IMPLICATIONS AND CONCERNS OF TECHNOLOGY IN THE ELEMENTARY LITERACY CLASSROOM

by

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Implications and Concerns of Technology in the Elementary Literacy Classroom

"If we teach today as we taught yesterday,
we rob our children of tomorrow." –John Dewey

Part One: Scholarly Research and Implications

Introduction

Growing up in the late 1990s, I was surrounded by ever advancing technology. I remember dancing around my living room and having my Walkman skip, scratch, and fall on the floor. I remember my parents buying our first computer. I remember getting my first iPod and my first cell phone, which now can be purchased as one device. With all this technology around, it is not hard to imagine how much interest I took in it. I became the go-to person in my family for all things technology, always wanting to learn more and help others. In college, I saw technology used in a classroom en masse for the first time. That classroom is a one-to-one technology district, in which each student has their own Chromebook, a small laptop with Google-based applications and Internet access. I was in awe of the projects students were making from PowerPoint presentations to full-scale movies, all with a highly motivated sense of collaboration.

Having witnessed the implementation and the success of using these devices, I knew I wanted to take this knowledge a step further and think about how this technology, specifically in the literacy classroom, is impacting those involved. I was looking to understand how the roles, actions, and attitudes changed for the different affected groups – teachers, students, administrators, and parents – when technology was implemented in a literacy classroom. I examined multiple scholarly articles, books, and journals on the topic of technology, specific to the literacy classroom. From the research, it is clear that students, teachers, administrators, and

parents all have to adjust their roles, actions, and attitudes when technology is implemented into the literacy classroom. Following the beginning explanations of technology and literacy, the subsequent paper is organized into sections based on the findings of each of the four affected groups: the student, the teacher, the administrator, and the parent.

Purpose of Technology in the Classroom

Many students in the current public education system are struggling to not only gain reading skills, but also apply them later on in their education. In fact, "More than eight million students in grades 4 to 12 are identified as struggling readers" (Sternberg, Kaplan and Borck 416). This number is staggering, and a large part of the problem is defining why that particular student is struggling. There is a myriad of possibilities for the reason behind this continued struggle, including mental barriers, like understanding letter sounds and comprehending meaning. It can be extremely difficult for a teacher to pinpoint where or what the barrier is. This is where technology, when implemented successfully into the classroom, can assist the teacher. According to an article by Susan Watts-Taffe and Carolyn B. Gwinn about effective technology practices, "Many teachers find technology helpful in reaching students who seem otherwise inaccessible. Furthermore, we have found that when students interact with new technologies, individual student strengths and weaknesses that have gone heretofore unnoticed may become apparent" (17). Technology, as they state, can help teachers better understand their students and their individual needs, preferences, and abilities.

However, technology can also be used in the literacy classroom for a variety of other purposes, including meeting student objectives, in both traditional and new literacies (Watts-Taffe and Gwinn 14). This means that technology can help teachers meet curriculum goals, both

traditional ones and also those standards pertaining to technology, such as examining credibility. Watts-Taffe and Gwinn go on to state that technology can also help with communication and collaboration. "Both the amount and the complexity of interaction among students and between students and teachers can be enhanced when working with new technologies" (16). Teachers now have the ability to better communicate with their students and allow students to collaborate with their peers in a safe environment. Technology can serve a multitude of purposes in the classroom as it begins to shift the classroom to a more student-based, guided learning structure.

History and Current State of Technology

Beginning in the 1960s, technology slowly crept its way into the American classroom. However, as Michael C. McKenna points out, it was accepted into some subjects more easily than others. "In some areas, the STEM subjects in particular, tech applications have been warmly welcomed…In the language arts, however, the appropriateness of technology is less obvious, and the teacher resistance has been higher from the onset" (McKenna 10). Teachers did not see the potential purposes of this new technology, and therefore, did not implement it to its fullest potential. According to an article by June Brown, Jan Bryan, and Ted Brown, "…teachers and children simply did old things in new ways without grasping the value of technology as a new communication tool. Although technology changed the classroom environment to some degree, curriculum and instruction did not change" (Brown, Bryan, Brown 2). Basically, they argue that teachers need to focus on truly incorporating technology into their lesson plans as a tool to help not just their instruction, but also the students' learning.

Some teachers never truly implemented technology into their classroom, causing a potentially valuable resource to go to waste. Other teachers, while at first hesitant, began to

understand the possibilities for their classroom using these devices. Now, in 2015, technology is at the forefront of almost all classrooms, no matter the subject. Several obstacles have been overcome, but according to Watts-Taffe and Gwinn, there is still more work to be done. "Fortunately, computer access is becoming much more equalized across socioeconomic and color lines (National Center of Education Statistics, 2000), but Labbo (2005) warns that the challenge now is to eliminate the divide that can exist in how technology is used in the classroom" (Watts-Taffe 18). In this new era, technology is beginning to become a major resource in schools. More research is being done on the impacts of technology, its best uses, and what devices/resources to use. For example, Howard Pitler, Elizabeth R. Hubbell, and Matt Kuhn developed a book entitled *Using Technology with Classroom Instruction That Works*, which reports nine ways in which technology can be used in the classroom. They are word processing applications, organizing and brainstorming software, data collection and analysis tools, communication and collaboration software, instructional media, multimedia creation, instructional interactives, database and reference resources, and kinesthetic technology (Pitler et. al 10). These classifications are pretty specific in comparison to where technology began only fifty years ago. These categories continue to grow and change as technology develops in this ever-changing world.

