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Neil Selwyn, Stephen Gorard and Sara Williams
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Digital Divide or Digital Opportunity? The Role of Technology in Overcoming Social Exclusion in U.S. Education

NEIL SELWYN, STEPHEN GORARD,
and SARA WILLIAMS

The use of information technology in education is now a political orthodoxy, seen by many politicians and educators as a ready means of widening participation to those social groups traditionally excluded from learning. However, the role of technology in overcoming social exclusion in education and lifetime learning practices has often failed to be objectively discussed, with a tendency for many educationalists to adopt either overtly optimistic or pessimistic positions. From this background, the present article objectively examines both current patterns of exclusion from education and technology alongside the range of ongoing policies and initiatives established in the United States concerned with technology and education. Moreover, based on a range of North American and European research literature concerned with participation in education, the article then discusses the issues and problems faced by U.S. educationalists and policy makers in proactively using technology as a means of reducing social exclusion in lifelong education.

Opportunity for all requires something else today—having access to a computer and knowing how to use it. This means that we must close the digital divide between those who have got the tools and those who do not.

—President Bill Clinton, State of the Union Address, 2000

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Despite the previous resistance by educators to "wonder" technologies such as the film projector and the television (Cuban, 1986), the past decade has seen the burgeoning importance of information technology (IT[1]) in the delivery of education around the world. The seemingly rapid rise to prominence of technologies such as the Internet is viewed by many educationalists as having profound and far-reaching implications for the way in which teaching and learning takes place across all stages of education, from the preschool years to learning by the elderly and retired (Harasim, Hiltz, Teles, & Turoff, 1995; Riedling, 1999). Indeed, the formation of legislation concerning technology-based education now forms one of the predominant global policyscapes across industrialized nations (Ball, 1999). In the United States, as in nations across Europe and East Asia, the role of technology in education is currently of key political concern. This concern is duplicated in the United Kingdom where there has been a recent tradition of importing social policies from the United States, not always with great success (Dolowitz, 2000).

This heightened awareness of technology in education has coincided with the renewed prominence of issues concerning the need for countries to foster patterns of sustained learning across the life span and thereby reduce levels of social exclusion in education and lifelong learning practices. Worldwide concerns over the relative inflexibility of workforces and subsequent global uncompetitiveness of economies have therefore prompted many countries to focus on the necessity for individuals to continue learning and *reskilling* throughout their lifetime (Driver, 1994). This has led governments around the world to introduce policy drives aimed at creating "learning societies" (Department for Education and Employment [DfEE], 1998) and "clever countries" (Hedberg & Steele, 1992) based on a general awareness of the importance of lifelong learning. Crucially, such policies have been fashioned around agendas of social inclusion and a specific concern over widening rather than merely increasing participation in education.

The rise of both technology and lifelong learning to the fore of educational and political consciousness has forced policy makers and educationalists to address the relationships among social exclusion, education, and technology. On the one hand, many optimistic commentators have approached the integration of technology into education as a significant opportunity to reduce social inequalities in educational participation. The perceived capability of technologies such as the Internet and digital television to overcome issues of

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time, space, and motivation has led some to argue that IT can negate many of the traditional barriers to learning and attract more learners through sheer convenience and accessibility alone. On the other hand, more pessimistic commentators have pointed toward the capacity of technology-based learning to increase levels of social exclusion from learning. The stark delineation between those who currently have access to IT and those who do not, in terms of age, socioeconomic status, race, and gender, has led to growing concern over an emerging "digital divide" (Kerka, 1997). From this perspective, technology-based education is seen as exacerbating preexisting divisions and inequalities between the haves and have-nots (Wresch, 1996).

