Qualitative Study – The Digital Divide and its Impact on the Achievement Gap

Manuel F. Negron

New Jersey City University

Introduction

School districts throughout the country are implementing strong initiatives to integrate technology in the curriculum and throughout classrooms to promote active learning. Despite these initiatives, the problem still lies where there is a lack in the accessibility and use of technology. One of the biggest disparities amongst the lack of technology and the use of it lies amongst minorities and students from low-income households in K-12 public schools. According to studies, when comparing minority students against households of the majority, fewer minorities own computers (Chisolm, 2001). “Digital divide” defines the disproportion of technology amongst students and schools. The “digital-use divide” is an extension to the term that refers to schools or classrooms that are not using technology in their lesson or their curriculum despite actually having the technological devices.

Throughout our consistently evolving society, technology and its use continues to have an impact in our everyday lives. Unfortunately, the biggest impact of the digital divide continues to fall on the minority population and families from low-income homes (Chisholm & Carey, 2002; First & Hart, 2002).

Problem Statement

According to Pablo Freire (2002), he believes that an unbiased educational process does not exist. A “caste” system in which minorities and low-income families either continue to stay at the bottom or do not progress as fast as the majority households is being sustained by some educational systems. The digital divide and its impact on the student achievement gap will be the focus of this study. The “achievement gap” is a term that refers to major continual disparities in academic performance or the distinction amongst various groups of students in regards to reaching academic success. The influence of school administrators on narrowing the divide and the scope of the digital divide in an inner-city school will be explored in this study.

Purpose

In order to improve teaching and learning and achieve academic success, students need to utilize technology in their daily lessons assigned. K-12 public schools must revise their curriculums to integrate technology in support of the academic learning environment in the classroom. Technology in society today plays a vital role in the opportunities available for individuals to compete in the competitive global development of our world. It is imperative that individuals have the necessary technological skills and training needed to achieve a higher socioeconomic status (Eisner, 1985). How much access and use of technology teachers and students have is crucial in order to have an effective learning process. Unless there is a balance in the accessibility and use of technology throughout public schools, the achievement gap will continue to be visible amongst our minorities and students from low-income families.

Research Questions

 This study will seek to answer the following three research questions:

1. How do educators define the term “digital divide”?
2. To what extent do educators realize that the “digital divide” exists?
3. What is the relationship between the accessibility and use of technology in the classroom and student achievement?

Limitations

 Researchers’ have the possibilities of finding limitations within a study, which are identified possible problems or weaknesses. Below are possible limitations to be found within this study:

**Researcher/Teacher Bias**

Researcher and teacher bias may occur within in the study due to the researcher being a Principal within the school district. Teacher experiences, prejudices, biases, and perceptions may have an impact on participants’ approaches, interpretations, and responses to the study.

**Lack of Participants**

 Since the researcher in the study also plays the role of a Principal within the school district, teachers may be reluctant to participate in the questionnaire/interviews and/or to respond in an honest professional and candid manner.

Delimitations

 As a researcher, delimitations are boundaries set to control the range of study. For this study, the K-2 teacher populations will not be provided with questionnaires or interviewed due to the large size of the staff and the focus being placed on actual testing grades (3-8). Currently, a strong emphasis and focus is placed on student academic achievement and growth is determined by individual student PARCC scores and/or scores from the STAR Renaissance formative post assessments in grades 3-8.

Assumptions

 In research, assumptions are statements that are presumed to be true. For this study, the following assumptions are to be considered:

* Participants in the study will respond to the questionnaire provided and answer interview questions in an honestly.
* All participants have and are experiencing the same problem of the study and are therefore and an appropriate sample for the study.
* All participants selected will have a sincere interest in the research being conducted and do not hold ulterior motives.

Literature Review

The link between the accessibility and use of technology in education and its impact on the student achievement gap will be the focus of this literature review. The core of the review is to look at an analysis between the accessibility/use of technology, minority students and those from low-income families, and the student achievement gap in regards to teaching and student learning.

