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The Negative Effects of Evolving Technology on the Success of High-Risk

Students in Higher Education: Prospective Students at Risk Due to Their

Lack of Early Access to Educational Technology

Abstract

"I do not fear computers. I fear the lack of them"

-Isaac Asimov (Quotes)

Asimov speaks with tongue-in-cheek, but his comment is unquestionably serious when considered in the world today. Technology is changing at the fastest rate in history. New varieties of computers, software and Internet access relentlessly emerge to replace their previous forms. This phenomenon presents a challenge for all, but particularly to those for whom technology is unaffordable and unavailable. This paper will explore the negative effects of evolving technology on minority college students who are already at academic risk due to a substandard secondary school education, family instability and poverty. It will examine the educational advantages of technology in developing basic skills in English and mathematics, and the need for students to develop the additional skills necessary to navigate resources in all areas of study at the college level. The paper will argue that some forms of advanced electronic entertainment can and do have a damaging affect on the academic and social advancement of many at-risk students. Finally, it will conclude with examples of community programs currently

in place to address this problem, and offer suggestions and initiatives that can substantially improve the academic success of at-risk students.

Background

The United States is one of the most affluent nations in the world, yet poverty is widespread, particularly among its children. In 2006, twenty-eight million children in the United States were growing up in low-income families (National). These children typically face severe social and educational disadvantages. Oral Lee Brown, an advocate for academically at-risk children, writes of the every day problems that these children describe, "typical problems of poverty and deprivation that affect children in low-income families: Mama doesn't feed me in the morning, they'd say. Or Mama's working two jobs and can't ever be there when I get home from school, so some neighborhood bullies have been beating me up and taking my dinner money" (Brown 91). She shares, that in addition to the lack of financial and basic physical needs "what troubled me most was how apathetic some of these parents felt about their kids' education" (Brown 103). Clearly, learning takes on an entire new challenge when complicated by hunger, fear, family instability and parental apathy. Much of a child's early education takes place in the home, beginning at an early age with basic language and number skills. Parental involvement using books, counting and printing are a necessary basis for learning in later years. Children have the capability to learn more before the age of six than any other time in their lives (Friedman, 14). It is no wonder that low-income, minority children are at an education deficit before they even begin their formal schooling. The United States Department of Education reports that the most significant barrier to the involvement of parents in the education of their children is a lack of time. The increasing number of single-parent households has an impact on the phenomenon as well as the necessity in two-parent households for two incomes. These

factors contribute to a decline in the amount and quality of time parents spend helping their children with school assignments and homework. The attitude that public schools have sole responsibility of a child's education also contributes significantly to the decline in student performance (US). While public schools should provide basic, necessary academic skills, parents need to be proactive as well.

Unfortunately, typical urban public schools do little to alleviate the problems faced by disadvantaged children. Low-income children often receive a diminished education in the public schools when compared to their financially advantaged peers, due to inadequate resources, limited leadership and ineffective curricula (Ba). The National Assessment of Educational Progress found that "nineteen percent of eighth-graders in large central city school districts can read at a proficient level, compared to thirty percent nationally. In mathematics, only seventeen percent of eighth-graders in large central city school districts are proficient, compared to twenty-seven percent nationally; in several of the urban districts, math proficiency levels drop to the single digits" (Clowes). Basic English and mathematics skills are imperative to academic success through secondary school and into college. Because at-risk, minority students often leave urban public schools with deficiencies in these areas, many require extensive remediation in basic academic skills when they reach college, causing frustration and hopelessness, thereby diminishing their chances of success.

Technological Disadvantages

The onset of the digital age compounds these existing problems. Computer and technology skills are crucial to academic success, yet the same low income, high-risk minority students who lack basic skills in language and mathematics lack access to and training in

technology as well. The line of the digital divide, recognized as the gap between those who do and those who do not have access to the internet and other valuable information technology is firmly drawn in terms of income, race and ethnicity in the United States. Low-income minorities are far less likely to own computers and have access to the internet at home than non-minorities. In fact, only thirty percent of young people in low-income households have the use of a home computer as opposed to ninety percent of youth who are growing up in an affluent home. While an estimated sixty percent of non-Hispanic whites have access to the Internet at home, only thirty-two percent of Hispanics and forty percent of African Americans enjoy the same advantage (Dickard). This significant inequality places minority students at a great risk of academic failure. The US Department of Education maintains:

> Technologies are only tools. They cannot create new products, solve problems, or deliver quality work instrumental to the prosperity of the United States. They are only effective when put to use by those who can master them. Today's students must have access to such technologies in order to become masters of today's knowledge and meet national demands for qualified workers, educated consumers, and responsible citizens. But in some communities with school budget cutbacks, over-crowded classes, poorly trained teachers, and limited parental involvement, students are not being prepared well enough to meet those demands" (US).

