The Digital Divide (DD): A Reconceptualization for Educators

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The author attempts to elaborate upon the popularized notion of the digital divide (DD). Previously, the DD has been defined as a lack of access to information technology for specific groups. This "access DD," in the opinion of the author, is an incorrect conceptualization for educators. The author then explains why educators must redirect their attention and resources to solve the more nebulous "social DD."

The notion of a digital divide (DD) has inspired the activity of government, business, and academia. Each of these communities carries differing sets of means, motives, and responsibilities; however, they generally agree that the DD must be bridged. The phrase "digital divide" is actually a distilled label for a relationship between the information haves and have-nots. As a metaphor, the phrase works well. Meaning that, the word "divide" signifies an information barrier between different groups. However, the problem with the metaphor is that it focuses too much attention upon the *divide* as opposed to the divided. Gilmore (2000) explained candidly, "lets stop pretending that we've solved all that much when we run some wiring through the crumbling walls of a public school…all we've done is install hardware, the easy part of the job." As currently conceptualized, the DD is a hardware problem. A problem solved when the barriers to access are removed. In contrast, a "social DD" incorporates the social, cognitive, and communicative barriers proven to affect technology perception and use. It is the aim of this essay to re-conceptualize the DD for educators away from a simple lack of access and toward the social, cognitive, and communicative factors that truly divide groups.

In 1995, the National Telecommunication and Information Agency (NTIA) released the first of three reports based on data obtained by the U.S. Census Bureau from roughly 48,000 American households (NTIA, 1995). The report was titled, "Falling through the Net: A Survey of Havenots in Rural and Urban America" and it measured penetration and usage rates for various technologies in 1994. Although the initial report focused primarily upon telephone penetration, the most attention was placed upon group differences in reference to computer penetration. The authors of the first report identified significant gaps in computer penetration based on ethnicity, income level, and/or geography. In the subsequent reports, the NTIA emphasized the specific characteristics of the DD, which solidified the notion within popular culture.

Since that 1995 report, the NTIA has conducted two subsequent investigations into the DD in 1998 and 1999. In reference to the changing characteristics of the DD, the authors of the 1998 report stated that, "Despite this significant growth in computer ownership and usage overall…the 'digital divide' between certain groups of Americans has increased between 1994 and 1997…Blacks and Hispanics now lag even further behind Whites in their levels of PC-ownership and on-line access" (NTIA, 1998). It was this finding that provided additional momentum to bridge the access DD. From the executive branch, President Clinton created a commission specifically to deal with the widening gap. In 1999, the President stated that, "we have worked to make sure that eventually a digital divide will not deprive business of the technology-savvy workers they need, and will not hurt our educational systems today" (Clinton, 1999). It was clear from the President's address that the DD had been defined as a lack of access to information technology.

Although the first two reports generally indicated a widening gap in computer penetration and Internet usage, the third and final report presented information that appeared to reverse the trend. The authors of the third report stated that,

> For Americans with incomes of $75,000 and higher, the divide between Whites and Blacks has actually narrowed considerably…[, which] suggests that the most affluent American families, irrespective of race, are connecting to the Net. If prices of computers and the Internet decline further, the divide between the information "haves" and "havenots" may continue to narrow. (NTIA, 1999).

The bridging of the access DD was confirmed by several privately funded studies. Festa (2000) wrote that, “lower income households, defined as those with annual incomes of $25,000 or less, compose the fastest-growing segment of Net users.” Mark Rhoads, Director of the Internet Council stated that, “Gender and racial differences are beginning to melt away on the Internet” (Bloomberg, 1999).

This new data showing a shrinking access DD is the most important rationale for a reconceptualization. The current access DD is the latest in a series of technology diffusion gaps within the past century. One may simply review the history of telephone diffusion to see large gaps in reference to ethnicity and economic level when the telephone was an immature medium. However, as the telephone medium matured, the gap in telephone penetration stabilized and then virtually disappeared as reported by the NTIA. When one combines the historic trends in technology diffusion with current data, it is almost certain that the access DD will soon disappear. At that point in time when the access DD no longer exists, there will be little if any attention from the government and business communities.

Importantly, there are policy implications with the current conceptualization of the DD. At the national level, two of the most recently introduced bills of legislation aimed at bridging the DD are solely directed at the hardware problem. H.R. 4061 and S. 2424 (2001) the Digital Divide Elimination Act provides a tax credit to lower income households for the purchase of computer technology. Also, The Digital Empowerment Act (H.R. 3897 and S. 2229, 2001) proposes the installation of computer technology in public housing facilities. Corporate America has also joined the chorus; companies like Microsoft have recently offered over one billion dollars in software and hardware to lower income schools (www.microsoft.com/presspass). To be clear, the sponsors of these initiatives must be applauded not chastised for their propositions. As a point of fact, it is the governmental and business communities that are most equipped to tackle the access DD. However, these initiatives merely address the most clearly identifiable part of the problem, beneath the surface there are vast numbers of individuals who possess access and choose to avoid information technology. This is the social digital divide.

