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The Technology Students Prefer for Their Learning

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Table of Contents

Abstract

The purpose of this action research project was to find out if students want to use technology in their learning and what that looks like. The research question guiding this study was "How do students think technology should be used in their learning?" Technology is in all aspects of our lives, including education. Technology promotes powerful learning experiences for students and teachers. There is an abundant amount of technology options for students to use for their learning. In many instances, the teacher will determine the technology tool or resource that will be used by the students. Students are seldom given an opportunity to choose the technology. By asking students what technology they want to use in their learning, we can better meet their needs and wants regarding technology.

The Technology Students Prefer for Their Learning

Technology integration is the use of technology resources in education by teachers and students. Technology resources can consist of and are not limited to computers, tablets, smartphones, application software, the Internet, web tools, and social media. Technology resources can be utilized by teachers to enhance and differentiate learning for their students. Students to learn information and solve problems can utilize technology resources. There are vast amounts of technology resources that teacher and students can use. In most classrooms, it is the teacher who determines how technology will be integrated. Very seldom do we ask students how they want to use technology in schools. This action research proposal will answer the question "How do students think technology should be used in their learning?" The research will help teachers to determine how to integrate technology into their classes to engage their students.

Technology impacts everyone. It is in all aspects of our lives, including education. Over the years, technology integration began slowly in schools, a few desktop computers that students could use to look up information. It has progressed into what it looks like today in most classrooms – every student using a laptop or device to aid in their learning experience. Technology has given today's students and educators the opportunity to take part in powerful learning experiences.

The action research study is being conducted in a school district that has a 1:1 laptop program. The 1:1 laptop program was implemented in the fall of 2011, which was seven years ago. The district encourages teachers to incorporate technology in their classrooms, but continued support is needed for teachers on how to effectively implement the technology. Currently, technology professional development (PD) is not offered, but there is a need for it. It would beneficial for teachers and students for the district to offer technology PD and focus on

technology resources that the students want to use. With so many technology options, teachers may only focus on the technology they like using instead of integrating technology that students want to use. If we think of a school as a business, then our students are the customers. To be successful, a business must survey their customers to determine their needs and wants to provide the desired goods and services. It is assumed students want to use technology, but it is never asked "how" they want to use it. Schools and teachers need to ask students what their technology needs and wants are. In conducting action research and asking the 8th grade – 12th grade students how they want to use technology in school, teachers can take the results and adjust their teaching to meet the needs and wants of the students. The data will help teachers and administration determine how students want to use technology in their learning, what types of technology they want to use, and how often they want to use technology.

Review of the Literature

Today's students are part of the digital generation. They utilize technology for learning and personal use. They utilize technology inside of schools and outside of schools. In order to meet the needs of these students, education must change from traditional learning to learning with technology. Teachers need to learn how to properly integrate technology into their classrooms through technology professional development and on-going support. Teachers also need to integrate technology that today's students want to use. With effective technology integration, students will be able to create using technology while learning and become successful.

The purpose of technology in education is to enhance teaching and the learning process. Teaching, learning, educators, students, and classrooms have all been affected from the integration of technology in education. It has greatly changed education in how teachers teach

and how students learn. Students' success will improve with enhanced teaching and a better-quality learning process. Technology has many benefits but there are also some challenges.

Today's students are considered digital learners and are referred to as the Net Generation. Digital learning occurs when technology is used to enhance a student's learning experience or to enhance an instructional practice. Net Generation people are individuals that are regularly exposed to technology. In discussing Net Generation students, Mitchell, Wohleb, and Skinner (2016) believe that since technology is in all aspects of today's students' lives, they expected it to be a part of their education. In order to reach the needs and wants of these students, teachers must effectively integrate technology.

The Benefits of Technology

Technology in education has many benefits. The individuals that benefit from technology include students and teachers. Research has shown that student attitudes and involvement has increased due to technology use. It has also shown that technology helps to enhance curriculum. It also helps with personalizing students' individual learning experience.

Student involvement. One of the greatest benefits of technology is increased student involvement. Mitchell et al. (2016) found that if technology is added to the instruction and learning, student engagement is higher. Downes and Bishop (2015) also found that technology helped students to become more engaged in their education which then led to an increase in students' learning. Students who were typically disengaged or reluctant became motivated with technology because they had their own laptop they were able to utilize. Technology also helps to increase student motivation which will has led to positive outcomes such as improved student behavior, improved attendance, improved attitudes toward learning, and better test scores (Downes & Bishop, 2015). Ankiewicz (2017) found that students typically have a positive attitude towards technology.

Technology activities motivate students to learn. Learning is more fun and meaningful for students when using technology. Students who use technology have positive views of technology (Stone, 2016). Students take the initiative to use technology to collaborate and learn with others without being told. When teachers allow students to use technology to work on a project they are excited and enjoy the work. Technology causes students to take ownership in what they are creating (Heidenrich, 2013).

Purposeful learning. While technology can increase student involvement, it also creates purposeful learning. Heidenrich (2013) determined that technology is more effective when instilled into instruction for learning than when used alone and students are appreciate of teachers who integrate technology into the classroom. Kemp, Preston, Page, Harper, Dillard, Flynn and Yamaguchi (2014) found that technology can increase the benefits of education depending upon how teachers implement the technology. When technology tools are used appropriately, both the teaching and learning are greatly enhanced. Kemp et al. (2014) stated, "It enables both students and teachers to easily utilize multiple types of resources online, as well as software that increase the varieties of input and output methods; effective use of technology promote multiple literacies" (p. 18). Downes and Bishop (2015) observed that technology provided students a way of sharing their work that was new and a more authentic way of sharing it with others outside of their classroom. Chen and Yang (2012) determined that technology improved attitudes for students to experience authentic language learning.

Individualization/Differentiation. Technology integration also helps with differentiation and individualization for student learning. Mitchell et al. (2016) found that if technology is added to the instruction and learning it allows for differentiation of learning in an effective manner. Downes and Bishop (2015) research found that technology-rich projects

allowed for individualized learning opportunities for a wide range of students. Certain technologies appealed strongly with some students that were typically disengaged.

