The Digital Divide and the School Library

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What is the Digital Divide?

The term “Digital Divide” first gained popularity in educational and technical literature in the early 1990’s as a way to describe the gap between those who did and did not have access to computers and the Internet, and the use of the term has evolved to describe inequities in access, use, ability, and technological knowledge of digital haves and have-nots. In a global context, the digital divide continues to represent gaps in everything from access to computers, to broadband connectivity, to digital literacy education. In the context of school libraries in developed countries such as the United States, digital divide debates and initiatives continue to address equitable access and connectivity issues, but have become focused on the more nuanced issues of the Second Level Digital Divide, which concentrate on how technology is used to engage in an increasingly participatory learning culture.

While access to reliable and updated hardware and Internet connections are still important elements of the digital divide debate, “access alone does not signify equity of education--it is *how* the technology is used and is in fact integrated into educational institutions and the lives of students that determine its contribution to equity” (Kassam, Iding, & Hogenbirk, 2013, p. 219). The same socioeconomic factors that contribute to issues surrounding basic access to technology also play a role in the second level digital divide, by hampering digital inclusion. While cell phones and other mobile devices have more Americans connecting to the internet for many everyday tasks, the access available through most mobile devices does not support activities such as conducting research, applying for jobs, or performing other meaningful and necessary tasks in our 21st Century digital society. Economist Aleph Molinari (2011) calls the digital divide the “new illiteracy” and advocates for the empowerment of the digitally excluded through digital literacy education for students of all ages.

School librarians, as literacy education experts, have an important role to play in bridging the second level digital divide by helping students develop the skills they need to effectively use digital resources for research, inquiry, and participation in a culture of lifelong learning.

Challenges and Opportunities

Access Gap

Access to technology has expanded since 2001, when the concerns for the digital divide started to take place, but the concerns for physical access have turned into access of knowledge, “Like education in general, it is not enough to give people a book, we also have to teach them how to read in order to make it useful. Similarly, it is not enough to wire all communities and declare that everyone now has equal access to the Internet. People may have technical access, but they may still continue to lack effective access in that they may not know how to extract information for their needs from the Web” (Hargatti, 2002). This quote suggests that “effective access” is how people use technology and whether they are able to have the knowledge and skills to use at home. Warschauer & Matuchniak remind us that “access to technology is not a binary division

between information haves and have-nots…" and that even at its most basic, access includes the type of computer or device used, where that is accessed, how it is used, and the skill of the user (2010, p. 185). The device itself, how the information is being used and what types of skills the user has, all contribute to the idea of access. The issue is not just being able to find a device to use; it's how the device is being used, especially inside and outside of the classroom, that matters.

Usage Gap

With smartphones, it seems that everyone has some sort of access to Internet to check emails, use social media and stay connected. However, just because more people have smartphones it does not necessarily close the digital divide.

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According to Todd (2013), "...we need to look at the digital divide, not only from the perspective of access to technology, but also from the perspective of ways in which technology is being integrated into the classroom and curriculum. Cummins (2005) refers to this as the "pedagogical divide."' Integrating any type of technology use into the classroom is not sufficient. The "pedagogical divide" can happen when teachers' technology instruction is outdated, and especially when technology is integrated just for the sake of using technology. Even if teachers are incorporating current technology, they may not be using it in a meaningful and educational way. Technology needs to be integrated into the curriculum to enhance certain learning objectives and for students to develop new literacy skills.

Not only is there a pedagogical divide, but a school community's demographic and socioeconomic characteristics can contribute to the gap as well. Students' socioeconomic status represents a major factor in the digital divide, "An *Education Week* report (2007) points out that for low achievers and for students in poor urban schools, technology is still typically introduced as a remedial tool involving skills-based software whereas teachers of more advanced students tend to use a variety of more sophisticated programs" (Todd, 2013). What this issue comes down to is a person's physical access to technology, but also to digital-based skills taught in the classroom. Without exposure to current technology, and without proper instruction of the use of technological tools, students are stuck in the past using outdated software. With the increasingly participatory nature of the Internet in today's society, students who only learn basic skills on specific software programs are at a disadvantage as global citizens.

Not only is technology introduced as a skill based software approach, but teacher computer usage contributes to this growing gap as well, "The majority of computers are being used for teacher work or the development of lower-order skills through drill and practice activities" (Todd, 2013). How the technology is being used leads to teachers and students caught in a pedagogical divide as well. Not only does the digital divide affect student knowledge and use of technology, but a teacher's ability and knowledge to teach 21st century learning skills is an important factor within the divide as well. If a teacher is not well versed in 21st

century skills, their students will be at a disadvantage. It is not enough to look at the digital divide in terms of how it affects just the student population. The whole school environment needs to be analyzed in order to provide a contemporary and meaningful technology education to students and teachers.