Does the digital divide play a vital role in academic student achievement? All state assessments and the majority of formative/summative assessments are taken on a technology-based platform. Students are expected to have the content knowledge needed to meet or exceed the expectations as well as have the necessary technological skills to submit responses using the interactive technological features. Individual student academic performance scores get rolled up into the overall school academic performance score, which determines if the school is high or low performing and in need of support.

**Digital Divide**

The digital divide has been a popular topic in education for some years. As technology continues to be a major component of ours schools and our world, the divide continues to be visible in regards to accessibility and use. Studies have shown that students from affluent backgrounds tend to have greater accessibility and use of technology when compared to minorities and students from low-income homes. The clear divide gives wealthier students an advantage and places an additional barrier for schools with a high poverty rates.

**Achievement Gap**

 The “achievement gap” is a term that refers to major continual disparities in academic performance or the distinction amongst various groups of students in regards to reaching academic success. The National Center for Educational Statistics reports that throughout the years of 1990 and 2015, White fourth and 8th-graders scored higher on average in math and reading scores than students of Black and Hispanic descent.

**Accessibility to Technology**

All students regardless of their backgrounds can make significant gains in technology readiness and student achievement when provided with the applicable technology used throughout the curriculum. The problem is that schools with the most disadvantaged students such as ethnic minorities and those from low-income households also face the biggest challenges in terms of financial budgets, adequate teachers, and support services. An additional factor to the problem is that students also lack the accessibility and use of technology in the homes (Darling-Hammond, 2014).

**Use of Technology – Teaching & Learning**

According to a 2014 report titled *Using Technology to Support At-Risk Students’ Learning*, three components were determined to use technology effectively with students in urban schools:

• Learning through interactive lessons and activities

• Technology use through exploration and creativity

• Effective integrations of technology and teachers

Enhancing exploration and creativity in lessons through the use of technology provides students with the opportunities to avoid the typical “Drill and Kill” strategy that occurs when computers take the place of teachers and students are expected to memorize information and are then assessed on it (Darling, Goldman, and Zielezinski, 2014).

Summary

In an approach to close the achievement gap and narrow the digital divide, technology must be integrated into the curriculum to enhance lessons. Technology is not meant to replace the teacher standing in the class. Teachers provide humanistic characteristics that technology cannot. They provide students with emotional support through good times and challenging ones as well as the interventions that students need in support of the technology when they find themselves in a time of struggle.

School districts must also develop a plan prior to making huge financial budget allocations, which normally are geared towards purchasing technology equipment without look at other aspects needed to support this initiative as a whole. The plan must include a look at the technological infrastructure, equipment, and training to support teachers and students in improving teaching and learning.

Methodology

**Introduction**

Urban public schools in neighborhoods comprised of minority and low-income families are consistently being identified as low-performing schools due to low academic performance scores, but yet they still face a divide in both the accessibility and use of technology. Schools that are identified as low performing are required to develop School Improvement Plans (SIP) that require budget allocations aligned to specific goals and performance targets for each underperforming content area. School improvement plans are written based on the school’s academic performance. Data analysis of all factors that may have contributed to the school’s performance must be analyzed including all assessments at all grade levels. The school’s internal data in regards to the various grade levels and content areas must also be analyzed before the plan is developed. An effective school plan must also be reviewed cyclical and school administrators must be trained to make clear accurate judgements (Arnold, 2017). Despite the development of these plans, urban schools still face a divide in terms of accessibility and use of technology because in most cases, technology does not seem to be a priority. According to the National Center for Education Statistics report (2010) on Teachers’ Use of Educational Technology in U.S. Public Schools; results differed by low and high poverty concentration of the school for the percentage of teachers that reported their students used educational technology sometimes or often during classes to prepare written text (66 and 56 percent, respectively), learn or practice basic skills (61 and 83 percent, respectively), and develop and present multimedia presentations (47 and 36 percent, respectively). For students to have the best opportunities possible for academic achievement, accessibility, use, and integration of technology in schools must be a priority. The achievement gap amongst minority students and those from low-income homes must be closed so that students can have a competitive edge in the challenging global marketplace today.

