**The Impact of Laptop Computers on Student Learning Behaviors**

**CHAPTER 1**

**INTRODUCTION**

Students’ lives today are filled with technology that gives them access to information and resources 24/7. Students are able to create multimedia content and immediately share it with the world and participate in social networks where people from all over the world share ideas, collaborate, and learn new things.

Outside of the classroom, students have the freedom to pursue their passions in their own way and at their own pace. Opportunities for today’s students are limitless, borderless, and instantaneous (Office of Educational Technology, U.S. Department of Education, 2010) so it only logical that their learning environment should reflect their everyday lives

. Forty-five of the fifty states in the United States have adopted the Common Core State Standards. The standards define the knowledge and skills students should have within their K-12 education careers so they will graduate from high school able to succeed in college courses and in workforce training programs.

The Common Core Standards are focused, coherent and include rigorous content and application of knowledge through higher-order thinking skills. This new set of standards is based on evidence, research, and is internationally benchmarked so that students are prepared to succeed in our global economy and society (Council of Chief State School Officers and National Governors Association Center for Best Practices, 2010). With the implementation of these standards, American students should be fully prepared to compete successfully in the global economy.

All students must be prepared to compete not only with their American peers in the next state, but with students from around the world (Council of Chief State School Officers and National Governors Association 2 Center for Best Practices, 2010).

In order for students to think deeply, be globally competitive, and meet the new standards, it is essential they have access to technology. Mike Muir, Bette Manchester and Jim Moulton (2005), authors of Learning with Laptops, explained that laptop computers can accelerate, enrich, and deepen basic skills, motivate and engage students in learning, increase the visibility of tomorrow’s workers and connect students and schools to the real world. Just as pens and pencils were the predominant tools for knowledge and learning during a large part of the last century, computers and the Internet are key tools for learning and knowledge production for the 21st century (Warschauer, 2005). Demski (2012) says, “If we want our students to be able to find meaningful work and be contributing members of a global society, then we need to prepare them for their future, not our past”.

**STATEMENT OF THE STUDY**

It is imperative that students can interact with technology and the Internet because the 21st century offers us far more options to learn and grow intellectually. In fact, today more than a million people in the United States alone are learning online (Bonk, 2010).

Laptop computers and wireless connectivity represent two of the fastest-growing technologies in schools (Warschauer, 2005). The opportunities that technology brings to the classroom open up walls so that a classroom is no longer a closed system (Demski, 2012). The Office of Educational Technology in the U.S. Department of Education is calling for a 21st Century Model of Learning Powered by Technology (2010).

**PURPOSE OF THE STUDY**

The purpose of this study was to determine the impact of laptop computers on student learning behaviors. Each student and teacher was equipped with a laptop computer in which they had 24/7 access.

Qualitative research methodology was used in this study and the data consisted of classroom observations, a review of the teachers’ lesson plans, and in-depth interviews with five classroom teachers.

The results of this study revealed that laptop computers had a positive impact on student learning behaviors. Students were engaged in the learning process, produced higher quality work, and had improved communication with their teachers when they had access to laptop computers.

Through analysis of the data, the researcher suggested that the changes in student behavior occurred because of personalized learning for each student, access to multiple materials and media, and the laptop computer serving as assistive technology.

**SIGNIFICANCE OF THE STUDY**

The Office of Educational Technology through the U.S. Department of Education is recommending that students and educators have adequate broadband access to the Internet and adequate wireless connectivity both inside and outside of school. Additionally, it is recommended that each student and educator have at least one Internet access device, software, and resources for research, communication, multimedia content creation, and collaboration for use both inside and outside of school (2010).

Some school districts in Georgia, Florida, Kansas, Louisiana, Maine, Massachusetts, Michigan, Missouri, New Hampshire, California, Pennsylvania, and South Dakota are ahead of the curve and have already implemented one-to-one laptop computer initiatives. One-to-one laptop computer programs equip each student and educator with a laptop computer. One-to-one laptop computer initiatives have the potential to significantly impact education, and school districts implementing laptop programs report improvements in day-to-day operations (Holcomb, 2009).

Districts are meeting one-to-one laptop programs with enthusiasm and many school principals are ordering more electronic learning tools and fewer textbooks (O’Hanlon, 2007).

**DEFINITION OF TERMS**

This model calls for engaging and empowering experiences for all learners through the power of technology to provide personalized learning instead of a one-size-fits-all curriculum, pace of teaching, and instructional strategies.

In order for this to happen, students need access 3 to technology that mirrors their everyday life and the reality of their future.

**CHAPTER 2**

**METHODOLOGY**

The purpose of this qualitative research study was to examine the impact of laptop computers on student engagement as perceived by classroom teachers. Specifically, this study examined the impact of unlimited access to laptop computers on student learning behaviors for middle school and high school students through a subjective view from their classroom teachers.

