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The "Haves" and "Have Nots": Poverty and Opportunity In The Information Age

Introduction to the Digital Divide

The term "digital divide" is believed to have been coined in 1995, the same year that the US Department of Commerce National Telecommunications and Information Administration (NTIA) issued the first of four reports titled "Falling Through the Net." The NTIA's 2002 report indicates that although home computer use is almost universal among the wealthiest youth, only one-third of the lowest-income youth use a home computer. The survey found similar differences in Internet access and use between low- and high-income youth. Often, schools are the only means of access to information technology for underprivileged children, and therefore it more often than not falls upon teachers and administrators in poorer school districts to "bridge the divide."

The importance of inclusion in the information age cannot be ignored: "Those [young people] who are connected will have greater access to college, to well-paying jobs, and to information that will help them more fully participate in civic society" (Servon, 2002). According to Servon, "schools are in many ways the logical institution through which to diffuse IT to youth. They reach the most children and represent a major infrastructure investment."

It is important for this paper that the digital divide is considered not only an issue of access, but of digital literacy. Many studies focus simply on the ratio of computers to students rather than how students are using those computers to support learning objectives and develop skills. Some research indicates that low-income and wealthy school districts tend to use computers differently: schools serving higher-income students generally used computers in a more intellectually powerful ways, such as analyzing information and making presentations, whereas schools in low-income districts tended to use computers to reinforce basic skills and for remediation (Becker, 2000).

As this paper shall explore, in order to mitigate the impact of the digital divide between low-income and wealthier school districts significant investments must be made not only in appropriate technology acquisitions, but in teacher development and curriculum redesign.

Developing the Teacher

A key to bridging the digital divide is for more teachers to be trained in how to integrate technology effectively into their teaching. "A slew of evidence supports the need to move from just simply having computers in classrooms…to connecting them effectively to a curriculum that can engage students. When this occurs, there can be some remarkable gains – but such a transformation depends on trained teachers," (Kuttan & Peters, 2003). Unfortunately, such training is not the norm for teachers in disadvantaged communities.

Even for states who require educational technology as a part of teacher certification, there are dismal statistics that sometimes over 50 percent of the teachers in high-poverty urban areas lack certification, (Kuttan & Peters, 2003). It is clear to one researcher that "where teachers are personally comfortable and at least moderately skilled in using computers themselves…are computers becoming a valuable and well-functioning tool," (Becker, 2000). It would appear then, that if the students within an underprivileged school are to benefit from the computers and technology that they do have, that more emphasis in must be placed on educational technology training in teacher education programs and later in teacher in-services and professional development opportunities.

While changes in teacher education policy on a state and national level may help address technology training for future educators, current teachers must rely on professional development opportunities. However, such opportunities are hard to come by for teachers in financially-strapped school districts. "Nationally, school districts have not invested to nearly an adequate extent in costly areas of professional development (costly in terms of the time teachers have to be out of the classroom and the need a substitute teacher)….It is not surprising that because of so many competing demands, poor school

districts have chosen not to invest in professional development to better integrate technology use. (Kuttan & Peters, 2003).

Unfortunately, the largest of federal funding efforts for disadvantaged schools, such as E-rate, does not pay for professional development in any way. If eliminating the digital divide is a priority for governmental bodies, initiatives and funding must be provided for teachers to learn the skills they will need to teach their students with the aid of technology. Teachers must also take opportunities presented to them to continue their own learning, as technologies evolve continuously.

Changing Curriculums

Another key component necessary to better adoption of technology in schools, regardless of economics, is curriculum re-design. Often it has been noted that use of technology is simply added as an afterthought to more traditional curriculums and methods of teaching. Much evidence supports the need to move from just simply having computers in classrooms and fast networks to connecting them effective to a curriculum that can engage students. For example, recent analysis of the National Assessment of Education Progress shows that when exposed to software programs that foster high-order thinking skills, poor children in high-poverty schools improve their academic skills by one grade. (Kuttan & Peters, 2003).

Project-based learning models are being favored in cutting-edge charter schools. These schools have taken a big step back from traditional pedagogy in order to think about how education can best serve students and prepare them for working in the new economy (Servon, 2002). For example, the New Technology High School in Napa, California requires students to master eight skills before they graduate: collaboration, problem solving, oral communication, written communication, career building, technological literacy, citizenship and ethics, and content literacy. In this school traditional subjects are taught in an integrated fashion.

