harder and more complex than the middle school prompts? These results indicate a significant difference between these levels and should prompt closer examination of teaching practices at both levels. In addition to a closer examination of teaching practices, other factors, such as underlying educational needs, students' apathy levels in high school compared with middle school, and students' average length of time in a US school, etc., should also be examined. These areas although outside the scope of this study, would provide a clearer understanding of the differences between the two levels.

The results of this study provided insight into how the transition from middle school to high school may impact ESL students. A deeper investigation may provide insight into educational gaps encountered as students move into higher grades, may encourage greater continuity of instruction between levels, additional variables that may impact student performance, and insight into the various skills and knowledge they may need in order to become successful at this level.

Predicting Success

The final analysis, a Logistic regression, was run to determine if any of the variables in the earlier analyses would predict successful online writing assessment scores. Six variables from earlier analyses were used in a Logistic regression to determine if any could predict successful online writing assessment scores: one-to-one membership, computer access outside of school, Internet access at home, computer use in school, computer use outside of school, and school level. Three of the variables were found to be significant predictors, school level, Internet access at home, and computer use outside of school. School level was the strongest predictor when it came to success. Students in middle school were almost three times more likely than high school students to be successful on the online writing assessment. Those with Internet access and who used computer a computer outside of school were 2.3 and 1.86 times, respectively, more likely to be successful than those who don't have Internet access or use a computer outside of school. The Logistic regression identified these predictors; however, the model was not a strong one for predicting success. While it could predict almost 90% of those that would be unsuccessful, the percentage for predicting those that would be successful was only 26.4%. This low percentage of accuracy for success does not bode well for making future predictions.

Recommendations and Implications

The results from this study, although not all statistically significant, should provide pause and further necessitates discussion of the one-to-one imitative and the significance of technology access and use with various school levels of ESL students. The data from this study represents the results of ESL students who were involved in a one-to-one member school and those who were not and their self-reporting of technology access and use. From these results, I have identified several implications for those currently involved in one-to-one programs and who may be contemplating technology and its use in schools.

Writing is typically the hardest and last skill that ESL students learn. Technology provides a new and different outlet to perform this task. Research (Bebell & Kay, 2010; Goodwin, 2011; Warschauer & Ames, 2010) has shown that writing on computers increases student motivation for writing. While the results of the one-to-one membership and successful online writing assessments were not significant, I believe putting technology in the hands of students is a worthwhile idea, but changes need to be made. Schools should make writing with technology a priority. This may involve increasing the availability of technology in schools if a one-to-one program cannot be started and administrators need to make its use within writing instruction a priority. Providing them access will present them the opportunity to become proficient not only at writing but using the technology as well. Since technology plays such a large role in our society, it is easy to assume that individuals, whether they are getting a job or going to school, are equipped with the skills to successfully use technology. Unfortunately, this is not the case with everyone, so providing students with opportunities to become familiar with technology will only benefit them in the long run.

Another significant finding in this study surrounded the education level of students. As discussed, prompts were not available, so determining the differences between the two levels was not possible. But the finding should give school officials pause and should be investigated. Further investigations should include the entire population to determine if this occurs with non-ESL students. If it does not, what would be the source of the difference? In my experience, there was an effort to work with all teachers within the grade level to plan curriculum; however, there was not an effort to work and collaborate with those at the higher education levels. In this type of discussion teachers could share what knowledge, skills, and experiences they had noticed were lacking with students as they are promoted to the next level. There may be some of this type of communication in the higher levels of the administration, but to provide the opportunity for those who have direct contact with students and know what they need and can better prepare them for success at the next level is essential.