To date, debates over technology and education have remained largely entrenched in these polarized viewpoints of technology as either panacea or peril. Moreover, the role of technology in overcoming social exclusion has yet to be fully problematized and critically engaged with by many educational policy makers—a crucial step toward objectively assessing the long-term nature, effectiveness, and sustainability of technology-based education. Despite a growing number of academic commentators highlighting the need to critically reassess and question the role of IT as a social leveler (e.g., Bromley & Apple, 1999; Bryson & de Castell, 1994; Winner, 1997), politically, technology remains to be seen in less problematic terms. From this background, the present article examines both current patterns of exclusion from education and technology as well as the range of ongoing policies and initiatives established in the United States concerned with technology and education. Moreover, based on a range of North American and European research literature concerned with participation in education, the article then discusses the issues and problems faced by U.S. educationalists and policy makers in proactively using technology as a means of reducing social exclusion in lifelong education.

PRESENT PATTERNS OF SOCIAL EXCLUSION FROM EDUCATION AND TECHNOLOGY

There is reasonable agreement across different research and interest groups as to the nature of current nonparticipants in postcompulsory education and training (Tight, 1998). Recent official reports and academic studies list the unemployed and others on low incomes, the unskilled and unqualified, exoffenders, part-time or temporary workers, those with learning difficulties or low levels of basic skills, and some ethnic groups as being the least likely to participate (DfEE, 1998; Fryer, 1997; Kennedy, 1997). Although improving public school systems have reduced such inequalities in the education of children and adolescents, these changes do not appear to apply to

adult learning (Gorard, Rees, Fevre, & Furlong, 1998c). If extended initial education (such as university study) is ignored, then women and older people are much less likely to be adult participants in learning (Gorard, Rees, & Fevre, 1999b).

Similarly, although levels of access to IT have boomed over the past 10 years, there is considerable evidence of a so-called digital divide, namely, a growing disparity between those individuals and communities that have and those that do not have easy access to new information technologies. Official statistics confirm that access to computer technology in the United States is mediated by a host of factors (National Telecommunications and Information Administration [NTIA], 1999). For example, income is a highly significant factor in whether or not individuals have access to IT, with high-income households (i.e., $75,000 or higher) being 9 times more likely to have access to a computer and 20 times more likely to have access to the Internet than those at lowest income levels. Similar disparities exist in terms of levels of education, urban as opposed to rural areas, and Whites as opposed to African Americans or Hispanics. Moreover, there is evidence from these official data that such inequalities in access to technology are continuing to widen over time and are being replicated at school level as well as with adult populations (Department of Education, 1999; NTIA, 1999).

This polarized scenario is confirmed and reinforced by a host of other research into technological wealth-poverty, with socioeconomic status, income, level of education, race and ethnicity, gender, age, and geography all consistently found to affect levels of access to information technology in the United States and abroad (e.g., Balnaves & Caputi, 1997; Kerka, 1997; MORI, 1998; Novak & Hoffman, 1998). It would therefore seem clear that broadly, the same social groups are facing exclusion from both educational opportunities and overall access to technology. How then are the U.S. government's stated concerns with exclusion from both technological access and educational opportunities being translated into educational policy?

BRIDGING THE DIGITAL DIVIDE: EXAMINING THE U.S. EDUCATIONAL TECHNOLOGY POLICY AGENDA

The announcement in September 1993 of the National Information Infrastructure (NII) initiative by the Clinton-Gore administration (Information Infrastructure Task Force, 1993) has been widely acknowledged as precipitating the subsequent rush of similar policy drives throughout the rest of the world (Langdale, 1997; Tan, 1995). Indeed, President Clinton has latterly referred to issues of technology access and use as a "national crusade"

(Clinton, 2000). The broad aim of the NII initiative has been to create an information and communications network connecting homes, businesses, and public institutions to the Information Superhighway. Although the U.S. administration has expressed concern that every American citizen has equality of access to a fast and flexible network, the development and implementation of the NII has largely been left to the private sector. The federal government largely sees its role as promoting the NII and creating the market conditions for private providers to flourish.