Technology is a double-edged sword to disadvantaged students. It exists, but extensive, early training is necessary for all students to grasp and use available information technology. Currently, disadvantaged students do not receive this specific training.

Students of Hispanic heritage have a special set of obstacles to overcome regarding computers, access to the Internet and technological skills. Many families are less culturally at ease with Internet use than the general population. The Latino community places family at its core and is extremely socially interconnected. Families and friends prefer to spend time together in person as opposed to electrical communication, and tend to seek out Internet service only when needed instead of having it available in the home (Chavez). The sterile, non-personal atmosphere of the Internet is an uncomfortable means of communication for many families in this cultural community, and there is often little encouragement for children to break away from this tradition. The concept of family and social support is certainly a positive one for these families, but change and education is needed to find ways to integrate technology into this already rich, social culture.

Many minority families also experience unique struggles with language identity and Internet use. Hispanic student who are learning English as their second language often use a combination of Spanish and English, or a"Spanglish" dialect when communicating. African American culture has experienced public division regarding speech and dialect in recent years (Warschauer). Essentially all ethnic minorities struggle with a form culture specific dialect and language. While the anonymity of the internet persona is vast – male, female, black, white, gay, straight - language and dialect is an identifying factor that is difficult to hide, with English as the dominant Internet language. Anatoly Voronov, director of the Russian Internet service provider, Glasnet states:

> It is just incredible when I hear people talking about how open the Web is. It is
> the ultimate act of intellectual colonialism. The product comes from America so

we either must adapt to English or stop using it. That is the right of any business. But if you are talking about a technology that is supposed to open the world to hundreds of millions of people you are joking. This just makes the world into new sorts of haves and have nots. (cited in Warschauer, 5)

Families and students with issues of language, language identity and dialect are much less likely to feel comfortable using the Internet as a resource for academics, and firmly remain in the "have not" category of technological comfort.

Furthermore, as technology increases, a second generation of the digital divide evolves as well. Improved access to the internet such as broadband and more recently, fiber-optic technology has placed low-income families at an even greater shortfall in regards to enhanced Internet access. In April of 2006, Republican congressman John E. Peterson remarked, in a letter sent to the New York Times, that the "lack of broadband leads to a lack of access to information, which leads to fewer economic opportunities, which leads to lower incomes, which leads to fewer broadband options"(Moyers). This repetitive cycle continues to isolate low-income families, and their children, from the advantages of the Internet. The multiplying generations of the digital divide will continue to have a debilitating effect on the education and advancement of minority students.

Insufficient access to technology is not limited to the low-income home, but is also extremely evident inside many urban schools. Education in the use of technology is critical, yet disadvantaged schools suffer from the same challenges of inadequate resources, ineffective curriculum, and unproductive leadership in teaching technology as they have for decades with the traditional basic academic skills of language and mathematics. Many teachers move to higher

paying suburban school districts, where funding of technology and professional development training is more available. Many of the teachers who remain in the inner city schools continue to be untrained and under prepared to meet the new standards required to teach advanced technology. Moreover, hardware, educational software for business, the arts and science, and basic Internet access are not readily available in many under-served urban districts (Ba).

Advantages of Early Access to Technology

Literacy and technology are integrally related. The following list of rights, as suggested by the International Reading Association in 2001, is too often missing in urban school districts serving minority populations, and imperative to the academic success of all students:

- Teachers who are skilled in the effective use of Information Communications Technology (ICT) for teaching and learning
- A literacy curriculum that integrates the new literacies of ICT into instructional programs
- Instruction that develops the critical literacies essential to effective information use
- Assessment practices in literacy that include reading on the internet and writing using word-processing software
- Opportunities to learn safe and responsible use of information and communication technologies
- Equal access to Information Communications Technology

(Pearson 2)

Technology has become a vital component in the successful transmission of literacy to students.

Clearly, there is a real need for early access to technology for all students in secondary school in order to master the basics of educational technology. Information literacy is in essence one of the most important tools for success at all levels of education. The ability to find, sort, and identify the seemingly endless supply of information on the internet is an essential skill. Surfing the internet also provides important literacy training for children and adolescents. Children who

are trained in the safe and responsible use of the internet, and spend time surfing, do better in school than those who do not have home access to the Internet, and the opportunity to explore. "It appears that the text-based nature of most Web pages is causing children to read more, resulting in improvements in grade point averages and performance on standardized tests of reading achievement" (Michigan). Blogs, and "Keypals" provide practice writing, and also offer students the exciting opportunity to communicate and learn with other children from around the world (Pearson 3). It is extremely important for children, adolescents and young adults to have adequate equipment and time to safely explore and learn from the sea of information offered by the Internet.

