

The Digital Divide in Developing Countries: A Case for Distance Education

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ABSTRACT

Although distance education is catching up in almost all countries in the world, it is still little known and less studied in many of the developing countries. Given such a lack of coverage even in the Western educational literature, the possibilities of finding in-depth exchanges concerning distance education in developing countries are very limited.

This presentation presents the existing ‘digital gap’ in the world, and focuses on three important barriers to distance education or learning are: 1) the lack of resources 2) lack of infrastructures, and 3) lack of recurrent funding necessary to acquire or develop appropriate software and courseware on a continuous basis, and maintain, service and replace the equipment. Technologists and educators need to enter the developing world, study the market and then modify their wares according to local needs with the help of local industry and labor-force. This is one important way of building meaningful collaborations and partnerships between the developed and developing countries.

Keywords: Distance Education. Digital Divide. Developing Countries.

1. INTRODUCTION

What is awareness and how does it differ from knowledge? Simply stated, knowledge is what we know to be true within our own context and experience.. What we know, then is mired in the immediate, the local, or at best, the national and regional.

Global awareness involves a recognition and appreciation of the size, complexity, and diversity of the earth conceived as a single entity. It is literally a “world view”, and is opposite from the previous view. It enables us to perceive the vastness of the world, its dynamic complexity, and the diversity of its peoples and cultures. Awareness, much like mindfulness, is knowing that we don’t know, that there is a realm of knowing that exists outside our direct experience.

While preparing this paper I read an article titled “Tech Gaps Separates Nations: But Poor Countries Need Basics more than Computers” in the Houston Chronicle (June 18, 2004; p.10C). In this article many delegates from the weeklong U.N. Trade and Development Forum in San Paulo, Brazil were quoted. The President –elect of the group, Leonel Fernandez of the Dominican Republic said., “Even the academic literature on information technology suggests that it is only applicable to industrially developed countries,... and we have to change that.”

Juan Carlos Solines, Director of Ecuador’s digital government project told delegates to that forum that, “The name of the game is access, access, access.” Of course, we in the US

and in universities do not see that some countries, particularly in Africa are so far behind that providing them with computers doesn’t make sense.

This article along with my continuing research dealing with international human resource development, aroused my curiosity to see how much technologically with computers and distance education has really changed. The following were some of the data I traced.

The World Clock Monthly projections show that the World Population figure for June 01, 2004 is 6,371,699,268. That seemed to me to be a lot of people.

The following table shows the number of people online through out the world.

YEAR	NUMBER	% POP
1995	26 Million	.63
1996	37 Million	.88
1997	70 Million	1.71
1998	119 Million	3.17
1999	163.28 Million	3.9
2001	445 Million	7.62
2002	580.78	9.57

[Http://www.nua.ie/surveys/how_many_online/world.html](http://www.nua.ie/surveys/how_many_online/world.html)
Retrieved June 07,2004

The following table shows the breakdown of internet users by region and the population in millions online of that regions.

Region	1999	2002
Africa	1.72	6.31
Asia/Pacific	33.61	167.67
Canada/US	112.40	182.67
Europe	47.15	185.83
Latin America	5.29	32.99
Middle East	.88	5.12
Total Worldwide	201.05 Million	580.78 Million

The next table shows the increase in India of the population online and percentages of population:

India	Pop online	% of Pop
1997	80,000	.01
1998	500,000	.049
1999	8000,000	.08
2000	4.5 million	.45
2001	7 million	.67

According to surveys of the Computer Almanac Industry's ranking report the top 15 countries have accounted for 89percent of the global online population.

Other Issues. Some other data that I gathered over the Internet:

1. Some 48% of the people in India are illiterate
2. 70% of the population in sub-Saharan Africa are illiterate.
3. One out of two people in India cannot read or write
4. Seven out of 10 in Banladash cannot read or write
5. Eight out of 10 in Rwanda cannot read or write

Almost 80% of 600 million telephones in the world are in Europe, IS, Japan, and Australia.

