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ABSTRACT

The digital divide is a commonly used term in today's society, but few truly understand the impact that it has on minority students. This issue is one that goes beyond access to technology, but encompasses issues of equity in use. This paper examines the data on home and school computer use by minority students. It discusses the College Reach-Out Program (CROP), a collaborative effort of 3 mid-Florida institutions of higher education; the CROP 2000 Technology Project, including some student feedback; and the Our Kids After-School Program at the Community Technology Center, Jacob Riis Neighborhood Settlement House, 2 programs which are giving minority at-risk students non-traditional experiences with technology. (Author/AEF)

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Falling Behind: A Technology Crisis Facing Minority Students

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Abstract

The digital divide is a commonly used term in today's society, but few truly understand the impact that it has on minority students. This issue is one that goes beyond access to technology, but encompasses issues of equity in use. This article will examine the data on home and school computer use by minority students. It will also discuss the College Reach-Out Program (CROP) and the Community Technology Center at Jacob Riis Neighborhood Settlement House, which are two programs giving minority at-risk students non-traditional experiences with technology.

Introduction

In 1999, the Department of Commerce published a report entitled, *Falling through the Net: Defining the Digital Divide*, in which they found, "providing public access to the Internet gives certain groups the opportunity to advance by providing them with technical skills which are needed to compete in the digital economy." Those who have access to technology are being afforded more opportunities than ever before, but one must also think about what happens to those being left behind. There is a global discussion occurring surrounding the issue of the "haves and have-nots." Most research on the subject has uncovered what has come to be known as the "digital divide" or the separation between those who have access to and can effectively use technology and those who do and cannot.

This article will discuss how the digital divide affects minority students at home and school. Data from the Department of Commerce, Educational Testing Service, and other sources show that this population of students is not only the least likely to have access to computers at home, but also the least likely to gain access at school. I discuss one program, the College Reach-Out Program (CROP), which is working to overcome these inequities by exposing minority children to enriching computer activities. It is my opinion that alternative access opportunities must be created for these students, and I will review the work I did with a group of minority at-risk students and the educational program they were involved in. The project the students and I worked on gave them a different view of how computers fit into their present and future lives.

Home Computer Ownership

There are large disparities between the access opportunities of the rich vs. poor and ethnic majority vs. ethnic minority populations. The 2000 report, *Falling Through the Net: Toward Digital Inclusion*, from the U.S. Department of Commerce is the most recent data available on home computer ownership. It is evident that gains have been made across ethnic groups in acquiring home computers. As can be seen in Figure 1, all groups have

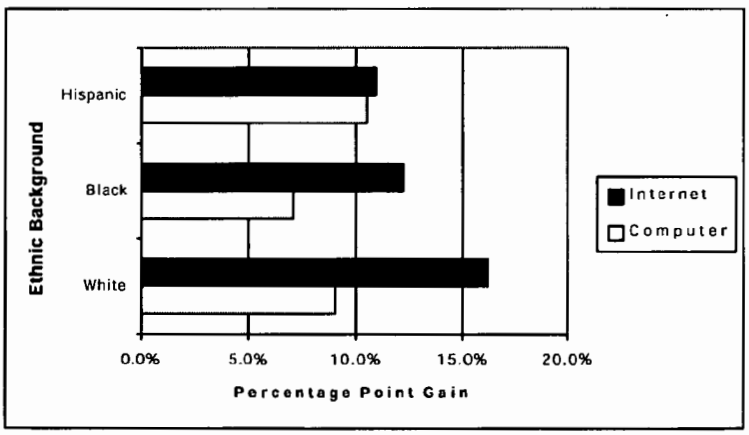

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Figure 1, Gains in Computer Ownership and Internet Access, 1998-2000

experienced significant increases in home technology ownership. However, what is not immediately evident is how this growth has impacted the divide in access opportunities of different groups. The 1998 gaps between Whites and minority groups, with regard to computer ownership, still exist today. Between African Americans and Whites there was a 21.1 percentage point difference from in 1998 where there is a 23.1-point difference today. For Hispanics, the difference was 23.4 in 1998 and is 22.0 today. Therefore, even though all groups are increasing their technology acquisition, the differences in access rates have been maintained.