Further implications surround computer use. Sadly, computer use at school was not significantly related to successful online writing assessment scores. This finding appears to show that students are not gaining any benefit from school use. Research (Andrei, 2014; Bebell & Pedulla, 2015; CDW, 2011b; Goodwin, 2011; Harris, 2010; Wilcox, Jeffrey, & Gardner-Bixler, 2016) shows that students are not using the technology that they have access to and the activities do not appear to be helping them to become academically successful. This may be in part due to the comfort level of the teacher (Bebell & Pedulla, 2015; CDW, 2011b; Goodwin, 2011; Harris, 2010). This further indicates a need for additional support for some teachers who might opt for other methods when dealing with technology. Teachers need to be able to better adapt to the inclusion of technology into the curriculum. Additionally, reviews of teacher education programs may need to occur to determine how they provide technology training within their programs and

assist new teachers with how to include technology into their lessons. Like two sides of the same coin, technology use in school must be combined with utilizing technology outside of school to maximize its effectiveness. This finding was significant; therefore, when teachers are better able to infuse technology into the curriculum and use the avenues for access that students have at home, the more likely students are to succeed on online assessments, especially in writing. Thus, they can provide opportunities to support the curriculum goals while promoting the use of technology.

Students appear to have at least some access to the Internet at home, and this access appears to positively impact their success with online writing assessment scores. Access for students may vary greatly, some may have home WIFI and are able to stream and download materials while other may simply send email and have limited, shared access. Nonetheless, this access is providing some type of preparation where they are learning the skills needed for these online assessments. This could be an avenue for expenditure for administration to explore. Providing students with adequate Internet access to connect to content a teacher could use to support the curriculum via online means, may promote those successful scores. With the BYOD movement, this could be a better use of financial resources since it appears students have devices with which to access the Internet already.

Due to these implications, there are several recommendations for use by school officials when it comes to technology and its reach within their academic setting:

Recommendation 1: Further research is needed for assessing one-to-one initiative benefits. Although the results from this study did not show a significant relationship between membership and online writing assessment scores, further research does need to look into

secondary benefits students gained with their experience with one-to-one access. This would include basic word processing skills, research skills using reliable online sources, etc.

Recommendation 2: Technology access and use doesn't have to be strictly through the use of a laptop nor does it have to be at school. Students appear to manage online access via other devices other than a computer or laptop. Students would benefit from utilizing these other devices in their schoolwork, especially if they are not part of a one-to-one school and do not have frequent access to school technology. This idea supports the OECD's (2018) recent report which encourages educators to provide students with the skills needed to be successful in their future workplace. Therefore, educators need to create a bridge between school and home technology and provide more opportunities for students to use technology outside of school.

Recommendation 3: Evaluation of the continuity of content and teaching practices should be conducted between school levels. Curricula across grades levels should build upon themselves year after year and in order for students to be successful and to eliminate gaps that students may encounter as they progress through each grade.

Recommendation 4: The survey used prior to the assessment appears to ask basic questions regarding access and use; however, there is more information that could be drawn from the survey if some changes were made to the questions. As discussed, one of the questions asks students if they have access to a computer at home. The research (Perrin, 2017; Ryan & Lewis, 2017) tells us that they may not have one, but they may have access to another device. Asking students what type of device they have access to may help determine the type of activities and experiences teachers could include in their instruction. This addition goes hand-in-hand with asking students for additional information regarding their Internet access. It is unclear what type of Internet access these students may have; therefore, asking clarifying questions regarding how

they access the Internet (is it strictly cellular access or do they have home WIFI) should be done. Clarifying questions that focus on what they can do on their device, i.e., stream videos, email, texting, etc., would be equally beneficial to characterize the type of access they have at home.

Recommendation 5: Teacher preparation should be a priority. This will enable all teachers to feel comfortable using technology throughout their curriculum. This should include pre-service teachers and ensuring that they are equipped to be successful in today's classrooms.

Limitations

There are several potential limitations observed during this study. One limitation of this study is the transitory nature of the ESL population; they tend to be more transient in terms of length of stay in a particular community. Therefore, some students moved from a one-to-one member school to a non-member school, or vice versa, during the focus testing years of this study or may have moved from the area altogether; therefore, their experiences with technology were affected. A second limitation is the self-reporting nature of the pre-assessment survey. Some students' responses may not provide an accurate picture of their technology access. Additionally, some students, due to language or provided accommodations, may not be able to fully comprehend the survey questions; therefore, they may not have provided an accurate picture of their technology access and usage.

