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English 327 W

Research Paper

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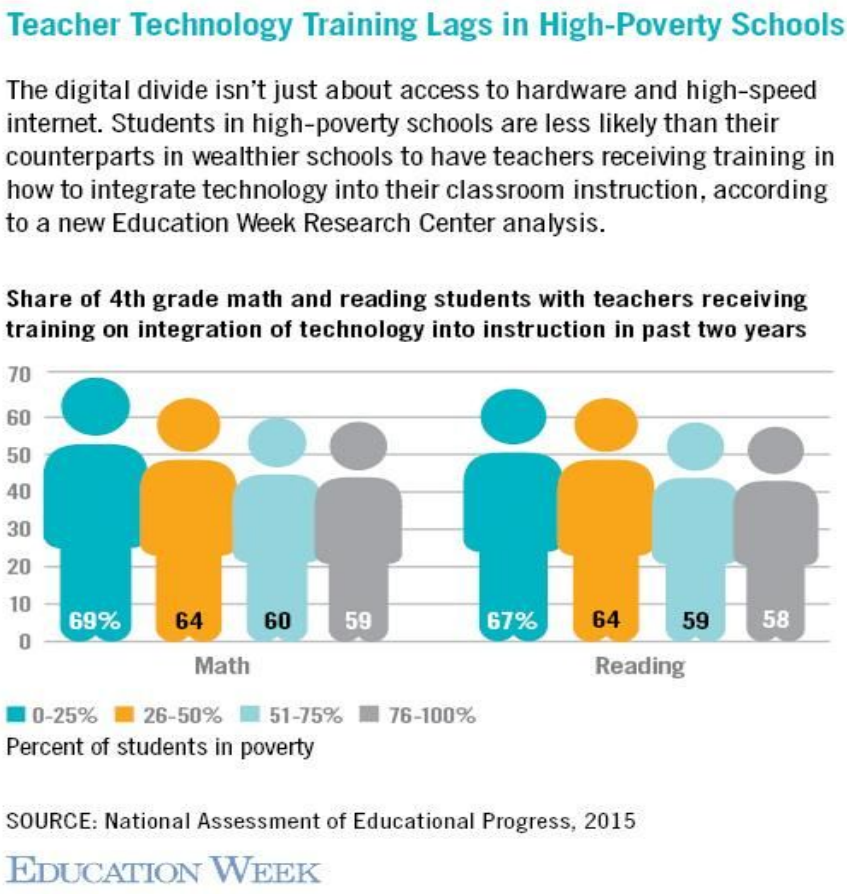
Technological Divide in The Education System: What Are the Causes?

Introduction

Technology has always been an issue surrounding society, especially, within the education system. When discussing technology in the classroom, this paper refers to electronics in the classroom; for example, laptops, interactive boards, cell-phones, and tablets. There is much speculation on the technological divide that leads to many questions, as well as, conflict. This paper examines the opinions and studies that top researchers conducted to answer the lingering questions that face the education system, because technology is one major cause of the divide. Many of the questions that surround the controversy are how to introduce technology in the classroom, how it influences students learning, what are the teacher's beliefs and means of implementing the technology in lessons, and finally who is to blame for the lack of or too much technology in the classroom. Many professionals in the field of education also think poverty and economic status is a major cause for the technological divide within the education community. Therefore, this project will examine the technology controversy in education in order to find out the major causes of the technology divide and this paper will examine the effectiveness and influences it has on student's education. This is significant because we need to put an end to the technological divide we are facing between teachers, administrators, students, and parents.

Review of Literature

First, we will examine the technology divide and who is to blame for this issue. When targeting this issue first are perspectives on if one particular professional area is to blame teachers, administrators and so forth. In the article, *Technology in the Classroom: Teachers and Technology: A Technological Divide,* Clarke and Zagarell address how both administrators and teachers can be to blame for the technology divide. When Clarke and Zagarell introduce how both can be to blame it helps answer any questions about each professional's responsibility before it becomes a question ,as well as, they are not targeting one position over the other. When looking at administrators as the key facilitators of this divide, one needs to understand the level of power administrators have over teachers. Administrators or in more direct terms principals are the key in the effort to infuse technology in the schools (Clarke). This is important to note because anyone who works in a public-school system knows teachers cannot implement anything without the endorsement and acknowledgement from the principals. The second major group of people to blame would be the



