

## The impact of technology on Hispanic students

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### ABSTRACT

The purpose of the study was to determine if elementary teachers use technology as a tool to enhance classroom strategies for improving student achievement among Hispanic students. The following research questions were utilized: a.) Are computers available for classroom teachers and Hispanic students? b.) Has the available technology contributed to the academic success of Hispanic students? and c) Are teachers trained regarding the use of technology as a teaching tool?

Participants responded to a survey designed to determine if elementary teachers used technology as a tool to enhance classroom strategies for improving student achievement among Hispanic students. The findings from the study support the assertion that the availability of technology has an impact on the academic success of the Hispanic students in one South Texas elementary school. Every classroom was equipped with computers. A limited number of students had a computer in their home. Teachers' responses demonstrated the positive effect of being trained to use technology as a teaching tool and the subsequent contributions technology has had on the academic success of the students in the classroom.

Keywords: technology, Hispanic students, achievement, elementary, classroom strategies

## INTRODUCTION

It is the end of the first decade of the twenty first century, and we are surrounded by technology. Every day there are new gadgets—what was new yesterday is outdated today. Regarding today's college graduates, Prensky (2001, p. 1) stated, "Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives." Prensky (2001) uses the adjectives, Digital Natives and Digital Immigrants. Students are "native speakers" of the digital language, which includes computers and other forms of technology. Older users of technology, not born directly into the time of the digital world, have out of necessity adopted it and learned how to use it. Prensky (2001) asks whether teachers, who are likely to be digital immigrants, are speaking with an accent to their students.

Today most schools have internet access. At this point there is one computer accessible for every four learners (National Center for Education Statistics, 2008). The increased accessibility of modern tools in schools is not an automatic reflection of an upgrading in the classroom's teaching scenario (Lim & Chai, 2008). Research conducted in the past implies that unacceptable results go hand to hand with teachers not possessing the necessary skill set to put into operation technology in classrooms (Baylor & Ritchie, 2002). A report from 2009 showed that only 20% of U.S. citizens believe technology preparation, examination for certification, or technology-related specialized development for educators is necessary (Hightower, 2009). Additionally, another study provided an elongated list of issues, ranging from the instructor and school culture, to educator attitudes and beliefs as impacting negative technology implementation (Chen, 2008).

Teachers use technology for a variety of activities. They plan lessons, communicate with other teachers and students, and provide integrated instruction to students. They grade papers, make rubrics, and communicate with parents (Bebell, Russell, & O'Dwyer, 2004). For example, facilitators may conduct the instruction in the classroom using a LCD digital camera. Students use technology for a variety of purposes as well. Students search the internet for data, and use different kinds of software, including tutorials and drills (Barron, Ivers, Lilavois, & Wells, 2006).

There are state mandatory technology requirements that indicate teachers must develop the knowledge and necessary skills to be proficient with these technologies. As a consequence, the double objective of some teachers is to integrate the essential knowledge and skills of technology while integrating a different culture in the activities of the classroom (Simonsson, 2004). There are few studies based on multicultural educational practices and implementation of technology by bilingual education teachers (Simonsson, 2004). The accessible research is centered mainly on pre-service teachers. Nevertheless, each of the respective components already mentioned have been researched intensively. For example, multicultural education has been documented to be a functional means to enhance connections among minority and non-minority groups of students.

The 2001 Elementary and Secondary Education Act, known as No Child Left Behind Act of 2001 (NCLB) has increased awareness for the need for reform in funding a high-quality education that addresses the realities of the changing demographics within our nation's public school systems. The strict accountability system for results of student achievement does not allow for different levels of student performance for minority students or those with limited English proficiency. States are required to report test-score data separately for Hispanic students and to demonstrate annual progress in increasing achievement results. NCLB requires all

students to be technologically literate by the eighth grade. Using technology to enhance classroom instruction furthers the mission of NCLB to close the achievement gap that separates low income, Special Education, LEP, and students of color from their more advantaged peers.

The purpose of the study was to determine if elementary teachers use technology as a tool to enhance classroom strategies for improving student achievement among Hispanic students. The following research questions were utilized: a.) Are computers available for classroom teachers and Hispanic students? b.) Has the available technology contributed to the academic success of Hispanic students? and c) Are teachers trained regarding the use of technology as a teaching tool?

## **METHOD**

The sample for this study was comprised of 24 classroom teachers in an elementary school in the Rio Grande Valley in South Texas near the Mexican border. The 2007-2008 student population was 582, of which 99.7% were Hispanic. Of the 582 students, 352 were classified as LEP. The campus received the state rating of *exemplary* for the school year 2006-2007.

Classrooms at the elementary school are equipped with at least three student computers and one teacher computer. Each teacher was provided with an EIKI projector and some classrooms were also equipped with an Elmo projector and 52 inch Plasma TV. There was a full-time technician on campus and on-going technology training was provided to assist teachers in using the up-to-date equipment and software.