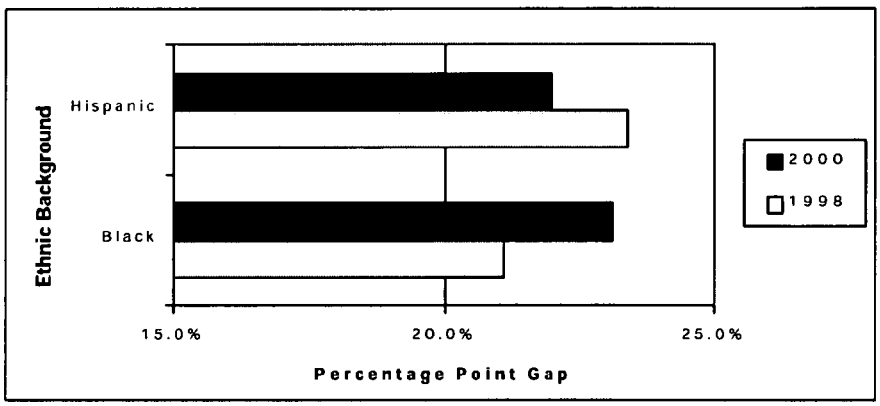

Figure 2. Change in home computer ownership gap, 1998-2000

It is not enough for a family to simply own a computer. Connection to the Internet is another confounding variable. Although, as with computer ownership, Internet access rates have increased, there are significantly fewer people who have access to the Internet than computers in the home. (Figure 3) This is not only true for the African American and Hispanic populations, but for Whites as well. Only 46.1% of Whites have Internet access, versus 55.7% that own a computer.

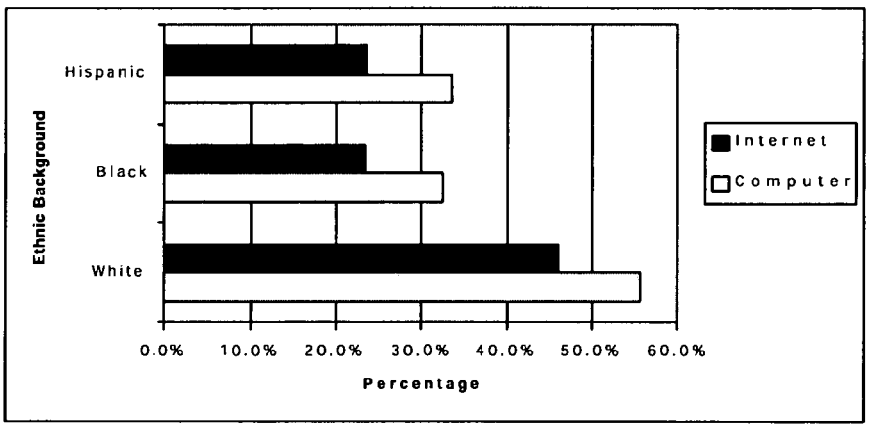

Figure 3. Computer Ownership and Internet Access, 2000

Unlike computer ownership, the gaps between Whites and minority groups regarding Internet access have not remained stable, but widened. In 1998 there was an 18.6 percentage point difference between African Americans and Whites in regard to Internet access. That difference has increased to 22.6 points. This increase has also occurred between Hispanics and Whites going from a 17.2 percentage point difference to a 22.5-point difference.

Technology Experiences at School

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It should be apparent that there are extreme inequities in computer ownership and Internet access in the home. Yet, many people believe that creating access opportunities at schools, libraries, and other public areas will counteract these inequities. However, a look at the data on computer access in schools shows that inequities exist there as well. A 1999 report from the National Center for Education Statistics reported that in schools with a minority population greater than 50%, only 37% of the instructional rooms have computers. This is compared to 57% of instructional rooms in schools with a minority population less than 6%.

In addition, the Educational Testing Service found, that the more students a school has belonging to a minority or low socioeconomic group, the higher the ratio of students to computers, peaking at 32 to 1. This is more than 7 times the recommended ratio implying that poor minority students lacking access to computers at home are also not being given equitable access at school.