The largest potential limitation to this study, was the presence or absence of other variables that might influence the outcome on the online writing assessment that are neither measured nor accounted for. These variables may include but are not limited to, motivation for taking a test online, student preparedness, and general health and welfare of the student prior to testing. Some students involved in the online writing assessment may have completed this test for the first time; therefore, motivation and preparedness potentially influenced how students

from either group performed on the test. General health and well-being will affect all students. Most information sent home prior to these tests is typically provided in English; therefore, the preparedness of non-English speaking students may have been adversely affected through improper nutrition and sleep prior to the online writing assessment.

Considerable diligence was put forth to provide as much information about the writing prompts and the scoring of students' response as possible. However, another limitation exists in that the writing prompts were not disclosed. Due to this limitation, I was not afforded the opportunity to determine the difficulty level for each prompt for both middle and high school. Lastly, as with all quasi-experimental studies, other factors and variables not accounted for in this study may have contributed to the results.

Extensive and continuous effort for locating current research was put forth throughout the writing of this study. However, much of the research surrounding ESL students, assessment, and the one-to-one initiative occurred between the early 2000s through the mid-2010s. This timeframe corresponds somewhat with the beginnings of NCLB and bookended with the end of the grant disbursement from the third round of the U.S. Department of Education's Race to the Top grant competition. This provided somewhat of a limitation for this study; however, with the "Bring Your Own Device" movement, more research in this area may become available in the future.

Limitations, such as the ones listed, could have greatly affected the outcome of the online writing assessment and would need additional study involving qualitative data, such as personal interviews with students, parents, and teachers, to determine the impact of these other influential variables. This type of qualitative data was not available within the data collected and is outside the scope of this initial study; however, it may be the catalyst for a future study.

Future Research

In the case of this quasi-experimental study, causation cannot be determined as noted earlier. Shadish, Cook, and Campbell (2002) report that with further investigation a result from this type of study may provide “an alternative [which] may later emerge as a likely causal agent” (p. 17). Additionally, these results have “provide[d] a preliminary survey of hypotheses, and ... [should] be checked through the more expensive experimental manipulation” (Campbell & Stanley, 1963, p. 64). Therefore, future research is needed to better understand the impact of the one-to-one initiative and technology access and use.

Future research should include a closer look at students who were eliminated from the study due to lack of a response, an unintelligible response, or a response that was too limited to evaluate. These students may offer personal stories as to why they had not fully completed the assessment or were not able to provide a readable response. The group of one-to-one students in this study was relatively small; future research would benefit from the examination of a larger population to determine if stronger relationships will emerge. Additional research should include an examination of the activities that students are currently participating in outside of school to determine what knowledge and skills are being practice that positively impact their online writing assessment scores. Furthermore, focusing more keenly on the amount and type of access for those who do not have one-to-one status may provide further insights as to how to improve the performance on these online assessments and provide student with skills needed for their future.

Conclusion

One of the primary purposes of this study was to determine whether or not one-to-one membership provides an advantage over those students who are not members. The results of this

study showed that one-to-one membership was not significantly related to successful online assessment scores. Other factors such as education level, access to Internet in the home, and use of a computer outside of school, positively relate to successful online assessment scores.

Although this study provided some mixed results on these technology programs, computers do provide students access to resources that, in the past, may not have been so readily available as well as provide them technology skills which will likely be needed in a variety of employment opportunities these students may have in the future (Vigdor et al., 2014).

Therefore, in this researcher's mind, providing students with skills and knowledge needed in today's and tomorrow's workplace may help make them earn a living, even though it may not guarantee higher scores, and is worth the benefits they will likely gain in the long-run.