In contrast, Conte notes most schools continue to operate with little modifications to a traditional model:

Traditional classrooms - With their strong central authority, carefully prescribed curriculum, 55-minute classes, homogenous student groupings and emphasis on rote learning – may have trained children adequately for the old-style mass-production economy….In the Information Age economy, however, businesses must innovate and customize their product constantly….These environments place a premium on workers who are flexible, innovative, self-directed, and able to solve problems collaboratively. (2000)

There is obvious importance that if impoverished school districts are to give their students the best possible opportunities in the workforce, that they must redesign their curriculums to foster flexibility, innovation, and problem solving as well as develop useful technology skills.

Up-to-Date Technology

In addition to teachers knowing how to use technology, schools must be commitment to keeping their technology up-to-date for their students. "No matter which side of the digital divide you are on, it is fair to say that keeping resources updated is always going to be a concern….In education, this means than an investment in technology is going to have to be long-term," (DiBello, 2005). Little commitment to keeping technology up to date may be wasting students' time and districts money if the training and experience on outdated equipment and software no longer used in the in the workforce.

Thankfully, the prices of technology are falling, making it easier for cash-strapped school districts to afford investment in computers, networks, and software. As Compaine optimistically states, "There is also reason to believe that the poorer schools, having been later to the game, are benefiting from lower costs for equipment and the improved performance of PCs compared to those that would have been purchased by the "cutting-edge" schools at higher prices a few years earlier," (2001). However, it takes teachers and administrators who are familiar with the technology of today and can anticipate the trends of tomorrow to assure that technology in the classroom remains viable.

Collaborative Opportunities

In her book *Bridging the Digital Divide: Technology, Community, and Public Policy*, Lisa J. Servon emphasizes the need for youth technology programs and community centers outside of the regular

school day in order to give underprivileged students the best opportunity for well-paid employment in the

information age:

> Unfortunately, most schools do not currently possess the capacity to take advantage of what
> technology offers. Overwhelmed teachers are challenge to take on learning and teaching in an
> entirely new area. Schools struggle to find funding to support ongoing technology costs. As some
> point, schools may be able to effectively incorporate technology into what they do. Until then,
> youth-orientated CTC's [community technology centers], particularly those located in
> disadvantaged areas, serve an important function. (2002)

In her chapter, "Community Technology and Youth," Servon describes several community

technology center programs that have formed partnerships with local schools to reinforce and compliment

what schools do in their curriculum. Inherent in their purpose and design, CTC programs provide the

structure, training, and resources that are often not available in schools. On student interviewed saw how

her CTC program participation allowed her to then contribute back to her school: "This fall semester I got

to work in my class as the student's assistant teacher and I could help other students and other teachers. I

can apply all that I know to projects I do in school and take it a step further," (2002, p. 129). It seems

logical that teachers should explore partnerships with CTC's as a way to give their students the skills

necessary compete in the workforce as well as bolster technology use in their own schools.

Prescription for Reducing the Digital Divide

After having surveyed the digital divide from the perspective of economic inequalities, this paper

explored several key areas of development and opportunity within the K-12 schools for teachers and

administrators to bridge that divide. With that knowledge in hand, here are ten recommended strategies

for educators to be the most effective in integrating technology into the underprivileged classroom:

1. Before computer purchases and technology investments are made, assessment and strategic

planning must occur involving all of the school's stakeholders.

2. Teachers must be sufficiently trained in educational technology, either through professional

development opportunities or in teacher education programs.

3. Curriculums must be redesigned to integrate the use of technology for "higher thinking" processes.

4. Teachers should be sensitive to student culture/ethnicity when investing in educational technology to use in the classroom; students should be able to "relate" to cultural representations in the software.

5. Technology must be kept in good working order so that technical issues do not override learning objectives.

6. Teachers should be sensitive to English language learners when designing lesson-plans involving technology.

7. Technology (both software and equipment) used in schools must be kept up-to-date, requiring long-term commitments from all stakeholders.

8. Teachers should take advantage of extended learning opportunities that technology facilitates, such as access to outside experts, collaborative projects with other schools, etc. that support learning objectives.

9. Teachers and administrators should strive to develop partnerships with community technology centers to enrich students' experience both inside and outside the classroom through extra-curricular activities.

10. Finally, teachers must dedicate themselves to being life-long learners if they are to prepare their students for the ever-evolving demands of an Information Age workforce.

Conclusion

It is clear from the exercise of this paper that the way in which we educate children will have a great impact on their economic opportunities as adults, as well as the economic development of the country. With the Industrial Age now giving way to the Information Age, there is great risk that the disparities between the poor and the economically advantaged will grow unless our educational systems can become proactive in developing students' skills, technological and otherwise, to meet the demands of

a quickly evolving information economy. If educators strategize and commit to the evolution of

education, themselves, and their classrooms, it is possible to bridge the gap of the digital divide.

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