Competence in the use of word processing programs is also very important in order to achieve academic success at the college level. Basic, rudimentary skills are not sufficient for students to navigate these powerful programs in a way that ensures academic success. Students should be comfortable to set up margins, change font size and style, and additionally to insert tables, graphs and charts. Students should also be competent to use spelling, grammar, and vocabulary functions, as well as an assortment of specialized graphics programs to enhance the visual presentation of any document. Students should learn to use 'tracking change' features, so that they can collaborate in their writing and thereby receive feedback from peers and teachers (Pearson 3). It is also important for students to be familiar with spreadsheet programs such as Microsoft Excel to use for basic mathematical functions, charts, graphs and data analysis, and teaches basic mathematical and statistical concepts. Competency with presentation programs like Microsoft PowerPoint is also imperative. Excellent technological presentation skills and the confidence that results carry into all high school and college classrooms as well as into the

business world. The skills developed to successfully organize and present on a topic in this manner are invaluable.

In addition to receiving training in software skills, students should have unlimited access to educational software, educational games and internet sites to help them to practice basic skills in mathematics and English. This access and training should begin at the elementary school level and continue throughout secondary school and into college, and should grow and expand with each child's age and stage of development. Young children should have access to electronic storybooks and other engaging, entertaining academic technologies that have been proven to help students comprehend material as well as motivate them to read and learn. Electronic magazines or "E-zines" allow older children to become engaged in education and grow in their use of academic technology. Interactive whiteboards and "Smart boards" have the potential to provide continual technological support in the classroom. These powerful tools can be used to diagram and organize writing, and create concept maps for any discipline of study (Pearson 3). Free Internet software programs such as Hot Potatoes Half Baked Software allow students and teachers to create and customize quizzes and games specific to classroom learning in order to reinforce important lessons. This free software package provides the technology to design matching, multiple choice, and fill in the blank exercises and can be adapted to reading, math or any subject of interest. Instructional dialog and answer feedback options are included in the software, as well as the ability to move to other internet resources within the exercises (Hot). The wealth of learning opportunities that are available through software and the Internet is staggering. It is imperative for basic teacher training to include the effective use of new academic technologies, and provide the additional training in their use. Teachers must be encouraged to be flexible, and continually adapt and adjust classroom lessons to include evolving technological

tools. All children, adolescents and young adults need to be exposed to these valuable educational resources, regardless of economic status, race or ethnicity.

Social Mobility

Zeynep Tufekci writes a fascinating conference paper on the Digital Divide and Social Mobility for the International Communication Association in 2005. He chronicles a study conducted in 2001 that follows the progress of a group of twenty-three low-income adults supplied with free access to computers, the Internet and instruction on their use. The classroom instruction, conducted at a community center for three hours, four evenings each week for a total of three months, consisted of a curriculum focused on Microsoft Word, Excel, PowerPoint, the Internet and email (Tufekci 7). The anticipated results were improved job prospects and eventual employment in positions requiring newly acquired technological skills. The actual results were surprising. Employment was not a consequent of the training, but the training influenced them in other, positive and productive ways. There seemed to be a "direct psychological benefit from the training in terms of helping people feel more comfortable around computers and about themselves" (Tufekci 13). Several participants were inspired to return to college to begin or finish their education. Students reported that "using computers for word processing, research, registration and communication significantly eased their efforts at continuing education" (Tufekci 13). Knowledge of computers and technology empowers and inspires students to succeed in college, and results in a higher self-esteem, pride and ultimately, an upward social mobility.

The Hidden Hazards of Technology

Clearly, knowledge of academic technology is vitally important to the success of all students, and early access and adequate training at the secondary school level provides the

background to prepare students for success at college. It is also obvious that academically at-risk, low-income students face additional issues due to myriad challenges and obstacles. An additional, sometimes hidden hazard for these students, however, revolves around non-academic technologies. These new, evolving technologies can also negatively affect the academic and social outcome of high-risk college students, only in veiled, insidious ways.

College age students of today are part of the hip hop generation; the post civil rights generation defined by Rap music and known for the need to acquire wealth and material goods. Derek Murray, in his commentary on hip-hop as art comments that " hip-hop's materialism and "bling-bling" excesses have dominated the music in recent years. Ridiculous displays of wealth (luxurious, multimillion-dollar mansions, exotic cars, and copious amounts of platinum diamond-encrusted jewelry) have become the aesthetic of choice. Many rap videos, with their million-dollar budgets, have degenerated into nothing more than excessive "ghetto" mini-melodramas that in many respects overshadow and control the success of the music" (Murray). While artists of this generation constantly fight to dissuade this perception, impressionable children and youth take the materialism of their generation very seriously. The status symbols of the latest technology are very attractive and important, especially to financially disadvantaged youth. MP3 players, cell phones, portable DVD players and DS handheld game consoles are common possessions among low-income students. Some even take on extra jobs to pay for these technological status symbols of implied success.