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APPENDIXES

Appendix A

Analysis Plan

| Research Question | Data/Source | Data Analysis |
|--|---|---|
| Does a significant relationship exist between student one-to-one membership and successful test performance among ESL students as measured by the online writing assessment? | County data: Online writing assessment score County data: One-to-one membership | Chi Square DV: One to one membership (yes/no) DV: Writing assessment score (BB or above) |
| Does a significant relationship exist between ESL students' reported amount of technology access (computer ownership and home Internet access) and successful academic test performance among ESL students as measured by the online writing assessment? | Preassessment survey: Computer ownership, Internet Access County data: One-to-one membership | Chi Square (x2 – ownership and Internet) DV: Access - computer ownership (yes/no), Internet access (yes/no) DV: Writing assessment score (BB or above) |
| Is there a significant difference between ESL students who are members of a one-to-one school and those who are not on their technology usage (in school and out of school)? | Preassessment survey: Daily school technology usage, Out of school technology usage County data: One-to-one membership | Independent t-test (x2 – in school and out of school) DV: Usage – Rarely or Often IV: group membership (one-to-one or not) |
| Does a significant relationship exist between ESL students' grade level (middle or high) and successful academic test performance among ESL students as measured by the online writing assessment? | County data: grade level County data: One-to-one membership | Chi Square DV: Writing Assessment score (BB or above) DV: Grade level (middle or high) |
| How does the probability of an ESL student receiving a passing score on the online writing assessment change when taking into account their one-to-one membership, technology access, technology usage, and grade level? | County data: writing assessment score County data: one-to-one membership, survey data, grade level | Logistic Regression IV: one-to-one membership, technology access, technology usage, and grade level DV: writing assessment core (BB or above) |

Appendix B

2014-15 Writing Survey Questions Provided by Tennessee Department of Education (TDOE)

2014-15 Writing Survey Questions

1. How often is the following statement true for you? I like to write.**
 - A. Almost always
 - B. More than half the time
 - C. About half the time
 - D. Less than half the time
 - E. Rarely or never

2. How often do you write in your Language Arts or English class?*
3. When you write assignments for your English class, how often do you write about something you have read?*
4. How often do you write in subjects other than Language Arts or English?***
5. How often do you work in pairs or small groups to discuss each others' writing?***
6. How frequently do you make notes or an outline before you begin writing a paper?***

7. How often do you work to edit or change a previous piece of writing?
- A. Almost always
 - B. More than half the time
 - C. About half the time
 - D. Less than half the time
 - E. Rarely or never
8. How often does your teacher provide individual feedback on your writing?
- A. Almost always
 - B. More than half the time
 - C. About half the time
 - D. Less than half the time
 - E. Rarely or never
9. How often do you use a computer at school for writing assignments (homework, stories, reports)?**
- A. Almost every day
 - B. Once or twice per week
 - C. Once or twice per month
 - D. Rarely or never
10. Do you have access to a computer outside of school?*
- A. Yes
 - B. No
11. Do you have Internet access at home?*
- A. Yes
 - B. No
12. How often do you use a computer outside of school for writing assignments (homework, stories, reports)?*
- A. Almost every day
 - B. Once or twice per week
 - C. Once or twice per month
 - D. Rarely or never

