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## Motivational barriers : technology use by minorities

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## Motivational barriers : technology use by minorities

### Abstract

This research paper reviews motivational factors that affect the use of technology by minorities. The technology gap is taking a toll on individuals, communities, and Society at large. Sixty percent of jobs require skills with technology. Students with limited or no access to computers are falling behind in developing skills that are needed in college and in the job market. This lack of infrastructure strikes some as particularly worrisome because it comes at a time when the federal government is forcing individuals and communities to become more self-sufficient. The research cited in this paper addresses the existence of a digital divide, describes motivational barriers for minorities, suggests instructional strategies to motivate minorities, and provides examples and recommendations for what exists now.

**Motivational barriers: Technology use by minorities**

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**By**

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## Abstract

This research paper reviews motivational factors that affect the use of technology by minorities. The technology gap is taking a toll on individuals, communities, and Society at large. Sixty percent of jobs require skills with technology. Students with limited or no access to computers are falling behind in developing skills that are needed in college and in the job market. This lack of infrastructure strikes some as particularly worrisome because it comes at a time when the federal government is forcing individuals and communities to become more self-sufficient. The research cited in this paper addresses the existence of a digital divide, describes motivational barriers for minorities, suggests instructional strategies to motivate minorities, and provides examples and recommendations for what exists now.

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## Introduction

### Introduction to the problem

The web is now an integral part of the average person's daily life. People are conducting a wide range of their day-to-day activities online, such as banking, tax filing, schooling, and corresponding with friends and family. The lack of access to up-to-date computers in low-income communities and to affordable Internet access in rural areas prevents many people from attaining good jobs as well as the technological knowledge to participate in the affairs of the broader society. An information underclass is continuously growing (Benton Foundation, 1999).

Unless more minorities and lower-income Americans begin to use and eventually buy computers, the United States will be divided between those with ready access to computers and those without (Davis, 1998). Simply owning a computer or having access to one is a good start but access only scratches the surface. If people are not motivated to use the technology or understand how it can benefit their lives, they are still suffering from the divide. Morse (2000) suggests we are in transition from a currency-based system of exchange to a new "knowledge economy" where the value of one's economic means is directly connected to what one knows.

### Statement of the problem

Each year being digitally connected becomes ever more critical to economical and educational advancement and community participation (U.S. Department of Commerce, 2000). Education is valued the world over and is widely accepted as the most important asset an individual can have to escape poverty. Technology is transforming education but resources for technology are not evenly distributed among communities. New



technologies could provide data that communities can use to understand and attack problems relating to education, housing, crime, health, and other issues these communities face (Benton Foundation, 1999). African Americans have been absent in the use and development of technologies throughout the growing electronic age. As a group, African Americans are said to suffer from technological illiteracy. Many simply have not had the opportunities to learn the necessary skills to be on equal ground with other ethnic groups (Walton, 1999).

The question is why do minorities continue to lag behind in this technological revolution? Motivation seems to play a role in the use of technology among minorities. Blacks have traditionally been poorly educated and deprived of the sorts of opportunities that create the vision necessary for technological ambition. The low priority that society puts on equal access to telecommunications hardware, combined with skepticism among the poor about the benefits technology might bring, hinders deployment of new information infrastructure in impoverished neighborhoods (Benton Foundation, 1999).

#### Definition of terms

- Minorities – Any group of people who are not considered the majority.
- Motivation – An inner drive, impulse, intention, etc. that causes a person to do something or to act in a certain way.
- Technology – Technical terminology for computers, hardware, software, Internet, etc.

## Review of the Literature

### Introduction to the Review of the Literature

The review of the literature will discuss a variety of research dealing with minorities and technology. Research cited in this paper addresses the existence of a divide, describes motivational barriers for minorities, suggests instructional strategies to motivate minorities, and provides examples and solutions for what exists now. Much of the research that has been compiled deals with how African Americans compare to Caucasians so there will be more references to African Americans throughout this paper.

### Review of the Research

Existence of a Digital Divide. There has always been a gap between those people and communities who can make effective use of information technology and those who cannot. This gap has been coined the “digital divide” (Digital Divide Organization, 2000). Now, more than ever, unequal adoption of technology excludes many people from reaping the fruits of the economy. A consensus does not exist on the extent of a divide or whether the divide is growing or narrowing. Researchers do acknowledge the fact that some sort of divide exists at this point in time.

