The Digital Divide and Closing the Achievement Gap for Low Socio Economic Students

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Abstract

The digital divide is a well known term in the educational world and has two distinct levels. The research discussed within this brief discusses the level 1 divide of access and the level 2 divide of the ways that technology is being used to access higher order thinking skills. The level 1 divide is being addressed by many school districts across the nation; however the digital divide is not being closed for low-socioeconomic students. The research about the level 2 digital divide presents that often low level skills are being taught to students from poverty instead of using technology to engage in higher order thinking task such as creating and analysis. Implications for all school districts and specific to MOEC (Metropolitan Omaha Educational Consortium) are discussed calling for the need of ubiquitous access for students from poverty and focused professional development for teachers.

Research Topic

The different aspects of the digital divide will be explored through current research and the implications about the need for purposeful professional development for teachers where students come from low socioeconomic households and access to technology has been limited.

Introduction

The digital divide is a term often heard in the education world, and references the division of technology access and skills between students from affluent areas compared to students from poverty. Often times the assumption is made that providing more devices to students in schools from high poverty areas will effectively close the digital divide (Barrett 2013). Current research shows that providing devices alone does not close the digital divide, and often times the divide widens without rigorous instruction from teachers.

Both federal and state initiatives have focused on providing funding to secure more devices into high poverty schools; however the digital divide starts before students ever walk through the doors of the schools. Access to technology at home plays an important role in the students' proficiency in using technology, and often times, educators are spending time teaching basic skills to students from poverty instead of engaging in rigorous tasks supported through the use of technology.

Affluent schools are engaging students in higher order thinking to create work that is enhanced by the use of technology, while high poverty schools are teaching the basics. Devices are provided for use in the classroom while professional development for using technology to enhance learning is not provided. Many teachers are not comfortable

with the technology itself, and do not have the skills to use technology to enhance the learning experience.

This brief will examine what access to technology is in the home and school settings, the impact of purposeful professional development for teachers around technology, and most importantly, the implications to MOEC to close the digital divide for students from poverty.

Summary of Findings

The digital divide is a term frequently used, and it has two levels of meaning that will be clarified for this brief. Chen (2015) defines the first-level divide to access to the hardware; such as computers, tablets, and other devices. He describes the second-level divide as how technology is used to enhance learning, and the differences found in affluent schools compared to high poverty schools.

Access to Technology – Level 1 Digital Divide

The first-level digital divide focuses on students physically accessing technology in both the home and school settings. This is the easiest level to address at the federal, state, or local level by ensuring funding is spent to provide more devices in schools. This is a step in the right direction to close the divide between affluent and low socio-economic students; however it alone will not level the playing field. Providing devices in the early childhood setting familiarizes students with technology, and reinforces the use of technology to enhance learning. Judge (2006) found in a study that schools with high poverty that have more access to technology than low poverty schools still had lower achievement rates. Barrett (2014) found that the schools receiving the lowest rating of Academically Unacceptable had the highest student to computer ratios and had the

highest poverty rates for the schools in this study. Even when the ratio of students to computers was lower the benefit of access to technology at home resulted in higher achievement of students.

The implications for access starts in the home environment, and students that have devices at home have an advantage before ever setting foot into the school. Students from affluent families have access to more devices earlier in their lives than students from poverty. Delen and Bulut (2011) conducted a study with almost five thousand ninth grade students in Turkey, and found that students with access to technology at home out performed those without access in the areas of math and science.

It can be assumed that with the cheaper price for devices and availability of internet that access is not as much as a concern as it had once been in the past. Minority students often have less access to technology, and research shows that minority students are half as likely to access technology outside of the school as non-minority students (Fairlie, 2012). The digital divide does not only impact the students that are below grade level, it can impact students that are considered talented and gifted. The excellence gap is the difference in achievement by students often labeled as talented and gifted. One study examined the excellence gap, and noted that access to the technology can close the excellence gap when comparing affluent students to students from poverty. There is caution though that without purposeful access and instruction that the excellence gap can widen (Hardesty, Williams, & Plucker, 2014).

Increasing student access to technology does have benefits, and research shows that the digital divide can be closed with access to technology being the first step. Students with ubiquitous access to technology in the 4th and 5th grades from an ethically

diverse sample all showed achievement gains on standardized tests in language arts and math (Kposowa & Valadez, 2013).

The research presented in this brief focused mainly on access referring to the availability of devices for students, and most research did not focus on the infrastructures needed to make use of those devices. Schools need to have the personnel and physical capabilities to support increased device uses in their building, and recognize that many students from poverty do not have access to the internet in the home setting. Even in a 1:1 student to computer environment the ability to access resources at home still may be limited.