Heidenrich (2013) performed a study on student perspectives about the use of technology and if it created powerful learning. Through interviews with high school students, Heidenrich (2013) found that students felt that technology fostered independent and interdependent learning. Technology has helped to encourage students to take the initiative to learn more from others or to learn through collaboration without being told. Online tutorials allow for independent learning. When students want to learn something new or how to use new software, they found online tutorials and videos to help them learn. When teachers are not able to explain a topic, students used the Internet to understand the material better.

Communication. Teacher and student communication is changing with today's learning and the availability of technology. Students use technology devices to communicate with others to get answers to questions or to answer questions that others may have (Heidenrich, 2013). Students are able to connect with teachers outside of school if they have questions regarding their learning. Technology eliminates the wait-time of having to be face-to-face to communicate. Students are able to communicate using the various types of communication such as e-mail, texting, and various social media. Kemp et al. (2014) found that using modern communication technology is very convenient and gains students' attention as it is a natural part of students' lives. Heidenrich (2013) conducted interviews and conducted focus groups with sixteen high school students over a three week period. Heidenrich (2013) found that students use phones more than any other tool for communication.

Technology Challenges

While there are numerous advantages to technology, there are also challenges to technology integration. Depending upon how technology is integrated, every school district will face different challenges regarding technology. Both students and teachers face challenges regarding technology. Technology challenges include student and teacher limitations, communication, and technology use outside of school. In recognizing technology challenges, schools can better plan for technology integration in their districts.

Student limitations. Students can be limited to technology integration by a variety of challenges. Hsu (2016) found from surveying teachers, that they believe a barrier for technology integration is that students lack computer skills. Students may believe they know how to use technology but they are not proficient in their technology skills. Kemp et al. (2014) found that technologies such as the Internet and personal computers do not increase access or improve learning for all potential students. Their research also found when technology is being used for entertainment or as a convenience it is not always necessary or appropriate. Downes and Bishop (2015) found in some instances that once the newness of technology wore off, student engagement decreased and an increase in the inappropriate use of laptops occurred. Ardies, De Maeyer, Gijbels, and Van Keulen (2015) determined that students' attitudes towards technology diminished over time. Ankiewicz (2017) found while technology can be considered positive, students can still have a limited concept of technology.

Teacher limitations. Teachers can be limited to technology integration by a variety of challenges. Hsu's (2016) researched showed that teachers feel there they receive a lack of technology training, technical support, and a lack of time to implement technology-integrated lessons. In knowing the importance of technology and the need to integrate technology, not all

teachers understand how and why it should be used and others do not integrate technology in their classrooms. Research has also shown that that teachers have to understand why they are using technology in order for it to be appropriate (Davis, 2011). Teachers must ask themselves why they are using the technology and then how well the technology was used to accomplish the learning task. Some teachers need to begin the task of utilizing technology with their instruction. Mitchell et al. (2016) believe experienced teachers need to educate themselves on how to use and integrate technology. The authors' research showed that teachers with 20 plus years of teaching had the lowest score for utilizing technology whereas teachers with 0-3 years of teaching experience had a higher score for utilizing technology. Stefl-Mabry, Radlick, and Doane (2010) found that middle school and high school students feel that teachers need help using Information and Communications Technology (ICT). Students have frustration when teachers expect them to use technology that the teachers themselves do not know how to use. Heidenrich (2013) found that the teachers' skills and comfort level with technology affect their students. Students want teachers to integrate technology. Students do not want to be responsible for teaching their teachers about technology.

Research shows there is a relationship between the availability of technology resources and equipment in regards to technology implementation. Heidenrich (2013) found that having access to technology affects students' access to knowledge and learning. Some teachers are limited with the amount of technology available to them depending upon what the school is able to provide. Technology allows students to learn independently. If a student does not gain the knowledge needed from the teacher, then the student is able to use technology to lean more. Students will use the Internet to find videos or tutorials on the subject they need help with. There are numerous websites, including YouTube, where information can be taught to students.

Mitchell et al. (2016) found that when more resources and equipment are available, more technology integration is occurring. Stefl-Mabry et al. (2010) found that students want technology to support their learning and students want to use their personal technology devices in school. This is a limitation because every school has a different policy on students brining their own personal devices into the building.

Communication. Kemp et al. (2014) asked six professors to give their views on topics related to technology. A Google Doc was created and shared with all of the participants. The participants were given permission to edit the document and share their thoughts. In regards to communication the participants felt that modern communication technology should not be used all of the time. Kemp et al. (2014) stated, "use of communication technologies provides instant gratification, oftentimes without substance if students do not have sound skills in interpersonal communication" (p. 19). If a student has a question, it becomes quicker and easier to e-mail an instructor instead of taking time to figure out the answer on their own. It deters students' ability to think independently instead of solving problems on their own.

Technology use outside of school. Today's learners use technology inside the classroom and outside the classroom, but there is a gap between how it is used in these areas. In their daily lives, students are occupied with the use of their personal devices but when they are at school there is a disconnect in the way they use their devices for learning (Pynos, 2016). Outside of school students used technology on their own terms, whereas at school teachers determine how the technology will be used. Owens-Hartman (2015) found that technology integration takes longer to integrate in schools than outside of schools. Depending upon the school, certain types of technology are not allowed in the classroom which causes the learning inside the classroom to be outdated. Stefl-Mabry et al. (2010) surveyed middle school and high school

students to find out their perceptions of technology integration. The researchers found that the student feel the use of ICT in school is limited. The middle school and high school students feel that teachers use common school applications and become bored with them, and high school students would rather use computers for learning information instead of reading books. Stefl-Mabry et al. (2010) stated "An understanding of the participatory social practices of young media users may enable educators, together with students, to build upon traditional literacy taught in today's classrooms and expand those practices into new media environments to reposition teachers and students as learning and partners" (p. 77). High school and middle school students have frustration toward restrictions on Internet access and personal technology devices. Outside of school students are able to access sites without being blocked, whereas Heidenrich (2013) found that students are frustrated with the blocking of online resources by a school's Internet content filter. Students also have frustration with school cell phone policies. Some schools do not allow cell phones to be used during class for learning purposes, but these students are disappointed with this as they want to use their cell phones to help them.