The U.S. Department of Commerce (2000) issued their fourth report of a series of studies entitled *Falling through the net: Toward digital inclusion*. This report focused on the progress that has been made with technology as well as the progress that needs to be made so every American can participate in the digital economy. The extent of digital inclusion was measured by households and individuals who have a computer and an Internet connection. The data showed that overall digital inclusion is increasing rapidly. The number of households with Internet access has soared to 58% compared to 26.2% in

December of 1998. Fifty-one percent of all households have computers compared to 42.1% in December of 1998. A digital divide exists, however, between households based upon different levels of income, education, racial and ethnic backgrounds, age, single/dual-parent families, and disabilities.

Asian Americans and Pacific Islanders have maintained the highest level of home Internet access at 56.8% (U.S. Department of Commerce, 2000). Blacks and Hispanics, continue to experience the lowest household Internet access at 23.5% and 23.6% respectively. When measured against the national average, the U.S. Department of Commerce (2000) found that Blacks and Hispanics lag behind in Internet access. The gap for African Americans has widened by 3 percent, from 15% in 1998 to 18% in 2000. The gap for Hispanics has widened by 4 percent, from 14% in 1998 to 18% in 2000. Only 16.1% of Hispanics and 18.9% of African Americans use the Internet at home. People with a disability are half as likely to have access to the Internet as those without a disability (U.S. Department of Commerce, 2000).

Hoffman and Novak of Vanderbilt University (1999) conducted a comparative analysis of Web usage and access across racial and ethnic groups in the U.S. The analysis was entitled *The evolution of the digital divide: Examining the relationship of race to Internet access and usage over time*. The focus of this analysis was on differences between Whites and African Americans at three different points in time. Primary data from three nationally representative surveys of Internet use among Americans, including the first survey on Internet use to collect data on race and ethnicity, were used.

Hoffman and Novak (1999) found that inequalities in home Internet access might be even more problematic than school access. Gaps in general Web access and levels of

usage between African Americans and Whites appear to be driven by whether or not there is a computer in the home. Access outside of the home is also vital in determining Internet usage. Additional access points, such as, school, libraries, workplace, etc. stimulate usage. When the school environment was taken into account they found that students attending poor and high minority schools have less access to most types of technology than students attending other schools. The creation of educational opportunities requires financial commitment that cannot be generated by the minority groups from within their own resources.

Many studies have shown that access to the Internet correlates with income levels and educational attainment. African Americans lag behind Whites in both areas. The U.S. Census Bureau (cited in Pew Internet and American Life, 2000) reported that the median household income for African Americans in 1999 was \$27, 910 compared to \$42,504 for White Americans. In 1999, 15% of African Americans received a college or graduate degree compared to 26% of White Americans. What is the online behavior of African Americans? Pew Internet and American Life (2000) issued a report based on the findings of a daily tracking survey on Americans' use of the Internet. The results were from six months of data from telephone interviews conducted by Princeton Survey Research Associates. Pew Internet and American Life (2000) found that the rate of growth in Internet usage of the African American population has grown compared to that of whites. In 2000, the percentage of Black adults who had Internet access grew 13 points to 36%. The percentage of White adults grew 8 percent to where half of all White adults have Internet access. In the past year, more than 3.5 million African Americans have gone online for the first time. The overall African American online population is about 7.5

million, more than 4 million are women. There is an even split between the sexes among White Internet users. Rural Blacks (22%) are not nearly as connected to the Internet as blacks who live in cities (35%) or suburbs (41%).

Online behavior as reported by the Pew Internet and American Life Project (2000) are as follows:

- Online Blacks are more likely than Whites to have used the Internet for activities that relate to economic advancement and significant quality of life issues. Fifty-one percent of Blacks have used the Internet to get information about a job compared to 37% of Whites.
- Online Blacks have sampled the entertainment features of the Internet. Seventy-three percent of Blacks have gone online just for fun compared to 61% of Whites.
- A striking difference between online behaviors of the two groups was religious and spiritual material. Thirty-three percent of online Blacks have hunted for such information compared to 20% of Whites.
- Online Whites are more than twice as likely as online Blacks to have participated in Web-based auctions and purchasing products over the Internet. African Americans tend to be less trusting than their White counterparts, as well as more concerned about their online privacy. Both races are equally as likely to have done banking online, travel reservations, and bought or sold stocks.
- Just 36% of Blacks with Internet access go online on a typical day compared to 56% of Whites. Eighteen percent of Black users only have access to the web at work compared to 12% of Whites. White users are more likely to have Internet access from home. Seventy-one percent of Black users have access to the web from home while

84% of White users have home access. During non-working hours, Blacks (12%) are less likely to go online than Whites (17%).