The data collected from this study were duplicated data from a study the researcher was co-researching titled, “The Impact of Technology on Teaching Pedagogy.” Findings from that study also showed significant impact of laptop computers on student learning behaviors. Qualitative research studies essentially provide a “complex, holistic picture” (Creswell, 1998, p. 17) with a detailed view of the topic.

Therefore, the research questions should be “open ended, evolving, and nondirectional” (Creswell, 1998, p. 99).

**DESIGN OF THE STUDY**

This qualitative research study sought to address the following question: How does access to a laptop computer impact student learning behaviors as perceived by classroom teachers? Laptop computers facilitate the kinds of learning, thinking, and analysis that today’s world demands.

Through laptop computers, students learn to access information, analyze and critique it, and work that information into a variety of authentic products (Warschauer, 2005). Thus, this research study provides insight into a small, but relevant, sample of teachers’ perceptions about the impact of access to laptop computers on student learning behaviors.

The results of this study have the potential to contribute to the 14 improvement of student learning and achievement through encouraging teachers to include laptop computers and related technology into their instructional materials.

The examination of the impact of laptop computers on student learning behaviors requires a research methodology that enables the researchers to observe classroom behaviors of teachers and students using laptop computers.

This thorough understanding is fostered through the collection and analysis of data gathered from multiple sources: classroom observations, interviews, and a review of documents. This qualitative research study provides evidence that laptop computers positively impact student learning behaviors.

Classroom observations, interviews with the teachers, and a review of documents were used in this study. The classroom observations prior to the interviews allowed for a more in-depth discussion of the technology and methodology used by the teacher.

A qualitative approach was used because it allowed the researcher to develop a level of detail about the individual and place, as well as be highly involved in actual experiences of the participants (Creswell, 2003).

In this qualitative research study, the researcher recruited the participants; explained the informed consent to the participants; collected and secured the informed consent signed forms; conducted participant observations and wrote descriptive field notes either by hand or on a laptop; interviewed participants; viewed student work and teacher lesson plans about doing lessons with laptop computers and without laptop computers; transcribed interviews; conducted the data collection; and managed, analyzed, and interpreted the data.

15 Although the researcher was a graduate student in the Judith Herb College of Education, Health Science and Human Service (JHCEHSHS) during the time this study was conducted, her role in the research was wholly that of a researcher.

This role was established through discussions with the teachers, administrators, and The University of Toledo faculty included in the research. The researcher also served as a graduate assistant in the Educational Foundations and Leadership Department of JHCEHSHS.

During her time as a graduate assistant, she took part as co-researcher in a research study titled, “The Impact of Technology on Teaching Pedagogy,” which cultivated her interest in the impact of teachers using technologies in the classroom and the impact on student behavior.

**POPULATION**

These additional roles provided the researcher with supplementary frameworks that influenced the analysis and interpretation of the data. Creswell (1998) explains the importance of finding a site that is “accessible, willing to provide information” and that can shed light on a specific issue being explored (p. 111).

Five teachers from a mid-western suburban school district were used in this qualitative study during the fourth quarter of the 2010-2011 academic school year. The teachers came from one middle school with approximately 700 students and one high school with approximately 1400 students.

The students in both schools are predominately white, middle-class students. Both schools made Adequate Yearly Progress during the 2010-2011 school year. This study focused on five teachers who taught language arts, science, or mathematics.

Principals of the two schools identified these five teachers who were recognized as exemplary in their use of technology-based tools in their classrooms. Each teacher is considered to be technology literate among their principals and peers. Two of 16 the teachers have received a technology certificate from a university offering graduate level courses in technology integration.

In order to take part in this study, the teachers were required to sign the Institutional Review Board informed consent, which simply explicated the purpose of the study, the description of the procedures, potential risks, potential benefits, confidentiality, voluntary participation, and the contact information of the researcher and The University of Toledo Social, Behavioral, and Educational Institutional Review Board.

It was made clear that the participants would remain anonymous and that their lesson plans and students’ work would not be identified in the research study. To protect the teachers’ anonymity, the following pseudonyms will be used: Ms. Jones, eighth grade math and science teacher; Ms. Elliott, seventh grade language arts teacher; Ms. Warren, eighth grade language arts teacher; Ms. Jackson, high school language arts teacher; and Ms. Leonard, eighth grade math teacher.

Furthermore, the researcher assured the teachers that participation was voluntary and that they could opt out of the interview procedures at any time. During the observations, the researchers were able to observe students’ interaction and engagement with the laptop computers. Observing the classroom environment permitted the researchers to view the students’ work and witness the completion of complex projects.