These types of non-academic technology can actually put at-risk students at a greater disadvantage. Some studies indicate that the "wired generation" that is constantly listening to music, watching DVDs and playing video games is actually becoming less social and more isolated. This phenomenon has been coined "technological isolation". In his article on

Technology and Social Isolation, Chris Barylick contends, "there's a point where technology becomes the end to all means, where you place your own happiness and self-image in the technology you have access to and can learn about. The idea of going out to meet new people or expand yourself and your interests becomes all the easier to do without" (Barylick). The constant, dependent use of entertainment technologies can actually become addictive, and have detrimental effects on a young person's life. The technology becomes a priority, pushing other activities aside, including education. Advanced technology designed for entertainment can easily contribute to failure for students who are already at risk academically.

The benefits and detriments of video games is not a new topic, but one that continues to affect the success of youth. While educational video games can be very advantageous to the learning process, the video game industry continues to be riddled with inappropriate, damaging offerings. Racial and sexual stereotypes still abound in many games. Violent, sexual games are known to have a lasting effect on children, and studies find that they affect college age youth in the same way. Studies have shown that virtual violence has the same effect of the brain as actual violence, and there is evidence that aggressive thinking affects decision-making abilities (Mayse). Academically at-risk students exposed to the negative influences that often accompany this type of technology are likely to lose an already precarious focus on their college education and their future.

Positive Changes

Advancing and changing technology is a gift to those who have access to it, and the knowledge to use it effectively. It is the job of educators and the community to be sure that this information is communicated to today's youth, regardless of social, economic or ethnic status.

Fortunately, there are positive measures currently in place that may help America's economically disadvantaged youth to overcome this obstacle.

One positive change is the movement toward community internet access. High-speed internet is beginning to be thought of as a basic public necessity, not unlike electricity, gas, water and sewer service (Free). Some urban communities are running pilot programs to provide designated areas with free wireless access. Public libraries and community centers are recognizing the need for internet access in their communities and are taking steps to provide access to their residents.

Communities are also beginning to recognize the need for training in computer and internet technology. In Austin, Texas, a wealthy, technological city that also has a large number of its residents living in poverty, officials responded to the need for technology access and training by establishing a grant funded Community Technology Center. The center provides free access to computers and the Internet, and instruction on their use (Tufekci 4). In Lousiana, a United States Department of Education grant funded technology program was established that trains children and their parents in computer and internet technology. Parents and children learn computer applications and safe use of the internet together. At the program completion, families receive free new or refurbished computers to use in their homes. The program also provides professional development training for area teachers on the use of the internet to enhance classroom activity (National). Low-income communities are beginning to find ways to provide the valuable service of technology access and training to their urban residents, and are helping to improve the future of their children.

Some urban school districts are looking for ways to improve the quality of the education provided to their students. In Philadelphia, where almost half of the public school

teachers leave their jobs within two years, the Jason Project, "a nonprofit educational organization headquartered in Ashburn, VA., whose mission is to inspire in students a life-long passion for learning in science, math, and technology through hands-on, real-world scientific discovery" was instituted (Ba). The Jason project provides students and teachers with opportunities to develop skills in science and technology. This successful initiative uses technology to challenge interest and excite students and their teachers. The planned activities in this proven program train teachers to teach difficult children who struggle with basic skills in English and math, and teach technology and science using relevant, practical methods (Ba). Districts that are proactive are changing curriculum to include the technological education that their children require and deserve, helping to prepare them for future academic success throughout high school and beyond, to college.

In Conclusion

Education: A debt due from present to future generations.

George Peabody (Wisdom)

Historically, Community Colleges have had the difficult job of teaching students who come to their institutions under prepared to succeed academically. Two years of college are frequently extended to three years due to the need for remedial education in preparation for college level learning. Most students in this academic condition come from low-income, urban school districts that have failed to provide the basic skills in language and mathematics necessary to navigate college. They are typically minority students, who have struggled through societal and economic difficulties throughout their lives. The advent of technology has made the situation for these students even worse. The changing, evolving nature of computers, the Internet and other technologies used in education often add a third tier of necessary remediation

for these already at-risk students. It is imperative for parents, the community and public schools

to provide the necessary technological skills to children at an early age to ensure their success

later in life. While progress is being made, there is much more to be accomplished.

Technological skills must be viewed as basic, required education in today's rapidly changing

world.

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