Technology Implementation

Heidenrich (2013) determined that access to technology has a positive impact in creating powerful learning experiences. One way of implementing technology in schools is a one-to-one program. With more affordable technology and the recognition of the importance of educational technology, more schools are implementing a one-to-one program. In a one-to-one program students are provided with a technological device. Some schools choose to provide a laptop, while others may provide tablets.

Clemensen (2018) found in his research on a one-to-one school that every teacher had adopted technology in the classroom, but it was done in different ways. Some teachers utilized

technology as an additional teaching tool while others changed their classroom based upon the technology. Downes and Bishop (2015) found that the integrity of implementation affects the ultimate impact technology has on student learning. Clemensen (2018) also found that technology professional development needs to shift from technology basics to how teachers can utilize technology to the utmost extent in the classroom. Teachers also feel the most effective technology professional development was when teachers were learning from other teachers.

Student voice has a significant role in the success of students. Stefl-Mabry et al. (2010) stated "By the late 1990s and early part of the 21st century the term student voice began to emerge in the dialogue of educational research and reform, suggesting a cultural shift, not only to listen to students, but also to legitimize students' perspective and opinion and argue for its inclusion in discourse related to educational practice and school reform" (p. 66). Student voice describes how students give their input to what happens in the classroom and in their learning. Byker, Putman, Handler, and Polly (2017) stated "Student Voice is a term that honors the participatory roles that students have when they enter learning spaces like classrooms. Student Voice is the recognition of students' choice, creativity, and freedom" (p. 119). Their research found that when students were given a voice it was still within the boundaries of a variety of choices given by the teacher. Owens-Hartman (2015) observed increased student involvement when the teacher allowed for student voice in technology choice.

Technology Choices

Technology allows for numerous choices for both teachers and students. The choices included the type of technology software being used and the type of technology hardware being used. Technology software can be purchased software installed on school devices or cloud based software. Technology hardware can be laptops, desktop computers, tablets, or smart phones.

Every school district will have different options of technology software and technology hardware.

Software. Students have numerous technology software choices. Software choices varying depending upon the school district. Some software may be installed on the computers where as some software is cloud-based. Cloud-based software is software that can be found on the Internet. According to Owens-Hartman (2015) cloud based technology software is a top choice for students. The cloud based technology students preferred were Prezi, Twitter, Google sites, Google slides, and a blog.

Hardware. In addition to software choices, students also have technology hardware choices. Depending upon the school district, the technology hardware options for students will be different. Students hardware options can include a school provided laptop, personal laptop, tablet, or smart phone. Owens-Hartman (2015) found that students prefer using laptops and smart phones when accomplishing a project-based learning mission. Laptops were the students' first choice. Smartphones were used often to also work on projects and communicate with each other.

Factors that affect technology choices. There are many factors that influence the technology choice a student will make. If a teacher allows a student to choose the software or hardware being used for an assignment, several influences will affect the decision. Students will choose based upon ease of using the software and if the software has add-ons or enhancements (Owens-Hartman, 2015). Students also base their technology choices on their experience using it. If the technology resulted in a positive experience, then a student is more likely to use that same technology again. Students also want to use a technology platform in which an outside audience can easily view it (Owens-Hartman, 2015).

The compatibility of hardware and software is a factor in a student's' technology choice. According to Owens-Hartman (2015) students choose the software first that they want to use and will then determine the best hardware choice for the chosen software. If the software will not perform well with a certain type of hardware, then a student will make a different choice. The level of student self-efficacy and knowledge from technology exposure will also affect the choice. If students lack experience with a specific technology, they will be less likely to choose it. If a student has had exposure to technology and has more confidence using it, then they will choose to use that technology again.

Satisfaction while using technology will affect a student's technology choice when they are allowed to choose the software or hardware. Owens-Hartman (2015) found that enjoyment while using a technology affected a student's choice. The researcher determined students found it gratifying to use their smart phones. While using their own smart phones, students noticed with certain cloud based software, a smart phone worked better than a laptop. Using a smart phone also helps with passwords as the students were already logged on and did not have to remember passwords to type into their laptops.

Collaboration also affects the choice of technology. If a technology choice makes collaboration easier, then it will be chosen by a student (Owens-Hartman, 2015). Owens-Hartman (2015) found that students want to use software that allows users to easily share with each other when working together on an assignment. Students also want to choose software that can be used anywhere. When students are collaborating they are not always in the same location, so the software must allow for use inside and outside of school. Collaborative software also helps when students are absent from school as it allows them to work on a group assignment from home instead of waiting until they are back at school. Students also want to use technology

that allows for everyone to see the progress group members have made, which most collaboration software has this feature.

Technology Integration Support

In order to promote technology integration different types of support are required. Teachers require more training on how to integrate technology to help prepare their students to be global citizens. Teachers want useful and practical training pertinent to the classroom as well as professional time to work with the technology to develop effective classroom strategies using the technology (Rifkind, 2011). Administrators need to attend professional development that will help them to support technology integration in their schools (Esposito, 2013). School districts also need to adopt technology enriched professional development programs for teachers. Rifkind (2011) conducted a study to focus on the perceptions of teachers and administrators towards technology integration in the classroom. Twenty-nine and four administrators participated in the study. Support and training in regards to perceptions of administration support, district training initiatives, and technology needs was the most overriding theme to emerge in the study. Twenty-seven of the twenty-nine teachers referred to personalization for support and training. Teacher participants felt there is a need for personalized and targeted technology training.

Jackson (2013) found in his research that teachers' preparation needs for integrating technology are different given the teachers' demographic backgrounds. When determining technology training for teachers, gender, age, race, grade level taught, highest degree earned, and years of experience should be considered. Teachers want subject-specific training and general technology training differentiated for beginner, intermediate, and advanced users (Rifkind, 2011). Teachers need to technology training to improve their skills and raise their confidence in

working with technology (Heidenrich, 2013). Technology training should focus on skills or knowledge that will enhance teachers' teaching.