**DATA COLLECTION**

The direct observations allowed the researchers to have a firsthand experience with participants and record the information accurately as it was revealed. Interviews with individual teachers provided historical information and allowed the teachers to elaborate on what the researcher viewed during the observations.

Interviewers were used in order to control a line of questioning (Creswell, 1998) and allow teachers to 17 explain their lessons and the students’ learning behaviors as laptop computers were integrated into their classroom.

Prior to the observations and interviews, the teachers were asked to provide copies of their lesson plans before laptop integration and after laptop integration. This request allowed the researchers to see the pedagogical shift with the use of laptop computers.

The lesson plans were available to the researcher during the observation. During the observation, the researcher sat in the back of the classroom and jotted descriptive field notes either by hand or on her laptop. Directly after the lesson was completed, the researchers conducted a tape-recorded interview with the teacher.

The interviews included thirteen open-ended questions (Appendix A). The researchers asked additional questions to participants as the interview progressed. The questions were to clarify their answers or to get an elaborated response.

The additional questions asked were specific to the lesson the researcher observed or to the lesson plan documents the researchers reviewed. Creswell (1998) recommends storing the qualitative data in printed transcripts and computer files. He also suggest that attention be paid to how the information will be organized and stored, along with creating backup copies or files of data collected.

In this qualitative research study, the interviews were tape-recorded using a digital audio recording device, saved to a computer, then transcribed. The transcripts were printed and placed in a folder.

This research study was an offspring of a study that the researcher and her professor conducted entitled, “The Impact of Technology on Teaching Pedagogy.” For “The Impact of Technology on Teaching Pedagogy,” the researchers visited the school 18 sites to observe teachers using laptop computers in their lessons.

Prior to observations the researchers would review the teachers’ lesson plans on how the teachers would teach the same concept before they had daily access to laptops and after the 1:1 laptop initiative implementation. After the observations the researchers interviewed each teacher about their shift in pedagogy due to the integration of laptop computers.

In doing the coding and analysis of “The Impact of Technology on Teaching Pedagogy” as a co-researcher, the researcher found results about the impact of laptop computers on student learning behaviors were emerging.

These emergent findings are the basis of this study: the impact of laptop computers on student learning behaviors. In “The Impact of Technology on Teaching Pedagogy,” interviews of the teachers were transcribed and coded by hand to sort, analyze, and code common themes that were discussed and described during the interviews.

Lesson plans from previous years when technology was not available were reviewed and compared with current lessons with technology integration. These documents enabled the researcher to identify the shifts in teaching pedagogy, expectation of student production, and instructional materials as well as to serve as an unobtrusive source of information (Creswell, 2003).

Common themes emerged from a cross analysis of the interviews, observations, and lesson plan documents. For this research study, the same data were recoded with various colors of highlighters. Each color highlighter represented a different code. The codes were: engagement, work completion, expectations, communication with teachers, differentiation, and access to materials. The codes were based on interpretation and analysis of the researcher.

**ANALYSIS OF DATA**

The coding system was then revised and the most prevalent 19 codes that emerged from the data were the identified themes of the research study: student engagement, depth and efficiency of completed work, and communication with classroom teachers. Since this research represented an ethnographic case study, the researcher collected multiple sources of data including field notes, observations, lesson plan documents, viewing student assignments, and interviews.

**SUMMARY**

For the specific analysis of the impact of laptop computers on student learning, the researcher chose to analyze data from all sources of data.

The amount of data collected during qualitative research through multiple sources can be overwhelming. Consequently, the analysis process took time due to many readings of the collected data and reflecting on the research.

**Appendix A**

**Interview Questions**

1. Can you recall a time when and how you made the connection between when you decided to use software to teach this lesson?

2. What were some of the challenges you faced when you worked through integrating technology into this lesson?

3. In what way is the use of software different from traditional ways to present concepts and lessons to students?

4. Have you noticed any changes in student behavior or learning on the lesson when you integrate technology?

5. If you were going to use Bloom's taxonomy (recall, application, comprehension, analysis, synthesis, evaluation) would you describe the shifts in student learning using that language when you integrate technology?

6. How would you have taught this same lesson 4 years ago pretechology?

7. If you were looking down at your evolution of moving this lesson from a more traditional way of presenting to using software as part of your pedagogy, what would you see?

8. How would you describe your own shift in using technology pedagogy in your lesson design?

9. Are you the same, worse, or better teacher when using technology to teach?

10. Has your preparation time changed for lessons as you use more technology?

11. Would you be able to do the same lesson without technology?

12. In what ways is the use of software different from the traditional ways you used to 37 present content and lessons to students?

13. Is anything else that you want to tell me that I didn't ask you?