Closing the Digital Divide:
Improving Technology Perceptions for Hispanics

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Research Study
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Abstract

The present study aims at observing the effectiveness of using educational games to close the Digital Divide between Hispanics and other ethnicities. Following the use of educational games used to assist in the delivery of a subject matter, our study seeks to prove that the use of the educational games will in fact bridge the Digital Divide by changing the Hispanic students' perception of technology.

Introduction

In recent years, education has aimed more and more towards technology integration in the classroom. An increasing number of families in our country have access to personal computers in their homes and schools. Thus, the use of computers has become heavily relied upon in our education world today. There is a move towards using technology as a tool to optimize student learning and achievements. However, problems arise with the increasing use of technology in our schools. As technology is incorporated in the classroom, there is a gap mounting between groups of students with and without computer and Internet access at home as well as in the classroom. Some schools and homes are more technologically capable than less fortunate. The National Telecommunications and Information Administration (NTIA) has repeatedly identified a "digital divide" in the United States, defined as a home computing gap between white and affluent Americans and those who are ethnic minorities or poor (Papdakis, 2000).

Closing the Digital Divide has become a priority in national concerns. Also contributing to the Digital Divide is teachers' reluctance to integrate technology in their classrooms (Slate, Manuel, & Brinson). Curriculums are aimed at meeting national standards that are tested on standardized tests. Thus, teachers are more concerned with teaching the content covered on the test with traditional methods because they lack the freedom of designing their instruction. If teachers are only using traditional methods in their classrooms, how can the Digital Divide be bridged?

The introduction of technology into our school system has formed a group of technologically disadvantaged students (Slate et al.) This group of students does not have access to a computer at home and only come in contact with computers at school. Slate et al. state, "In 1999, NTIA reported that twice as many White households own computers, in comparison with Hispanic households. It is also stated that 30% of White households have Internet access, as compared to 13% of the Hispanic population. The Hispanic population is lacking technological skills that other ethnicities have. This is proof that Hispanics are falling victims of the Digital Divide. How can we make this change in K-12 classrooms?

The use of educational games and software in the classroom is being used to achieve student success. These games could be used to bridge the Digital Divide for Hispanics.

Literary Review

The term "Digital Divide" has emerged as a popular catch phrase in educational publications. Recently, the term *digital divide* has been used primarily to highlight inequities between various social groups with respect to acquiring computers and accessing the Internet. (Morse, 2004) The "digital divide" was a major concern that the Clinton Administration made it one of the platforms (Agarwal, 2002). Schweikart (2002) attests that President Bill Clinton's "Call to Action for American Education" proposed universal Internet access for students. Agarwal (2002) also stated that the Administration worked tediously to bridge the "digital divide" and create digital opportunities for all Americans. The platform made some changes because by the year 2000, two-thirds of schools were connected to the Internet compared to only 3 percent before Clinton's term. Although numerous studies suggest that the gender gap in Internet use appears to be closing over time, the perception persists that the gap for race is not decreasing (Novak & Hoffman, 1998). The gap in American society with Internet use is expected to be severe if not changed.

The fastest-growing minority group in the United States, Hispanics, continues to trail Whites and other minority groups in owning computers, Internet use, and e-commerce activities. (Edutopia) Although disadvantaged groups *have* substantially increased their home access to computers and the Internet, the gap between these groups and white Americans is growing. (NTIA)The promise of Information Technology for Hispanic communities will not be realized simply by the acquisition of computers. In addition, this community must be given access to the technology that assists in education, such as the Internet and educational games. Exposure to computers as an everyday part of life plays an important role in being able to see oneself as a "computer user" (Stanley, 2003). (Pinkett 2000) advocates a holistic approach to individual and community engagement with technology, one that seeks to identify their interests first, and then determine how technology can support those interests. Seventy-seven percent of high school students play electronic games – and enthusiasm for games appears to cross all borders of income and cultural backgrounds. (2005 Summit on Educational Games).