The Change in the Definition of Literacy Due to Technology Implementation

Brown, Bryan, and Brown stated, "The concept of literacy clearly has become more differentiated and more expansive in the wake of the technological revolution" (Brown, Bryan, Brown 1). While technology is becoming a large part of the classroom, it is also important to

define what is meant by literacy, especially because due to the technology integration, the definition has changed. According to Ann Holum and Jan Gahala, two technology researchers:

> Literacy instruction traditionally refers to the teaching of basic literacy skills—reading, writing, listening, and speaking. In today's digital world, however, technology has contributed to an expanded understanding of literacy. Besides having basic literacy skills, today's students also need technology skills for communicating, investigating, accessing and using information, computing, thinking critically about messages inherent to new media, and understanding and evaluating data (Holum and Gahala 3).

This new definition of literacy changes the way the literacy classroom looks and operates. Teachers have to teach new skills that they themselves may never have learned. Students are expected to do more, but this is all in hopes of getting the student prepared for college and careers, which are becoming heavily technology-based as well.

Implications of Technology Integration for the Student

Students will be asked to align their attitudes with student-based learning, as they adapt to the new roles and actions required by this model.

Roles:

Students in the modern day literacy classroom will be asked to fill multiple roles. They will be expected to work collaboratively using this newly implemented technology, as Watts-Taffe and Gwinn suggest. They state, "…students learn how to rely on and support each other in their independent endeavors as well as how to work together toward a shared goal" (Watts-Taffe and Gwinn 17). By working together, students are able to better comprehend material and also examine multiple points of view. This will help them later in life, as they continue to grow and

communicate with a variety of different people. Watts-Taffe and Gwinn also say the students' role changes, as they are required to become life-long learners. "The rapid changing nature of technology requires learners to learn not only the information available at the present time, but also how to update their knowledge base continually" (Watts-Taffe and Gwinn 15). Students will need to be continual learners and be able to communicate with others in order to be successful both in the classroom and in the world.

Actions:

As far as their physical role in this technological classroom, students will be asked to do different tasks that will help them build valuable skills. Brown, Bryan, and Brown suggest that students in this new classroom will be tasked with completing electronic work. They state:

> …Literacy in the 21st century requires that children not only communicate with classroom peers, but also read e-books, receive and send e-mail, locate and evaluate online information, prepare reports with presentation software, establish dialogue with learned individuals in other regions, and write for both a local and global community (Brown, Bryan, and Brown 3).

By completing these tasks, students will be better prepared for the technological world that they live in. They will gain an understanding of the content, the technology, and also the process skills in order to repeat the task. According to the *Handbook of Research on Literacy in Technology at the K-12 Level,* a collection of essays compiled by Leo Tan Wee Hin and R. Subramaniam, Wan Ng writes, "In a technology-mediated learning environment, the interactive, open and not-linear nature of learning requires learners to be actively analyzing, evaluating, and making decisions while manipulating the information at hand in order to construct new knowledge or solve a problem" ((Hin) Ng 100). Inherently, Ng is arguing for a student-directed,

inquiry-based classroom environment, where technology is a tool to further knowledge. This new classroom structure will change the students' role, however, it will help them further on in life as they are better equipped for technology-based experiences.

Attitudes:

Students might have possibly grown up around technology. Therefore, their attitude towards it does not necessarily change. However, when it is incorporated into the literacy classroom, research shows that students are more interested in the work they are doing and value it more. With technology, there is more room for differentiation in the classroom and students are able to read books and do projects based on their personal interest. As McKenna states, "When students are afforded the opportunity to explore existing interests through online projects, the value they ascribe to reading increases and their attitudes toward reading grow more positive…collaboration can be the social engine that motivates students as they engage in structured online inquiry tasks" (McKenna 12). It is clear that when students are able to work on a project that interests them, and then collaborate with their peers, they become more positive and more motivated. Technology, according to Watts-Taffe and Gwinn, plays a huge role in this motivation. "It is probably also not surprising that technology can have a positive impact on student motivation and factors related to motivation such as enjoyment of schoolwork, persistence, and time on task (Kamil et al., 2000)" (Watts-Taffe and Gwinn 21). Overall, technology in the classroom helps students become more highly motivated, more positive, and value their work more both individually and collaboratively.

With the implementation of technology into the literacy classroom, the student must become aware of their new role in the classroom, which will change their actions as well. Their attitudes, while already quite positive toward technology, often times create an optimistic attitude

toward the work they are producing as well. Technology molds the classroom toward a student-directed approach, which also causes the teacher to question their position in the classroom.

Implications of Technology Integration for the Teacher

Teachers, once they shift their beliefs to seeing the benefits of technology, will be able to redefine their roles and their actions in the literacy classroom.

Roles:

The most significant change for teachers upon the implementation of technology in the literacy classroom are their roles. Due to the fact that students, once they understand the devices, can direct their own learning, teachers are able to focus their attention on students who need extra support (Sternberg, Kaplan and Borck 418). In traditional teaching, teachers often prepare content to present to the class, with the teacher being active and the students taking a more passive role. Now, with technology in the classroom, onlookers believe that the opposite is taking place, with students taking the active role. While this is true, the teacher does not become passive. The teacher now learns along side the students, asking questions, learning new tools to help the students, and exploring these new technological devices. Researchers Glynda Hull, John Scott, and Jennifer Higgs, state just that in their article for *Phi Delta Kappan*:

> "Rather than ask teachers and teachers-to-be to learn about digital tools in a mostly decontextualized way – as discrete skills to acquire and then use at a later time – we advocate immersing them in tool use and artifact generation in much the same way that kids acquire expertise in using digital technologies out of school to socialize, solve problems, explore interests, and make things" (Hull, Scott, and Higgs 56).