teachers themselves, Clarke and Zargarell bring to attention that an administrator cannot implement technology structured learning in the schools if the teachers them self-lack knowledge and training (Clarke). The lack of technological knowledge is not only recognized by Clarke and Zagarell but is also agreed upon by McQuirter and Meeussen the authors of *Self-Regulated Learning: A Touch stone for Technology-Enhanced Classrooms*. McQuirter and Meeussen display their knowledge in quite a different way than Clarke and Zargarell. McQuirter and Meeussen address the divide in a much larger perspective when they address that teachers are having students rely on them versus being able to be in control of regulating themselves and have a full understanding without teacher's assistance all the time and the lack of technology is to blame. This lack of technology in the classroom is often referred to as "teachers' resistance (Clarke)." Teacher training is crucial when confronting the technological divide in an article titled "Poor Students Face Digital Divide in How Teachers Learn to Use Tech**"** written by Benjamin Herold, addresses how lower income teachers are often not trained to implement technology in the classroom because there is not enough money and how in lower income schools in is nearly impossible to sustain a technology centered learning environment. Herold states the following in his article regarding veteran teachers "for teachers already in the workforce, professional development hasn't kept up with the pace of technological change (Herold)." When looking at the graph on the previous page one can see how students in poverty are directly affected because of the lack of teacher training. Low income schools are often at a disadvantage so although teachers can be a blame because of the lack of knowledge the blame is more closely related to the economic differences within school districts and the level of training that is offered to educators. Herold states the following about the technological divide facing the

schools “Undoubtedly, there are still big disparities in the technologies available to the haves and the have-nots (Herold).” This small statement from Herold shows how divided the schools are because of economics and not always because of the lack of teacher knowledge. When looking at who to blame for this technological divide the school systems and society must first find the source of the problem and address it at the base level which is the teachers.

When discussing who is to blame for the technological divide in our school systems one must examine the sources of the technological divide and although many are quick to point to teachers and administrators as a society, we must take a deeper look into outside sources. One of the outside sources that may be a larger contributor to the technological divide is low income schools, as well as, location of schools and their ability to provide substantial technological resources to each and every classroom in their schools. Many professionals will say the divide is beginning to widen because students in low income families and school do not have access to quality internet and devices all the time. Steele-Carlin the author of *Caught in The Digital Divide* she stated the following “As record numbers of Americans go online, the gap between those who have access to technology and those who don't may be widening (Steele-Carlin).” The gap is widening because students who are often in low-income schools often do not have regular access to internet at home nor have access to the devices that teachers are required to use in a technology centered learning environment. Often the technological divide becomes a race issue as well because black households because only 40% of black households have the same access to internet as white students and that range even broadens when looking at Native Americans and Hispanics (Steele-Carlin). Herold’s article also addresses how low-income schools and families are a major cause for the technological divide facing our education system agreeing with

Steele-Carlin. Herold states in low-income school's technology-based learning does not raise to the top of the list for concerns for the schools because many low-income schools face other priority issues therefore, making the technological divide even larger between low-income schools (Herold). Poverty stricken schools and families are often not given the same opportunities as other non-low-income schools because many other issues race to the top besides making a technological advanced school system to help broaden student's knowledge. Due the lack of money and good economic standing the technological divide is growing in low-income schools and often cannot keep up with the technology advances that are rapidly occurring every year and in the education system.

The technological divide will always exist if we do not address how it influences our children which is the most important aspect when determining technology in the classroom. Student success should be one aspect that is always brought up when addressing the technological divide. Technology allows for differentiation in the classroom especially for students with disabilities. Technology provides equal access to education for all students (Dukuzumuremyi). Dukuzumuremyi and Siklander are the authors of I*nteractions Between Pupils and Their Teacher in Collaborative and Technology-Enhanced Learning Settings in the Inclusive Classroom*, this article helps address the benefits of technology on students and looks at all students not the typical "normal student." Technology allows for better social interaction for students with disabilities including the connections between non-verbal, verbal, and kinesthetic learning (Dukuzumuremyi). With the use of technology inclusive classrooms become more effective and more common, which allows for independence, and social interactions among learners. The previous authors McQuirter and Meeussen also address this issue as it compares to

bettering student learning. Like Dukuzumuremyi and Siklander they speak mainly on self-regulation which allows students freedom in their learning which is correlated to student independence versus the reliance on teachers resembling to learned helplessness. Self-regulation is a big topic when discussing technology in the classroom. Shifflet and Weilbacher the authors of *Teacher Beliefs and Their Influence on Technology Use: A Case Study* agrees with the above authors that technology can be used to help engage students in thinking critically and again promote self-regulated learning (Shifflet). Case study evidence is very prevalent in all these researchers' article which shows that technology is an effective tool in the classroom that can help make students less reliant on teachers and more self-reliant, as well as, helps narrow the gap between students with disabilities.