Another way to support technology integration in a school district is to hire an onsite technology specialist. Rifkind (2011) research found that teachers feel there is a need to have onsite educational technology expert. This individual would be able to help with incorporating technology in the classroom. The technology specialist can help with lesson planning that integrations technology. With the technology specialist being employed in the district, onsite professional development training could be offered to the teachers. The technology specialist could also offer one-one-one training on an as-needed basis or could also be present in the classroom to aid in technology integration.

For successful technology integration, all stakeholders must gain skill with specific technologies and have opportunities to choose technology tools to help them achieve their learning goals (Davies, 2011). Administration and teachers need to work together to develop programs that support technology integration and understand the reason behind using it. These programs can include professional development, mentoring, and student training. PD that focuses on technology training for teachers can be useful as it helps teachers to improve their instruction. Teachers are benefiting from receiving new technology learning as well as getting time to work on their new skills. Schools can also use the current technology knowledge of teachers to help other teachers. Teachers who have had success with technology integration can share their knowledge with others in the form of mentoring or peer training. Teachers feel it would be beneficial for a mentor to help with planning a lesson involving technology and then continue the mentoring with assistance in teaching the lesson. Peer training includes teachers sharing their technology experiences with others and observation opportunities. Teachers want

to observe other teachers using technology and see how they incorporate technology into their classrooms (Rifkind, 2011). Students also need educated about technology. In order for students to properly use technology, they must be provided guidelines on how to properly use it (Nworie & Haughton, 2008).

The following review of literature confirms that today's students need and want to learn with technology. Technology is everywhere. Technology has shown to have a positive effective on student achievement. Schools need to provide an environment that supports technology integration. With effective technology integration, students' learning will be enhanced. In order to offer students an education with effective technology, teachers need to be properly trained. Professional development needs to focus on technology basics and continually adapt as teachers become more comfortable with technology so that they can grow in their technology integration skills in their teaching. Also, students need to be given a voice in their learning and how they want to use technology.

Methods

Participants

The action research was conducted in a school district located in a small rural community. The district is a consolidated district made up of three rural communities with a total population of approximately 2,750 people. The school district has approximately 658 students PK-12 and operates in three buildings. The school district promotes technology integration by implementing a 1:1 laptop program. Students in grades 2-12 have access to their own Chromebook, and students in 1st grade and Kindergarten have access to iPads. Every teacher has their own HP laptop and Epson projector. The district employs a part-time technology coordinator and a part-time IT consultant.

The action research focused on the junior-senior high building, where approximately 305 students are enrolled in grades 6-12. Grades 8-12 were the participants for the action research study. Approximately 211 students are enrolled in grades 8-12. Male student's make-up 59% of the student population in grades 8-12. Female student's make-up 41% of the student population in grades 8-12. The ELL population for 8-12 students is 1.4%. The special education population consists of 11.8%. It was decided to exclude grades 6 and 7 in the action research study. Grades 6 and 7 have only been in the junior-senior high building for 6 weeks. Their exposure to and use of technology in the elementary and intermediate building differs greatly compared to how it is used in the junior-senior high school. For that reason only, it was decided to not include them in the action research study.

Data Collection

The action research question to be answered was, "How do students think technology should be used in their learning?" Since the students are currently using technology in a one-to-one laptop district, it is important to meet the needs and wants of these students regarding their technology learning preferences. The independent variable is technology for learning. The action research question will answer the ways technology can be integrated to foster student learning. The dependent variable is the students' preferences. Students will be asked to identify their preferences for technology use to foster their learning.

The survey questions were created for current 8-12th grade students in the junior-senior high school. Prior to this year, students were allowed to have smartphones in the classroom, regardless of the reason for using them. This year, the district enforced a new policy regarding smartphone use in the classroom. Students can only have their smartphones out in class if they are given teacher permission and they can only be used for educational purposes. Due to the

students' feeling regarding the new smartphone policy, there were no specific questions regarding smartphones included in the survey. It was determined that students' feelings regarding the new policy would alter how student responses whereas they would have otherwise answered in a different way.

Since the students are currently using technology in a one-to-one laptop district, it is important to meet the needs and wants of these students regarding their technology learning preferences. The independent variable is technology for learning. The action research question will answer the ways technology can be integrated to foster student learning. The dependent variable is the students' preferences. Students will be asked to identify their preferences for technology use to foster their learning.

The survey was created for current 8-12th grade students in the junior-senior high school. The survey questions focused on technology to determine students' preferences of how they want to use technology in the classroom. Prior to this year, students were allowed to have smartphones in the classroom, regardless of the reason for using them. This year, the district enforced a new policy regarding smartphone use in the classroom. Students can only have their smartphones out in class if they are given teacher permission and they can only be used for educational purposes. Due to the students' feeling regarding the new smartphone policy, there were no specific questions regarding smartphones included in the survey. It was determined that students' feelings regarding the new policy would alter how student responses whereas they would have otherwise answered in a different way.

The timeline of the plan was three weeks. One week was spent creating questions for the survey. After creating the questions, the teacher researcher met with the building principal and discussed the survey. It was important to get the input of the principal as the results could

possibly affect professional development in adding technology topics to existing professional development. Also, the principal was the technology coordinator prior to serving in the current administrative role as a principal and has extensive knowledge regarding technology integration. After the questions were finalized, a Google Form was created. During the second week of the plan, students were emailed the survey to their school email accounts. The teacher researcher talked with each grade level and explained the purpose of the survey and encouraged students to complete the survey. Students in grades 8-12 received the survey, which consisted of 211 students. Students were asked to complete the survey by the end of the week. The survey was voluntary. Students were given the opportunity to fill out the survey, but were not required to do so.

The survey consisted of 15 closed-ended questions and open-ended questions. The survey was limited to 15 questions so that students would be more likely to answer the questions honestly instead of having survey burnout and not answering questions. There were 11 closed-ended questions and four open-ended questions. The closed-ended questions consisted of types of technology that can be used in the students' learning. These questions provided quantitative data by providing insight into the number of students who feel a certain way about technology. The open-ended questions produced qualitative data by allowing students an opportunity to give their own voice on what their learning with technology should look like. During the last week, the data from the students were reviewed and analyzed. The teacher researched organized the findings in a presentable form. The findings were shared with the administration and teachers in the 6-12 building.