Second Level Digital Divide and Knowledge

While the issue of access in terms of the haves and have-nots is still present within the issue of the digital divide, it has transformed in recent years to focus on not only access, but also the equitable opportunities of how technology is being used within the classrooms. This is known as the Second Level Digital Divide (SLDD). The SLDD focuses on how access to the Internet is not sufficient enough to ensure learning and to develop relevant digital skills. Reinhart (2012) suggests that, "A growing body of research indicates that the Second Level Digital Divide is a subtle, yet complex, divide that impacts people in various ways, and which has the potential for social exclusion." Even though a student may have Internet access through a smartphone, or through computer access, without proper instruction or education, students are not on equal level playing fields if they are not able to use technology in the same ways as their peers.

The Second Level Digital Divide moves beyond the issue of computer access within the schools. It goes further to include the types of instruction teachers and librarians give within the school environment, which can either help or hinder the SLDD. For example, "Banister and Fischer (2010) found that the SLDD can be reduced by providing continued technology support and training that motivates teachers to utilize technology in their classroom" (Reinhart, 2012). If teacher knowledge and instruction is outdated from 20th century technology skills, then the technology education students receive in schools will add to the growing divide. Reinhart (2012) continues, "Most often, the technology classes focus on general use of technology rather than age and subject specific instruction." The SLDD shows the importance that a school's technology instruction is crucial to closing the gap on the digital divide. By focusing on teacher instruction, they will be better equipped to helping their students gain new skills and learn how to use technology to better enhance their learning throughout their lives.

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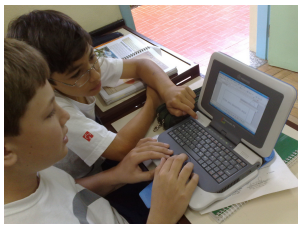
A student's ability to use technology, and more importantly, to use it in meaningful ways, needs to happen when a student at home and when a student is at school. Henderson (2011) states that focuses on the home-school knowledge gap by emphasizing that teachers have the opportunity to level the playing field by teaching literacy and inquiry in the classroom context with technology. She points out, though, that teachers lose this opportunity when they choose to teach software (Word, or PowerPoint), instead of integrating technology into the content areas. By just focusing on software technology, students are ostracized if they do not have those programs at home.

Therefore, there are inconsistencies of digital education and use from home environment to the school environment. Even if students do have the access, the knowledge of literacy and inquiry suffers from lack of education, thus creating more of a Second Level Digital Divide.

Impact and Implications

Equitable Access

The severity of the impact of the access divide on schools depends not on whether schools have computers and internet connections, but whether schools provide equitable access to reliable computers that are regularly used as an integral part of learning, adequate internet connectivity to support all students, and technically knowledgeable educators that embrace and understand their role in providing education that focuses on computer skills, research, and innovation (Seyed & Alreza, 2008, p. 231).



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Teachers who work at schools with slow and outdated computer hardware and software, as well as those who encounter unreliable or insufficient Internet connections, are less likely to integrate technology into lessons. The schools in which teachers are most likely to face these conditions are often also the schools in which socioeconomic conditions do not support a rich technological environment at home, which serves to amplify the problem. Warschauer, Knobel, and Stone (2004) refer to this challenge as one of "workability" (p. 577).

Workability is a genuine concern to a number of districts, and should be addressed by librarians, educators, and administrators alike. Schools are a place where children should be able to find equitable access to technology, but providing up-to-date computers, software, and connections may require advocacy, grant-writing, and fundraising from school administration, educators, and librarians. School librarians can provide valuable guidance to administrators and teachers about technology that integrates well into the curriculum, as well as provide assistance and research that will aid in obtaining funding and grants to purchase and update technology in their school. Longtime librarian, educator, and administrator Lisa Nielsen (2013) attributes her success in providing equitable access to students at her "cash-strapped, inner-city school" to networking, seeking out leasing and discount programs, connecting with companies that offer assistance to students in need, and connecting with community resources of all kinds. Nielsen emphasizes the potential for librarians to impact this issue by reminding librarians and educators that it is our responsibility "to provide all students with opportunities to connect, communicate, collaborate and create. Technology brings the world to them and allows them to pursue their passions in ways that teach them that what they do matters" (2013).

Disparate Usage

The usage gap in school libraries has changed as the digital divide has changed. What was once a question of any access to technology and the Internet is now a question of

the type and manner of use of that technology. Even when students have access to smart phones, computers, and other technology at home or through public libraries, they still require technology education and guidance for meaningful use of technology (Henderson, 2011, p. 156). School librarians can encourage equitable access in their schools by providing both professional development to teachers and digital literacy education to students.