It is clear that the role of teachers has significantly changed in the classroom, as they become more parallel with the students instead of in a hierarchical structure. This new role deeply impacts their physical actions in the classroom.

Actions:

Teachers' actions will also change in the classroom, as they begin to sit side by side with the students as a guide while using technology as their tool for learning. Teachers should be focused on helping the student process and understand their explorations. Yin Cheong Cheng, in her essay for Hin and R. Subramaniam's *Handbook* states, "Teaching is considered as a process to initiate, facilitate, and sustain students' self learning, self-exploration, and self-actualization; therefore, the teacher should play a role as a facilitator or mentor who supports students' learning" ((Hin) Cheng 5). By facilitating and helping the students, teachers are building positive relationships with their students and becoming more aware of individual student need. According to Watts-Taffe and Gwinn, by planning ahead, teachers can build strong communities that use technology as a tool to collaborate and express individual opinions freely (Watts-Taffe and Gwinn 19). The students are able to feel comfortable in the classroom and feel that the class and the teacher is right along side them as they continue their education. While the changing roles and actions seem necessary for proper implementation of technology, it is the teachers' attitudes that can prevent these changes.

Attitudes:

In many articles of research, it was found that teachers' opinions on technology, its uses, and its value, differ greatly. Amy Hutchison and David Reinking asked nearly 1,500 literacy teachers about their thoughts on technology. Their results stated that, "Among the literacy teachers responding to this survey, there seemed to be a gap between their perceptions about the

importance of integrating ICTs into their instruction and their reported use of them" (Hutchison and Reinking 322). So, while teachers reported that they valued the use of technology in the classroom, they also reported a lack of use due to a variety of reasons. These reasons ranged from lack of time, to lack of skills, to lack of incentives, but the greatest one by far was a lack of support or professional development on how to implement these devices into the classroom (Hutchison and Reinking 325). While these are mostly extrinsic factors, or ones that teachers cannot control, they are still looking for more help, which in turn, mandates that the administrators' role be changed as well. Teachers are going to need quite a bit of assistance implementing technology into the literacy classroom, which is why the administrators also needs to be cognizant of their changing role.

Implications of Technology Integration for the Administrator

Administrators, while not always in the classroom, need to be readily aware of the uses of technology as well as provide teachers with support and resources to help with implementation in the literacy classroom.

Roles:

Administrators need to take initiative in their role, as the teacher needs significant support when using technology in their literacy classrooms. As Hutchison and Reinking state in their findings from their study, "The results of this investigation also emphasize the fact that administrators and policymakers cannot expect teachers to bear the sole responsibility for increasing integration of ICTs into literacy instruction" (Hutchison and Reinking 331). This means that administrators must really be involved in the literacy classroom if they want

technology to be a resource for students to learn. The actions of the administrator must showcase this new role by providing professional development and personal support.

Actions:

By providing professional development, administrators allow teachers to learn new ways to use their available technology in the classroom. However, that is not enough. As Hull, Scott, and Higgs state:

> Teachers, like students, need access to contexts in which they can develop as creators of media. This development doesn't happen in isolation; being situated in and supported by a community of practice that links to other people, forms of participation, and collaborative opportunities (Brown, Collins, & Duguid, 1989) is key to moving beyond interaction with media and into creation (Brennan, Monroy-Hernandez, & Resnick, 2010) (Hull, Scott, and Higgs 58).

By working in groups, much as the students will be expected to do in the new technology-based classroom, teachers are able to share ideas and support other teachers. By doing so, they will be able to find new tools and empower each other to integrate technology into their classrooms. If administrators help teachers by offering a community of support and professional development, "a revolution in education driven by a changing world and digital technologies may indeed be afoot" (Hull, Scott, and Higgs 60). They just have to have the willing attitude to do so.

Attitudes:

Administrators, according to Hull, Scott, and Higgs, have shown "relatively little attention" to the "kinds of professional development experiences that educators require in order to support students' expressive and intellectual engagement with new media" (Hull, Scott, and Higgs 57). Administrators really need to become more aware of the technology implementation

in the literacy classrooms of their schools, especially when teachers are looking for support and guidance. Therefore, it is extremely important for administrators to work with teachers in order for their roles and actions to have an influence on their attitudes.

Implications of Technology Integration for the Parent

Parents, by communicating with the teacher and the administrator, will hopefully begin to adapt their roles and attitudes towards technology to help the student outside of school as well.

Roles:

The parents' role is changing rapidly as schools implement technology in the literacy classroom. Students are asking for the devices more often at home and at school. Parents need to communicate with the school and become extremely educated about the use of technology and its importance. According to Sternberg, Kaplan, and Borck, schools have found that parents are often very unaware of technology skills and sometimes even their literacy skills as well. Therefore, "Some schools are even experimenting with providing resources to parents/guardians to help them develop their own literacy skills. These resources include information on adult education programs, links to interactive Internet-based activities, and access to support for adult learners" (Sternberg, Kaplan, and Borck 419). The parents' role now needs to become more actively involved through communication with the school.