The RTA survey finds that African Americans and Hispanics use public facilities to access the Internet more often than other ethnic groups (Stanley, 2003). Improving the access to public facilities could help bridge the digital gap. Agarwal (2002) states that:

> Minority leaders must encourage minority businesses to give back to the community, by donating money, supplies, and/or time to community technology centers that are designed to help young children as well as adults who are computer illiterate. These businesses must make sure that the technology centers are properly kept up to standards, so that underserved people will have continuous access to gain the skills needed to find a job, so they themselves can give back. There must be a system where after one receives help, they must help another: the minority community must work together for the betterment of its people.

Schools attended by students from diverse ethnic backgrounds as well as students from families living in poverty are likely to offer less access to most types of technology (Morse, 2004). Well-trained teachers will play a central role in ensuring that all students use computer technology equitably (Morse, 2004). Teachers should be trained to incorporate technology into their daily assignments. Teacher educators must be allowed to work within a culture that values the use of computer technology in teaching. In an article written by Morse (2004), it is stated that schools that have relatively small amounts of computer technology will need to implement solutions to increase their students' access. Here are some of the key points to achieve this goal:

- Examine how best to configure labs or classrooms with computers, and manage students' access to the existing computer technology, so as to maximize every student's use of it.
- Offer evening, weekend, and summer computer technology courses.
- Hold summer computer technology camps.
- Create student computer technology clubs that meet during non-instructional times, such as during lunch, study halls, or after school.
- Help student's access computer technology that is available in public libraries or community centers.
- Solicit donations of computer technology from businesses.

Technology today has provided opportunities for people to receive education from their homes or on the road. For the Hispanic community to advance its social, political and economic agenda; it must be a player in this new world. To participate, Hispanics must be proficient in the basic tools of technology, such as computers and their applications. But to achieve proficiency; they must also achieve a much higher general level of education which involves every aspect of how Hispanics engage the U.S. educational system.

Research Questions

The purpose of this research study is to examine if the use of computer based educational games in the K-12 classroom, and if the use these games assist in changing the perception

of Hispanics and technology. This study seeks to answer the following research questions:

Do Hispanics and other Ethnicities have a lesser chance of being computer literate after completing a K-12 education?

Would the use of Education Games in K-12 Classrooms close the digital divide between Hispanics and other Ethnicities?

Research Design

The purpose of this study is to provide information for departments of education, technology directors, administrators, teachers, and future researchers in determining if Hispanics have a lesser chance of being computer literate after completing a K-12 education and if the use of computer based educational games in the K-12 classrooms closes the digital divide between Hispanics and other ethnicities.

In this study, the following ideas will be evaluated: (a) how teachers integrate the usage of educations games, (b) do educational games increase the interest of technology in students, (c) if the access of educational games outside of the classrooms increases the interests of students.

It is challenging to determine if educational games help in closing the digital divide between Hispanics and other Ethnicities. Therefore, it is important for teachers to have background knowledge of the digital divide and proper training on how to use the educational software. Teachers knowing how to use the software and how to effectively incorporate that knowledge into their lesson could help close the divide. Teachers play a very important role in this study in determining the needs of their students and the interest of their students. The teachers will provide feedback on how they think that educational games could be used in their classrooms.

There will be an experimental study that allows students to use different educational software. By allowing the students to use the different software applications, teachers would know the types of educational software that interests the students, which software increases the knowledge and computer skills of the students, and if the software is appropriate for a students' skill level.