Kassam, Iding, and Hogenvirk (2013) recommend librarians participate in and offer training on the use of computers as well as mobile devices, and that they assist teachers in developing a strategic plan to integrate technology into their learning objectives (p. 220). Henderson (2011) also emphasizes the need to rethink teaching to include multiple literacies to fully integrate technology into curriculum and close the gap (p. 160). Additionally, librarians should advocate for space and resources for students to explore technology and apply digital literacy skills in a supported environment for personal inquiry not specifically required for an assignment or class.

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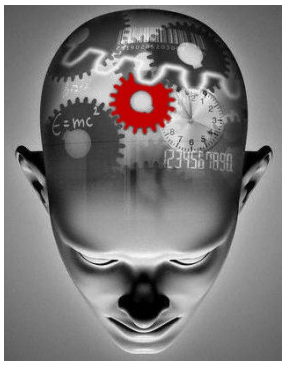
Like anything else in an educational environment, technology should be used for a purpose. School librarians may encounter teachers who believe they are integrating technology into their classrooms because their students present reports in PowerPoint, or because they let students play math games on the computer as a reward for good behavior. While this beginning step toward using technology in the classroom may be positive, it does not represent an effective use of technology.

School librarians can enrich teachers' understanding of effective uses of technology by modeling technology integration in their library classes and by suggesting subject-related technologies that provide students with meaningful technology engagement as an integral part of learning. The following suggestions offer alternatives for more effective use of three common technology tools used in classrooms:

- Instead of using PowerPoint to make lists and present cut-and-paste information and pictures, encourage students to use PowerPoint as a platform to organize and present original thoughts based on research, and to present a variety of media-rich resources that spur further discussion and debate.

- Instead of using MS Word to have students write and print a report to turn in, encourage students use MS Word to write and edit a similar report or opinion piece to upload to a class blog. Then, have students engage with each other for feedback and further inquiry.

- Instead of using a free program, like the National Center for Education Statistics' *Create a Graph* program, to have students graph information you provide to them, engage students so that they ask a question about the world around them, determine what information they will need to answer their question, research information about their question, and then evaluate the best graph format to present that information.



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21st Century Knowledge

Early efforts to lessen the impact of the digital divide on students focused on initiatives to provide computers, and then Internet connectivity, in schools, school libraries, and classrooms. Continuing efforts to address the gap that persists in usage concentrate on teacher training and technology integration into school curriculum. The impact of the developing second level digital divide will require librarians and educators to reframe the problem of the digital divide as a knowledge gap issue and focus on the services and opportunities we offer students to prepare to be active participants in the 21st Century workforce (Seyed & Alireza, 2008, p. 226-7). The knowledge gap cannot be bridged by simply placing students in front of a computer and expecting they will figure things out on their own. Librarians should approach collaboration and lesson planning to bridge the knowledge gap as they would any other learning--with clear objectives, modeling and support, and iterative assessments that provide students feedback both about basic computer skills and more complex literacy skills that support 21st Century learning.

The knowledge gap can only be addressed when teachers and school librarians integrate technology in the curriculum to offer students learning experiences that require them to inquire, solve problems, and think critically in addition to teaching them technical skills. School librarians are a valuable asset, and can provide training and resources to teachers who may need assistance to integrate technologies in their classrooms in meaningful ways. School librarians also serve as a valuable collaborative partner, who can work with teachers to plan, implement, and assess lessons that support literacy and thinking skills that help to bridge this knowledge gap.

A Librarian's Story

Krista goes to Main Street Middle School, and is in sixth grade. Krista starts her day by going to school and eats breakfast in the cafeteria with her friends. They discuss the homework they did the night before. Many students in Krista's grade have their own laptops that their parents bought them for their birthday. Krista has a smartphone she got for Christmas, and uses it to check her email, go on social media and stay connected with her friends. But last night, Krista couldn't get a ride from her parents to the public library to do research for her Social Studies project on the Civil War. So she quickly looked up information on websites on her cell phone, and wrote it down in her notebook to use for her project.

Krista goes to her first class of the day, Social Studies, and listens to everyone else share their research on their topics. Even though Krista was able to look up some information on her smartphone, her facts and information do not match up with the rest of the class. Instantly, Krista feels frustrated and embarrassed when it's her turn to share. There are a few laughs from the class, and the teacher, Mr. Brown, makes a disapproving comment. Her Social Studies teacher uses the Smartboard to show Krista's class some of the basic operations of PowerPoint: how to add slides, change fonts, etc. because that is the program he wants them to use for their project.

