

Opening Doors with a New Set of Keys

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The Issue

Does the educational system unknowingly decide the future of the students it teaches? Does the digital divide that separates our society into the technologically aware and the technology starved permeate the individual classroom setting? This paper will address the instructional decisions that divide our students into separate societies made up of those who will and those who will not be taught to be full participants in a technologically advanced society. Unfortunately, expectations of student achievement can have implications that reach far beyond the four walls of the classroom. Can the answer be as simple as a change in instructional practices using technology? Consider the following scenario:

Mrs. Franks' third grade class is studying plate tectonics. She has many different ability levels in her classroom and she spends a lot of her time working with a group of students who have difficulty reading the text from the Social Studies book. The students in this group decode the vocabulary words and learn their definitions. She understands the importance of computer instruction for her students and allows the students who are able to read the selection on their own to work in a group to develop a Powerpoint presentation on plate tectonics, complete with pictures from the

internet. To give the students in her remediation group equal time on the computer, she allows them the one on one time to play games reinforcing reading skills. The skills that are being developed in the more advanced group are preparing them for a job that expects collaboration and presentation skills. They are also expected to analyze information for accuracy and compile facts into a meaningful format. The group working on the remediation of skills is seeing a more didactic use of technology. The “click this button and make an action happen” mentality diminishes technology use to the role of game playing.

This scenario is played out in classrooms all over the country as teachers feel the pressure to move children from working below grade level status to grade level or above. However, the need to remediate often outweighs the opportunities to offer students authentic projects that require them to create and design their own learning and develop a valid conceptual framework.

The distinction between Internet savvy students and students with Internet access is one of Internet use. Students who use the Internet in authentic ways modeled by instruction in the classroom, mirror this methodology in the home. The following results were shown in a August 2002 Pew Internet & American Life Project:

- Nearly every online teen (94% of 12 to 17 year olds who report using the Internet has used the Internet for school research;
- Seventy- one percent have used a Web site as the major source for their most recent school project; (Levin & Arafah 2002)

These statistics suggest the following questions: Are students equitably taught to assess Internet information for validity and also are teachers knowledgeable enough about the capabilities of the Internet to discern whether the work submitted by students is authentic? Good professional development in the area of *technology integration* should address both of these issues. Often the answer lies in the questions asked of students.

While this paper does not seek to ignore the obvious differences in home accessibility to

Internet resources, authentic classroom use of existing resources will be addressed.

Authentic Use as used in this paper is the use of problem solving to address real world issues while appropriately using the tools of information literacy as defined by the American Library Association.

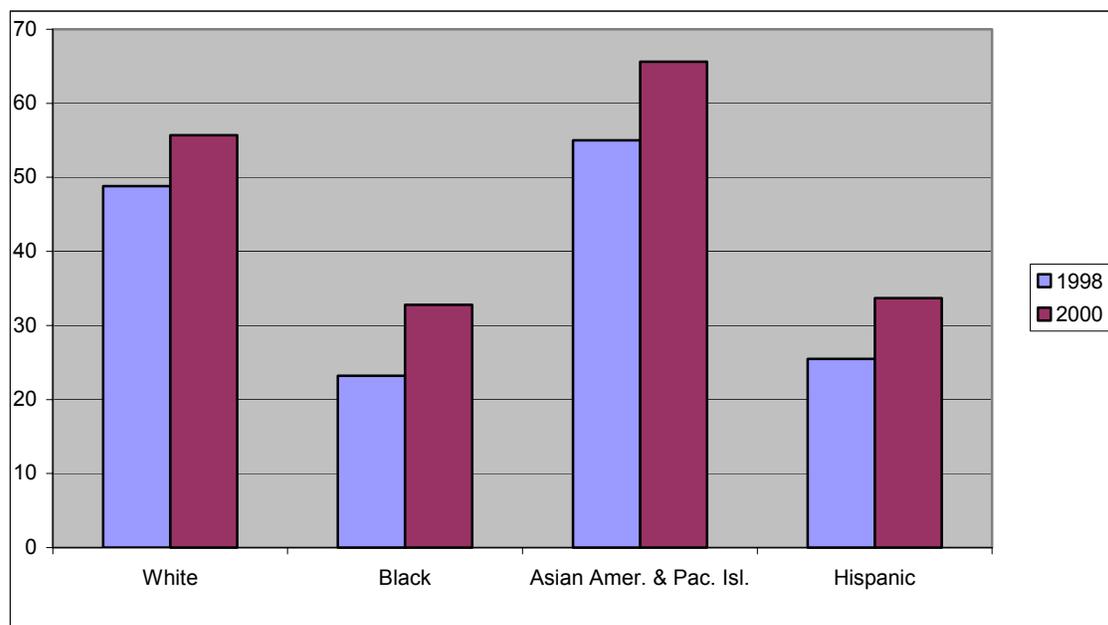
Jamie McKenzie, a consultant on planning and professional development says that technology planning should serve the curriculum, not the other way around. (Brey 2002) When administrators look to technology to solve problems of societal equity, they are often disappointed. The connection between student learning and information literacy should be clearly defined. McKenzie says, “Students and teachers should be good at exploring data instead of spreadsheeting.” (McKenzie, as cited by Brey, 2002)

