THE ROLE OF TELECENTERS IN
DEVELOPMENT COMMUNICATION AND THE DIGITAL DIVIDE

Everett M. Rogers and Pratibha Shukla

The purpose of the present essay is to describe a different strategy of development and social change than has been pursued in recent decades, informatization, which may hold great promise for certain nations. Informatization has potential for bringing about needed social change. Unfortunately, the informatization strategy often results in greater socioeconomic inequality in society due to differential access to computers. This digital divide may be overcome in the long range through public access provided by telecenters.

THE POTENTIAL OF INTERACTIVE TECHNOLOGIES

Advances in communication technologies, mainly centering around the Internet and the World Wide Web, make possible a radically different type of future society, particularly in the nations of Latin America, Africa, and Asia. This potential for communication and social change has only begun to be realized, however, for reasons discussed later in this essay, in certain nations and by selected segments of their populations.

The potential of the new interactive technologies is:

1. To connect disadvantaged people with societal decision-makers so that their voices may be heard in the agenda-setting process.
2. To empower people and communities to determine their own futures through developing self-efficacy and collective efficacy (Bandura, 1998).
3. To provide accurate information about social problems and their possible solutions.

Informatization is the process through which the new communication technologies are used as a means for furthering development as a nation becomes more and more an information society (Rogers, 2000; Singhal & Rogers, 2001). An *information society* is one in which information workers (whose main job responsibilities are to gather, process, and/or distribute information, or to produce information technologies) are more numerous than such occupational categories as farmers, industrial workers, or service workers. A nation may pursue an informatization strategy is various ways, such as by encouraging the rapid diffusion of the Internet, by creating technopolises (or technology cities, like Bangalore and Hyderabad in India), and/or by converting government services to become Web-based. Andhra Pradesh state in southern India has in the past several years pursued this informatization strategy for development with considerable success (Singhal & Rogers, 2001).

DEVELOPMENT

Development is a widely participatory process of social change in a society, intended to bring about both social and economic advancement, including greater equality, freedom, and other valued qualities, for the majority of the people through their gaining greater control over their environment. This later quality, control over the environment, is similar to *self-efficacy*, defined as the degree to which an individual believes he/she is able to control over his/her future (Bandura, 1998).

Scholarly study of development began in the post-World War II era as former European colonies in Asia, the Middle East, and Africa gained their independence. New national governments placed a high priority on economic growth and social development. International development agencies sought to help national governments to improve nutrition and health, promote family planning, encourage more widespread literacy, and to boost agricultural production. One key to achieving such development was to use radio and other mass media to convey the information and motivation needed for widespread behavior change (Papa and others, 2000). Thus as development communication was emphasized, particularly in the 1960s and 1970s, this communication function was mainly understood to mean providing mass media channels through which development messages could be conveyed to mass audiences.

Currently, the new communication technologies of the Internet are understood to represent a different kind of development communication tool that can contribute to higher levels of social and economic development.

DIFFERENTIAL RATES OF ADOPTION OF THE INTERNET

Interactive communication technologies like the Internet were originally developed in industrialized nations like the United States, and first spread rapidly in North America and Europe, starting around 1989. The rate of adoption of the Internet and the World Wide Web in these nations may represent the fastest diffusion of any innovation in the history of humankind. In about 1991, the rate of adoption of the Internet passed the "critical mass" (meaning that an adequate number of adopters had occurred for further diffusion to become self-sustaining). Thereafter, increasing millions of new users adopted the Internet each year.

The *digital divide* is the gap that exists between individuals or systems advantaged by the Internet and those individuals or systems relatively disadvantaged by the Internet (Rogers, 2001). The Internet was adopted by about 60 percent of the adults in the United States in 2000; the users are advantaged socioeconomically, racially, and in urban-rural residence (Cole and others, 2000). A digital divide also exists between the developing nations of Latin America, Africa, and Asia (except for Japan) versus the developed nations of North America and Western Europe.

The total number of Internet users was estimated at 429 million worldwide in mid-2001, and the rate of diffusion continues to grow rapidly, especially in Asia. North America has the largest number of Internet users, with 41 percent of the total; Europe has 27 percent, Asia 20 percent, and Latin America has 4 percent of total Internet users (Shukla & Rogers, 2001). African nations have only 1 percent of total Internet users. When the number of Internet users are calculated on the basis of users per thousand population, the digital divide becomes even more pronounced (Shukla & Rogers, 2001):

North America	479
Western Europe	218
Eastern Europe	33
Latin America	21
Asia	17
Middle East/Africa	7
Worldwide	52

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These very wide differences in Internet users per thousand population are presumably due (1) to a lack of economic resources, (2) a lack of central station electricity, telecommunications, and other infrastructure, and (3) government policies that may not actively encourage or promote Internet diffusion, perhaps out of concern that such interactive communication might corrupt the moral fabric of society through pornographic and other objectionable content (the Internet is a very decentralized system that is difficult to censor or control).