In educational terms, the promise of an Internet connection to every classroom in every school has been a central tenet of the official promotion of the overall policy drive. To facilitate this educational goal, the federal government issued the "Technology Literacy Challenge" (Department of Education, 1996), which made available a projected $2 billion of funding until 2001 to provide every classroom with Internet access and "modern multimedia computers," ensure IT training and support for all teachers, and establish a network of "effective on-line learning resources." Subsequently, in 1998, the "E-Rate" initiative provided up to a further $2.25 billion per annum to the Universal Services Fund, effectively offering means-tested discounts of between 20% and 90% for schools to purchase internal and external network connections. To date, the E-Rate program has committed more than $3.65 billion to more than 50,000 schools and libraries (Kennard, 2000). Now, the Technology Literacy Challenge has been augmented by a series of related programs, including the $150 million Preparing Tomorrow's Teachers to Use Technology training and support program, the distance learning–based Star Schools program, the Regional Technology in Education Consortia technological assistance program, and the $25 million Learning Anytime Anywhere Partnership program for encouraging lifelong learning through technology (Office of Educational Technology, 2000a). Crucially, all these programs are being introduced beneath the aegis of bridging the digital divide and providing educational opportunities to underserved learners (Office of Educational Technology, 2000b).

More recently, the Clinton-Gore administration announced the "From the Digital Divide to Digital Opportunity" proposal as part of the 2000 budget proposal, specifically designed to address issues of social exclusion from IT learning. In particular, these proposals are centered around $2 billion over 10 years of tax incentives to encourage business and industry to donate computer hardware, training, and sponsorship to schools, libraries, and community technology sites. Moreover, a further $100 million has been committed to a series of 1,000 community technology centers in low-income urban and

rural communities, offering computer access and training to low- income adults and schoolchildren. This initiative is designed to complement the already established 500 neighborhood learning centers in publicly assisted housing. Both these schemes are further complemented by the $600 million 21st Century Community Learning Center program aiming to support the creation of about 5,000 school-based community IT centers. In addition, the Digital Divide to Digital Opportunity proposal also includes measures to expand home access to IT for low-income families, accelerate the construction of high-speed networks in otherwise underserved communities as well as a $10 million initiative to boost the numbers of Native Americans entering careers in IT.

Throughout all these policies and initiatives, it is implied that information technology will be the primary means by which such programs will overcome existing barriers to lifelong education. It is suggested, therefore, that IT will help overcome the barriers that deter people from learning by making learning provision more flexible, bringing costs down and making learning more accessible and affordable, offering reliable and accessible information, and allowing people to learn at their own pace (e.g., Benton Foundation, 1996; Glennan & Melmed, 1996; Southwest Educational Development Laboratory, 1995). As the Information Infrastructure Task Force (1993) argued at the launch of the NII,

> The NII promises to transform the lives of the American people. It can ameliorate the constraints of geography and economic status, and give all Americans a fair opportunity to go as far as their talents and ambitions will take them.

Thus, in particular, IT is now being seen as a means for overcoming social exclusion and widening participation in education. Yet, to what extent can technology be expected to act as such a "technical fix" (Robins & Webster, 1989)? The remainder of this article will examine these claims. In particular, it will discuss the role of IT in overcoming traditional barriers to participation in education and consider the emergence of new barriers to education in light of IT-based policies.

TECHNOLOGY-BASED EDUCATION AND TRADITIONAL BARRIERS TO PARTICIPATION

The barriers faced by potential participants in lifelong learning have been usefully classified by Harrison (1993) into the following three groups: situational (to do with lifestyle), institutional (related to the opportunities available),

and dispositional (personal knowledge and motivation). The increasing use of IT in education may be said to be altering the institutional constraints on participation and affecting the situational ones. What IT cannot do by itself is to change the dispositional constraints or alter the social determinants of participation; neither, it is argued later, does it necessarily provide a genuinely educational experience. The social determinants of patterns of participation in adult education, in particular, are of such long standing for the individual (Gorard, Rees, et al., 1999b) that they appear to lead to learner identities acting as filters in assessing future opportunities. It is doubtful, therefore, whether the improvements in participation brought about by IT, welcome as these are, will significantly include all currently excluded groups.