Current issues with digital access are often only concerned with the acquisition of hardware and access available to students away from the school setting. Mark Warshachauer, in "Reconceptualizing the Digital Divide" (2002) says that programs that focus on providing hardware and software and do not address the human and social systems that must also change for technology to make a difference. Warshazchauer identifies the problem of digital equity as a problem that is an interwoven and complex combination of social systems and processes. He introduces the idea of technology for social inclusion. In the school setting, the line is extrapolated to include instructional inclusion thus allowing all students in a classroom setting to participate in the learning taking place. This involvement should be done in an authentic manner, i.e. problem solving and allow for communication and consideration on an equal basis.

A New Definition of the Digital Divide

Proponents of the digital divide put forth the idea that inequities in computer hardware and Internet access place ethnic groups and women at a disadvantage in today's technological society. The following chart (Figure 1) shows statistics collected for "Falling Through the Net", Toward Digital Inclusion (2000):

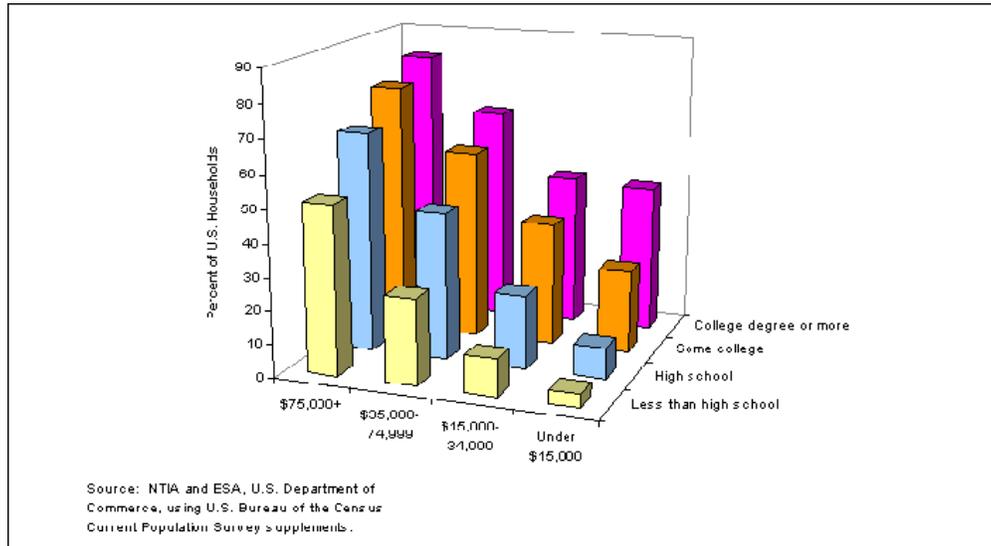
Figure 1. Percent of U.S. households with a computer by Race/Ethnicity