Another study was conducted to investigate the usage level by minorities of computers, the Internet, and the World Wide Web. Ervin and Gilmore's (1999) data suggests that regardless of race, most participants felt the Internet was unsafe and a threat to their personal privacy to conduct certain transactions on the Internet. African Americans perceived the Internet as a tool used by the government to track and monitor individuals. Instead of a digital divide due to income and education levels, this study suggests it could be a matter of mistrust that is keeping African Americans from using the Internet. The idea that African Americans do not trust the Internet can be understood because of historical events that have violated their trust, such as government sanctioned medical experiments, unfulfilled political promises, etc.

Connecting Classrooms. Despite considerable progress, schools in low-income communities have fewer computers and modems than schools serving wealthier districts. The children who need the most are getting the least. Insufficient hardware or network connections are not the only problems for schools in poorer school districts. Due to inadequate teacher training, these schools may not be using the computers in ways that will have the greatest long-term benefits. Computers are usually used for rote learning or drill exercises compared to wealthier districts where more complex learning activities are encouraged. Poorer districts are learning to do what the computer tells them, while wealthier districts learn to tell the computer what to do (Benton Foundation, 1999). This disparity is based upon a misconception by the teachers as how to deliver a well-rounded technology program. This misconception is the product of inadequate training. The

Office of Technology Assessment (cited in Benton Foundation, 1998) suggests that schools should devote at least 30% of their technology spending to training. Just 13% of schools require teachers to obtain training in advanced telecommunications. When teachers do receive training in the fundamentals of using computers they often do not get assistance in figuring out how to use the technology in their courses.

In 1994, the U.S. Department of Education commissioned the National Center for Education Statistics (NCES) to track the rate at which public schools and classrooms were connecting to the Internet. The report was entitled *Internet access in U.S. public schools and classrooms: 1994-1999*. This was part of the National Information Infrastructure (NII) initiative to have all schools and classrooms connected to the Internet by the year 2000. NCES, since 1994, surveyed 1,000 public schools in the fall of each academic year on Internet access and since 1996, on types of Internet connections used (National Center for Education Statistics, 2000).

The NCES (2000) reportings were as such:

- Public schools in the U.S. have nearly reached the goal of connecting every classroom to the Internet. The percentage of public schools connected to the Internet has increased from 35% in 1994 to 95% in 1999.
- By 1999, all schools, regardless of level, poverty concentration, and metropolitan status, were equally likely to have Internet access.
- In 1994, three percent of all U.S. public school rooms of instruction (classrooms, libraries, and computer labs) were connected to the Internet. Sixty-three percent were connected by 1999.

- Internet access in rooms of instruction varied by school characteristics. Thirty-nine percent of classrooms had Internet access in schools with high concentrations of poverty compared to 62 to 74 percent of classrooms in schools with lower concentrations of poverty.
- Schools with the highest concentration of poverty had 16 students per computer with Internet access compared to 7 students in schools with the lowest concentrations of poverty.
- Dedicated line network connections- Seventy-seven percent of secondary schools and 72% of schools with the lowest concentrations of poverty were more likely to connect to the Internet using more dedicated lines than 60% of elementary schools and 50% of schools with the highest concentrations of poverty.

The issue extends beyond the public school setting. As technological transformation of higher education continues, the student body becomes increasingly diverse. Many minority students arrive at universities with very little knowledge of technology. The increased commitment to technology in higher education and our society's growing dependence upon technology for personal, social, and economic development have a tremendous potential for leaving the technologically poor segments of society at a disadvantage (Chisholm, Carey, and Hernandez, 1999). These issues need to be addressed if universities are going to implement technology that is equitable for all students.

Chisholm, Carey, and Hernandez (1999) investigated access and utilization issues of students at an urban university. The study dealt with students of many different ethnicities to determine if discrepancies persist at the university level. This study revealed



that minorities are less likely to own computers, are apt to have their first experience with a computer later in their lives, and express less confidence in their knowledge of computers than majority students do.