Teacher's beliefs towards technology also hold a huge importance of why there is a technological divide. If teacher's themselves do not believe technology is an effective and useful tool in their classroom, it most likely will not be introduced or will be used minimally. Shifflet and Weilbacher in their case study just blatantly asks the teachers in the study what their beliefs are in the classroom. One of their participants, named Mike, stated that technology itself does not facilitate learning, but with teachers playing an essential and critical role, it can foster learning and increase student participation and excitement (Shifflet). Although, another participant Cheri who has only been teaching three months could use all the technology already in the classroom for example the Smart Board, but she had a difficult time implementing outside technology because she did not have good classroom management skills yet, this showing the disconnect between teachers and technology (Shifflet). Clarke and Zagarell beliefs towards classroom technology do not strain to far from Shifflet and Weilbacher beliefs. Clarke and Zagarell believe

that technology holds a strong promise for improving student performance and allows more room for student leadership skills to form. Still leaving teachers themselves to play a critical role for this type of learning to take place while still foster better learning. A major concern in beliefs about implementing technology in classroom which causes a major divide is the decreasing need for teachers to educate, teach, and foster learning in their classroom. This, causing hesitation in the implementation of technology in the classroom. McQuirter and Meeussen beliefs on technology help bring reality to this fear when discussing their beliefs. When implementing technology McQuirter and Meeussen and their participant they believe a teacher should become more of a coach and a guide in learning and stop directing the nature of learning in the classroom and allow technology to take over (McQuirter). When looking at the beliefs of the participants and the authors one can see where they align and where the divide begins. The threat technology holds on teachers may alter their beliefs on technology and means of usage in the classroom, where as allowing total control of their education to students seems unruly and not a true representation to what may happen if technology is implemented more in the classroom.

When looking at the divide facing our education system, we have to look at the variety of ways teachers are implementing technology in the classroom and how it affects students. There are various ways teachers can implement technology in the classroom and the means in which they integrate technology in their classroom can also affect the technological divide. Also, looking at teacher use can help bridge the gap in the technological divide because it gives more insight on different methods and classroom techniques. When exploring the uses of technology also helps bring up if the divide itself is more between teachers themselves newer teachers (1-5 years of experience) vs. veteran teachers (5 or more years of experience). *Classroom*

orchestration: Synthesis written by Jeremy Roschelle et al introduces a new method of learning in the technology advanced classroom that some teachers are using (Roschelle). Orchestration is an approach to technology enhanced learning that emphasizes attention to the various challenges that can occur when using technology in the classroom (Roschelle). Orchestration learning focuses on supporting teachers because a classroom is complex, highly variable and unpredictable (Roschelle). This learning still focuses on a teacher teaching versus on the previous article written by McQuirter and Meeussen where they believe a teacher's role should switch to entering more of a coach role and focus more on student independent learning. In the study titled *Teaching, Learning and New Technology: A Review for Teachers* written by James Hartley explores a wider variety of teaching situations which consist of direct instruction, adjunct instruction, facilitation the skills of learning, social skills, and widening learner's horizon (Hartley). With a wide variety of situations being looked at and how to implement technology in each situation can help expand teacher knowledge in the classroom rather veteran teacher or newer teacher. Although Hartley looks at multiple different situation in the classroom that can occur for example when facilitating the skills of learning Harley discusses how technology can help disabled readers acquire reading skills by adjusting how the test is shown and the presentation can be altered (Hartley). Harley does not go without saying that technology takes support of several disciplines to make it work he states the following about technology and how it does not work without cooperation of many.

"It is clear that introducing a new technology into any learning situation in any country requires a great deal of thought and planning, and a good deal of developmental testing. It requires multidisciplinary approaches involving teachers, researchers, technologists, developers

> and pupils. And it requires specific training for all of these groups, and possibly changes in attitudes as well as approach (Hartley)."

When saying this he shifts the attention to how it takes a great deal of planning and that it often requires several experts to get involved to make sure there is a successful end result with implementing technology in the classroom. This quote alone could help end the technological divide because the proper functioning of schools requires administrators, teachers, and parents to work together and if more people would come together to help each other with issues in the classroom when implementing technology could help bring educators closer and less reluctant in helping each other. It takes a team to educate students with technology and Harley shows this in his study several times. Teachers different approaches to technology can be very helpful when trying to close the technological divide because it helps give teachers a larger perspective into other educator's classrooms.