The inequities associated with students and technology do not end there. Let us suppose we are in a school that has overcome the last two inequities and has a good student to computer ratio for their students. Problems still exist. Even though they may be exposed to computers on a regular basis, the types of activities they are engaged in often times deal only with low-level thinking skills. The majority of the students from the CROP program reported to me that they used computers for drill and practice and practicing standardized tests. One student even said, when asked how she uses computers in schools, "We just do what the teacher tells us to do."

I do not believe this should be their only exposure to technology. In order for students to understand how computers fit into their daily and future lives they must see computers integrated into their education. One experience that greatly influenced my belief in using technology with minority at-risk students was working with CROP 2000. This program is detailed below.

The College Reach-Out Program

The College Reach-Out Program (CROP) is a collaborative effort of three Mid-Florida institutions of higher education—Central Florida Community College, Santa Fe Community College, and the University of Florida. The purposes of CROP are to identify and recruit economically and educationally disadvantaged students and help them move in a direction that could lead them to college. As can be seen in Figure 4, the majority of the students are African American.

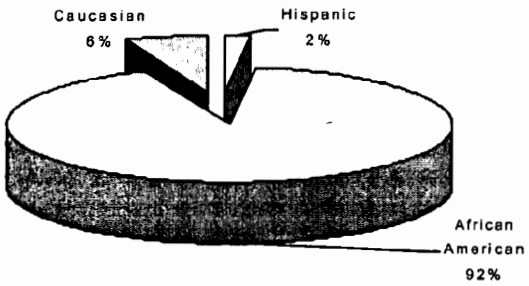

Figure 4, Ethnic Background of CROP Students

CROP is a program that functions throughout the year, but the summer is a special time for the students. Every summer, the rising 8th and 9th graders spend 5 days living on campus at the University of Florida. During that time they live in the dorms, eat in the cafeterias and interact with college students on a personal and academic level. Many current undergraduates work with the students as counselors, and are not only employed to handle disciplinary problems but to also give the students an opportunity to develop one-on-one relationships.

For their summer experience these students had the opportunity to create 1 1/2 minute movies using iMovie from Apple Computers (www.apple.com/imovie). The students were encouraged to make semi-autobiographical movies, but many chose to create a story instead. The only requirement was that they make something they could take pride in presenting. After the movies were completed, they were transferred to individual VHS tapes for the children to take home. I believe that a good way to understand how to structure new activities is to look at the triumphs and tragedies of those who have done it in the past. Therefore, below is a summary of the journal that I

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kept during the CROP 2000 summer program. I also include suggestions for those wanting to create their own design based on this idea.

CROP 2000 Technology Project

Although I was very excited about what we would be doing I wasn't sure if they would be as excited, but the second I told them they were going to be making movies I could see the excitement on their faces. The original plan for the students was for them to bring a bunch of pictures of themselves so that they could have a variety of images in the movie, but none of the kids brought pictures. It may be useful for those who want to use photographs in projects to have the students bring in the photos days before the project is scheduled to begin. This will avoid the problem of students not having pictures to use and having to spend time looking for images.

I talked to them about what the movies were going to be about and told them what the different roles (movie director, art director, musical director, and narrator) entailed. Once they picked their roles, I brought everyone back together in order to explain more in depth what they would be doing for the remainder of the day. Handouts were distributed to explain the roles, but as is true when teaching anything, it is best to orally communicate your ideas as well as putting them on paper.

At that time they were free to work for the remainder of the hour. Most of the groups spent time talking about what they were going to do because they wanted to be able to structure their pictures around a theme. I spent my time walking around and talking to the students, and from the questions they asked I it seemed that the hardest part for most groups was developing a theme. It was refreshing to teach a computer class where the hardest part for the students was not using the computers. It became a tool for accomplishing a task instead of the task itself.

I was naïve about how smoothly the project would go and it slapped me in the face on the second day. They came with just as much energy as on the first day but seemed to get more hyperactive as the morning went on.