Source: U.S. Department of Commerce, U.S. Bureau of the Census Population Survey Supplement

Internet access as it relates to educational background in the home is presented in the chart on the following page:

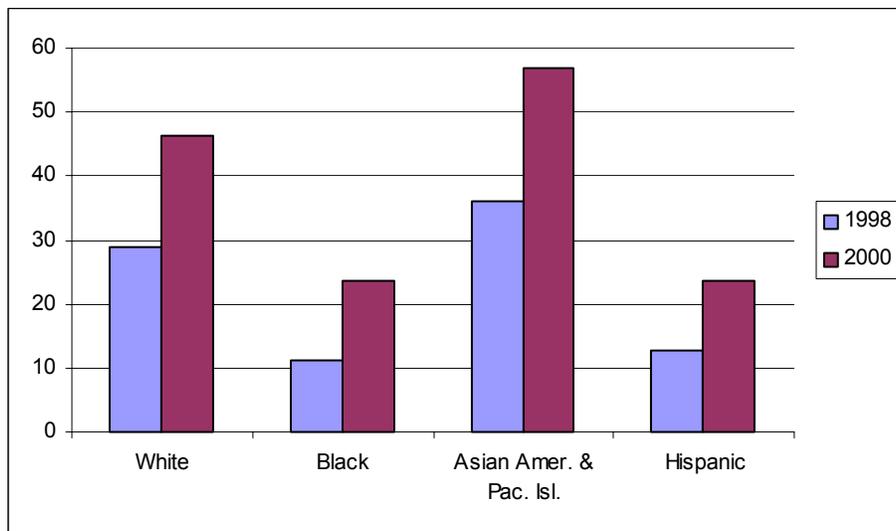
Figure 2. Percent of U.S. households with home Internet access by income and education (2000).



Source: U.S. Department of Commerce, U.S. Bureau of the Census Population Survey Supplement

In households where more emphasis is placed on the acquisition of higher learning opportunities, there is more use of the Internet in the home. This statistic is broken down to apply to ethnicity:

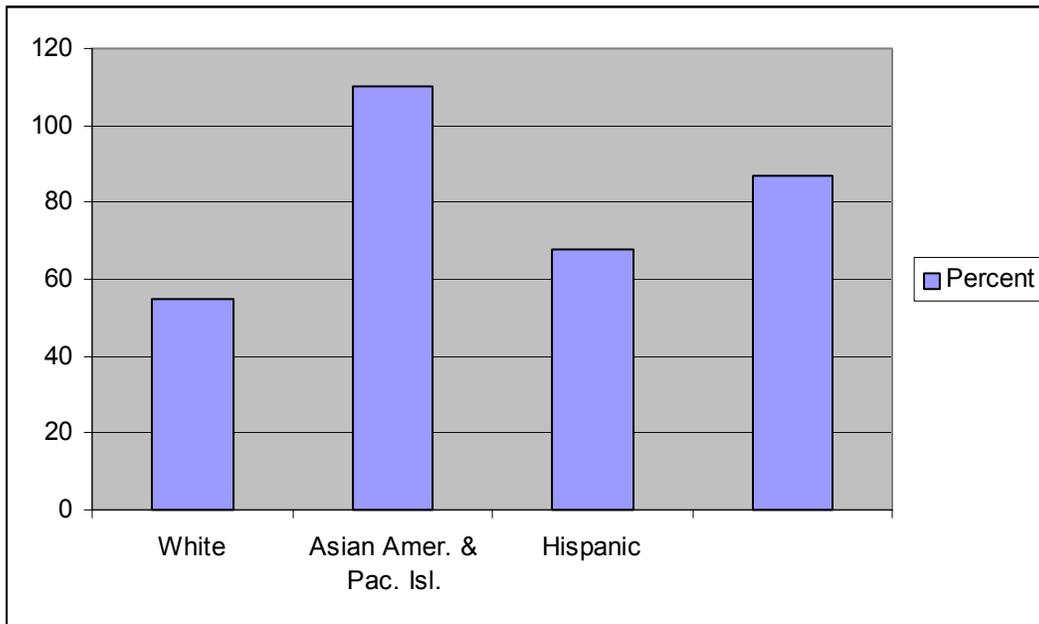
Figure 3. Percent of households with Internet Access by Race/Ethnicity.