Actions:

By communicating with the school, parents are able to work with the students at home, whether through a technological device or not. They are more involved in their child's schooling, and therefore, students gain a more synonymous relationship between school and home. These relationships are important for the student to feel supported by both the school and the home. In

order to further these relationships, parents need to continually communicate with the school, the teacher, their student, and even potentially the administrator to create a positive environment for their child.

Attitudes:

The loudest concerns against technology in the literacy classroom come from parents. They are concerned that "digital text" will lead to "decreased reading speed, inability to accurately scan or notice details when screen reading, and distractibility from other available resources" (Wright, Fugett, and Caputa 368). While these are valid concerns, Wright, Fugett, and Caputa make the argument that the good may outweigh the bad. "Moreover, numerous studies illustrate the benefits of e-book reading as an effective means to improving the literacy skills of children, especially reading comprehension (Korat, 2009; de Jong & Bus, 2002; Grimshaw et al., 2007)" (Wright, Fugett, and Caputa 368). It is important for parents to really examine all sides of the technology debate before forming an opinion. Of course, there will always be people, not just parents, who do not understand the use of technology in the classroom. However, it is essential to hear their concern. While there are always obstacles to overcome, it is intriguing to see progress toward using technology in the literacy classroom. Parents can help largely with the integration of technology in the literacy classroom, as long as they are able to understand their roles, and do not let their attitudes inhibit their communication with the school.

Implications

The research shows that with an understanding of roles, actions, and attitudes, the affected groups of students, teachers, administrators, and parents can work harmoniously together to create a technologically rich literacy classroom. Arguably, it is most important for teachers to

have positive attitudes when it comes to technology in the classroom, because if it is poorly integrated, students are not reaching their fullest potential. It has become necessary, in other words, for teachers to essentially get out of their own way, and focus on how to effectively use technology in the literacy classroom.

Many teachers are still asking if technology should be implemented in their classroom, even when it is already there on the shelf. The question no longer can be if, but what is the best way? This is difficult for researchers to pinpoint, as Holum and Gahala point out in their essay, "…even as researchers begin to describe empirical evidence supporting the effects a particular technology on an educational practice, that technology itself is changing and in some cases even becoming obsolete" (Holum and Gahala 5). This constant change in technology causes issues with research evidence, but it also provides little information on the proper use of the technology in the classroom. "In addition, the evolving nature of educational technologies precludes any efforts to predict the success of, and establish guidelines for, subsequent educational practices" (Holum and Gahala 5). Basically, technology has been evolving so quickly that researchers cannot begin to gather data for any one particular device and its impact on the classroom. With that being said, it is clear that more research needs to be completed, but the issue carries a time constraint. Some continuous research must be done, in order for all groups, students, teachers, administrators, and parents, to see the positive impacts of technology in the literacy classroom.

Part Two: Real World Application and Implications

Introduction of Intent

After conducting research on the implications of technology in the classroom, I was interested to see if the findings would remain accurate in a real classroom environment. The research indicated that when technology gets implemented into the classroom, students should become more motivated and engaged, teachers should feel a shift in their role, administrators should offer more support, and parents should be even more communicative with the school and their students. Through a series of interviews with the four affected groups, I was able to compare a functioning classroom to the research findings.

Introduction of School District

This particular school district is located in the middle of the lower peninsula of Michigan, where farming and industry are the two main employment fields. The population of the village that the school district resides in is about fifteen hundred people (Village Website). The village is predominately white (96.8%), but there is also a large Hispanic or Latino community that makes up nearly the other three percent (Village Website). Roughly ten percent of families live below the poverty line. The village has a very low median income and nearly seventy-four percent of the students receive free or reduced lunch (MI School Data). The school district itself has an elementary school and a middle/high school. The district also has an alternate high school. Each grade in the district is made up of roughly fifty to seventy students. The elementary school holds preschool through fifth grade, with the middle/high school carrying sixth on through twelfth grade. The elementary school has been rather consistent in their statewide school ranking, staying near the 50th percentile (MI School Data). However, the middle/high school has recently

started plummeting. In 2011, they were evaluated to be at the 64th percentile, in contrast with 2013, where they ranked in the 16th percentile and were announced as a focus school (MI School Data). While nearly every student graduates from high school in the district, only roughly fifty percent attend college (MI School Data).

Introduction of Class

The participants of this study are members of a fifth grade classroom at the elementary school in the district described above. Many of the students have troubled home lives, as stories are told of abuse, neglect, drugs, violence, and abandonment. The majority of the students do not have both of their birth parents involved in their lives. Some have one parent present and some have neither. The majority of the students have severe emotional difficulties. They come to school as an outlet from home, with the hopes of someone being there to hear their stories and give them advice. The teachers often feel overwhelmed as they attempt to give all students their attention while teaching at the same time. Academically, the majority of the group ranges from average to below grade level. However, there are a few students who really excel. The class as a whole gets along and tend to enjoy being social with one another.