One of the most obvious barriers to participation in formal learning episodes is cost, and it is not immediately clear that technology-based education provisions will eliminate rather than simply alter this. Our focus here is on financial and opportunity costs for individuals, but it should be noted that these costs can also be considered in relation to organizations, regions, and governments. The current nonparticipation of many individuals in education can be explained at least in part by the relatively higher costs for poorer groups whether these are defined by unemployment, low-income and socioeconomic status, gender, or area of residence (Hand, Gambles, & Cooper, 1994; Maguire, Maguire, & Felstead, 1993; Rees, Fevre, Furlong, & Gorard, 1997; Sargant, 1996; Shackleton & Walsh, 1997). The cost of equipment, communication, and insurance to participate in learning via technology at home is unlikely to attract many such newcomers. Where facilities are provided institutionally free at the point of delivery (as in community technology centers), the opportunity costs and the problems of transport and other institutional barriers remain.

Participation rates in education are also clearly lower in many areas for women, perhaps due to greater child care commitment (Frazer & Ward, 1988), disruption caused by pregnancy and childbirth (Schratz, 1996), less full-time work (Gershuny & Marsh, 1994), and poorer personal transport (Burstall, 1996; Park, 1994). They are also generally lower for older residents (Gorard, Rees, Fevre, & Welland, in press; Greenhalgh & Stewart, 1987). Although in some ways IT can be described as both gender and age neutral in theory, it is not clear from current usage that women and older people are likely to be particularly advantaged by the use of technology. Perhaps the biggest problem of all is time. For those in employment, the United States has traditionally had long working hours, and although leisure time may be growing, there is now a multiplicity of competing opportunities for use of time (McGivney, 1993) and accessing the Internet or watching digital broadcasts

could simply add to these. In summary then, the situational barriers may be relatively undiminished by any new developments.

The greatest changes could be in the institutional barriers to participation, including the current lack of flexibility in courses, lack of credit for informal prior learning, poor guidance, lack of appropriate opportunities locally, fear among new potential participants of certified courses, and lack of basic skills. Interrupted patterns of participation have traditionally led to high noncompletion rates (Istance & Rees, 1995), whereas lacking even basic skills paradoxically excludes those most in need from participating in formal courses (Nash, 1996), and these skill levels often pass over generations in the same family (DfEE, 1996; Gorard, Rees, et al., 1999a). Properly handled, technology-based educational provisions could destroy many of these barriers at a stroke, but then, so could conventional educational institutions if they and their governments wanted to. Why this is not happening and why the rather lazy solution of technology is apparently preferred would have to be the subject of another article (but see Tight, 1998). On the other hand, use of technology itself could become another basic skill barrier. Given the credentialist human capital stance of current educational policy (both in the United Kingdom, see Fevre, Rees, & Gorard, 1999; and the United States, see Carnevale, 1998; Carnevale & Rose, 1998), it is unlikely that either route will address the very real fear of certification among some groups of nonparticipants.

Barriers are by definition more effective against the less motivated, so perhaps the most significant barrier faced by all nonparticipants is the personal one of disposition. There is growing evidence of a relatively stable learning identity for lifelong learners formed by school-leaving age and stemming from family background, initial educational experiences, and informal episodes (Gorard et al., 1998a). With increasing dropout even during extended initial education (Fielding, Belfield, & Thomas, 1998; Pyke, 1996), it seems that many people have a deep reluctance to continue in formal learning (Titmus, 1994), which they see as childish and having nothing to do with the world of work (Harrison, 1993). The traditional focus on formal participation leads many people to view learners as a breed apart, not for the likes of us (Edwards, Sieminski, & Zeldin, 1993), whereas others may not find appropriate opportunities to learn (Banks, Bates, Breakwell, Bynner, & Emler, 1992) or may have a low level of awareness of the opportunities, incentives, and rights (Park, 1994; S. Taylor & Spencer, 1994).