According to Stallings, (cited in Chisholm, Carey, and Hernandez, 1999) institutions that do not and/or cannot transform themselves to meet the needs of students in our technology-oriented society will not survive. If Historically Black Colleges and Universities (HBCU's) are going to survive in a competitive educational environment, they need to be able to compete in the technological realm. The National Association for Equal Opportunity in Higher Education (NAFEO) (2000) assembled a team of researchers to obtain findings on the technological needs of Historically Black Colleges and Universities (HBCU's).

The Technology Assessment Study (TAS) assessed the computing resources, networking and connectivity of HBCU's and other institutions that provide educational services to predominately African American student populations. NAFEO (2000) found that none of the 80 responding HBCU's require undergraduate students to own computers and only 15% recommend student computer ownership compared to 30.5% of all institutions of higher education. The limited financial resources of African American students make it difficult for HBCU students to have the financial resources to purchase their own computers. Therefore, approximately 75% of students attending HBCU's do not own their own computers and must rely on institutional resources to connect to the Internet, World Wide Web, or other networks. This is a major issue for HBCU's. Students need financial assistance to buy computers.

White populations have historically denied black children equal access to educational resources. The educational experiences of blacks have been significantly different from those of the larger population due to a history of segregation and exclusion. In addition, after being historically segregated and provided with unfair levels of resources, blacks are more suspicious of changes in education than are others, recognizing that changes have often provided cover for new biases (Hess and Leal, 1999). The history of African Americans since the discovery of the New World is the story of their encounter with technology. An encounter that has proved to be hopelessly devastating to their hopes and dreams. Blacks have participated as equals in the technological world only as consumers (Walton, 1999).

Motivational Barriers. Few educators would argue with the fact that student motivation is an important influence on learning. Keller (cited in Newby, Stepich, Lehman, and Russell, 2000) defines motivation as an internal state that leads people to choose to work toward certain goals and experiences. It defines what people will do rather than what they can do. Motivation is influenced by many variables, some internal and some external. Motivation makes a direct contribution to learning by focusing students on certain desired learning goals and increasing the effort they expend in reaching those goals (Newby, Stepich, Lehman, and Russell, 2000). Many educators recognize that the effectiveness of educational programs is very much tied to student motivation. Society assumes that motivation problems are most pronounced in the inner city schools. Since African American students largely populate those urban schools, society assumes that African American children must be the least motivated.

Gladney and Green (1997) examined the motivation of African American high school students. Their research supports the importance of perception of ability and the different goals one has relative to the situation. Motivation was determined by asking the students what were their favorite and least favorite classes. Three fourths of the students stated that the reason for liking or disliking a class was the teachers' attitude or the teachers' method of teaching. Racial bias in the classroom was experienced by over three fourths of the sample population. The biases ranged from cultural differences, the teacher not understanding the culture of the class, to segregation, students sitting with their own peer groups.

The students were asked if their motivation was affected personally by the race of the teacher. Student motivation was found to be affected by the race of the teacher when the teachers' attitude toward the student was judgmental. African American students felt that teachers of different ethnic backgrounds could not identify with their needs so therefore motivation was decreased. Over three fourths of African American students reported that race makes a difference in motivation but that the teachers' attitude and methods of teaching can transcend the color of their skin (Gladney and Green, 1997).

For the most part, schools in the United States are based on a white, middle-class, American majority culture. The number of students of color in our public schools increases each year. The proportion of graduates of teacher preparation programs who will work in racially diverse schools will increase over time, with only 10% being teachers of color (Freeman, Brookhart, and Loadman, 1999). Ormrod (cited in Newby, Stepich, Lehman, and Russell, 2000) states that students from different cultural backgrounds are likely to experience a cultural mismatch, in which important

discrepancies appear between their home culture and the school culture. Teachers sometimes contribute to this cultural mismatch by viewing these students through their own cultural window.

Teachers are becoming frustrated that they cannot find ways to help African American youth succeed academically. Teachers must understand the problems that these children face in society. These problems include dysfunction in the home and class as well as the uniqueness of how African Americans learn (Fazarro, 1999). Kunjufu (cited in Fazarro, 1999) feels that as family structures change teaching methods must change to keep students motivated to learn. The current generation is more individually focused rather than collectively focused as in the past. Misconceptions that black children from low-income households are incapable of performing well in the classroom needs to be stopped. These misconceptions may inadvertently be conveyed as lower expectations of these children who in turn can lose their motivation.