Students in grades 8-12 were given a survey about technology. The students had one week to answer the questions. The students were not required to answer the survey. Within the

one-week time period there were one hundred and twenty-one (N=121) survey responses. Of these responses there were 8th grade students (N=38), 9th grade students (N=15), 10th grade students (N=25), 11th grade students (N=24), and 12th grade students (N=19). There were 15 questions within the technology survey.

Findings

Data Analysis

The action research plan uses both qualitative and quantitative data. The action research plan is a mixed method approach in which both types are needed. The action research question is "How do students think technology should be used in their learning?". The independent variable is technology for learning. The dependent variable is students' preferences. The measurement instrument used to collect data was the teacher created survey. The data to be collected is the student survey results. All students in grades 8-12 received the survey which was two hundred and eleven students (N=211). Within a week of giving the survey there were one hundred and twenty-one (N=121) survey responses.

The survey began with basic demographic questions such as grade level. Respondents were asked their grade level. Thirty-one percent (N=38) of respondents were 8th grade students. Twelve percent (N=15) of respondents were 9th grade students. Twenty-one percent (N=25) of respondents were 10th grade students. Twenty percent (N=24) of respondent were 11th grade students. Sixteen percent (N=19) of respondents were 12th grade students.

Table 1

Number of Survey Responses per Grade Level

Grade level	Students in Grade	Student Responses
8	52	N=38
9	29	N=15
10	46	N=25
11	44	N=24
12	40	N=19
Totals	211	N=121

There were one hundred and twenty-one (N=121) responses from students regarding their technology skills. Seventy-six percent (N=92) responded that their technology skills are average compared to the other students in their class. Twenty-two percent (N=27) responded that their technology skills are more advanced compared to the other students in their class. One percent (N=2) responded that their technology skills are at a beginning level compared to the other students in their class.

Table 2

How Students Compare Their Technology Skills to Other Students

Skill Level	Students
Beginning – I am still learning how to use technology	N=2
Average – I know about the same as others	N=92
Advanced – I know more than others	N=27

There were one hundred and twenty-one (N=121) responses from students regarding their Internet access outside of school**.** Ninety-five percent (N=115) responded that they have access to the Internet outside of school. Five percent (N=6) responded they do not have access to the Internet outside of school.

There were one hundred and twenty-one (N=121) responses from students regarding their access to a personal device, either a laptop or tablet, at home that can be utilized for learning. Eight-eight percent (N=106) responded that they have access to a personal device that can be used for learning. Twelve percent (N=15) responded that they do not have access to a personal device that can be used for learning.

Respondents were asked about what type of devices they use while they are at school. There were one hundred and twenty-one (N=121) responses from students. Fifty-seven percent (N=69) responded that they used the Chromebook that is provided by the school for the 1:1 program. Twenty-six percent (N=32) responded that they use their school Chromebook in addition to their personal devices. Thirteen percent (N=16) responded that they only use their personal device at school for educational purposes. Four percent (N=4) responded that they do not regularly use technology when they are at school.

Table 3

Technology Device Preference for Use at School

Technology Device	Students
School provided Chromebook	N=69
Personal mobile device	N=16
I do not regularly use technology	N=4
School provided Chromebook and personal mobile device	N=32

Respondents were asked about the frequency of use of technology resources and technology tools in the classroom that were used to support their learning. There were one hundred and twenty-one (N=121) responses from students. The technology tools and resources that had the highest percentage of being used daily were the following: eighty percent (N=80) responded Google docs, forty-two percent (N=51) responded Google slides, seventy-four percent (N=74) responded Google classroom, seventy-one percent (N=71) responded research, thirty-two percent (N=39) responded social media tools, thirty-five percent (N=42) responded taking notes, and thirty-one (N=37) responded watching videos for learning. The technology tools and resources that had the highest percentage of never being used were the following: sixty-seven percent (N=83) responded augmented or virtual reality environments, seventy-two percent (N=87) blogs, seventy-one percent (N=86) responded coding software, fifty-one percent (N=62) responded online classes, fifty-two percent (N=63) online curriculum, thirty percent (N=36) responded online presentation software, fifty-four percent (N=65) responded online textbooks, and forty-two percent (N=51) responded virtual labs.

Table 4

Frequency of Use of Technology Resources/Tools in the Classroom

Technology Resource/Tool	Daily	Once a week	Once a month	Few times a year	Never
Augmented or VR	N=3	N=10	N=8	N=17	N=83
Blogs	N=3	N=9	N=4	N=18	N=87
Coding	N=2	N=4	N=9	N=20	N=86
Online games	N=22	N=45	N=44	N=5	N=5
Google Docs	N=97	N=19	N=2	N=1	N=2
Google Slides	N=51	N=39	N=23	N=4	N=4
Google Sheets	N=14	N=16	N=30	N=38	N=23
Google Classroom	N=74	N=34	N=10	N=0	N=3
Online classes	N=27	N=5	N=12	N=15	N=62
Online curriculum	N=9	N=10	N=24	N=15	N=63
Online presentation software	N=5	N=18	N=33	N=29	N=36
Online tests	N=14	N=27	N=35	N=29	N=16
Online textbooks	N=5	N=8	N=17	N=26	N=65
Research	N=71	N=38	N=8	N=0	N=4
Social media tools	N=39	N=25	N=13	N=16	N=28
Software/Apps	N=17	N=33	N=33	N=17	N=21
Taking notes	N=42	N=38	N=21	N=8	N=12
Watching videos for learning	N=37	N=31	N=30	N=11	N=12
Watching teacher videos	N=8	N=20	N=42	N=20	N=31
Virtual labs	N=7	N=14	N=26	N=23	N=51

Respondents were asked about their level of interest of using technology resources and technology tools in the classroom that would be used to support their learning. There were one hundred and twenty-one (N=121) responses from students. The technology tools and resources that respondents answered of having the most interest in using in their learning were the following: sixty-two percent (N=62) responded online games, fifty-four percent (N=54) responded Google slides, forty-six percent (N=55) responded research, forty-one percent (N=49) responded watching video for learning and thirty-seven percent (N=45) responded virtual labs. The technology tools and resources that respondents answered of having no interest in using their learning were the following: forty percent (N=49) responded augmented or virtual reality environments, seventy percent (N=85) responded blogs, fifty-three percent (N=64) responded coding software, forty-six percent (N=55) responded Google sheets, sixty percent (N=73) responded online curriculum, forty-six percent (N=55) responded online presentation software, fifty-five percent (N=66) responded online textbooks, and thirty-nine percent (N=48) responded watching videos made by teachers that explain a lesson.