Previous research would also suggest that some learners will remain happy with their autodidactic informal approach to learning, not wanting recognition or qualification (Gorard, Fevre, & Rees, 1999), even with the introduction of more technological opportunities. Indeed, as Robertson (1998)

argued, one of the principal problems facing many technology-based education projects is that they are all primarily supply-side initiatives rather than demand led (i.e., generally not formed in response to specific requests from a relevant community). There is, therefore, no guarantee of actual increased demand for learning merely because it has been technologically repackaged. As Robertson (1998) argued, this problem also beset previous schemes: "The 'wicked' problem of [previous education] policy is less the lack of supply, and much more the absence of demand for skill and skill development, both from individuals and employers" (p. 12).

Throughout the rhetoric of lifelong learning (both in policy documents and the writing of some practitioners), nonparticipants are often blamed for their situation and threatened with socioeconomic exclusion because the alternative of admitting the existence of socioeconomic determinants for nonparticipation might require a totally different and rather more expensive government program. The prevailing view is that people ought to participate because it is good for them, but this shows a form of historical amnesia (Gorard, Furlong, Fevre, & Rees, 1997). This approach has been tried in the United Kingdom before and has failed before. The current emphasis on formal vocational education and training and on learning as a positional good (Keep, 1997) thus ignores the emancipatory, individual, and radical nature of the original proposals for lifelong learning on which rhetoric current policy is justified. A compulsion to train and retrain for a flexible careership or to prevent the damage caused by social exclusion may benefit those in power and meet the requirements of the productive system (Furter, 1977; Johnson, 1993), but if nearly a third of the population do not wish to take part after formal schooling, it is just possible that the problem lies in the provision and not in the nonparticipants. As well as leading to economic competitiveness (perhaps) and social mobility (probably), education is nearly always a genuinely transformative experience for an individual (Lewis, 1993) and one that affects the local community. Learning should not, therefore, be viewed simply as an escape route from unemployment, poverty, or social exclusion but a normal part of an accomplished life, especially in a democratic society (Rees, 1997). Viewed in this way, it is not clear that the experiences offered by technology-based education, which is often based on a model of information transmission, can be genuinely educational or that they can lead to better reasoning skills, creativity, and the ability to value divergent cultures, as claimed by some advocates (Roll, 1995). Given these severe limitations, it may therefore be seen as completely rational for an individual to decline to participate.

NEW BARRIERS IN THE DEVELOPMENT OF TECHNOLOGY-BASED EDUCATION?

Having considered the many established barriers to lifelong learning, it is also pertinent to address hitherto unforeseen barriers to expanding lifelong learning that technology-based education faces. So far, the pronounced technological emphasis of current education policy has been treated as unproblematic by many in education, only prompting disquiet among more conservative factions of the educational establishment opposed to the erosion of traditional education as well as more progressive educators concerned with considerations of equity, fairness, and social justice. Although it has been fashionable to dismiss any concerns about IT as the arguments of unenlightened neo-Luddites (Volti, 1992), the downside of technologically based learning does merit serious consideration, especially in the light of the substantial claims being made on its behalf. In doing so, three major caveats to technologically enhanced lifelong learning readily present themselves (at least partly as a result of the barriers to participation discussed earlier).

Despite efforts to the contrary, the culture of information and communications technology remains firmly young, White, middle class, and male—precisely the narrow attributes of the traditional adult-learning base the government is so keen to move beyond. It has long been argued that information and communication technologies are ostensibly White, middle-class, Eurocentric, male artifacts in terms of their language (predominantly English), technical development, and users' values (Holderness, 1998; Spender, 1997). In this way, many of the technologies that will form the backbone of the new education provision (in particular the Internet) are not necessarily likely to be dominant or familiar technology with working-class, older, female, or ethnic learners. Although it is contentious to assert that IT will increase divisions between learners along these lines, it seems unlikely that in the short term, delivering learning opportunities in this way will positively discriminate for the working class, females, and ethnic minorities and, therefore, extend the reach of lifelong learning.