The digital divide bears certain similarities to previous conceptualizations of the knowledge gap hypothesis, defined as the process through which audience segments with higher socioeconomic status acquire knowledge at a relatively faster rate than do lower socioeconomic status audience segments, thus widening the knowledge gay between these segments (Tichenor and others, 1970). A review of 71 studies of the knowledge gap hypothesis from 1970 to 1994 by Viswanath and Flinnegan (1996) concluded that mass media communication often increases knowledge gaps, although in a few cases the disparity between knowledge haves versus have-nots contracts. Currently, knowledge gaps are being created by the Internet.

TELECENTERS

One strategy for bridging the digital divide within a nation, and between nations, is to encourage telecenters, which typically offer public access to computers, the Internet, and other communication technologies, provide training, and supply certain business services. Importantly, telecenters provide *public*, as opposed to *private*, access to the Internet, so that each individual or household does not need to own their own computer and telecommunications equipment. Understandably, telecenters are most likely to be established in locations where individual access to the Internet is unaffordable or unavailable. Telecenters are an important strategy for closing the digital divide in developing nations, although cyber cafes and other types of telecenters are similarly important in certain areas of developed nations like the United States. For example, 35 telecenters have been established in libraries, health clinics, community centers, schools, and other public sites in Taos County, New Mexico, a low-income, rural, and remote area (Buller and others, 2001). People are trained in computer and Internet use, and can access the Internet for health and other information at each of the 35 public access centers.

A telecenter may consist of a small room equipped with one or more computers and a long-distance telephone or wireless telephone. One or more individuals staff the typical telecenter, and charge a small fee per hour of use for the computer/Internet, fax, or long-distance telephone. A national ministry of telecommunications may provide this equipment at a discounted rate to the operator, who often earns enough income to support his/her family.

Or the telecommunications equipment may be privately owned. These micro-businesses are commonly called "cyber cafes" and may also sell coffee, tea, soft drinks, and snacks, along with Internet access. Such cyber cafes are today located everywhere in India (Singhal & Rogers, 2000), and are spreading rapidly in many other developing nations. The experience to date suggests that a considerable pent-up demand exists for Internet access among rural and urban poor. Telecenters are a rather recent development. One of the first cyber cafes is believed to be the Coffee Day Cyber Café, on Brigade Road in Bangalore, India. This café opened in 1995, and

has since expanded into a chain of cyber cafes in India. Today, cyber cafes are found in every nation in the world.

Lutz and others (2000) studied six telecenters (four libraries and two community centers) in East Austin, Texas, a low-income urban area. Many users of these public access centers were constrained by the 30-minute time limit imposed by the telecenter staff. Libraries are not physically designed to serve as telecenters, nor are library staff trained or oriented to facilitate public access to the Internet. Help desk services were not available in either the Austin libraries or the community centers. So the six telecenters of study in Austin left much to be desired in providing public access to the Internet. Future research is needed to determine the reality of Internet access provided by telecenters.

Some day in the future, perhaps within another generation in the United States, almost complete adoption of the Internet will be reached, and the present *access*-divide may disappear. Thereafter, we expect that a *learning*-divide or a *content*-divide may become more important. For example, a recent readability analysis of 40 health/medical Web sites found them to be written at a level requiring a college education for comprehension (Berland and others, 2001). Recent adopters of the Internet in the United States average about eight or nine years of formal education. Understandably, these audience individuals need Web sites that are written for comprehension by individuals with lower levels of formal education. Less-educated people in the United States also prefer a narrative, story-telling approach to conveying information, which is seldom provided by existing Web sites.

THE DIFFUSION OF TELECENTERS

One communication theory that helps us understand the rapid spread of telecenters and the Internet is the diffusion of innovations. *Diffusion* is the process through which an innovation spreads via communication channels over time among the members of a system (Rogers, 1995). An *innovation* is an idea perceived as new. The newness of an innovation means that it is likely to be viewed by most individuals as somewhat uncertain and potentially risky. Usually, a new idea spreads slowly at first, until a certain number of respected individuals have adopted, and then the rate of diffusion speeds up, until most individuals have adopted, after which the further rate of diffusion slows down. Thus the rate of diffusion over time approximates an S-shaped curve.

The rate of adoption of telecenters today is in the take-off portion of the S-curve, which means that the total number of telecenters is rapidly increasing, and that further diffusion is becoming almost self-sustaining. This situation augers well for the future spread of telecenters.

CONCLUSIONS

Any new communication technology that has important impacts will, at least in the short term, advantage certain individuals and systems and disadvantage others. At present, the differential adoption of the Internet has created a digital divide within nations, and between developed and developing countries. Provision of telecenters offers one strategy for bridging the digital divide, but only a relatively small portion of all non-users of the Internet currently have public access via telecenters. Further research is needed (1) to design and evaluate potential strategies for closing the digital divide, and (2) for exploring how informatization can aid the development process.

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