Research Design

 The research conducted will be based on the action research design, which may use both qualitative and quantitative methods. Action research applies it focus on a specific issue and seeks to find a solution to the problem. Teachers in an urban school will be provided with a set predetermined questions and qualitative survey interviews will also be conducted. This method will be used to quickly collect and analyze data and strive to implement changes based upon the findings to narrow digital divide and close the student achievement gap.

Population & Sample

 Throughout the qualitative data collection process, I will be conducting a maximal variation sampling of teachers in an urban K-8 public school. Teachers will be selected based on their assignment to specific grade levels. Teachers will be provided with a specific number and they will be selected using a random number table. The research study approximately 20 teachers because the data collection and analyzation process takes considerable time.

Researcher’s Position

The role of the researcher in this study will be as a Principal within the school district exploring to identify the digital divide within a K-8 public school in an urban school district. The study will also explore the teachers’ perceptions on their views on the divide and how it plays a vital role on student academic achievement. The researcher will place strong interests on the inventory of technology within the school, current school academic performance data, and training/professional development provided to teachers on the use and integration of technology to include hardware, software, an online platforms.

 Assumptions that may occur are the teacher’s perceptions on technology integration within content areas. Teachers’ may assume that because they used laptops or any other technological device that they are integrating technology; when their use could be considered “substitution” according to the SAMR model. The SAMR Model is a framework categorizing four different levels of technology integration in the classroom. "SAMR" stands for Substitution, Augmentation, Modification, and Redefinition. The SAMR model shares a common language across disciplines as teachers aim to assist students visualize complex concepts.

Researcher and teacher bias may occur within in the study due to the researcher being a Principal within the school district. Teacher experiences, prejudices, biases, and perceptions may have an impact on participants’ approaches, interpretations, and responses to the study.

Instrument

Teacher questionnaires and interview surveys will be used as the main source of data collection. Questionnaires will be available anonymously and consistently via surveymonkey.com throughout the data collection process. The questionnaire survey will be survey will have a cross-sectional design in which the data will be collected in the spring prior to students taking mandated state assessments. This approach will be used to determine the attitude or beliefs on the digital divide and its impact on the student achievement gap (Creswell, 2015). Qualitative survey interviews will also be conducted in which the researcher will ask open-ended questions and listen to and record the responses of the participants. The core of the survey will reflect the survey instrument created by the Metiri Group for the SETDA Profiling Educational Technology Integration (PETI) project (PETI, 2010).

Procedures

**Data Collection**

The data from this study will be collected directly from the Principal through a technology-based platform as well as through interviews. Teachers participating in this study will complete a questionnaire through an on-line link that will be provided to them as well as specific individual interviews. A formal letter requesting permission to conduct interviews and a questionnaire will be sent to the identified Principal of the school along with an explanation of the study, and a copy of the questionnaire that will be used. The responses to the questionnaire as well as responses to the interview will be analyzed and coded to identify themes through the school in regards to the school’s accessibility/use of technology, teacher training/development, and the role it plays on student academic achievement.

**Data Analysis**

The qualitative data analysis will be conducted in the following steps:

**Step I – Preparing Data for Analysis**

* In the initial analysis, data must be subdivided so that a consolidated larger picture can be determined as a final goal.

**Step II – Simultaneous Processing**

* The process of analyzing the data will be simultaneously conducted, as data collection is ongoing in order to look for major ideas.

**Step III – Iterative Phases**

* The cycle between data collection and analysis goes back and forth in order to fill gaps within the study.

**Step IV – Reading of Data**

* Data will be read several times and an analysis is conducted each time in order to gain a better understanding of the responses from your participants.

**Step V- Approach**

* There is not a one way approach to analyzing qualitative data

**Step VI – Interpretive Research**

* Make a personal assessment to describe the themes that capture the main categories of information identified (Creswell, 2015, p. 237).