From a more practical perspective, it may be argued that technologically based educational provision is more conducive to certain types of learning than others. Is technology-based education, therefore, really capable of effectively widening the skills base? For some, virtual learning is not the same as real-life learning, appearing to be more about knowledge dissemination than a genuinely transformative process (Selwyn, 1999). Indeed, even the most enthusiastic proponents of IT-based distance learning recognize the

limitations of the medium for delivering all types of learning. As De Kerckhove (1997) conceded, at best, IT enhances, rather than replaces, real-life learning. However, in the clamor to develop and establish technology- based education programs, the limitations of this new learning may be too easily ignored. Moreover, in many learning situations, reliance on the virtual rather than the real ignores the uniqueness of educational processes that are fundamentally altered once digitized and delivered online. As Zuboff (1988) reasoned, IT "produces a voice that symbolically renders events, objects and processes so that they become visible, knowable and sharable in a new way" (p. 376). In the light of the points raised within this article, it would seem paramount that this new way of experiencing events, objects, and processes should not always be seen as an adequate substitute for real-life learning.

Finally, a crucial but constantly overlooked question hanging over the longevity of any technology-based education program is the integral role of business and industry in its continuity. Indeed, the central involvement of the private sector in the development of public technology use has been continually emphasized by the government.

> The Federal government funded and developed early versions of the Internet for nation security and research purposes. It will continue to provide funding for research and development on future Internet and high-performance computing technologies. However, most of the capital to build the computing and telecommunications infrastructure is being provided by the private sector. (Secretariat on Electronic Commerce, 1998, p. 50)

Thus, in many ways, the U.S. policy is based on an overt model of market-led neo-liberalism in respect to the development of technology-based education. Indeed, in this respect, to not involve the private sector in technology policy making has been generally considered to "run against the very grain of American culture" (Sawhney, 1996) and to overlook a very necessary element of successfully implementing large-scale public technology programs often technically and logistically beyond the means of the government. However, the integral involvement of the private sector in technology-based education introduces concerns over the perennial clash between education both as a private interest and a public good. This problem is an enduring one, as Tasker and Packham (1993) warned:

> The two worlds of [education and industry] remain profoundly different. The purpose of industry is to generate profit for private gain, usually in competition with other companies. The profit so generated may or may not benefit society; the concept of public good is not central to industry's concerns. The purpose of higher education is to

generate knowledge through collaboration between scholars, not competition, and in such a way that society as a whole benefits. (p. 134)

Doubts should therefore be raised over the attractiveness of technology-based education programs to private companies, especially if they do not prove to be immediately beneficial. Moreover, the financial incentive for companies to actively encourage participation among more socially diverse but less profitable consumers is also less obvious. As Robertson (1998) asked, why, if technologically based lifelong learning for all is that attractive a proposition, had the private sector not already autonomously developed it without the current coercion from the federal government?

Aside from the obvious financial incentive, one primary objective of extending lifelong learning is, as noted earlier, to strengthen the U.S. workforce and economic productiveness. Most previous industrial involvement in education has, in this way, been primarily focused on the production of appropriately skilled school leavers. Indeed, as A. Taylor (1998) argued, the acceptance of employability skills into educational discourse is part of a larger permeation of business interests in education. The focus of these new forms of lifelong learning is firmly on the needs of the workplace and U.S. business and commerce. However, this in turn poses a fundamental question: Will a privately dependent education movement lead to a widening of skills or merely a concentration on the narrow base of industry-friendly core skills and key competencies?

DISCUSSION

The fact that the Clinton-Gore administration made a serious effort to address the issue of IT and education is not contested. Indeed, the range of IT-based education policies marked an unprecedented commitment to integrating new technologies into lifelong education. Nevertheless, educationalists and policy makers alike would do well to bear in mind the limitations of such an approach as well as the potential opportunities.