*** Asked in 2014.**

**** Asked in 2013 and 2014.**

Appendix C

2014-15 Writing Rubric for Grades 6-8

TCAP/WA Informational/Explanatory Rubric – Grades 6-8

Tennessee Department of Education

Revised: April 2013

| Score | Development | Focus & Organization | Language | Conventions |
|----------|---|--|---|---|
| 4 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes well-chosen, relevant, and sufficient evidence¹ from the stimuli to insightfully develop the topic. thoroughly and accurately explains and elaborates on the evidence provided, demonstrating a clear understanding of the topic and the stimuli. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains an effective and relevant introduction. utilizes effective organizational strategies to create a unified whole and to aid in comprehension. effectively clarifies relationships among ideas and concepts to create cohesion. contains an effective and relevant concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates consistent and sophisticated command of precise language and domain-specific vocabulary appropriate to the task. illustrates sophisticated command of syntactic variety for meaning and reader interest. utilizes sophisticated and varied transitional words and phrases. effectively establishes and maintains a formal style. | The writing: <ul style="list-style-type: none"> demonstrates consistent and sophisticated command of grade-level conventions of standard written English.² may contain a few minor errors that do not interfere with meaning. |
| 3 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes relevant and sufficient evidence¹ from the stimuli to adequately develop the topic. adequately and accurately explains and elaborates on the evidence provided, demonstrating a sufficient understanding of the topic and the stimuli. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains a relevant introduction. utilizes adequate organizational strategies to create a mostly unified whole and to aid in comprehension. clarifies most relationships among ideas and concepts, but there may be some gaps in cohesion. contains a relevant concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates consistent command of precise language and domain-specific vocabulary appropriate to the task. illustrates consistent command of syntactic variety for meaning and reader interest. utilizes appropriate and varied transitional words and phrases. establishes and maintains a formal style. | The writing: <ul style="list-style-type: none"> demonstrates consistent command of grade-level conventions of standard written English.² contains some minor and/or major errors, but the errors do not significantly interfere with meaning. |
| 2 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes mostly relevant but insufficient evidence¹ from the stimuli to partially develop the topic. Some evidence may be inaccurate or repetitive. explains some of the evidence provided, demonstrating only a partial understanding of the topic and the stimuli. There may be some level of inaccuracy in the explanation. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains a limited introduction. demonstrates an attempt to use organizational strategies to create some unification, but ideas may be hard to follow at times. clarifies some relationships among ideas and concepts, but there are lapses in focus. contains a limited concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates inconsistent command of precise language and domain-specific vocabulary. illustrates inconsistent command of syntactic variety. utilizes basic or repetitive transitional words and phrases. establishes but inconsistently maintains a formal style. | The writing: <ul style="list-style-type: none"> demonstrates inconsistent command of grade-level conventions of standard written English.² contains many errors that may significantly interfere with meaning. |
| 1 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes mostly irrelevant or no evidence¹ from the stimuli, or mostly/only personal knowledge, to inadequately develop the topic. Evidence is inaccurate or repetitive. inadequately or inaccurately explains the evidence provided, demonstrating little understanding of the topic and the stimuli. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains no or an irrelevant introduction. demonstrates an unclear organizational structure; ideas are hard to follow most of the time. fails to clarify relationships among ideas and concepts; concepts are unclear and/or there is a lack of focus. contains no or an irrelevant concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates little to no use of precise language and domain-specific vocabulary. illustrates little to no syntactic variety. utilizes no or few transitional words and phrases. does not establish or maintain a formal style. | The writing: <ul style="list-style-type: none"> demonstrates limited command of grade-level conventions of standard written English.² contains numerous and repeated errors that seriously impede meaning. |

¹ Evidence includes facts, definitions, concrete details, quotations, or other information and examples as appropriate to the task and the stimuli.

² Conventions of standard written English include sentence structure, grammar, usage, spelling, capitalization, and punctuation.