Introduction of Technology and Policy

In 2012, the district realized that technology was further involving itself with education. Therefore, that summer, they began to examine budgets in order to determine if they could afford to offer each student and teacher their own device. After receiving some grants, it was determined that the schools had the funds to purchase the technology. According to the school's website, "Voters in the village approved a bond request that will fundamentally change our

approach to education, resulting in a new model for our schools and classrooms" (School Website). The district created a committee comprised of staff members to determine the plan of action. They also asked for a few parents to sit on a panel to voice their concerns, which ranged from lack of knowledge about the devices to Internet safety. It was soon decided that all students in second through twelfth grade would receive an Acer C720 Chromebook, complete with a protective case and a charging cable. Each device was estimated to cost around 250 dollars. Students in sixth grade and above would be able to take their Chromebooks home. Students in Kindergarten and first grade would have access to a class set of iPads, as they would not receive Chromebooks. The committees also developed an Acceptable Use Policy, which states that students are responsible for handling and using their device appropriately. When the students received their Chromebooks, which run Google applications, they were also given a Gmail account, which they use to email teachers, share documents, and collaborate with their peers. They were told multiple times that even though they have their own device, they should understand that they should have "no expectation of privacy" as "use of the device can and may be strictly monitored electronically" (Acceptable Use Policy). The Acceptable Use Policy also states that students should not use the device for anything other than academics and that many filters have been applied to keep students away from certain websites.

Interview Questions

To the Student:

1. Think back to school before you had the technology. What was it like?
2. What were you feeling when technology became a part of your school?
3. Do you feel like school changed? If so, how?

4. Do you like school more now than then? If so, why?
5. What is your favorite part about using the technology in the classroom?
6. What are some of the frustrations when using your technology?
7. Do you think technology helped or hurt your school? Why?
8. Do you think technology helped or hurt you as learner? Why?
9. What do your parents think about your technology?
10. How much technology do you have at home? Did you have that much before the school gained technology?

To the Teacher:

1. What was school like before technology? Did you enjoy teaching?
2. What were your feelings when you found out technology was going to become part of your school?
3. Do you feel your role changed in the classroom? If so, how would you describe it now?
4. Do you like teaching more now than you did without the technology?
5. What is the best part about teaching with technology?
6. What are some of the frustrations you have when instructing using technology?
7. Do you think technology helped or hurt your school? Why?
8. Do you think technology helped or hurt you as a teacher? Why?
9. What reactions have you received from parents? Were/are they always positive?
10. Do teachers have different opinions on technology?

To the Administrator:

1. Having just entered the school district this year, had you had any prior experience with technology in the classroom?
2. What are your feelings about being the principal of a technology-based school? Do you ever feel like you have to defend your school district's technology plans?
3. Does technology in our school impact your role as an administrator? If so, how?
4. What is your favorite part about having technology in the school?
5. From your perspective, what are some of the frustrations with it?
6. How does technology help you communicate with others? Does it make your job easier or more challenging?
7. Should using technology be mandatory for all teachers?
8. How do you discuss this issue with teachers who are less willing to participate or do not think technology is necessary in the classroom?
9. What types of professional development do you offer teachers to keep them up to date on technology?
10. Overall, do you like technology in the school? Are their more benefits than disadvantages?

To the Parent:

1. Before technology was implemented in the schools, what was your experience with technology?
2. Have those experiences or that knowledge grown since the technology implementation?
3. How did you feel when the school district decided to get the technology? Did you get to

have a say? What were the concerns?

4. Have you been able to witness your child using technology or see any of the projects they have made?
5. Does your student ask for technology at home? Do they have access to it? If so, explain their daily usage. If not, do you feel pressured to give them access?
6. What do you think the benefits are of technology in the school?
7. Are there still any present concerns?
8. Does technology allow you to better communicate with the teacher, administrator, etc.?
9. Have you seen any differences in your child physically, mentally, or emotionally that seem to be derived from the technology? What about things like work effort, interest in school, etc.?
10. Do you feel like technology in the school was the right choice? Why?

Participant Interviews

Student A

Student A is an eleven-year-old girl who happens to be the top academic student, not only in her class, but in her grade as well. She has an older and a younger sister, with both of her parents present and actively participating in her life. Student A has a very relaxed and quiet temperament, but she is always respectful and responsible, which enables her to get excellent grades. Student A was in third grade when technology was implemented into the school district. However, her parents, particularly her mother (see Parent A interview), have always thought that having access to technology was important. Therefore, they have one iPad and one computer available at home for limited use. Student A states that over the years the technology in the

classroom has helped and that school was “less fun” without the devices (Student A). When she found out that her school was gaining technology, she was very excited and liked the idea. Later on, she began to experience problems, with the major one surrounding her reading abilities. She stated, “I had a problem reading online because I like to be able to hold a book, flip the pages, and even smell it” (Student A).

When asked if she liked second grade (when she did not have access to devices in school) or fifth grade where they attempt to be on their devices fifty percent of the day, she claimed that they were about the same; the only difference being that second grade was easier academically. She reported that her favorite part of using the Chromebook is being able to type, making her writing process faster. She also added that she likes that she can make the print smaller, so she can see it all on one screen, in contrast with paper, where she would have to flip pages over. Some of her frustrations include websites freezing or stopping, but she really appreciated that Google applications have an auto save feature, so she never has to worry about losing her work. When asked if she thought technology helped or hurt her school, she said simply “in the middle” (Student A). When asked if it helped or hurt her as an individual, she replied that it helped her type a little faster and she liked being able to look information up online, as “using an encyclopedia would take longer” (Student A).

Student B

Student B is an eleven-year-old boy who does not exhibit the same passion and motivation for school as Student A. He is more interested in his extracurricular activities, especially raising and showing his family’s goats. He tends to be unmotivated during school with his mother constantly intervening to keep his grades above average. While his father is in his life, his mother is definitely more involved with Student B’s academics and schooling. Student B also has an

older brother who has a large influence on him.