One prominent site of potential conflict that is apparent throughout current policy making is the role of technology-based education as a means of increasing social inclusion and as a means of increasing economic competitiveness. On the one hand is a powerful rhetoric regarding the use of technological-based learning to reskill and up-skill the workforce and increase U.S. economic competitiveness. On the other hand is the exhortation to use technology as a means of overcoming the exclusion of various social groups from renewed educational opportunities. Although social inclusion and increased

economic competitiveness are not necessarily antithetical, it is clear that beyond broad statements regarding a digital divide, the present technological agenda is economically focused, and that any concern with the socially excluded can be more accurately seen as a concern with the economically excluded, as the following quotes show:

> America's destiny is linked to our information infrastructure. . . . The potential benefits for the nation are immense. The NII will enable U.S. firms to compete and win in the global economy, generating good jobs for the American people and economic growth for the nation. (Information Infrastructure Task Force, 1993)

> Countries that have an insufficient supply of skilled workers will see high-skilled, high-paying jobs migrate to countries that can supply the needed talent. Those that have a surplus will find job opportunities opening for their workers in overseas organizations. Even though the United States has led the world into the digital age, we face these same realities. Without a concerted effort to develop students and workers to meet the new challenges of the digital economy, the United States could face a migration of high-skilled, high-wage jobs to other countries. (Secretariat on Electronic Commerce, 1998, p. 49)

This mismatch between economic and noneconomic agendas is perhaps best encapsulated in the emphasis throughout all the current initiatives on the use of technology-based lifelong learning for developing work-based, predominantly technological skills as opposed to the use of technology for general learning. Indeed, throughout all the ensuing rhetoric, very little is said about the types of learning that IT-based education will be suitable for. To date, for example, the majority of community technology center activities have been predominantly focused on using IT to deliver IT-skills education. Although it can be argued that developing technological skills is a prerequisite to using IT for more diverse learning outcomes, what form this learning will then take appears to have been given very little consideration above and beyond workplace-orientated key skills. Indeed, as Newman and Johnson (1999) asserted, to assume that all aspects of learning can be delivered via IT exhibits a "naive empiricism" toward the diverse nature of lifelong education.

Indeed, with regard to a more inclusive social agenda, the federal government consciously adopted a strategy at the outset of the NII policy development that emphasized access to technology in stark *connected/unconnected* terms. Indeed, this overemphasis on access ran throughout the NII policy drive during much of the 1990s:

> [We aim to] extend the "universal service" concept to ensure that information resources are available to all at affordable prices. Because information means empowerment—and employment—the government has a duty to ensure that all Americans have

access to the . . . potential of the Information Age. (Information Infrastructure Task Force, 1993)

Although the policy focus is now shifting toward how to use the technology, the official emphasis on *access/no access* as a measure of connectivity remains. However, such an approach in terms of education raises at least three areas of concern. First, access to IT should not be seen merely in terms of haves and have-nots. As Toulouse (1997) observed, there are two distinct types of access—whether groups have access at all and the hierarchy of access among those that do. Thus, beyond the simple issue of access to IT come more complex questions of levels of connectivity in terms of the capability and distribution of the access concerned. Access to a personal computer (PC) does not guarantee a connection to the Internet anymore than access to the Internet is a guarantee of effectively accessing every available Web site and online resource. Disparity in the context of IT access is also an important consideration. Will accessing online learning materials from a home-based PC be equitable to accessing the same materials via an open-access work station in a public library or community technology center? Moreover, attention should also be focused on issues surrounding the differential distribution of requisite skills, background knowledge, and availability of support among the population to make use of whatever access to IT there is. The danger is by focusing solely on issues of basic access, we are overlooking the quality and circumstantial nature of that access and, it follows, the quality of the learning once experienced online.

Indeed, the relationship between having access to and learning through IT has yet to be satisfactorily addressed within education policy. There is growing evidence that motivation to learn through IT goes far beyond mere issues of access to technology (Seale, 1999; Selwyn, Marriott, & Marriott, 2000). Nevertheless, from Newt Gingrich's offhand comment that it may be worthwhile "giving every poor person a laptop" (Resnick, 1997) to the broader goal of achieving universal access to IT, political thinking about achieving equitable participation in online services has yet to move beyond issues of basic access to hardware. How this hardware can and cannot be used is not as yet seen as a pressing issue for concern.