Primary Research/Methodology

In my primary research I conducted two interviews of educators who have a various background and experience in the education field, from one educator having only one year of experience to another having over forty-two years of experience. Conducting this research helped answer some of the questions many have when discussing the technological divide, as well as, having current perspectives on the ongoing divide in our education system from a teacher with a fresh perspective to another seeing how the technological divide have affected the education system over several decades. One of the participants is Dr. Cox who has had forty-two years of experience as an elementary classroom teacher, reading specialist, central office teacher specialist, assistant principal, and principal all in an urban district/Title I schools and the second

being Ms. Zimmermann who is a first-year teacher with a graduate degree in elementary education and is currently teaching the fifth grade. Both participants give great insight on the technological divide agreeing on some topics while disagreeing on a few others, this will help us explore the technological divide with a more personal perspective.

One of the first questions asked was as an administrator or teacher do you believe there is a technological divide facing the education system? Dr. Cox and Ms. Zimmermann answered this question very differently. Dr. Cox gave a bit of the same perspective as the author Herold. Dr. Cox gave a bit of insight on her experience as well stating the following as her view on the technological divide and how she experienced it

> "I believe the biggest divide is among the student "haves" and "have nots" Teachers assume that all students have computers that work at home with access to the Internet. A parent told that me about her son, one of our former elementary students (All A's by the way,) who had his reading grade lowered in 6th grade because he couldn't do the reading online homework."

Her statement again shows how teachers are becoming reliant on the technology and low-income families are facing the technological divide even more. Ms. Zimmermann stated in her one year of experience as a newer teacher in this modern society she has not seen the technological divide among the school system because every teacher in her class has the same access to technology throughout her school. Both Dr. Cox and Ms. Zimmermann do agree that the technological divide is more split between veteran teachers and newer teachers. The divide that is facing our education system is causing difficulty among teachers new vs. veterans because as Dr. Cox states that new teachers have received more training on the technology and are more current that

veteran teachers. Ms. Zimmermann also agreed with Dr. Cox but also adding a few details about the experience veteran teachers have over new teachers when implementing technology Zimmermann stated the following

"Veteran teachers have not always entered the field having learned about technological resources, websites, and programs available to them. New teachers are entering the field with experience and training. On the other hand, veteran teachers have had the ability to USE the technology in their classrooms, work out the bugs, and better explain how to use the programs and when."

This again shows that newer teachers have more experience and training than veteran teachers showing that the lack of training in veteran teachers is one of the causes that lead to the technological divide facing our educational system. Ms. Zimmermann did also note that the majority of her training was given to her during her undergraduate program and not the school she works in.

When conducting these interviews one of the most important questions to ask is about the students themselves and rather technology is being used effectively to encourage student growth or is it being used as a replacement to teachers actually having to teach themselves. Ms. Zimmermann stated that technology allows for much more exploration in the classroom with access to virtual field trips, google earth, and allows teachers to show students the things they are reading about. Ms. Zimmermann also says it allows teachers to source videos for topics they struggle teaching. On the other hand, Dr. Cox stated she does believe teachers are becoming too reliant on technology and therefore students are as well. She stated students having direct access to so much information is making students more reliant to "googling" every question rather than

thinking the question through. Although, they both have very different views and levels of experience on the uses of technology in the classroom they both agree that technology can help bridge the gap for students with learning disabilities and their peers. Although, both Zimmermann and Cox see technology in the classroom differently both views show the negative and positive aspects of technology in the class with one common agreement that technology benefits students with special needs and with appropriate teacher supervision technology can be a great asset in the classroom. With both an expert and a newer educator's opinion on the technological divide one can determine the divide may be caused because of opposing views and training between veteran teachers and newer teachers therefore taking the blame away from administrators and putting the weight more on teacher differences.

Conclusion

The technological divide is a crisis facing our education system and after continuous research one can determine the technological divide main causes are the lack of training, as well as, educators' personal opinions on usage of technology and where it fits in their own classroom setting. The technological divide is very controversial and from many findings and research one can see that the controversy is more correlated between veteran teachers vs. newer teachers. Through research and documents one can finalize that the best way to resolve the technological divide in the education system is properly train veteran and newer teachers on effective technology usage in the classroom so teachers are not becoming too reliant on technology, as well as, some teachers neglecting the use of technology in the classroom. The technological divide has many factors to consider when thinking about how to resolve the divide but as educators and professionals it will take agreement that professionals in the field must come

together and address how to properly train teachers so they become experts in technology in the classroom rather in a low-income school or not and how to adjust lesson plans to incorporate technology where it is necessary. The resolution to the technological divide is in the hands of educators and this divide between teachers does not have a place in our education system. More research needs to be conducted on how to implement appropriate training to educators within the school system.

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