Table 5

Interest Level of Using the Following Technology Resources/Tools in the Classroom

Technology Resource/Tool	Very Interested	Somewhat Interested	Not Interested
Augmented or VR	N=32	N=40	N=49
Blogs	N=6	N=30	N=85
Coding	N=25	N=32	N=64
Online games	N=62	N=35	N=24
Google Docs	N=51	N=53	N=17
Google Slides	N=54	N=46	N=21
Google Sheets	N=24	N=42	N=55
Google Classroom	N=46	N=52	N=23
Online classes	N=33	N=55	N=33
Online curriculum	N=16	N=32	N=73
Online presentation software	N=21	N=45	N=55
Online tests	N=27	N=48	N=46
Online textbooks	N=15	N=40	N=66
Research	N=55	N=45	N=21
Social media tools	N=40	N=56	N=25
Software/Apps	N=34	N=52	N=35
Taking notes	N=41	N=39	N=41
Watching videos for learning	N=49	N=42	N=30
Watching teacher videos	N=35	N=38	N=48
Virtual labs	N=45	N=37	N=39

Respondents were asked if they work independently or collaboratively when using technology in their classes. There were one hundred and twenty-one (N=121) responses from students. Sixty-three percent (N=76) responded that they work both independently and collaboratively in the classroom while using technology. Twenty-nine percent (N=35) responded to only working independently while using technology in the classroom. Eight percent (N=10) responded to only working collaboratively while using technology in the classroom.

Respondents were asked how they received feedback from teachers when using technology. There were one hundred and twenty-one (N=121) responses from students. Fifty-six percent (N=68) responded that the teacher fills out a rubric to give feedback when using technology.

Table 6

How Students Receive Feedback from Teachers When Using Technology

How Students Receive Feedback from the Teacher	Students
Teacher fills out a rubric	N=68
Teacher e-mails me	N=60
Teacher gives me verbal feedback	N=61
I do not receive feedback	N=25

Respondents were asked what prevents them from using technology at school. There were one hundred and twenty-one (N=121) responses from students. Seventy-one percent (N=86) responded the internet is slow and inconsistent. Fifty-five percent (N=67) responded that teachers limit student technology use. Fifty-two percent (N=63) responded that there are too many rules again using technology. Forty-seven percent (N=57) responded that the websites

needed for school work are blocked. Eleven percent (N=14) responded that there are no issues using technology.

Table 7

What Prevents Students from Using Technology at School

Technology Barriers	Students
Internet is slow and erratic	N=86
Blocked websites	N=57
Teachers technology knowledge is limited	N=19
Teachers limit student technology use	N=67
Too many rules against using technology	N=63
I do not use technology at school	N=3
There are no issues using technology at school	N=14

Respondents were asked to describe a technology activity that went well and a technology activity that did not go well. There were one hundred and twenty-one (N=121) responses from students. Twenty-one percent (N=25) responded that Kahoot was an activity that went well. Ten percent (N=12) responded that using technology to research and write a paper went well. Twenty-four percent (N=29) responded that they have not had any technology activities that went poorly. Ten percent (N=12) responded that technology went poorly because of technical issues.

Respondents were asked to what their favorite ways to use technology in the classroom were and what their least favorite ways to use technology in the classroom were. N=42 responded that their favorite way to use technology is online games, such as Kahoot. N=20 responded their favorite way to use technology in the classroom is doing research and writing a

paper. N=21 responded their least favorite way to use technology in the classroom is to take notes.

Discussion

Summary of Major Findings

Survey responses indicated that students want to use technology but there are some limitations to their use of technology. In completing the survey, the majority of students to complete the survey were the 8th grade students. In the analysis of why 8th grade students were more likely to willingly complete the survey could be because these students have had less experience with the 1:1 laptop program. Because the 1:1 laptop program is newer to this grade level, these students have more excitement and positive feelings toward technology.

Students were asked to rate their technology skills compared to the other students in their class. In the analysis of the responses, the researcher identified that the majority of students feel that their technology skills are average in comparison with their peers. These students do not feel behind or superior in comparison with their peers in their technology skills. Since students feel average, it indicates that students do not feel that they are technology experts and can benefit from continued technology integration.

Students were asked about the devices that they most typically use while they are at school. In the analysis of the responses, the researcher identified that the majority of students chose to use the Chromebook that the school provides to students for the 1:1 program. This would indicate that students have positive feelings toward the 1:1 program. Students like using the Chromebooks instead of having to bring their own device to school. The school should continue using the 1:1 laptop program.

Students were asked about the frequency of using specific types of technology resources and tools in their classes that help to support their learning. In the analysis of the responses, the researcher identified that there are certain types of technology resources and tools that are never being used in the classroom. The technology resources/tools that are being used daily by students are Google Docs, Google Slides, Google Classroom, and research. The technology resources and tools that are not being used by students are augmented/virtual reality environments, blogs, coding, online curriculum, online textbooks, and virtual labs. The teachers in this building need to encourage students or provide students the opportunity to use a variety of technology resources and tools instead of the types that are always being used.

Students were asked about their level of interesting in using specific types of technology resources and tools in their classes to help support their learning. In the analysis of the responses, the researcher identified that there are certain types of technology resources and tools students have a very high interest in using and types that there is no interest in using. The technology resources and tools that students have a high interest in using are online games to support their learning. The technology resources and tools that students have no interest in using are blogs, coding, online curriculum, and online textbooks. Teachers could try to add more online games that support student learning in their classroom.