Participants responded to a survey developed by the researcher. The survey consisted of 19 questions designed to determine if elementary teachers used technology as a tool to enhance classroom strategies for improving student achievement among Hispanic students. Questions one through seven focused on grades taught, availability of computers in the classroom and homes of the students, and the increase in student academic success that classroom teachers could attribute to technology. Questions 8-19 focused on the technological skills of the teachers and the amount of time they actually used technology to enhance classroom instruction.

The study was conducted during the spring semester of 2008. A questionnaire, including a letter explaining the purpose of the survey, was enclosed in an envelope and placed in every classroom teacher's mailbox. The completion of the questionnaire was anonymous and on a voluntary basis. The quantitative data for the survey were collected and analyzed using descriptive statistics.

## **RESULTS**

Surveys were distributed to 28 participants, and 24 were returned. The number of teachers in each grade level ranged from 2 to 4. The majority (54%) of teachers were in self-contained classrooms, while the remaining teachers (46%) were departmentalized.

Teachers (96%) responded that they had 3 or more student computers in their classrooms. The teacher's computer and all student computers (100%) are connected to the Internet. Participants responded that less than 70% of the students have access to a computer at home with or without the Internet. Teachers were asked whether they believed that the technology available on their campus contributed to students' daily success. Twenty-one teachers (88%) surveyed strongly agreed or agreed that the technology available on their campus contributed to their

students' daily success. Only one teacher (4%) disagreed with that technology contributed to student success, and only two teachers (8%) strongly disagreed.

Participants were asked whether the technology available on your campus contributed to their success in their classroom. Again, twenty-one teachers (88%) surveyed strongly agreed or agreed that the technology available on their campus contributed to their teaching success. Only one teacher (4%) disagreed with that technology contributed to teaching success, and two teachers (8%) strongly disagreed.

Participants were asked about the frequency in which they used the computer. Eighteen (75%) of the participants responded that they use the computer daily. Five participants (21%) replied that they used the computer 1-3 times per week, while 1 participant used the computer monthly. All teachers (100%) have a computer at home. Participants responded to questions regarding their technology skills. All teachers (100%) have assessed their technology skills using the Texas Department of Education (TEA) Technology Self-Assessment Tool. Of those, 71% scored at the proficient or advanced level.

The teachers were asked whether they have received appropriate professional development for utilizing technology. The majority of the teachers (79%) indicated they had received the appropriate training. Only 21% indicated they had not received the appropriate training as required by TEA. Participants responded to a question regarding campus alignment with the Texas Long Range for Technology, which is required by the NCLB Act. The majority of the teachers (92%) indicated their campus is aligned with the Texas Long Range Plan for Technology. Only 8% of teachers did not believe their campus is not aligned with the Technology Plan.

Some survey questions dealt with participants' technology utilization. In regard to technology use in developing instructional materials, tests, lesson plans, etc., the majority of teachers (58%) use technology almost daily to develop instructional materials, tests, lesson plans, etc. The remaining 42% use technology 1-3 times per week for such use. When asked about their use of e-mail to communicate with colleagues, 71% responded that they use email to communicate with colleagues at least 1-3 times per week. The remaining 29% use email to communicate with colleagues 1-3 times per month. Teachers used technology less often to create multimedia presentations for classroom use. Only two participants (8%) use multimedia presentations daily, while five (21%) use multimedia presentations in the classroom 1-3 times per week. Nine teachers (38%) use multimedia 1-3 times per month, and eight (33%) never use multimedia presentations at all. When asked about Internet utilization for content or planning materials for your lessons, the majority of teachers (83%) responded that they do this type of research almost daily. The rest of the teachers (17%) use the internet for content or lesson planning 1-3 times per month. When asked about their use of digital cameras, 79% of teachers responded that they download digital pictures into the computer 0-3 times per month, while three (13%) download digital pictures 1-3 times per week, and 2 (8%) do so daily. Regarding the use of EIKI projectors, the majority of the teachers (92%) use this projector to present a lesson daily or at least one time per week. The remaining 8% use this projector at least 1 time per month. Regarding the use of ELMO projectors, the majority of the teachers (75%) use an ELMO projector to present a lesson almost daily, while one teacher uses the ELMO projector 1-3 times per month, and five teachers (21%) never use one at all, as indicated in Table 1 (Appendix).

## DISCUSSION

Both Hispanic students and teachers in this study had access to computers. Classrooms had computers available for student use, but not all students had computers at home. Survey results indicated 70% or less of the students had home computers. According to Padrón and Waxman (1996) student learning must be connected to the home in addition to focusing on knowledge learned in the classroom. Providing students with the increased availability of home computers may help to connect learning in the classroom to real-life situations. The use of e-mail, online dictionaries, spell checkers, and word processors can enhance LEP students' English skills and play a role in the learning processes (Johns & Tórréz, 2001).

