Addressing the Digital Divide in Kentucky:
Beyond the Barriers

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Introduction

All around the world, societies are being transfixed and transformed by new media technologies, at the heart of which lies the internet. For those who are fortunate enough to hook up and logon, a wealth of information and services await. In this bold new era of computer mediated communication, the internet is becoming an integral tool for social, political, and economic participation. Those who lack the necessary means to access the internet are becoming increasingly marginalized, as the world is facing a binary digital divide - an ever-widening gap that separates the information "haves" from the "have-nots". This gap follows closely along the lines between the rich and the poor, encompassing such divisions as educational level, race, age, disability and language. The potential for social exclusion intensifies as the emergence of the internet requires new capabilities to sustain participation in the online global community.

Kentucky, once referred to as America's "Third World" (Compton, 2000), is at risk of "falling through the net" as research indicates that we rank among the lowest in the nation with regard to internet usage - only 44.2 percent of homes statewide access the internet, compared to a national average of 50.5 percent (National Telecommunications and Information Administration, 2001). This paper will address the problem of the digital divide in Kentucky, beginning with an overview of Kentucky demographics, followed by an examination of the types of barriers that must be considered in overcoming the digital divide and the theoretical perspectives that underlie these conditions. The paper will conclude with a discussion of ways in which the digital divide in Kentucky can be practically addressed and perhaps one day, solved.

Kentucky - In Focus

Globally, there are over 400 million people on the internet, with North Americans accounting for a significantly disproportional 41 percent of these users. This imbalance in information access threatens to silence the voices of the world's most vulnerable populations. According to research gathered by the United Nations Development Programme (2001), internet usage is becoming concentrated in in developed countries, in primarily urban areas, and among users who are better educated, wealthier, younger in age, and predominantly male. Many developing countries lag far behind the digital enclaves of First World nations, a pattern which is being replicated in the U.S. and Kentucky.

Kentucky is a state of extremes. Inside our state's "Golden Triangle", which includes the metropolitan areas of Central and Northern Kentucky and the Louisville area, prosperity abounds, while in rural areas, particularly those in the Appalachian, Pennyrile, and non-agrarian Western Kentucky regions, deep pockets of poverty exist, exacerbated by geophysical isolation. The division between the rich and the poor in our state is one of the widest in the country (Kentucky Long Term Policy Research Center, 2000).

Telephone access, let alone internet access, in some regions of the state remains problematic. Ten percent of all households in the state lack access to a telephone line, rising to more than 20 percent 19 counties (Garkovich, Hansen, & Dyk, 1997). The national average for telephone penetrance is 93 percent (Mueller, 1997). In terms of digital information, Kentucky exhibits a similarly fragmented distribution of internet access. In 2000, 72 percent of persons living in the "Golden Triangle" had internet access, compared with 62 percent in the Western region, 54 percent in South Central, and 53 percent in the East (Kentucky Long Term Policy Research Center, 2001). By 2002, broadband (DSL and cable modem service) became available in 68 percent of all counties, with the highest concentration

in urban centers (80 percent) and the lowest concentration in Eastern (62 percent) and South Central Kentucky (52 percent) (Connect Kentucky, 2002).

Disparities in access to the internet also exist in other sectors of the state. In Kentucky's public school system, 90 percent of "low minority enrollment" schools have internet access in the classroom, compared to only 50 percent in "high minority enrollment" schools (Education Week, 2001).

Barriers to Access

Many barriers to internet access have been identified through research, including economic, educational, racial/ethnic, psychological, physical, and regulatory (Eastin & Larose, 2000; Latimer, 2001; National Telecommunications and Information Administration, 2001; Stanley, 2001). Each of these factors cannot singlehandedly account for the digital divide; however, frequently these barriers converge, as will be demonstrated below. These issues must be addressed before any attempt to solve the digital divide can be accomplished.

Economic Barriers

Economic barriers function in several ways to restrict access to technology. At the governmental level, economic barriers may exist as a lack of funding or inadequate budgetary inclusion. At the organizational level, economic barriers may prevent agencies from purchasing necessary technology or hiring qualified personnel. Recent research by Connect Kentucky (2002) revealed that just under 20 percent of the state's businesses have websites, and expense of technology was cited most frequently as the reason for not upgrading access capabilities.