Quality Technology Instruction – Level 2 Digital Divide

The second level digital divide focuses on the use of technology to impact student achievement; notably showing that in high poverty schools lower level technology skills are being taught. Warchauser (2010) emphasizes the need for opportunities and mentors for students to move from passive consumers of media to an active producer of digital content. Technology use should be rigorous and enhance the learning experience for students; however in high poverty schools students are often taught the basic skills for technology use. When comparing high poverty schools to affluent schools lower level applications such as skill and drill were more common in high poverty schools while more affluent schools were using technology to analyze and create (Swain & Pearson, 2002).

Teachers with strong pedagogy, content knowledge, and purposeful integration of technology to enhance learning opportunities can begin to close the digital divide (Banister & Reinhardt, 2001). Teachers need to be computer literate and capable of

helping students navigate through technology resources that require higher order thinking (Crawford, 2005). Purposeful integration of technology to enhance the learning experience is required in low poverty schools to close the digital divide and have the largest impact on student achievement. Providing devices in the classroom with the teacher assigning a software program is not enough to close the gap. Without quality professional development provided to staff, low level skills for technology will continue to be taught.

Many teachers are not comfortable with using technology let alone teaching students to use to technology to enhance learning (Swain & Pearson, 2002). The lack of teacher knowledge to purposefully integrate technology into the classroom is more often seen in school with high poverty. If a teacher is not able to effectively use technology in his/her own life then they will not be able to get students to use higher order thinking skills with technology. When selecting teachers, content knowledge is a key factor in student achievement in academic areas, and it is easy to overlook the lagging technology skills. Teachers also need to be knowledgeable in the use of technology while demonstrating solid content knowledge in order to close the digital divide for students from poverty.

According to Pena-Lopez (2010), the teaching of digital skills that our students will need to be successful citizens include technological literacy, informational literacy, media literacy, digital presence, and e-Awareness. A teacher must be knowledgeable in these skills to effectively teach students, while skillfully using the technology to enhance the curriculum. Technology use can no longer be an event that happens at a certain point in the school day, but must be a tool to enhance the learning experiences for all students.

Technology must be a tool for all learners to engage in higher order thinking such as analyzing multiple works, synthesizing, and creating digital content. The boundaries can be expanded for what it means to present on a topic, and multiple ways, such as using the internet to share with the world, can be used to share this information with others. When teachers are lacking these skills, it is the responsibility of the district to provide focused professional development for teachers in high poverty areas to close the digital divide.

As Pena-Lopez (2010) suggested, there are many aspects involved in effective technological instruction for students, and the bigger picture is creating students who are digital citizens. Teachers in high poverty schools, where access to technology at home is limited, are charged with teaching students responsible use of technology. These skills may not be taught in the home environment and without the teaching of technology etiquette devices and internet access can quickly become a distraction instead of enhancing learning in the classroom. Students must become aware of sending out information to the public, be critical of the sources of information, and use technology in appropriate ways to interact in a global society. Often students without access at home can be overwhelmed by the amount of resources available through technology and can spend time reviewing resources instead of analyzing and synthesizing the information to meet the learning objective. Self-regulation also is an important skill that is taught to students to ensure that they are focused on technology use to enhancing their learning.

Implications of the Findings and Application to MOEC (Metropolitan Omaha Educational Consortium)

Implications of the Findings

This brief has some direct implications ranging from the hiring of new staff members, training of current staff members, having a vision for technology, and ensuring access for our students to technology.

Through strategic planning, school districts need to develop a vision for what technology access and instruction to enhance learning looks like in their district. With a clearly articulated vision, specific steps can be followed to ensure that the access to technology is a priority for the district and appropriate funding is provided. Without a knowledgeable instructional leader driving decisions around technology, it is possible that the purchases of technology will not achieve the goal of engaging students in higher order thinking and closing the digital divide for students from poverty.

Access.

The level 1 digital divide issue of access can be the easiest to address, however there are many barriers to implementing ubiquitous access for students. The biggest barrier is creating an infrastructure in our school buildings that can support an increase in devices and methods for students to access technology outside of the school setting. School districts should put considerable effort into providing access to the Internet and devices outside of the school walls because it provides students access to information beyond what the teacher has presented (Kposowa & Valdez, 2013). The research overwhelmingly showed that a key to student achievement is access to technology in the home setting. Partnerships with companies to provide internet at a reduced rate for families from poverty is a step in right direction, and the Council Bluffs Community School District (CBCSD) is currently partnering with the city to provide free wireless internet to all residents. Knowing that the students from poverty have less access to

devices and the internet, the CBCSD began to phase in the free services in the neighborhoods with the highest poverty rates. Providing access outside of the school walls is a necessary step to closing the digital divide for students from poverty where access had been limited.