Since, as I mentioned before, they did not bring any photographs, they were to spend 10 minutes looking up pictures on the Internet of someone they admire. A problem, however, was that they did not know how to search the Internet. Considering that the majority of these students reported owning a home computer (71%) and using the Internet at school (55%) they did not know how to search the Internet. Instead there was a lot of "I can't find anything", and "Where can I find pictures?" Most teachers will not be working with students that they have never seen before, so they can more easily gauge student expertise. However, for those working with new students, I would suggest assuming they don't know anything. That way, if they do have knowledge coming in, it will only enhance the project as opposed to hindering it.

The last day was crunch time. Instead of allowing the kids to come into the computer lab as I usually did, I met them outside to give explicit instructions for what they needed to work on, but even with these instructions all of the groups stayed an extra hour to finish their work. After they finished, we watched the videos and they were all very proud of what they had accomplished.

Student Feedback

As can be seen above, the program was not easy to organize and implement. Nevertheless, what I hope you get from this is that it can be done, and is something students will enjoy. I asked the students to write comments about their experiences working on this project. Some of the comments I received were:

- "I never knew how fun it could be making a movie on the computer."
- "It can be kind of hard, but when you put your mind into it you can do it."
- "I didn't know you could take pictures and put them on the computer."
- "I got to look at things on the computer that I usually don't look at."
- "I didn't know there was so much excitement."

These types of responses cannot be elicited when students are engaged in technology use that merely reduces them to passive clickers.

Jacob Riis Neighborhood Settlement House

Community Technology Centers are one of the ways that communities nationwide are working to bridge the digital divide. These centers allow residents of communities to have access to technology as well as take classes to improve their technical skills. This community center is located in the Queensbridge Public Houses, home to 12,000 residents, 5000 of which are under the age of 18. The Community Technology Center within offers

programming for all residents of the community ranging from an after-school program to evening adult classes. My current position is as the Community Technology Center coordinator for the Jacob Riis Neighborhood Settlement House. In that position, I am responsible for developing, staffing, and scheduling all technology programs offered at Jacob Riis. One exciting program that works with children is the Our kids After-School Program.

The Our kids program is designed for students ranging in age from 5 to 10. All participants come to a technology class twice per week where they are engaged in alternative technology experiences. After-school programs are a great place to try innovative and exciting technology projects, and one project we are trying with our students uses the program Microworlds. Microworlds is an application that was developed to teach young children programming concepts in a fun and exciting way. The interface for Microworlds is kid-friendly and allows children to not only program but also draw and create imaginative projects as well.

One example of such a project is an autobiography. Our students are creating an interactive program in Microworlds that will tell their stories. In contrast to a traditional autobiography that would solely be made up of writing, our students are drawing pictures and weaving those pictures into their stories. This allows them to develop their literacy, technical, and creative skills in one setting that is fun.

Implications and Suggestions

From reading the information that has been published about the digital divide and from my experiences with the CROP program and Jacob Riis, it has become abundantly clear that we are entering a time in our society where there is a new type of inequality. Computers give people access to more information than at any other time in our history. However, a large part of the population is being left behind.

No matter how you look at the data, poor and minority students are at a disadvantage concerning access to new technologies. The argument I have heard many times is that we cannot expect families who are struggling to survive to be able to afford a computer. However, what we should be more concerned with is how to engage these families through the use of technology.

We also must think about how we are using technology with minority students. When I met the CROP students, I discussed some of the things they were using computers for at school. The responses I received were quite disheartening. The majority of these students stated that they used the computer to play games or take tests. Their home use was not helping them to excel either. Most of the students in the CROP program own computers (95%), but none of them knew how to search for pictures on the Internet. Students who do not have access to high-quality computer experiences at home or school are not being provided with the opportunities they need to be successful in society. Is this the way we want to prepare students for the future?

This issue is far from being solved. There are many factors that must be taken into consideration when discussing the impact of a new technology on society, and computers are not any different. There are always those for whom it is a benefit and those for whom it is a detriment. The first step in bridging the gap is to realize that technology has not benefited everyone equally, and begin to work on ways to level the playing field. One possible solution is to expose students to innovative projects, such as the ones for the CROP program and Jacob Riis, which allow them to expand their views about how computers fit into their lives now and in the future.

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