Fordham and Ogbu (cited in Mahiri, 1998) make the case that African American culture itself is oppositional to the culture of schools. They argue that African American students associate school knowledge and official school culture with “acting white” and see this as a violation of their identification with their culture. There are many school factors that affect the success of culturally diverse students, these factors include but are not limited to the schools atmosphere and overall attitudes toward diversity, involvement of the community, and culturally responsive curriculum. The most influential relationship is that of the teacher and student (Burnette, 1999).

If teachers are not being properly prepared to teach the technology, especially from a multicultural perspective, then minority students will not be motivated to learn.

Burnette (1999) discussed teacher behaviors and instructional strategies that can build stronger teaching and learning relationships with culturally diverse students. These strategies are not geared directly toward technology but they can be used to increase the intrinsic motivation of minority students. Consequently, this can help students feel more comfortable with their learning abilities. A few of the instructional strategies and teacher behaviors are discussed below:

- Appreciate and accommodate the similarities and differences among student's culture.
- Build relationships with the students. Understand what the students' lives are like outside of the classroom, this enables the teacher to increase the relevance of lessons and make examples more meaningful.
- Focus on the ways students learn and observe students to identify their task orientations.
- Use a variety of instructional strategies and learning activities. Offering variety gives the students an opportunity to learn in ways that are responsive to their own communication styles and aptitudes as well as develop and strengthen other approaches to learning.
- Incorporate objectives for personal and affective development.
- Communicate expectations.
- Require mastery.

Carter (1998) addressed building stronger learning relationships. She found that it is important to instill a sense of pride in the background of minority students and to emphasize a true rendering of historical events. There should be an emphasis on

promoting a more diverse curriculum. Implement cooperative rather than individualistic goal structures, emphasize active rather than passive activities and promote oral and creative alternatives to assignments.

Family plays an important role in motivating students to use technology. Samaras and Wilson (1998) organized an investigation of African American families' perceptions of their experiences in an after school program at two inner city schools. The program incorporated families telling, writing, and then typing stories on the computer. Young children from low-income families had to locate and identify themselves in their own family histories through storytelling and used the computer as a tool to document their past. The duo found that shared activity, or culturally-mediated instruction, is a means to facilitate a child's internalization of mental processes and the tools of culture such as language, narrative, problem solving, and the use of technology. Families can serve to support, motivate, and sustain children's ideas. The children would show and tell their computer skills and teach their families about the technology.

Content. The phrase "Digital Divide" has quickly become a part of society's terminology. Its definition is becoming less and less clear while the issues involved are becoming more complicated. The digital divide debate initially focused on the basic issue of access to Information Technology, such as wiring schools, putting computers into libraries of underserved communities, etc. Now content is beginning to be recognized as possibly even more important than access. This is due to the impact that Information Technology has on every aspect of society (Digital Divide Organization, 2000).

High quality content is relevant to all communities and is needed in order to provide the motive for many to make the commitment of resources needed to get access to and

learn how to use digital technologies (Digital Divide Organization, 2000). Lazarus (cited in Twist, 2000) says, "There has been so much focus on the boxes and wires to connect to the Internet that we almost forgot to ask what people are getting once they connect" (p.1). In 2000, The Children's Partnership (TCP) (2000) published a report entitled *Online content for low-income and underserved Americans: The digital divide's new frontier*. The report focuses on the importance of creating useful content on the Internet. This content should reflect the needs and interests of low-income and underserved Internet users.

TCP (2000) determined just what content is desired by people who are at risk of being left behind. Useful content should include 1) employment, education, business development, and other information, 2) information that can be clearly understood by limited-literacy users, 3) information in multiple languages, and 4) opportunities to create content and interact with it so that it is culturally appropriate. Underserved adults want to engage in social, cultural, and professional activities online with special emphasis on local information about entertainment, jobs, places of worship, and educational opportunities. Although the Internet contains many job listings, these sites often do not include entry-level positions. Low rent housing is in great demand but it is hard to find such information online. For non-English speakers in the U.S. there is a desire for online translation tools. Effective searching was found to be a problem for both adults and children. There are now 550 billion documents stored on the Web. Internet search engines only index about 1 billion pages. The lack of motivation is reinforced when people are confronted by confusing, slow, or text-heavy searches. Adults and youth both want easier searching, coaching, and involvement (Twist, 2000).