Teachers view the availability of technology as having an impact on the academic success of their Hispanic students. Eighty-eight percent of the teachers responded that technology contributed to their own success or the success of their students in the classroom. All of the teachers responded that they use technology a minimum of one time per week to develop instructional materials. Effective instructional practices through the use of multimedia and other technology can help Hispanic students learn English. "Web-based picture libraries can promote Hispanic students' comprehension in content-area classrooms (e.g., science and mathematics). Multimedia can facilitate auditory skill development by integrating visual presentations with sound and animation" (Bermúdez & Palumbo, 1994, as cited in Padron, Waxman, & Rivera, 2002, p. 2). According to the International Society for Technology in Education (ISTE) (2000), "technology should become an integral part of how the classroom functions – as accessible as all other classroom tools" (p. 6).

Over 70% of the teacher indicated they had received the proper technology training and had scored in the proficient or advanced level using the Texas Department of Education Technology Self-Assessment Tool. The survey showed that a variety of different technologies that require knowledge and skill were being used in the classrooms. Effective integration of technology in the classroom depends on the training of the teacher. Professional development must be provided to assist teachers in acquiring the needed pedagogical and technological knowledge. The findings from the study support the availability of technology having an impact on the academic success of the Hispanic students in one South Texas elementary school. Teachers' responses demonstrated the positive effect of being trained to use technology as a teaching tool. Relevant to this study is the need to facilitate further discussion and research on using technology as a solution to narrowing the achievement gap between Hispanic and non-Hispanic students.

## REFERENCES

- Barron, A. E., Ivers, K. S., Lilavois, N., & Wells, J. A. (2006). *Technologies for education: A practical guide (5th ed.)*. Westport, CT: Libraries Unlimited.
- Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers & Education*, 39(4), 395–414.
- Bebell, D., Russell, M., & O'Dwyer, L. (2004). Measuring teachers' technology uses: Why multiple measures are more revealing. *Journal of Research on Technology in Education*, 37(1), 45–63.

- Bermudez, A. B., & Palumbo, D. (1994). Bridging the gap between literacy and technology: Hypermedia as a learning tool for limited English proficient students. *The Journal of Educational Issues of Language Minority Students*, 14, 165-184.
- Chen, C. H. (2008). Why do teachers not practice what they believe regarding technology integration? *Journal of Educational Research*, 102(1), 65–75.
- Hightower, A. E. (2009, March). Tracking U.S. trends: States earn B average for policies supporting educational technology use. *Education Week: Technology Counts*, 28.
- International Society for Technology in Education. (2000). *National educational technology standards for students; Connecting curriculum and technology*. Eugene, OR; Retrieved from [http://cnets.iste.org/students/s\\_book.html](http://cnets.iste.org/students/s_book.html)
- Johns, K.M., & Tórrrez, N.M. (2001). Helping ESL learners succeed. *Phi Delta Kappa*, 484, 7-49.
- Jonassen, D., Howland, J., Marra, R., & Crismond, D. (2008). *Meaningful learning with technology*. Upper Saddle River, NJ: Pearson, Merrill Prentice Hall.
- Lim, C. P., & Chai, C. S. (2008). Teachers' pedagogical beliefs and their planning and conduct of computer mediated classroom lesson. *British Journal of Educational Technology*, 39(5), 807–828.
- National Center for Education Statistics. (2008). *Digest of education statistics 2007* (No. NCES 2008–022). Washington, DC: U.S. Government Printing Office
- No Child Left Behind Act of 2001, Publ.L.No.107-110,115 Stat. 1425 (2002). Retrieved from <http://www.ed.gov/legislation/ESEA02/>
- Padrón, Y.N., & Waxman, H.C. (1996). Improving the teaching and learning of English language learners through instructional technology. *International Journal of Instructional Media*, 23(4), 341-354.
- Padrón, Y.N., Waxman, H.C., & Rivera, H. H. (2002). Educating Hispanic students: Effective instructional practices. Retrieved from <http://www.cal.org/crede/pdfs/PracBrief5.pdf>
- Prensky, M. (2001). *Digital natives, Digital immigrants*. Retrieved from
- Simonsson, M. (2004). Technology use of Hispanic bilingual teachers: A function of their beliefs, attitudes and perceptions on peer technology use in the classroom. *Journal of Instructional Psychology*. Retrieved from [http://findarticles.com/p/articles/mi\\_m0FCG/is\\_3\\_31/ai\\_n6332801/](http://findarticles.com/p/articles/mi_m0FCG/is_3_31/ai_n6332801/)

Table 1 - Teachers' Technology Utilization by Frequency and Percent

	Never	1-3 Times per Month	1-3 Times per Week	Almost Daily
Develop Instructional Materials	0 (0%)	0 (0%)	10 (42%)	14 (58%)
Email Colleagues	0 (0%)	7 (29%)	17 (71%)	0 (0%)
Present with Multimedia	8 (33%)	9 (38%)	5 (21%)	2 (8%)
Use Internet for Content and Planning	0 (0%)	4 (17%)	13 (54%)	7 (29%)
Use Digital Cameras	8 (33%)	11 (46%)	3 (13%)	2 (8%)
Use EIKI Projectors	0 (0%)	2 (8%)	0 (0%)	22 (92%)
Use ELMO Projectors	5 (21%)	1 (4%)	0 (0%)	18 (75%)