Appendix D

2014-15 Writing Rubric for Grades 6-8

TCAP/WA Informational/Explanatory Rubric – Grades 9-12

Tennessee Department of Education

Revised: April 2013

| Score | Development | Focus & Organization | Language | Conventions |
|----------|---|--|---|---|
| 4 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes well-chosen, relevant, and sufficient evidence¹ from the stimuli to thoroughly and insightfully develop the topic. thoroughly and accurately explains and elaborates on the evidence provided, demonstrating a clear, insightful understanding of the topic and the stimuli. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains an effective and relevant introduction. utilizes effective organizational strategies to create a unified whole and to aid in comprehension. effectively clarifies relationships among ideas and concepts to create cohesion. contains an effective and relevant concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates consistent and sophisticated command of precise language, domain-specific vocabulary, and literary techniques² appropriate to the task. illustrates sophisticated command of syntactic variety for meaning and reader interest. utilizes sophisticated and varied transitional words and phrases. effectively establishes and maintains a formal style and an objective tone. | The writing: <ul style="list-style-type: none"> demonstrates consistent and sophisticated command of grade-level conventions of standard written English.³ may contain a few minor errors that do not interfere with meaning. |
| 3 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes relevant and sufficient evidence¹ from the stimuli to adequately develop the topic. adequately and accurately explains and elaborates on the evidence provided, demonstrating a sufficient understanding of the topic and the stimuli. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains a relevant introduction. utilizes adequate organizational strategies to create a mostly unified whole and to aid in comprehension. clarifies most relationships among ideas and concepts, but there may be some gaps in cohesion. contains a relevant concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates consistent command of precise language, domain-specific vocabulary, and literary techniques² appropriate to the task. illustrates consistent command of syntactic variety for meaning and reader interest. utilizes appropriate and varied transitional words and phrases. establishes and maintains a formal style and an objective tone. | The writing: <ul style="list-style-type: none"> demonstrates consistent command of grade-level conventions of standard written English.³ contains some minor and/or major errors, but the errors do not significantly interfere with meaning. |
| 2 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes mostly relevant but insufficient evidence¹ from the stimuli to partially develop the topic. Some evidence may be inaccurate or repetitive. explains some of the evidence provided, demonstrating only a partial understanding of the topic and the stimuli. There may be some level of inaccuracy in the explanation. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains a limited introduction. demonstrates an attempt to use organizational strategies to create some unification, but ideas may be hard to follow at times. clarifies some relationships among ideas and concepts, but there are lapses in focus. contains a limited concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates inconsistent command of precise language, domain-specific vocabulary, and literary techniques.² illustrates inconsistent command of syntactic variety. utilizes basic or repetitive transitional words and phrases. establishes but inconsistently maintains a formal style and an objective tone. | The writing: <ul style="list-style-type: none"> demonstrates inconsistent command of grade-level conventions of standard written English.³ contains many errors that may significantly interfere with meaning. |
| 1 | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> utilizes mostly irrelevant or no evidence¹ from the stimuli, or mostly/only personal knowledge, to inadequately develop the topic. Evidence is inaccurate or repetitive. inadequately or inaccurately explains the evidence provided, demonstrating little understanding of the topic and the stimuli. | In response to the task and the stimuli, the writing: <ul style="list-style-type: none"> contains no or an irrelevant introduction. demonstrates an unclear organizational structure; ideas are hard to follow most of the time. fails to clarify relationships among ideas and concepts; concepts are unclear and/or there is a lack of focus. contains no or an irrelevant concluding statement or section. | The writing: <ul style="list-style-type: none"> illustrates little to no use of precise language, domain-specific vocabulary, and literary techniques.² illustrates little to no syntactic variety. utilizes no or few transitional words and phrases. does not establish or maintain a formal style and an objective tone. | The writing: <ul style="list-style-type: none"> demonstrates limited command of grade-level conventions of standard written English.³ contains numerous and repeated errors that seriously impede meaning. |

¹ Evidence includes facts, extended definitions, concrete details, quotations, or other information and examples as appropriate to the task and the stimuli.

² Literary techniques are only expected at grades 11-12.

³ Conventions of standard written English include sentence structure, grammar, usage, spelling, capitalization, and punctuation.

VITA

Christine Patti was born in Tacoma, Washington. She is the middle daughter of Mike and Diane Crum. She has an older and a younger sister. She grew up in Gig Harbor, Washington. She attended Gig Harbor High School. Upon graduating she attended Washington State University. In December 1993, she earned a Bachelor of Arts degree in Education.

Christine met and married her husband, Marc, and moved to Charleston, South Carolina. She attended graduate school at the College of Charleston where she earned her Master of Education degree in 1995. Just prior to graduation, the first of her two children was born. While working to balance life as an Air force military spouse and new mother, she opted to stay at home full time.

In 2006, Christine and her family moved to Knoxville, Tennessee. She began work as an ESL assistant in 2008. She chose in 2009 to return to school with Middle Tennessee State University and earned a K-12 ESL certification and began a full-time teaching position as an ESL teacher. In 2011, Christine began her PhD studies at the University of Tennessee. After three years of working full-time and attending classes part-time, Christine opted in 2014 to take a two-year educational leave of absence from teaching in the public schools. Christine became a full-time graduate student and began work as a graduate research assistant in the Educational Psychology and Counseling department.

In 2016, Christine earned a concurrent Master of Science in Instructional Technology degree and earned the Online Teaching and Learning graduate certificate. It was also during this year that she was asked to take a graduate teaching associate position and teach the Applied Educational Psychology course for the school year. With the focus of her studies being technology, Christine transferred her graduate assistant position to the Office of Information

Technology (OIT) in 2017, where she currently works in the Instructional Support and Training department. Over the last year and half, she has worked with faculty, staff, and students and provided training on various campus technology tools. Additionally, she has created training support tools, videos, handouts, etc. available through OIT workshops and other online resource sites. In late 2018, Christine completed her dissertation earning her a Doctor of Philosophy degree in Education with an emphasis in Learning, Design, and Technology.