Limitations of the Study

There are a few of factors that may have influenced the true representation of the proposed action research. One factor that may have affected the survey results may have been the students' feelings regarding the cell phone policy. This year, the school board issued a new policy regarding cell phones. Prior to the current school year, students were allowed to have cell phones in the classroom. Students did not have any restrictions on cell phone use. Students

were allowed to use cell phones for academic purposes and personal use in the classroom. Because the cell phones were seen as distractions to the students' learning, the school board established a new policy. With the new cell phone policy, students are only allowed to use cell phones with the teacher's permission and it must be for academic use only. A majority of students were upset with the new policy and have still not adjusted to the policy. Due to their negative feelings toward administration and teachers in having to enforce the policy, students may have answered questions differently if the policy was not in place.

Another limitation to the study is the both the students' and teachers' lack of knowledge of the vast technology resources and tools available for them to use. If students do not have knowledge of a technology resource or tool, they will not be able to determine if they would want to use it with their learning. If teachers are limited in the integration of technology in the classroom and use a limited number of technology resources and tools, then the students do not have experience using those technologies. In the question about the level of interest in using specific technology resources and tools that support learning, students may have based their answer on their experience or knowledge of the technology. If a student did not know what the technology was they may have just answered: "Not interested". Having the option, "I do not have knowledge of this technology" would have helped with this limitation.

Another factor that may have affected the study was the students' attitude when they took the survey. If students had a poor attitude while taking the survey they may have given less effort when answering questions. Some students do not care about giving honest answers and will just click on any response to be done with the survey. This makes it difficult to determine when students are answering questions without thinking about their response so they can be finished taking the survey.

Further Study

This research on students' technology preferences suggests that more work be done in order to get more data. The researcher could form focus groups for each grade level of students that were surveyed. These focus groups could be used to ask questions about technology, which gives students the opportunity to voice their own opinions. In addition to the focus groups, a follow-up technology survey could be given to students at the end of the school year. The researcher can create the survey with additional input from the principal and teachers. Teachers will be asked to give their input for this survey as they may have specific questions to be addressed regarding the technology tools and resources they use in their classrooms. The results of the survey can be used to help develop the upcoming professional development for the following school year.

Conclusion

Technology is changing the way today's students learn. Technology resources and tools give students and teachers the opportunity to engage in powerful learning experiences. Technology provides students with different ways to gain knowledge and also different ways to display their learning to others. Technology provides students the opportunity to take ownership of their own learning as there are a vast amount of technology resources for them to explore new information. Technology gives teachers the opportunity to enrich their lesson plans and how they teach. Technology also helps teachers to differentiate learning experiences for each individual student.

Technology is in all facets of education. The presence of technology has created a push and a need for teachers to integrate technology into their classrooms and lessons. In order to successfully integrate technology, teachers must incorporate technology that students want to

use. By giving the students the opportunity to use a preferred technology resource or tool for their learning, teachers are allowing for student voice. Student voice leads to students that are more engaged in their learning.

The research sought to find out what specific technology resources and tools students want to use in their learning. The research also sought to find out what students felt were barriers of technology and sought to influence change in how teachers integrate technology in their classrooms. The survey provided a method of examining what technology resources and tools students want to use. When shared with other teachers, the survey results will provide beneficial information to teachers on how they can adjust their integration of technology in their classrooms.

With the knowledge gained from the research, teachers can integrate technology that students want to use. This can be done with the researcher sharing the findings from the study with the administration and teachers in the district. The findings can also be used to develop professional development for teachers that will focus on the technology that students want to use. When teachers do not understand a specific technology, they will be less likely to use that technology with their students. By offering professional development to teachers on specific technology tools and resources, it eliminates the barrier for teachers of not understanding technology. The professional development will give teachers knowledge and confidence in using the technology tools and resources that students prefer. Teachers will be more effective in their technology integration. Effective technology integration will result in students that are more engaged in their learning.

References

Ankiewicz, P. (2018). Perceptions and attitudes of pupils towards technology: In search of a rigorous theoretical framework. *International Journal of Technology and Design Education*, 1-20.

Ardies, J., De Maeyer, S., Gijbels, D., & Van Keulen, H. (2015). Student's attitudes towards technology. *International Journal of Technology and Design Education, 25*(1), 43-65.

Byker, E. J., Putman, M. S., Handler, L., & Polly, D. (2017). Educational technology and student voice: Examining teacher candidates' perceptions. *World Journal on Educational Technology: Current Issues, 9*(3), 119-129.

Chen, J. J., & Yang, S. C. (2014). Fostering foreign language learning through technology-enhanced intercultural projects. *Language Learning & Technology 18*(1), 57–75. Retrieved August 26, 2018, from http://llt.msu.edu/issues/february2014/chenyang.pdf.

Clemensen, J. M. (2018). *The Perceived Effectiveness of One-to-One Technology in Smallwood High School.* (Doctoral dissertation). Retrieved July 18, 2018, from http://scholarworks.uark.edu/cgi/viewcontent.cgi?article=4188&context=etd.

Davies, R. S. (2011). Understanding technology literacy: A framework for evaluating educational technology integration. *TechTrends, 55*(5), 45-52.

Downes, J. M. & Bishop, P.A. (2015). The intersection between 1:1 laptop implementation and the characteristics of effective middle level schools. *RMLE Online, 38(7), 1-16.*

Esposito, M. (2013). *An examination of secondary school teachers' technology integration recommended by ISTE's national educational technology standards for teachers and school principal support for teacher technology efforts.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database.

Heidenrich, C. (2013). *Student technology use for powerful learning.* (Master's thesis). Retrieved from ProQuest Dissertations and Theses database.

Hsu, P. (2016). Examining current beliefs, practices and barriers about technology integration: A case study. *TechTrends, 60*(1), 30-40.

Jackson, B. C. (2013). *Teachers' needs for integrating technology*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database.

Kemp, A. T., Preston, J., Page, C. S., Harper, R., Dillard, B., Flynn, J., & Yamaguchi, M. (2014). Technology and teaching: A conversation among faculty regarding the pros and cons of technology. *The Qualitative Report, 19*(3), 1-23.

Mitchell, G. W., Wohleb, E. C., & Skinner, L. B. (2016). Perceptions of public educators regarding accessibly to technology and the importance of integrating technology across the curriculum. *The Journal of Research in Business Education, 57*(2), 14-25.