Application to MOEC

Providing internet access to students outside of the school must be a priority of the MOEC school districts to allow for learning to continue beyond the time spent in the classroom. A majority of the MOEC districts have committed to a 1:1 ratio of students to computers providing access to students both inside and outside of the school walls. This has allowed technology to be integrated into any setting assuming that the resources are in place to support the devices. If a student does not have access to the Internet at home, then their capability to find quality resources to enhance their learning is still being limited and cannot effectively close the achievement gap. This is challenging for schools to address for several reasons including the home setting being out of their control to influence directly. Even when reduced pricing or possibly free access to the Internet is provided it is not guaranteed that families will take advantage of this offer. Therefore, students from low socioeconomic status will continue to have their access limited, and the digital divide will widen. This creates an issue for teachers in the classroom about the learning expectations for students outside of the school walls. A teacher may find it necessary to assign work requiring access to resources using a device and internet access that will call for students to use higher order thinking skills knowing that all students can not access these resources. Teachers may choose to provide more traditional assignments not taking full advantage of the way that technology can enhance

the learning experience when exposed to this type of situation. While steps are being taken by the MOEC Technology Task Force to study the city wide internet initiative in the Council Bluffs Community School District, similar action to provide internet access to students from poverty must come quickly across the metropolitan area to close the digital divide.

A focus on providing access to devices and digital resources has greatly improved in MOEC districts over the past years; however there are still limited resources for access throughout the school day. When the number of devices are limited, it can be difficult for teachers to have students apply technology skills to enhance their learning. The teacher can only instruct students in a small group using technology to access additional resources to enhance their learning experience. Teachers may present information to all students using technology; however traditional forms of work are being completed when devices are limited in a classroom.

Professional Development.

Once the first level digital divide of access has been addressed the MOEC districts need to create a clear plan of action for focused professional development for teachers to use technology to enhance the learning experience. When new devices and infrastructures are in place teachers are left to create their own lessons and figure out how to use this technology in their classroom. As the research showed, often times the teachers are not comfortable with the devices or aware of the vast number of resources available to enhance the learning experience.

Chen (2015) referenced that when teachers are unprepared to incorporate technology, they focus on how to use technology instead of using technology to enhance

the learning experiences for students. This is an important difference to note, and as the research showed, often students from poverty are being taught low level skills. When professional development is provided teachers can be prepared to teach the basic skills that are needed while having students engage in rigorous work that requires higher order thinking.

There are opportunities for school employees to attend conferences, such as the Nebraska Educational Technology Association (NETA), to learn about the best practices for technology instruction. However, this is taken advantage of by a small population for the teachers that are intrinsically motivated to incorporate instruction, and can be limited by the funds available to send employees. The MOEC districts need to have a systematic plan aligned to their vision for the use of technology in their schools, and provide focused professional development to their teachers. Technology coaches are important to provide this professional development and ideally work in the classroom alongside the teachers. The digital divide will not close for our students without having knowledgeable and skilled teachers implementing the best practices for using technology to enhance the learning experiences for all students.

Conclusion

All school districts, especially those with a large population of students from poverty, need to first focus on the level 1 digital divide issue of access. School districts need to provide access to devices and ensure infrastructures are in place to support the devices at each building. Access however goes beyond the school walls, and students need access in the home environment. The research showed that computer access in the home setting correlated to increased achievement within several content areas. Access

extends beyond providing a device to students at home, and internet access needs to be provided to students. To build upon the learning in the classroom, students need to have access to the resource provided by the world-wide web. If a school can not ensure that students from poverty have access, then the digital divide will continue to widen.

Once the level 1 digital divide has been addressed, school districts must provide resources and professional development focused on the quality of instruction. The research calls for focused professional development to promote technology to engage in higher order thinking. There was little research that discussed what quality professional development for teachers would include to reinforce higher order thinking using technology when working in high poverty schools. A school leader needs to understand the abilities and knowledge of the teaching staff, and provide professional development tailored to these needs. As with any initiative clear learning outcomes, time to provide the learning to the staff, and on-going feedback during implementation is required.

Closing the digital divide is not easy to do in schools that serve students from poverty; however it is necessary to benefit students. Purposeful resources allocated to access and professional development are the avenues to close the divide, and a school district or school must make it a priority within their strategic plans.

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