Source: U.S. Department of Commerce, U.S. Bureau of the Census Population Survey Supplement

At first glance the numbers seem dismal, but according to Omar Wasow, the founder of New York Online, and a leading commentator on the challenges of the new media and the new economy, in every single category demographically, minorities were more likely to be acquiring computers in the next six months. Wasow says we should be looking at the trend and not the snapshot. The statistics in Figure 4 support Wasow findings:

Figure 4. Rate of Growth of Internet penetration by race/Hispanic origin.



Source: U.S. Department of Commerce, U.S. Bureau of the Census Population Survey Supplement

Wasow says the issue of equity is an educational problem, not an access problem. He says, “The real factor here is education. What you have to look at is not who has access to computers. What you have to look at is, who is taking Algebra? Why is it that in a number of tests black kids graduate with a 4 year differential than their white peers in math and reading? That’s where the divide occurs.” (Wasow, 2000)

Support from the Top

Administrator limitations on the time and location of access can be very limiting. School systems rely on an Acceptable Use Policy to set standards and limitations on computer use and activity. Brey quotes Marianne Peck, an administrator of the year for the Stanislaus County Office of Education and advises administrators to encourage the use of technology in the classroom using these steps:

- Model technology
- Provide ongoing technical support
- Set aside time for teachers to share their own successful teaching with technology strategies
- Allow opportunities for regularly scheduled, open discussion about technology successes and failures.

Student Expectations

Encouraging original thought and reflection from students instigates a higher level of participation in classroom process and learning. When teachers model authentic technology use for students, the students rely on connectivity for a number of uses. According to research conducted by the Pew Internet & American Life Project (2002), 78% of children between the ages of 12 and 17 go online. One of the most common activities of students is the completion and further research of schoolwork. The study discusses several ways that students use the Internet:

- As a virtual textbook or library
- Virtual tutor
- Virtual study group
- Virtual guidance counselor

- Virtual Locker (storage area) (Levin and Arafeh 2002)

The study further states that while students relate examples of both engaging and poor instructional uses of the Internet assigned by their teachers, the poor instructional uses are more typical regardless of connectivity and resources at the local level. Assignments were described as uninspiring. Students want assignments that are relevant to their daily lives. Another barrier to authentic Internet use is the quality of access within the local school building.

Bridging The Gap One Classroom at a Time

The International Society for Technology Education established national standards from which state educational agencies have developed specific objectives written to address the integration of technology across the disciplines. A scope and sequence of desired outcomes at each grade level is done at the local school district level in order to insure that students receive a standard level of instruction using technology regardless of the method of delivery. School systems that require teachers to implement these sometimes radical changes in instructional pedagogy without professional development may find themselves with technology that isn't used to its optimal instructional benefit and low teacher moral. Administrators encourage the use technology by students as well as teachers with high expectations for technology infusion into instruction. Policy choices can influence instructional decisions made by teachers. Accessibility and freedom of use in schools can influence student use of technology.

Teacher Leaders use technology as a medium and tool for the acquisition of professional development, analysis of information such as classroom test scores and data,

problem solving and presentation. The following information from a study conducted by Reil and Goodfellow (2000) illustrates the change in instruction that should take place in a typical classroom which authentically uses technology:

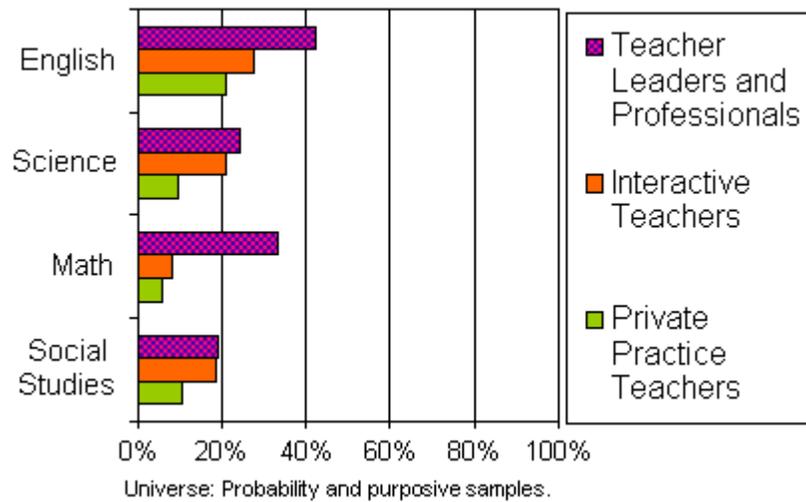
Table 1. Dimensions of Educational Philosophy.

	Knowledge Transmission	Co-Construction of Knowledge
Teacher's role	Information delivery in a structured coherent order	Facilitates learning (e.g., Coach, guide,)
Learner's role	Passive reception of knowledge/information	Responsible in group settings to share knowledge with others
Concept of Knowledge	Accrual of knowledge within a structured discipline or setting.	“Cognitive, social and socio-cultural structures that organize information in the mind and in the world” (¶24)
Process of Teaching & Learning	Memorization of facts, conditioning via rewards or punishments	Use of cognitive, social, or socio-cultural structures to organize knowledge within the mind and in the greater world.
Assessment	Assess retention of knowledge (e.g., psychometric tests)	Alternative assessments (e.g. portfolios, exhibits, and other types of performance assessments)

Source: Reil & Goodfellow (2000).

The table outlines authentic uses of technology and the guidelines closely follow the expectations set forth in the ISTE teacher and student skill development document. A comparison of teacher leaders who use technology is shown in Figure 5:

Figure 5. Percent of Teachers By Subject who use Computers Weekly with students.



Source: Reil and Goodfellow (2000), retrieved Dec. 15, 2003 from <http://www.crito.uci.edu/tlc/findings/aera/f7.html>

In concluding statements in their study, Reil and Goodfellow state that “teachers who assume a professional orientation to teaching are far more likely to have made high investments in their own education, to have constructivist compatible philosophical beliefs about education to develop the instructional practices that are related to their beliefs about education to develop the instructional practices that are related to their beliefs and to integrate computers into their classrooms and ways that support meaningful thinking and the sharing of ideas with their peers.” (Reil & Goodfellow 2000)

Strategies to improve the employment odds of all students regardless of background and home environment are ambitious indeed. Dismal statistics on school access underscore the need for schools to teach the skills needed to survive in today’s workplace. Information literacy, problem solving and data manipulation should be expected and infused into the standard curriculum at the appropriate levels. Teacher leaders recognize the need for this transformation to take place, students expect and crave the metamorphosis of pedagogy and they want their ideas not only to be heard but

considered. Students of all levels, abilities, ethnicities and genders deserve this respect, and appreciate challenge and intellectual stimulation in the classroom. Authentic instruction using technology can unify students in the classroom toward a common goal or essential question. In this instance, if culture and environment can be influenced by the classroom instead of the reverse, many barriers, restrictions, and the doors to many gated communities can begin to be demolished.

Contributors

[Rosalyn Spivey](#) is an assistant principal at Liberty Park Elementary in the Vestavia City School System in Vestavia Hills, Alabama. For three years, previously, she conducted technology training for Alabama teachers for the University of Montevallo Regional Inservice Center. She also served for three years as technology specialist for Shades Cahaba Elementary in Homewood, Alabama. Her research interests concern issues with digital equity and the delivery of authentic professional development for teachers in the area of technology. She is also interested in the responsibility of leadership to assist teachers in technology instruction and the development of a culture that embraces technology infusion.

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