METHOD

Subjects

For this study, students from George I Pair Elementary School located in Lexington School District 2 will be randomly selected to participate. The school has 184 students, 72 White, 85 African American, and 26 Hispanics. (South Carolina Department of Education, 2005)

50 students, 25 Hispanics and 25 non-Hispanics from George I Pair will be used in this study. The students will be assigned to two groups. Group A will be the Hispanics students and Group B will be the non-Hispanic students, including at least one child from each grade level at George I Pair. Each Group will be given a pre-study survey to determine their knowledge and perceptions of technology. (See Appendix A - Sample Student Technology Perception Survey)

Instructors

The instructors for this study will be randomly selected from each of the grade levels represented at the school, Pre K - 5. A total of seven instructors will be used for the study. The instructors will spend time with the researchers evaluating and learning the three educational games used in this study. The three games will consist of one game geared toward reading concepts, one spelling/letter concepts and one for math concepts. The researchers will cover in-depth with the teachers how to use the games, troubleshoot any problems and go through a practice run with the instructors so ensure that they are equipped to handle any questions that may arise from the students during the study. The instructors will also learn how to adjust the skill levels of the games (if needed) for the appropriate grade level of the student utilizing that game at that time. During the study, the teachers will also document their observations of the two Groups in a journal. (See Appendix B - Sample Teacher Observation Journal)

Games used in this study:

Math Flash Cards - Math Flash Cards is an online game offered by allmath.com that allows students to learn basic Math using flashcards. The students are allowed to select what type of math they would like to use in the game and the level of difficulty.

Lionel's Talking Gizmo - Lionel's Talking Gizmo is an online game offered by PBSkids.org that allows students to make sentences. The game allows students to learn about sentence structure, subjects, and verbs.

Elmo's Keyboard-O-Rama - Elmo's Keyboard O'Rama is an online game offered by SesameWorkshop.org that allows students to use their keyboard to prompt Elmo to show pictures of items that start with that particular selected letter.

Delivery

The instructors will begin by allowing the students to take the Student Technology Perception Survey. Depending upon the grade level of the student, the instructor may need to read the questions of the survey to the student and document the answers.

Next, the instructors will instruct the students on how to playing game #1, the online Flashcard game offered by allmath.com. The students will have 30 minutes to play this

game, during which time the instructor will observe the students and documents notes in their journal. The students will then receive a 15 minute break. After returning from the break, the instructors will instruct the students on playing game # 2, Lionel's Talking Gizmo offered by pbskids. The students will be allowed to play this game for 30 minutes. The instructors will also document their observations of the students in their journal. After a 15 break, the students will be instructed to play game # 3, Elmo's Keyboard-O-Rama offered by SesameWorkshop.org. The instructors will again observe the students and document the results in their journal

After completing all 3 games, the students would take the survey again.

Instrument

A pre-study technology perception survey (See Appendix A) will be designed by the researchers to determine the student's prior knowledge and perceptions of technology. The survey will consist of open ended questions and will be administered at the begging of the study by the instructors.

An observation journal will also be developed to allow the instructors delivering the study to document any noticed differences in the behavior of the students in each of the Groups (uncomfortableness, frustration, agitation, etc) as they participate in the educational games.

Data Analysis

The pre-study technology perception survey results and post-study technology perception survey results would be evaluated to determine if the student's perceptions of technology had changed after utilizing the educational games. More importantly, the focus would be on the results of Group A, the Hispanic students to determine if their perceptions of technology had changed after playing the educational games, which could lead to the fact that the digital divide was indeed closing.

Conclusion

Bridging the digital divide between Hispanics and other ethnicities is an area that needs additional research. Conducting studies in this area could lead researchers to determine if educational games using technology are beneficial for motivating Hispanic students to be more inclined in using technology and therefore possibly close the digital divide that exists between Hispanics and other ethnicities.

Feedback from teachers observing the students participating in the games is also beneficial. This information could be used to develop alternative ways to deliver classroom instruction that may motivate Hispanic students to be more inclined to utilize technology. With the results from the studies conducted in this area, researchers could provide advice to departments of education, technology directors, administrators, and teachers on different software that students like and if they believe that educational

games could help educate students and motivate them to like technology, therefore closing the digital divide that may exist between Hispanics and other ethnicities.