According to the research conducted by The Children's Partnership (2000) there are a number of barriers between the content people want and what is available online.

- Lack of local information – This barrier affects a large amount of Americans but it disproportionately affects Internet users living on limited incomes, especially the nearly 21 million Americans over the age 18 whose annual income is less than \$14,150 for a family of three.
- Literacy barriers – The vast majority of information on the Internet is written for an audience who reads at an average or advanced literacy level. Yet 44 million (22%) American adults do not have the reading and writing skills necessary for functioning in everyday life.
- Language barriers – Eighty-seven percent of documents on the Internet are in English while English is not the primary language for at least 32 million Americans.
- Lack of cultural diversity – There exists a lack of Internet content that is generated by ethnic communities themselves or organized around their unique cultural interest and practices.

The content area of the arts is seen as playing a role in the narrowing of the technology gap. The arts teach people how to express ideas, emotions, and cultural influences in as many different forms as we can imagine. Arts and Technology training increases a person's ability to use the technology to manipulate images, sound, text, and movement to create meaningful content that will engage users. The arts also help people learn about and explore technology as well as make content and culture relevant to communities. One benefit of converging arts and technology is that the technology itself is always secondary to creative expression (Bernal, 2000).



## Methodology

### Search

To begin this research an Internet search was conducted on the Digital Divide. This information helped to start a search that would lead to journal articles. After the initial search to see what kind of information existed on the digital divide, a search was then conducted on motivation, motivation and African Americans, motivation theories, racial differences and technology, and technology and minorities. Another search was done using the University of Northern Iowa's library database. An ERIC search was done which resulted in a lot of useful information. Since the results of the ERIC database search was so extensive, a more narrow exploration was needed. Education abstracts FT, Expanded academic ASAP, and ethnic news was used. Boolean logic was used to search these databases. The keywords were *technology, minorities, and digital divide*. The majority of information presented in this paper comes from journals found in the ERIC database and the Internet.

### Compilation of Data

There were many articles that dealt with the issue of a digital divide. There were not as many articles dealing with motivation and minorities. Therefore, many of the articles used dealt with motivation and were applied to instructional techniques that can be useful for working with minority populations. To narrow down the list of articles that was found, a list of questions were helpful. The selection process was as follows:

1. Look for articles that were up-to-date because information dealing with the use of technology is constantly updated.
2. The article should discuss the impact the digital divide has on students.

3. The article should deal with all minorities.
4. Look for articles that include statistics to give a better understanding of the impact on minorities.
5. Look for articles that include motivating students.
6. The article should list past solutions or future solutions to bridge the gap

The articles chosen dealt with three or more of the issues listed above. Most of the articles that were found dealt with African Americans in comparison to Caucasians so there will be more references to African Americans throughout this paper.

## Results

The findings of this research indicate that a digital divide still exists. Minorities are being left behind but many more are beginning to take advantage of the resources that are available to them. Minorities are ambivalent about technology and the research suggests that community-based organizations are needed to motivate the use of technology. Community revitalization projects have unintentionally promoted the perception that only outside experts can provide real help (Benton Foundation, 1999). Community based organizations already have strong local ties to the community through providing help and support to those in need.

Motivation to use technology can also be obtained through the student teacher relationship. This relationship is where it all begins. Minority and low-income students have already been labeled as unmotivated. When these students are supported and given the opportunity to excel they do just that. When teachers take into account the goals and needs of the students much can be accomplished.

## Discussion

### Conclusions

When understanding the issues of a digital divide one understands that educational attainment is an important aspect of the divide. Minority students first have to be motivated academically before they can understand and embrace technology. Schools are where our children come into contact with how to relate socially and economically. We have failed minority students in both areas. The technology gap does not necessarily reflect the choices made by individual households, the deeper problem is that many poor neighborhoods lack the infrastructure that is available in affluent areas.