When asked to think back to second grade before their school had technology, he said there were fewer options. For example, he would finish an assignment early and have nothing to do besides read a book. Now, with technology, he can write, read, watch videos, and play games when he finishes an assignment. When technology was implemented in third grade, Student B reported that he was very excited to be immersed in a school full of devices. He also said that since that time, school has changed quite a bit. He stated, "Most of our work is online now. I hate it because I can't take it home to get help" (Student B). To follow up this statement, he was asked if he liked school more now or then, to which it could be assumed based on his previous statement that he would have chosen then. However, the opposite occurred. "I like school more now because there is less homework and less paper. I lose track of those easily, so it is nice to have most of my work in one place" (Student B). Student B did report that he sometimes gets frustrated with his Chromebook as it freezes, takes long to load, or even just shuts off.

When talking about his home life and technology, he reported that his parents think technology is great. They believe it is easier to do things online. However, Student B does not necessarily agree. "They pay bills and stuff online. I don't get that," he said (Student B). In regards to how much technology is at home, he reported that his brother and him both have phones, iPods, and Kindles. They also share an Xbox. Student B's mother has a computer and his father has a phone. Student B believes that the amount of technology in the home has increased since the school got technology. Since his older brother is allowed to take his Chromebook home, they show their mother new tools and software to use, which has increased the technological literacy of the entire family.

Student C

Student C is a ten-year-old girl who has a lot of struggles, both in and outside of the classroom. I have learned that her father was abusive towards her and her mother, so her mother fled to this current village. According to Student C, her mother has now entered another abusive relationship, which recently involved a trip to court where she had to testify against her mother's boyfriend. All of this action and information has a significant impact on her academic and social life at school. She struggles academically, often receiving extra help outside of the classroom in Reading and Math. She also struggles to find friends to connect with, especially at an age where most of the students are more concerned about their own lives than others.

When we sat down for the interview, I informed Student C of the topic of my paper – technology – to which she let out a frustrated sigh. She stated that school was better back when they did not have Chromebooks, as she likes to write on paper, and they hardly do that now. However, when it was announced that the school was getting Chromebooks, she was excited, because she thought they were going to be fun. She stated that unfortunately a lot of students became "obsessed" with them, wanting to be on them at all times (Student C). This was one of the reasons she stated that technology hurt her school, as many students "are way to anxious to be on their computers" (Student C). When asked what her favorite activity was on her Chromebook, she replied with writing, simply because it is her favorite subject, and she mentioned again how she would rather write on paper.

She sees Chromebooks as being a tool for information, but gets frustrated when websites are blocked that should not be. In reference to herself as a learner, she said getting a device hurt her learning, as she just tries to get assignments done quickly so that she can play games, similar to the majority of her classmates. She also said, "Last year, during the MEAP [Michigan

Educational Assessment Program] test, my Chromebook shut down in the middle of it, and I had to take it again like the next day" (Student C). It is unclear whether this negativity towards the school's devices is due to her mother's view, as Student C informed me that her mother is really old-fashioned and likes to do things on paper. Student C does have her own tablet that she just got this past Christmas, but her mother does not have Wi-Fi at home, meaning that she can only use the online components before and after school.

Student D

Ten-year-old Student D is a fun, boisterous boy who is extremely interested in video games. His mother (see Parent D interview) attempts to keep him focused on his schoolwork, but he lacks the personal responsibility to get his work done on time. When asked about school before Chromebooks, he responded that it was boring, as there was not much to do. When they announced they were getting Chromebooks, Student D was extremely excited because he "thought it would be cool to be the first school" to get devices (Student D). He says he likes school more now, as everyone can do different things, homework is easier, and he can type his writing assignments, which he admits assists him because he is "not very good at it" (Student D). He admitted that his favorite part of having a device in school is having access to games when they have inside recess or are done with their work. However, he also added that his Chromebook glitches a lot, which effects his gaming. Overall, he agreed that the devices helped both the school and him as a student, because he has more access to information, more opportunities, and less homework. When asked about what his mom thinks about technology, Student D stated that he was not sure, but he thinks she is "pretty positive about it" (Student D). At home, Student D and his parents have access to "everything," including computers, phones, tablets, a PlayStation, a GameCube, and a Nintendo DS (Student D).

Summary of Students Interview

After conducting these four interviews and many others, it is clear that the students were generally pretty positive about technology due to their prior experiences with it. While some had more experience than others and some had a few differing opinions, the majority of the students seemed interested in their work and show that regularly. When comparing the interviews to the research, the task is more challenging, as the students are not going to speak on how their role may have changed in the classroom. However, by looking deeper and combining the interviews with personal observation, students do show a high level of collaboration when working on computer-based projects. All four students said they enjoy writing on their Chromebooks, which may be for multiple reasons, including the ease of word-processing, font size (smaller or larger), spell-check, self-expression, or for the simple fact that they get to listen to music. Still, for any of these reasons, the students are more interested in their work, and learning valuable computer and personal skills at the same time. Overall, the student interviews agreed with the research, in the fact that students become more self-directed, collaborative, and engaged learners when technology is implemented into the classroom.