References

Agarwal, K. (2002). Bridging the Digital Divide. *Global Competitiveness*, 10, 299-307 Retrieved June 2, 2006 from InfoTrac OneFile

Border KIDS COUNT: A Snapshot of Children Living on the Southwest Border(*February 2005) Retrieved from the Web on May 25, 2006*

Brinson, K., Manuel, M., & Slate, J. (2002). The "digital divide": Hispanic college students' views of educational uses of the Internet. Assessment & Evaluation in Higher Education; 27(1), 75-93.

Elmo's Keyboard-O-Rama. Retrieved June 2, 2006, from Sesame Street Workshop Web site: http://www.sesameworkshop.org/sesamestreet/games/flash.php?contentId=9495524

Lionel's Talking Gizmoe. Retrieved June 2, 2006, from http://www.pbskids.org Web site: http://pbskids.org/lions/games/gizmo.html

Math Flashcards. Retrieved June 3, 2006, from http://www.allmath.com Web site: http://www.allmath.com/flashcards.php

Mather, Mark and Kerri L. Rivers. (February 2006) The Concentration of Negative Child Outcomes in Low-Income Neighborhoods. The Annie E. Casey Foundation.

Morse, T. (2004). ENSURING EQUALITY OF EDUCATIONAL OPPORTUNITY IN THE DIGITAL AGE, *Education and Urban Society*, 36, 266-279.

Novak, T.P. & Hoffman, D. L. (1998). Bridging the Digital Divide: The Impact of Race on Computer Access and Internet Use. Research for a Digital World. Retrieved June 4, 2006 from http://elab.vanderbilt.edu/Research/papers/Bridging%20the%20Digital%20Divide%20-%20The%20Impact%20of%20Race%20on%20Computer%20Access%20and%20Internet%20Use%20%5BHoffman,%20Novak%20-%20Feb%201998%5D.pdf

Papadakis, M. (2000). Complex picture of computer use in the home emerges. *National Science Foundation Directorate for Social, Behavioral, and Economic Sciences.* Retrieved from http://www.nsf.gov/statistics/issuebrf/sib00314.htm.

Pinkett, R. (2000, April 24-26). *Bridging the Digital Divide: Sociocultural Constructionism and an Asset-Based Approach to Community Technology and Community Building.* Retrieved June 3, 2006 from http://llk.media.mit.edu/papers/aera2000.pdf

Schweikart, L. (2002). Race, Culture, and the "Digital Divide." *The Freeman: Ideas on Liberty.* Retrieved June 2, 2006 from http://www.fee.org/publications/the-freeman/article.asp?aid=4142

Stanley, L. (2003). Beyond Access: Psychosocial Barriers to Computer Literacy *The Information Society*, Retrieved June 4, 2006 from http://www.ubcinternational.ubc.ca/downloads/Beyond.pdf

South Carolina Department of Education, George I Pair Elementary 2005 Annual School Report Card. Retrieved June 3, 2006, from My SC Schools Web site: http://www.myscschools.com/reportcard/2005/elementary/e3202021_WEB.pdf

http://www.ntia.doc.gov/

APPENDIX A

Sample Student Technology Perception Survey

1. Do you use a computer?
2. What do you use a computer for?
3. Do you play games on the computer?
4. Have you used a computer to help you with homework?
5. Do you like using computers?
6. Will your parents allow you to use the computer to help with homework?
7. Do you use a computer at home?
8. What are your thoughts of using a computer?
9. Do you use the Internet?
10. What do you use the Internet for?

APPENDIX B

Sample Teacher Observation Journal

1. Did the students show signs of frustration while working with with the games?

   Group A:

   Group B:

2. Did you have to assist any of the students with working with the games?

   Group A:

   Group B:

3. Did the students seem excited about using the games?

   Group A:

   Group B:

4. Did you notice any body language that gave a perception of the students attitude towards technology?

   Group A:

   Group B:

5. Did you observe any other behaviors or actions that the students exhinited throught the study?

   Group A:

   Group B:

6. Do you think these or other educational games would be beneficial in your classroom? If so, how?