Finally, the role of the private sector throughout all technology initiatives should not be underestimated. Whereas postindustrialists such as Daniel Bell insist on the relative independence of the political and economic spheres, "it is quite clear that polity and economy are interdependent, and that the relationship between the two is far from simple" (Lyon, 1988, p. 13). The danger remains that the sustainability of technology-based education programs ultimately depends on businesses' ability to make them profitable rather than

any soft concerns such as education. Thus, as Sussman (1997) contended, the centrality of business interests to the information revolution is continually understated:

> The hucksters of the "information age" do not remind us very often that the business of business is more business—and more profit—and that deregulation [of the information superhighway] means more concentration, monopolization, and vertical integration in the industry. (p. 281)

This factor threatens to take on a renewed significance after the imminent change of presidential administration. As Gladieux and Swail (1999) pointed out, the Clinton-Gore drive for higher use of technology in education has been dogged by Congressional disagreement over how to finance policies such as the E-Rate, with critics viewing the funding of the E-Rate through universal service charges on personal telephone bills as unfairly hidden from consumers and, more significantly, circumventing congressional approval. Thus, the E-Rate Termination and Schools and Libraries Internet Access bills presented to Congress in 1999 looked set to compromise much of the E-Rate funding plans (Crowley, 1999). Although delayed by the election year politics of 2000, the future of government intervention in educational technology remains unclear beyond the short term.

Yet, perhaps the most telling factor in the long-term effectiveness of this new agenda of lifelong learning is its reliance on mostly preexisting structures of education. Despite the high-profile positioning of community technology centers and 21st century community learning centers, the fact remains that the vast majority of community access to IT will be provided through centers housed in existing institutions such as schools, colleges, and libraries, thus merely repackaging, rather than overcoming, existing institutional barriers to participation in lifelong learning. Moreover, the majority of commissioned online content and learning resources will be supplied by existing and established educational providers and the training and up-skilling of staff dependent on the existing system of teacher education (Slowinski, 2000). Although this fashioning of the new system of lifelong learning around old structures will ensure an initial stability, it may not go far in overcoming many of the existing problems regarding participation in lifelong learning. There is considerable evidence to suggest that merely providing additional access to IT in existing educational sites will not necessarily overcome the traditional institutional, situational, and motivational barriers to learning that have prevented many adult individuals from choosing to learn there previously (Gorard et al., 1998b). Indeed, even providing education via the Internet does not in itself necessarily constitute a new form of education.

Although the Internet may seem to challenge traditional notions of power, it is only a microcosm of real-life social relations, reproducing and reinforcing hegemonic relations (Kitchin, 1998). For example, an official educational Web site may still provide a significant deterrent to some current nonparticipants in learning.

Despite all these caveats, the current policies and initiatives will undoubtedly have a significant effect on patterns of education in the United States. If nothing else, the raised political profile given to lifelong education from the last decade of policy making will provide an invaluable foundation for establishing a culture of educational inclusion in the United States. Nevertheless, to view the role of technology in educational provision as some sort of panacea to existing educational shortcomings is, at best, shortsighted and potentially damaging to the long-term effectiveness of such programs. Indeed, as Postman (1992) argued, to maintain a blind faith in a technical fix for education is to lose sight of wider societal barriers to learning: "Our most serious problems are not technical, nor do they arise from inadequate information. . . . Where education is impotent it does not happen because of inadequate information" (p. 119).

Yet technology will undoubtedly remain an attractive option to educators and policy makers alike. However, this article has argued for caution in proceeding with this trend. As Neill (1995) concluded, "the savage inequalities of the past will extend into the wired savagery of the future. There is neither empirical nor theoretical reason to believe this scenario will change for the better" (p. 184). From this perspective, educators and policy makers cannot afford to lose sight of fundamental issues of inequality and disempowerment that technology may not be capable of addressing.

NOTE

1. Although now being referred to in some countries as ICT or CIT, this paper refers to IT to maintain a sense of continuity. Here, IT is defined as encompassing multimedia in its broadest sense, acknowledging the rapid convergence of computers, telecommunications, and broadcasting technologies.

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