One purpose of this paper was to inform the reader about the existence of a “digital divide”. A digital divide is a separation of races related to the use of technology. It is the separation of America’s society into the information rich and the information poor. Unfortunately, the information poor are minorities. The second purpose of this research was to inform the reader of motivational barriers, such as the lack of technological infrastructure, relevant content, and professional development for teachers that keep minorities at a disadvantage in using various technologies.

Computers are becoming integral parts of our lives and without the basic knowledge of computer skills one can be lost. Jobs are posted on the Internet, government officials are putting more information on the Web, and classes are being offered now more than ever on the Web. The uses of the Internet are constantly growing and the advancements in technology are waiting for no one. For example, telecommunication advances have caused the closings of numerous inner city bank branches. With the closing of these branches many residents are no longer in walking

distance of their banking services. This leaves the community less capable of maintaining economic activity in their own neighborhood.

A generation of youth is being alienated from schooling at vital levels by the content and structure of the American education system. Schools need to modify their focus on the mastery of content at a time when the possibility of content mastery is becoming passé.

### Recommendations

Some recommendations that can assist in narrowing the divide that continues to exist among minorities are as follows:

1. Students should be encouraged on every level from fun to challenging programs on the computer.
2. Older minorities should be offered programs to help acquaint them with computers in a non-intimidating environment.
3. Businesses should become more involved with reaching minorities.
4. Cultural bias on the Internet needs to reduce the bias that is in favor of those who developed the technology, educated, English speaking, high-income level white males.

As a society we have to be more aware of the different races and economic levels that make up this nation. If we do not deal with it now we will have a much larger problem down the road. Below are programs that are in existence to assist, encourage and motivate minorities and low-income communities to become acquainted with technology. Most of these examples speak to the strength of the communities, content relevant to the

identity of the students, training for teachers, as well as effective motivational techniques to ensure the success of these programs.

The National Alliance of Black School Educators. The National Alliance of Black School Educators (NABSE) is dedicated to improving the educational accomplishments of African American youth through development and deployment of instructional and motivational methods that increase levels of inspiration, attendance, and overall achievement. NABSE obtained a 1.1 million dollar three-year grant from the U.S. Department of Education to conduct a demonstration program to increase the number of National Board Certification Teachers serving low-income and low-achieving students. NABSE opened the four demonstration sites for the program in 1999 (NABSE, 2000).

The National Urban League. The National Urban League received a \$350,000 Ameritech grant to support the creation of five Ameritech digital campuses, one in each state within the Ameritech region. The campuses will be an educational resource within Urban League affiliates. Each affiliate is equipped to teach entry-level information technology literacy skills to students and adults who have limited access to computers in their communities. The campuses will provide the latest software, hardware, and skilled staff to enhance participants job and education readiness (Dunbar, 1999).

AT&T Corporation. AT&T Corporation donated \$1.42 million dollars to further technology education in underserved communities. More than half of the grant amount is allocated to organizations in Southern California. AT&T's \$1.42 million contribution will be used to supply equipment, program materials, and instructors to various schools, organizations like the Urban league and the NAACP, community centers, and training programs (Mendez, 1999).

ACENet. ACENet was started in 1985 to help small businesses in impoverished rural areas find new markets. To help small businesses get started ACENet has developed a computer loan program. Beginning in the fall of 1997, ACENet set out to train 18 students in the use of technology, entrepreneurship, basic workplace skills, and how to be a consultant. These students will either work at a technology consulting training center or go on to higher education (Benton Organization, 1999).

United Neighborhood Houses of New York (UNH). In 1991, UNH launched its Information Technology Initiative with two goals in mind. UNH first wanted to consolidate record keeping among settlement house programs so that caseworkers could spend more time meeting with their clients and coordinating services with other nearby organizations. Then they wanted to provide safe, supportive, friendly telecommunications based resources for community use. Since its inception, more than 29 settlement house programs have integrated computers into their services (Benton Organization, 1999).

DISCovering Multicultural America. This project contains information from 16 Gale reference books dealing with racial and ethnic minorities. It is a collection of print encyclopedias and statistics on Hispanic, African, Asian, and Native Americans (American Library Association, 1996).

Libraries Online. This is a joint project of Microsoft Corporation, the American Library Association, and the Center for Technology in the Public Library. Libraries Online was created to increase Internet access to underserved communities through local libraries (Benton Organization, 1999).