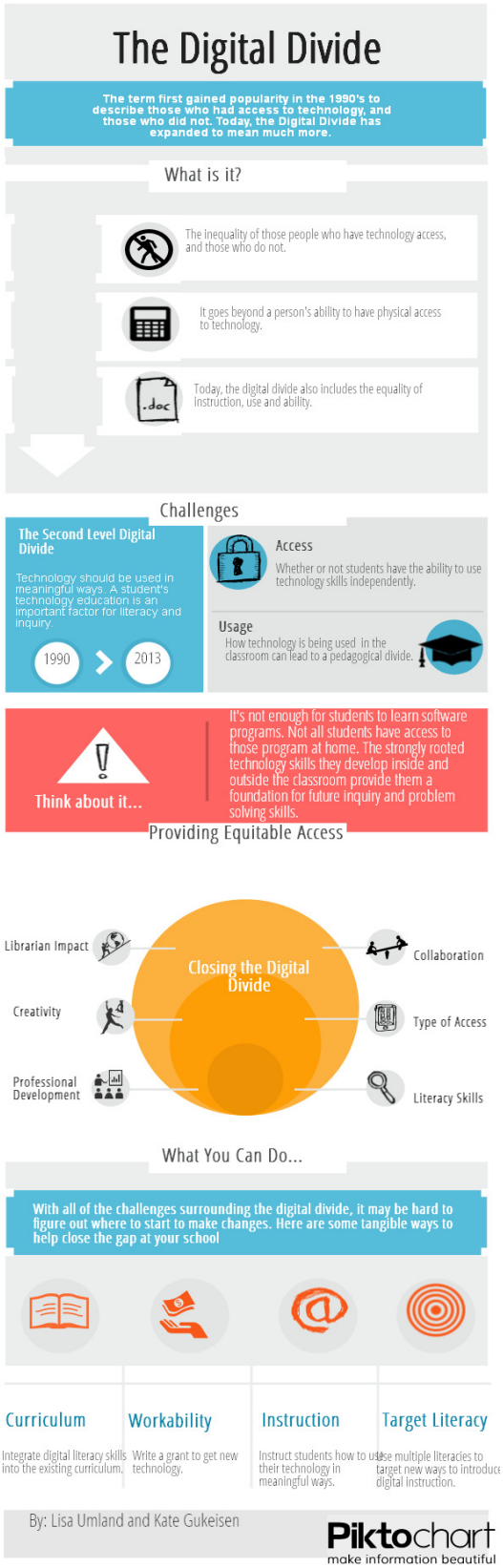
At the end of the school day, Krista heads to the school library to get started on her Civil War project. The librarian, Ms. Waters, sees Krista looking frustrated and staring at the computer. She walks over and asks Krista what she's working on. Krista explains to Ms. Waters what happened in class and that she has to do this PowerPoint project, which it is due in a few days, and she feels so far behind because she is not able to work on it from home.

When Ms. Waters hears what happens, she is concerned that Krista will not be able to finish her project. Ms. Waters thinks that Mr. Brown should be scheduling some computer class time since Krista, and more students like Krista, do not have access to computers at home. She also is concerned that the only internet access Krista has is from her smartphone, and that it is not sufficient for research, and she is not able to do her PowerPoint project from that device. Ms. Waters is also concerned that Mr. Brown criticized Krista's sources, without ever explaining why they were not credible. Just by showing students how to use PowerPoint, it does not give the students digital literacy skills to interpret, create meaning and organize information. Ms. Waters knows of many Web 2.0 tools that teach kids how to create a digital project, without just using a software program, that, students like Krista, could do from home.

After thinking about her concerns, Ms. Waters asks the principal if she is able to do a professional development seminar for the staff. In the seminar, Ms. Waters is going to show the teachers new and updated Web 2.0 tools and methods for students to research and organize their information digitally, in ways that are contemporary. She is also going to stress that classes should come in and utilize the library's computers, since not all students have the right kind of internet access to do projects at home. She will also address that even though many students seem to be proficient with technology, since they know how to use programs such as Word and use social media, students still need instruction digitally in learning how to use information in ways that will benefit their education and learn skills they can use throughout their lives. Ms. Waters will let teachers know that she is more than willing to help them in this area, and looks forward to collaboration in the future.

Bridging the Divide

Considering the challenges surrounding the digital divide, it may be hard to figure out where to begin to bring about change in your school. The following infographic will assist you in creating action items to close the gap in your school community.



You can view this Piktochart infographic at https://magic.piktochart.com/output/524576-the-digital-divide-copy-copy-copy

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