Teacher

The teacher for this particular classroom is a forty-five year old woman who has lived in the village or surrounding towns her entire life. She has previously taught Physical Education and second grade and this is now her tenth year teaching fifth grade. She was one of the many staff members on the committee to help bring technology to the district, as she was looking for some change. She stated, “I liked teaching before technology, but after I really enjoy it. I was actually looking for a change before we got the technology, just needed something different” (Teacher). The teacher was looking to use the technology as another resource or tool for her

classroom, another way to reach the students, another opportunity for more practice. When they began implementing the devices in 2013, they told teachers to use the devices as they see fit, but try to incorporate it as often as possible. This teacher did just that and reports that her role in the classroom shifted, but she still feels her job is a necessary part of the learning process. "Sometimes I think my role has become more of a facilitator than a teacher…Direct teaching still needs to happen, but some kids need more independence and I would like to find a way to give them more" (Teacher). While her role may have shifted, the teacher reported that she has also seen a shift in the students.

The biggest transformation that the teacher has seen since the integration of technology is a change in student pride. She says that this new high-tech classroom has positively impacted their pride in their work. "The best part would be when the kids create something and are proud to share it…It didn't used to be like that. When we created things, many students didn't want to talk about it. Over the past 3 years, the kids have gotten much more computer savvy and can come up with some amazing projects and presentations" (Teacher). The students are putting more effort into their work because they are more interested in what they are working on. While the students and this teacher may be changing, there are stories of teachers in the district not using their Chromebooks as much, particularly because they "don't want to take the time to find things for kids to explore" or they are just plain "overwhelmed" (Teacher). They still understand that the students must be prepared for the online M-STEP state test, so they are almost forced into using them at least once or twice a week. This teacher exhibits a rather positive outlook on technology and seems to be interested in finding more resources and opportunities for device use.

Summary of Teacher Interview

Overall, the teacher seemed to recognize the shift in role from an executive teacher to more of a facilitator role. The teacher agreed that she guides the students when using technology, but also feels that direct teaching is still necessary and important. By using technology, she is able to help students who are struggling, as most of the other students are on task and motivated to their work. She also recognized that not all teachers are as interested in the technology. Some are overwhelmed by the thought of using it, while others simply do not want to take the time to plan its use into their instruction. These attitudes will always be around. It is important to hear them, but also understand that technology is helping students get prepared for their future.

Administrator

This administrator is the principal of the elementary school in the district. This is her first year as principal, as the previous principal became superintendent of the district. While she was not present for the technology implementation two years ago, she has been involved with many other schools with a one-to-one technology ratio and is extremely positive about the environment that the devices offer. She automatically stated that she thought using technology should be mandatory for all teachers, because "it is our responsibility to prepare students for twenty-first century learning" (Administrator). This mentality is popular with many staff members in the building. When asked if has ever had to defend the school's technology, she stated, "So far I have not. I do feel we have to keep it in the forefront when talking about various strategies and to try new technology as we hear about things, but it is a tool and not a replacement for good teaching" (Administrator). She uses technology often to communicate with teachers, share ideas, and discuss incidents. She claims to see a lot more benefits, but understands that there are some concerns. She realizes that the staff and her need to "be cognizant more with social/emotional

skills, routines, expectations, and misbehavior" which is a reference to meeting more students' needs and using the technology to help gain access to more students. In order to help the staff meet these goals, the administrator offers at least three professional development sessions about the technology, and she also set up a teacher Facebook group, where they can share and discuss information and ideas.

Summary of Administrator Interview

The interview with the administrator illustrates that, as a leader, she finds it important to be a positive role model to her staff and students in regards to technology. In order to make technology run smoother, she offers professional development and places for teachers to come together to go over ideas and share tips. When examining how this compares to research, the administrator does provide a lot of support through professional development and staff learning groups. However, she is not as present during the school day, which causes issues among the staff. She may need to become more involved, as teachers, students, and parents will be looking for leadership and guidance throughout the next few years.

Parent A

Parent A is Student A's mother. She has a daughter in seventh grade, a daughter in third grade, and Student A in fifth grade. She is extremely involved in the schools and her children's education. She and her husband both served on the technology committee that made the decision to implement these devices. Prior to this integration, Parent A owned two computers and an iPad, which were accessible by all three children. All of them were computer literate before technology made an appearance in the school. While serving on the committee, Parent A expressed two main concerns with the Chromebooks they were considering. One was the issue that the mini-computers all ran on Google-based applications, while most students and parents

were probably more familiar with Microsoft applications. The other concern was the built-in camera, as Parent A was apprehensive about the students not understanding the repercussions of their actions using that camera. Upon implementation, the committee decided to have the local police come into every classroom to discuss the penalties of inappropriate technology use. The committee also agreed that the benefits outweighed the concerns, as they really liked that the students would be able to have an unlimited access to information, where they could inquire on their own.

While Parent A reported that personally her knowledge of technology has not changed since the implementation in the schools, she did believe that her older daughter has grown a lot since the middle school uses the technology to create songs and movies, allowing students to gain a more advanced knowledge. She stated that since Student A was already computer literate, it was just a matter of adapting to certain features of the devices, such as Google-based applications. Parent A also added that she likes being able to have her daughters show her the projects they are working on at home. She also likes that the teacher can show them at conferences. Parent A stated that she mostly communicates with the teachers and staff via email or on the school Facebook page, but since her daughters do well in school it is not usually necessary.

As far as changes in her children, she could not think of many, as she makes sure her children are healthy, both physically and mentally. They had always been excited about school, so the implementation of technology did not change that. Parent A stated that her daughters have expressed that they would like their own individual devices at home, but her husband and her have agreed it is really unnecessary. The children already have a limit on their technology use at home and adding another device would not change that. Two years have gone by since the

technology implementation and Parent A states she still believes it was the right decision. She reported that all of her concerns were heard and addressed, and she is very happy with the school district's policies and actions. She stated, "All schools should implement technology, because it is teaching the students what they will use in the future. If they can't afford it, they should start the technology in middle school instead of it being district-wide."