It is the more nebulous social DD that the educator is most equipped to bridge. The social DD is composed of barriers to motivation, knowledge, skill, content, and social networks. Each of these barriers constitutes an

exponentially more difficult problem than access due to the interrelationships between the barriers. For example, the absence of motivation in an information-deprived student can be the product of a lack of knowledge, which is manifested in a lack of skill. Despite this situation, there are students who possess both knowledge and skill and still lack motivation to use information technology. This may point to an absence in content or subject matter within the medium. Further still, there is the social network that can be either favorable or unfavorable to producing adequate levels of motivation. In each of the previous situations, the educator can be the pivotal figure to increase motivation leading to technological competency. The following is a brief explanation of each of the interrelated barriers of the social DD.

Motivational Barrier

Motivation is fundamental to cognition, behavior, and communication. Clearly, the influence of motivation has been thoroughly researched across disciplines (Bigge, & Hunt, 1980; Hall, 1961; Rubin 1990; Spitzberg & Cupach, 1984). More recently, Scott & Rockwell (1997) examined the role of negative motivation or technology apprehension. The most salient conclusion provided by the authors was that, "users notice the technology more so than the task for which it is used" (p. 55). Put simply, the Scott and Rockwell research suggested that negative motivation or apprehension can take precedence within the minds of the user and impede the use of technology. In a similar study, Kaye (1998) reported various categories of motivation (entertainment, social interaction, pass time, escape, information, and web site preference) that significantly influenced Internet use. The author also found that the motivational categories could be so strong as to reduce the use of other media. In education, researchers have linked precursory motivation to student learning with technology (Sherry, Billig, Jesse & Watson-Acosta, 2001) overall student satisfaction (Scott & Rockwell, 1997) and found that the one of the most significant stimulants for technology-related motivation is the student-teacher relationship (Guzley, Avanzino, & Bor, 2001).

Knowledge and Skill Barrier

Knowledge and skill within any human context are inextricability linked. Whereas knowledge is the presence of cognitive information, the behavioral manifestation of this information is skill. Accordingly, the presence of knowledge and the application of skill become pivotal elements when considering technology use. This is because as knowledge and skill increase, there can be a renewal of motivation, which in turn drives the individual to increase knowledge and skill. Similarly, this cycle can have the opposite consequence, meaning that the lack of requisite knowledge and skill can cause the individual to have negative motivation or even apprehension. Barnes (1994) provided an example of the increasing number of skills that are required for individuals to use the internet effectively. In her article, Barnes explored the notion of hypertext literacy and the consequences for individuals without these very specific hypertext skills. Barnes wrote that, "hypertexts are fundamentally different from printed texts and they change a student's instructional experience with texts by requiring a student to learn interactive reading and text navigation skills" (p. 25). Although this level of competency is basic, it remains a barrier for those without the requisite knowledge and skill. It is the educator not business or government that provides the formal training needed to develop knowledge and skill.

Content Barrier

Within the scope of this article, content refers to the substantive information that is stored and released through a digital medium. Of course, this conceptualization is a continuum that includes mundane devices such as compact discs (CDs) but also includes web-based databases. Individuals use both CDs and databases to access sought after content, but if the content for that individual is absent, it then becomes a barrier. To illustrate, an individual's first exposure to the internet can either encourage subsequent interaction or discourage it. The requisite motivation, knowledge, and skill propells the individual to the initial interaction with the Internet. However, the procurement of content provides gratification and hence increased motivation.

This perspective is based upon the uses and gratifications approach (Katz, Blumler, Gurevitch, 1974; Palmgreen, 1984). In general, uses and gratifications researchers point to cognitive, affective, personal, and escapist needs

that influence content gratifications. Mings (1997) applied the uses and gratifications perspective to content selection in reference to online newspapers. The author uncovered that the gratification categories were significant, "factors in their online viewing activity." In fact, Mings found that when gratifications were not met there was a significant amount of avoidance by the individual. This finding illustrates how the absence of content can be an important barrier for individuals. Educators can influence content directly or through others. By training students and professionals, the educator can encourage diverse content throughout the digital medium.

Social Network Barrier

The last barrier that composes the social DD is the role of social networks in technology use. A social network refers to the interpersonal interactions with individuals who have direct or indirect influence on a person's perception or behavior—including culture. Obviously, social networks play a crucial role in every person's life, and there is recent evidence concerning how prominent the social network can be in reference to technology use. Hoffman, Novak, and Schlosser (2000) explained, "schools, churches, local retailers or other community services in urban poor neighborhoods may not have web sites or use the Internet for communication. Consequently, Internet content may seem remote or irrelevant to the personal lives of the majority of urban poor." The Hoffman, Novak, and Schlosser excerpt described how powerful the social network can be in the perception and use of technology. The social network factor may be the most ignored aspect of the overall DD, because it is very difficult to assess or change. Nevertheless, the educator is the hub of the social network; the daily interactions of a teacher can change the manner in which hundreds of people think.

This article has attempted to reconceptualize the DD by extracting the different though related barriers that compose the social DD. To be clear, the access DD remains very important, and the government and business communities are certainly on pace to bridge the access DD in subsequent years. However, it is the position of the author that educators possess neither the means nor responsibility to bridge the access DD. The educator possesses the tools to dismantle each of the barriers previously described. Motivation cannot be given; it can only be encouraged; and although the government and business communities may presume that knowledge and

skill increase with mere accessibility to hardware, in reality it is the educator that is charged with achieving that goal. In addition, scholars and educators, through research, can influence the creation of content that gratifies the information deprived. Last, the educator is a central figure in the social network of students and the local community. The barriers that compose the social DD can and must be bridged, and unlike government and business, the educator has the responsibility to bridge it.

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