At the individual level, economic barriers may serve as substantial obstacles to internet use. Kentucky is a state with an ever-increasing poverty rate, especially among persons living in rural, non-metropolitan areas and among families with children and the persons over the age of 65 (U.S. Census Bureau, 2002). Forty out of 49 counties in Eastern Kentucky are considered to be "distressed"

counties, along with several Western Kentucky outliers, meaning that these counties have 150% of the U.S. poverty rate of 13.1 percent, 150% of the U.S. unemployment rate of 6.3 percent, and 67 percent of the U.S. per capita income (University of Kentucky Appalachian Center, 2000). Although computer prices have dropped in recent years, even a basic system remains unaffordable to many, especially those who work without earning a living wage or who live below the poverty line.

Socioeconomic conditions may also be driving the racial, gender, and age divisions that exists in internet usage. It is widely known that poverty rates in the U.S. vary greatly according to race, age, gender, family structure, and educational level (Zastrow & Kirst-Ashman, 2001). While there is little data available regarding racial, ethnic, and age gaps in internet access in Kentucky, much data exists at the national level and has confirmed disparities in usage for each of the aforementioned groups (National Telecommunications and Information Administration, 2001).

With respect to these known correlations, it is important to bear in mind that Kentucky's demographic landscape is changing. The populations of both Hispanics and African Americans are expected to increase, while Kentucky's older population is expected to surpass that of the younger population in the upcoming decades. Further, much of Kentucky's growth is occurring along major interstate and highway corridors, leaving many parts of Kentucky in a state of virtual disconnect (Crouch, 1999).

Various theories may be applicable in understanding poverty, each requiring different intervention strategies for tackling the digital divide. The Structural-Functionalist perspective holds that poverty and inequality serve a number of adaptive functions in society, such as rewarding some (lucky) individuals for hard work and competence while maintaining a "lower class" of workers to fill less desirable jobs. Conflict theorists regard poverty as resulting from the domination of the upper classes over the working class, allowing the rich to get richer at the expense of the poor. The Symbolic-

Interactionist and "Culture of Poverty" theories focus on how meanings, labels, and intergenerational attitudes affect those living in poverty, while serving to perpetuate these conditions. Any attempt to bridge the digital divide through economic strategies must be mindful of the theoretical underpinnings of the economic disparities that exist in Kentucky and abroad.

Educational Barriers

Closely related to economic barriers to internet access are the educational barriers. According to the Kentucky Long Term Policy Research Center (2001), internet usage among persons with only a high school diploma is 34.4 percent, compared to 64 percent of persons with a college degree.

Kentucky distinguishes itself as being among the lowest in the nation with regard to educational scores, and our illiteracy rate is 37.5 percent, meaning that there are over 900,000 Kentuckians who are functionally illiterate (Compton, 2000). In the Appalachian region of Kentucky, the illiteracy rate rises to 48.4 percent, the highest in the U.S. (Adams, 1997).

While income levels statewide lag below the national average on all accounts, poverty rates by educational level vary greatly in Kentucky, with persons holding at least a Bachelor's degree averaging $45,000 annually compared to $25,000 for a high school degree and less than $20,000 for persons not finishing high school. These disparities may produce additional barriers to internet access in the state, especially in poorer regions and among certain racial and ethnic groups of low educational attainment (Keister, 2000).

Educational achievement may also be related to cognitive abilities. For example, low educational level may result from encountering deficient circumstances in childhood, or from environmental conditions having detrimental effects. Research has found that early neglect and maltreatment can have enduring negative effects on brain development (Teicher, 2002). In addition, environments that fail to provide adequate stimulation to the developing brain or that contain certain

environmental toxins can have adverse effects on brain development and cognitive abilities (Cynader & Frost, 1999). These facts must be taken into account when evaluating educational policies with the goals of improving conditions and overcoming the digital divide.

Psychological Barriers

Research has shown that psychological barriers may be extremely influential in exacerbating the digital divide. Eastin and Larose (2000) state that "Internet self-efficacy, or the belief in one's capabilities to organize and execute courses of Internet actions required to produce given attainments, is a potentially important factor in efforts to close the digital divide.

Prior internet experience (especially two years or more), outcome expectancies and internet use were significantly and positively correlated to internet self-efficacy, while internet stress, self-disparagement, and relationships with similar others who experienced these characteristics were negatively related to internet self-efficacy. These findings may be interpreted through Bandura's Social Cognitive Theory (1977), which holds that human perceptions and behaviors result from finding success or failure with certain responses to stimuli, or through modeling the perceptions and behaviors of others.