MUSIC (Multi-User Sessions in Community)/LUV (Linking Up Villages). LUV is a Boston based project designed to reinvigorate communities through local electronic

bulletin boards and software called MUSIC. MUSIC enables participants to create an online version of their communities, complete with buildings, and within the buildings rooms. Individuals can stroll through these communities, obtain information on community services and activities, make their own contributions to the database, and participate in live chat groups libraries (Benton Foundation, 1999).

Outstanding African Americans: A text reconstruction program for improving reading, writing, and reasoning skills. This software consists of 28 biographies on notable African Americans who helped shape our nation, women, and men, historical and contemporary. It is meant for middle school students but may be of interest to older students. The program aims to make the student an active learner by offering continuous feedback on the student's answers. Questions must be answered correctly in order to progress and learn new material (Lee, 1999)

Educational Technology Training Centers (ETTC)- New Jersey. Funded in the fall of 1997 through Federal Goals 2000 legislation, twenty-one locations serve the state's counties. Most centers are positioned in school buildings with a few exceptions located on college campuses. These centers were designed so that school faculty would have a place to go for training on combining technology with classroom instruction. Special focus is given to disadvantaged school districts and statewide curriculum standards. The centers function year round and provide on-site and off-site training. The summer is the busiest time because teachers can freely attend. The ETTC provides training to teachers and others who support them in the districts. Teachers are trained to model the technology as they teach the students to use it (Smith, 1999).



This program has been successful because of the partnerships it has created with corporate and business partners. These partnerships have helped to offset the costs of training and provide technology to the teachers to deliver instruction. Business representatives were included in designing and defining services and training (Smith, 1999).

Willow Bend School – Rolling Meadows, Illinois. In April 1994, Willow Bend became the pilot technology school designated by the district. The administration increased the budget for staff development. Teachers were invited to attend technology workshops with the superintendent. Teachers and administrators worked in teams to research other schools and organizations throughout the world that were in place. The teams constructed a three-year plan to implement technology in the classrooms. Students are grouped in multiage classrooms and seated in round table formats. Teachers' met weekly and some even team-taught (Conyers, Kappel, and Rooney, 1999). Teachers were a vital part of the planning process. The students lead the district in test scores.

International School of Bangkok – Thailand. This project serves 2,000 students in K-12. The framework was based around four learning areas: inquiry, communication, construction, and expression. Workshops were based around these areas. These workshops took place after school and one-on-one sessions in the classroom. Once the workshops were in place a "train the trainer" program was established. This program helped build connections between teachers. Teachers are encouraged to think about the processes that technology supports rather than the technologies themselves. The focus is on the connection between technology and learning (Woolley, 1998).

National Level. In the fall of 1999, the U.S. Department of Education undertook a strategic review and revision of the national educational technology plan. There are five new national goals for technology in education.

Goal 1: All students and teachers will have access to information technology in their classrooms, schools, communities, and homes. An integral part of school improvement and reform is student and teacher access to educational technology. The quality of this access is crucial; therefore broadband access will be the new standard.

Goal 2: All teachers will use technology effectively to help students achieve high academic standards. Preparation of new teachers is critical to this goal. Preparation will include knowledge of how to use technology for effective teaching and learning, quality and coherence of technology-focused activities, improve instructional support available to teachers.

Goal 3: All students will have technology and information literacy skills, information problem solving skills are necessary, such as how to define tasks, identify information seeking strategies, locate and access information, determine information's relevance, etc.

Goal 4: Research and evaluation will improve the next generation of technology applications for teaching and learning.

Goal 5: Digital content and networked applications will transform teaching and learning. Digital content and networked applications must be independently judged to be of high quality, well documented, comprehensive, and have the power to inspire and motivate students.

McKinsey and Co. (cited in Benton Foundation, 1998) reported that over the next 10 years connecting schools could run as high as \$47 billion plus another \$14 billion in

annual operating costs. The price tag may not seem like much compared with the \$320 billion we currently spend on primary and secondary education each year. We are at a time when schools face many competing demands. Enrollments are rising, school buildings are aging, and a large number of students are not mastering rudimentary reading and writing skills. The cost of repairing leaky roofs and other mundane repairs could total \$112 billion.

In order for technology to work well for students and schools we must build human infrastructure at the same pace we are building technological infrastructure. We have to address issues such as content, curriculum reform, professional development, assessment, equity, and community involvement (Benton Foundation, 1998).

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