Nworie, J., & Haughton, N. (2008). Good intentions and unanticipated effects: The unintended consequences of the application of technology in teaching and learning environments. *TechTrends, 52*(5), 52-58.

Owens-Hartman, A. (2015). *A case study of technology choices by high school students.* (Doctoral dissertation). Retrieved August 29, 2018, from https://etd.ohiolink.edu/!etd.send_file?accession=akron1446579631&disposition=inline.

Pynos, R. (2016). *Student engagement and its relationship to mobile device ownership and the role of technology in student learning.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database.

Rifkind, D. (2011). *A case study exploration of secondary school teachers' technology integration*. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database.

Stefl-Mabry, J., Radlick, M., & Doane, W. (2010). Can you hear me now? Student voice: High school & middle school students' perceptions of teachers, ICT and learning. *International Journal of Education and Development using Information and Communication Technology, 6*(4), 64-82.

Stone, J. A. (2017). The impact of technology exposure on student perceptions of a 1:1 program. *Education and Information Technologies, 22*(5), 2281-2309.

Appendix A

Mrs. Allen's Technology Survey

The purpose of this survey is to examine the role of technology for student learning. Please answer each question as thoughtfully and honestly as possible. The results will be used to support and guide teachers for the instruction use of technology. Your responses will be kept anonymous. Thank you for your participation!

1. **What is your current grade? ***
   Mark only one oval.
   - ◯ 8th
   - ◯ 9th
   - ◯ 10th
   - ◯ 11th
   - ◯ 12th

2. **Gender ***
   Mark only one oval.
   - ◯ Female
   - ◯ Male
   - ◯ Prefer not to say
   - ◯ Other: _____

3. **How do your technology skills compare to the other students in your class? ***
   Mark only one oval.
   - ◯ Beginning - I am still learning how to use technology
   - ◯ Average - I know about the same as others
   - ◯ Advanced - I know more than others

4. **Do you have access to the Internet at home? ***
   Mark only one oval.
   - ◯ Yes
   - ◯ No

5. **Do you have a personal device at home, either a laptop or tablet, that can be used for learning? ***
   Mark only one oval.
   - ◯ Yes
   - ◯ No

6. **Which of these are true for you the majority of the time when you are at school? (Check all that apply) ***

Check all that apply.

- [ ] I use a Chromebook in class that the school provides to me
- [ ] I use my own mobile device (laptop, tablet, smartphone) to help with school work
- [ ] I do not regularly use technology when I am school

7. **How often are you using the following resources/tools in your classes to support your learning? ***

Mark only one oval per row.

	Daily or almost daily	At least once a week	At least once a month	A few times a year	Never
Augmented or virtual reality	◯	◯	◯	◯	◯
Blogs	◯	◯	◯	◯	◯
Coding software	◯	◯	◯	◯	◯
Digital, video, or online games (example-Kahoot)	◯	◯	◯	◯	◯
Google Docs	◯	◯	◯	◯	◯
Google Slides	◯	◯	◯	◯	◯
Google Sheets	◯	◯	◯	◯	◯
Google Classroom	◯	◯	◯	◯	◯
Online classes	◯	◯	◯	◯	◯
Online curriculum (example-Aleks math, EVERFI)	◯	◯	◯	◯	◯
Online presentation software (example-Prezi)	◯	◯	◯	◯	◯
Online tests or assessments	◯	◯	◯	◯	◯
Online textbooks	◯	◯	◯	◯	◯
Research	◯	◯	◯	◯	◯
Social media tools	◯	◯	◯	◯	◯
Software/apps (websites used for creating a project or product)	◯	◯	◯	◯	◯
Taking notes	◯	◯	◯	◯	◯
Watching videos for learning (YouTube or Khan Academy)	◯	◯	◯	◯	◯
Watching video made by teachers that explain a lesson	◯	◯	◯	◯	◯
Virtual labs	◯	◯	◯	◯	◯

8. **What is your level of interest in using the following technology resources/tools in your classes to support your learning? ***

Mark only one oval per row.

	Very interested	Somewhat interested	Not interested
Augmented or virtual reality	◯	◯	◯
Blogs	◯	◯	◯
Coding software	◯	◯	◯
Digital, video, or online games (example-Kahoot)	◯	◯	◯
Google Docs	◯	◯	◯
Google Slides	◯	◯	◯
Google Sheets	◯	◯	◯
Google Classroom	◯	◯	◯
Online classes	◯	◯	◯
Online curriculum (example-Aleks math, EVERFI)	◯	◯	◯
Online presentation software (example-Prezi)	◯	◯	◯
Online tests or assessments	◯	◯	◯
Online textbooks	◯	◯	◯
Research	◯	◯	◯
Social media tools	◯	◯	◯
Software/apps (websites used for creating a project or product)	◯	◯	◯
Taking notes	◯	◯	◯
Watching videos for learning (YouTube or Khan Academy)	◯	◯	◯
Watching video made by teachers that explain a lesson	◯	◯	◯
Virtual labs	◯	◯	◯

9. **How do you use technology in your classes? (Check all that apply) ***

Check all that apply.

- ☐ Independently
- ☐ Collaboratively (Working with a partner or group work)

10. **When you use technology for learning, how do you receive feedback from your teachers? (Check all that apply) ***

Check all that apply.

- ☐ The teacher fills out a rubric
- ☐ The teacher e-mails me
- ☐ The teacher gives me verbal feedback
- ☐ I do not receive feedback

11. **Describe an activity that went well using technology for a class. ***

12. **Describe an activity that went poorly using technology for a class. ***

13. **What are your favorite ways to use technology in the classroom?**

14. **What are your least favorite ways to use technology in the classroom? ***

15. **What prevents you from using technology when you are at school? (Check all that apply) ***
Check all that apply.

- [ ] The teachers limit our technology use
- [ ] The teachers do not know how to use technology for learning
- [ ] The websites I need for school work are blocked
- [ ] The Internet is too slow or inconsistent
- [ ] There are too many rules against using technology
- [ ] I do not use technology at school
- [ ] There are no issues using technology at school
- [ ] Other: _____