References

Chisholm, I. M., & Carey, J. (2002). Information technology skills for a pluralistic society: Is the playing field level? Journal of Research on Technology in Education, 35(1), 58-79.

Cullen, R. (2001). Addressing the digital divide. Online Information Review, 25(e), 311-320.

Creswell, J. W. (2015). Educational research: Planning, conducting, and evaluating quantitative and qualitative research. Saddle River, NJ: Pearson.

Darling-Hammond, L., Zielezinski, M. B., & Goldman, S. (2014, September 10). Technology can close achievement gaps, improve learning [Webinar]. Washington, DC.

Eisner, E. W. (1985). The educational imagination: On the design and evaluation of school progress (2nd ed.). New York: MacMillan.

First, P. F., & Hart, Y. Y. (2002). Access to cyberspace: The new issue in educational justice. Journal of Law and Education, 31(d), 385-411.

Freire, P. (2002). Pedagogy of the oppressed (30th anniversary ed.). New York: Continuum International.

PETI - Evaluating Educational Technology Effectiveness. (2010, December 12). Retrieved March 19, 2018, from https://www.immagic.com/eLibrary/ARCHIVES/GENERAL/SETDA\_US/S101212P.pdf

Status and Trends in the Education of Racial and Ethnic Groups 2017 (Publication). (n.d.).

U.S.Cong. (2010). Teachers use of educational technology in U.S. public schools, 2009: First look (L. Gray, N. Thomas, L. Lewis, & P. Tice, Authors) [Cong.]. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Dept. of Education.

Using Technology to Support At-Risk Students’ Learning (Rep.). (n.d.).

Additional Resources from Project #1

Arnold Mary Arnold Mary Arnold is an experienced school improvement adviser who works in primary and secondary schools across the North West., M. (2017, August 02). How to write and implement an effective school improvement plan. Retrieved April 11, 2018, from https://www.oneeducation.co.uk/one-editorial/school-improvement/effective-school-improvement-plans/

Darling-Hammond, L., Zielezinski, M. B., & Goldman, S. (2014). Using technology to support at-risk students’ learning. Stanford Center for Opportunity Policy in Education. Online https://edpolicy. stanford. edu/publications/pubs/1241.

Lynch, M. (2017, September 17). Can Digital Equity Close the Achievement Gap? Retrieved April 11, 2018, from http://blogs.edweek.org/edweek/education\_futures/2017/07/can\_digital\_equity\_close\_the\_achievement\_gap.html

SAMR Model: A Practical Guide for EdTech Integration. (2017, October 30). Retrieved April 11, 2018, from https://www.schoology.com/blog/samr-model-practical-guide-edtech-integration

Vigdor, J. L., Ladd, H. F., & Martinez, E. (2014). Scaling the digital divide: Home computer technology and student achievement. Economic Inquiry, 52(3), 1103-1119.

Appendix

Letter for Consent to Conduct Survey

Consent Letter to Conduct Research

March 18, 2018

To Whom It May Concern:

My name is Manuel F. Negron and I am a Doctoral Candidate at New Jersey City University. I am writing to request permission to allow me to conduct a survey among the teaching staff in your school. My research is titled “Digital Divide in Urban Schools – The Role of the Principal in Narrowing the Divide and the Achievement Gap”. I will be conducting the survey to teachers amongst K-12 public schools.

The survey will take approximately 15 minutes and will not interfere with instructional time. It will be conducted before/after school, during lunch, or prep periods. Participation in this survey is voluntary and there are no known/anticipated risks associated with its participation. The data collected in this survey is strictly confidential and will be used for academic purposes only. The names of participants or of the school will not be disclosed in my research.

If you approve, please sign below giving me permission and consent to conduct this survey in your school. Your anticipated approval to conduct this survey is greatly appreciated and if you have any questions or concerns, please feel free to contact me at your earliest convenience.

Respectfully,

Mr. Manuel F. Negron

NJCU Doctoral Candidate