Parent B

Parent B is the mother of three male students in the school district – one is in ninth grade, one is fifth grade and one is in Young Fours. She reported that before the technology implementation they had always had Internet, but with the school devices they all have become more knowledgeable as a family. All three boys have access to a laptop and a Kindle at home, and they love to use them, as their usage ranges from two to three hours a day. Parent B expressed that this may be a lot, but she does monitor the websites and applications that they use. Even with devices present in the home, when the school announced implementation, Parent B was not so sure about the change. "We [her husband and her] didn't like the idea of the new technology. We didn't say anything. I thought it was just the way it was going to be" (Parent B).

Parent B also expressed many concerns, particularly about how well her boys would learn as she thought it would be "easier to goof off" during school (Parent B). She thinks that exposing them to technology is important, but she gets worried that when the "teachers have their back turned the kids aren't following along" (Parent B). She also said that she feels that is "harder as a parent to stay connected with their learning" as they cannot bring their Chromebooks home to show what they are working on (Parent B). Lastly, she reported that she had not seen many changes in her children since the technology implementation, but worries that they will become lazy as adults. Overall, she concluded that she thinks the negatives outweigh the positive. "I

really don't like having the Chromebooks. I would rather have them using books and writing more. I like to see more on paper!" (Parent B).

Parent C

Parent C is a single mother of a fifth grader and a ninth grader in the school district. They have always had technology at home, including a computer, smart phones, and each child also has their own iPod. Her daughter, the fifth grader, "is on her iPod listening to music or playing games at least a couple hours a day" (Parent C). When the school district got technology, she said she was extremely excited. "I felt it was a good thing because that is where the world is heading. Yes, we had meetings at the school regarding it. My only concern was for the children that need one on one instruction. I am/was concerned that those children may be overlooked" (Parent C). As far as her particular fifth grade student, she does not feel there have been any concerns with her technology use. Parent C also noted that technology has benefitted her, as she finds it easier and more convenient to email or text teachers and staff. Personally, she has not seen any change in her children, and attempts to keep a positive attitude toward technology. When asked if technology was the right choice for the school, she replied, "Yes, because technology will continue to evolve and the children need to learn to evolve with it" (Parent C).

Parent D

Parent D is Student D's mother. She is a single mother of a first grade girl and the fifth grade boy. Before the technology implementation, she knew basic computer skills, and she feels that knowledge has not necessarily grown since. When the school announced the technology plan, she reported that she was "not a fan" and that she doesn't like the computers because her son "gets behind and can't do the work at home" (Parent D). Both children have access to technology at home, but she limits their use because they tend to spend their time on the devices

playing games. This hesitation stems from her childhood as she claims she "didn't grow up like this… We grew up with real work. They [the students] don't understand normal writing. They want nothing hands-on. Hands-on learning is important…. Figuring things out without Internet is important" (Parent D). This response is a completely valid and is furthered due to the fact that she stated she has not seen any of the online projects they have created. She also pushed another huge concern with her son, saying that since technology has come to the school her "son is lazy now" (Parent D).

Summary of Parent Interviews

The parent interviews are where the majority of the concerns and issues come into effect. From comparing the interviews, it is apparent that the parents who are more involved seem to at least understand the use of technology in the school in some regard, while others do not see the objective. Two of the parents expressed issues of laziness, which is a very valid concern, as the students are spending more and more time staring at the screen. After weighing their apprehensions, some parents believed that the positives outweighed the negatives, while others did not. When making connections to the research, parents should be attempting to make a solid connection the school and home. They should also be attempting to learn how to use these new devices. Many parents in this school district do not attempt to be involved in their students' education. The majority of the parents have a difficult time balancing work and children, particularly in the economic state that the village is in. This lack of involvement is extremely frustrating for the staff and it impacts the students greatly. These attitudes could potentially impede the successful implementation of technology.

Findings

After interviewing all four affected groups and comparing their responses to the research, it is apparent that in order to have a successful technology implementation, all participants must understand their roles, actions, and attitudes. The students must respond to their call to be more independent and self-guided, while the teacher must recognize that by using technology as a tool, they may take on a guidance role. Administrators must be present, positive, and offering a variety of professional development to their teachers. Lastly, parents need to be communicative with the school, expressing any concerns they may have, as their attitude has a large impact on the other groups. While this school district may have vocal parents, it is important to hear their concerns. If those voices were oppressed, successful implementation of technology would be unlikely. This school district also does not have an administrator who visits the classroom very often. While this issue is being addressed, she does offer professional development and a learning community, which keeps the school functioning in regards to technology implementation.

Overall, the school district is an ideal model for other schools to follow. They continue to work to find new resources and new opportunities for their students, as they put them ahead of students from other areas. The students understand and appreciate their technological literacy skills, particularly with such a positive staff supporting them. While their parents also have quite a bit of influence, and some are more understanding than others, it is obvious that these opinions have yet to undermine the strength of the positivity surrounding technology at the school. This could be a future issue, but as of now, it is still unclear what the effects of technology will be. Therefore, it is important to stay current, find new resources, and always be conducting more research on the impact of technology, not just in schools, but in the world as well.

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