Similar findings were gathered through ethnographic studies by Stanley (2001). Persons who held negative views of technology or who could see no relevance of the internet to their lives or livelihoods were less likely to access the internet, and these attitudes were most prevalent among persons of lower socioeconomic status. Self-concept, perceived ineptitude, and "fear" of computer technology were also relevant factors preventing access.

Other Barriers to Internet Usage

In addition to the aforementioned factors affecting the digital divide, many other significant barriers exist. Internet use is stratified by age, with persons over 55 less likely to go online (25.8 percent) than younger persons (approximately 55 percent) (National Telecommunications and

Information Administration, 2001). Persons with physical disabilities are less than half as likely (23.9 percent) to use the internet as persons without (Kaye, 2000). In addition, 49.6 percent of internet users are native speakers of English, despite the fact that they account for only 5.3 percent of the world's population (Global Reach, 2000).

Several regulatory and policy issues have been criticized for contributing to the digital divide. The Universal Service Law for telephone service was established in 1934 to ensure service to low-income households and setting rates below cost in rural areas and small towns. In 1996, an updated version of the Universal Service Law, known as the Telecommunications Act, was introduced. When applied to internet connectivity, several studies have concluded that this Act has been largely ineffective and is in need of revision (Noll, et al., 2000; Appalachian Regional Commission, 2001). The Telecommunications Act has also been criticized for failure to live up to its intended purpose (Latimer, 2000). Says Michael K. Powell, Chairman of the Federal Communications Commission (2001), "The underpinnings of the current regulatory regime for media are dated. Much of the regulatory structure and analytical foundations that exist today were built around television and radio as it existed in the 'golden age'. The current rules, standards, and principles do not take account of very dramatic changes in the media landscape."

This discussion of the many barriers to internet use is an attempt to validate the claim that any attempts to solve the digital divide must transcend mere access availability or provision of hardware technology, tapping into the underlying conditions that may reduce internet equity.

Strategies for Tackling the Digital Divide

Solving the problem of the digital divide in Kentucky, the nation, or world-wide, will not be an easy task. However, several practical steps toward closing the gap between the information "haves" and "have-nots" can be taken, with each step moving toward the ultimate goal of more equitable,

universal access.

At the most fundamental level, Kentucky's wealth disparity has to be addressed. For starters, our state's tax laws burden the poor more than nearly any other state (Karger & Stoesz, 2002). A redistribution of affluence is needed. In addition, many of Kentucky's people need help in getting on their feet, yet the state ranks among the lowest in the nation with regard to a social service agency-to-person ratio (Urban Institute, 1994).

Our educational system is also in dire need of improvement in order to graduate more college-bound students and remove the racial barriers to a quality education. Computer literacy training in Kentucky must start at an early age in order that children gain proficiency before computer anxiety has a chance to develop. Also, more applications are needed that target the elderly, those who are disabled, and those who lack proficiency in English.

National Telecommunications and Information Administration (2001) data show that ownership of a computer increases the likelihood of future internet use. Grants, rebates, and incentive programs, along with free technological support programs, such as the HAIL project that provided free computers and support to persons in several distressed Kentucky counties (Dean, 2000), need to become more numerous and accessible. In addition, the development of policies that make internet access more efficient and affordable, such as the deregulation of broadband technology, can help boost internet access among Kentuckians.

Educational campaigns and subsidies may be used to encourage participation, as may making more government functions available online. Empower Kentucky is a large initiative that intends to increase the state government's web presence. Other programs exist to help narrow the digital divide in Kentucky, such as the Information Technology Resource Center in Louisville, and UK's Alliance for Network Excellence.

Other pieces in the digital divide solution may include developing grass-root campaigns that target those left behind, working with community leaders and activists to raise awareness of the internet and its benefits, and developing a framework of best practice measures that can be used by government and private sectors to help promote internet usage. In addition, involvement of such areas as the business sector, area Chambers of Commerce, and health and welfare agencies can help boost interest in commercial issues and matters of well-being, leading steadily to increased participation in the online culture.

Conclusion

While some critics may claim that the internet boom is nothing more than a modern analog of the introduction of the radio and television (Gackenbach, 1998; Light, 2001), the fact remains that the internet is developing much more rapidly than these older media technologies (Mueller, 1997). But as with the older technologies, internet use will never reach 100 percent, but efforts should be made to narrow the divide that exists between today's information "haves" from the "have-nots".

Fair use of the internet can help individuals access the information, products, and services that can be used to improve their quality of life and enable them to participate more fully in today's emerging communications technologies. If the internet is to become an equitable means of communication, the problem of the digital divide should be addressed, <u>now</u>.

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