Less than 10% of the computers are in Africa, Latin America, and Asia (excluding Japan).

In Japan, India, Nigeria, Pakistan much of the life of students is spent only in rote memorizing and their success is measured only by testing their ability to reproduce irrelevant facts blindly. Professors and teachers have become factory workers producing goods for which there is no utility.

These numbers change daily, but not much. From this data we can conclude that education must go to the people wherever they are and should be on a 24 hour basis.

2. EDUCATION AND DEVELOPMENT

Throughout human history, education, in one form or another, has served as the main instrument for disseminating various accomplishments of human civilization. Its crucial role in producing and transferring knowledge and skills in society is well recognized. Past research and experience have amply demonstrated how education, especially basic education contributes to economic growth, the reduction of poverty, and the growth of general awareness in various developing societies. In fact, education is considered "essential for civic order and citizenship and for sustained economic growth and the reduction of poverty" (World Bank, 1995: xi).

The Report of the Independent Commission for Population and Quality of Life (ICPQL) points out the vital roles education and knowledge play in the globalized world, and it clearly states that "education is one of the keys to social development, and virtually every aspect of the quality of life" (ICPQL, 1996: 170). The importance of education is recognized in many international circles and forums. In 1990 it was the topic of a historic international conference: The World Conference on Education for All, held in Jomtien, Thailand, under the joint sponsorship of the United Nations Development Program (UNDP), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF) and the World Bank.

Unfortunately, education in general is at a difficult crossroads in many developing countries, particularly the least developed and low-income countries. Their educational

institutions are facing a litany of problems - severe budgetary constraints, rapidly increasing enrollment demands, spiraling educational costs, drastic reduction in foreign aid and contributions from donor agencies, and the marginalization of the majority who are non-literate, unserved or underserved by the mainstream education system. This indicates that there is crisis in education (Coombs, 1965, 1985). Education as the foundation of development, growth and civic society seems to be shaking and slipping away for many in the developing world.

Many authors, writers and researchers have expressed grave concern about the appalling lack of attention to educational issues. Many believe that lack of educational and learning opportunities can have disastrous consequences. Botkin, Elmandjra, and Malitza (1979) warns:

Learning processes are lagging appallingly behind and are leaving both individuals and societies unprepared to meet the challenge posed by global issues. This failure of learning means that human preparedness remains underdeveloped on a global scale. Learning is in this sense far more than just another global problem: its failure represents, in a fundamental way, the issue of issues in that it limits our capacity to deal with every other issue in the global problematique. (p. 9)

Despite such warning, it is already fourteen years after the Jomtien conference, but no significant advances or gains have been achieved in the Education for All (EFA) arena. The full potential of education has not yet been realized in almost all countries, and in the developing nations the right to basic education still remains a dream for well over a billion adults and children (UNESCO, 1993). One reason for this lack of progress is that "education may be the only man-made system that has remained inert, and only marginally affected by the technological and information revolutions" (ICPQL, 1996: 171). This situation should not continue.

New Information and communications technologies (ICT) are creating dramatic shifts in societies throughout the world. The two-pronged pressure on the education sector is to develop capacity to meet economies' growing demands for workers with new skills and training, and support the continued expansion of knowledge (World Bank, 1995). In its in-depth review of the current educational scene, the World Bank (1995) clearly states:

Higher living standards, better health, increased productivity, improved well-being for women and their families, and good government all depend on widespread education. In an era of rapid technological change and international economic integration, an educated, adaptable work force enables countries to prosper. The reverse is also true: countries without such a labor force are liable to be left behind and shut out of this prosperity. Developing countries have come a long way in making education available to their people. But an even higher priority for education is needed if countries are to take advantage of the opportunities offered by a rapidly changing world economy.

Emphasis on distance (including telecommunications-based) education is in harmony with the recommendations of the World Conference on Education for All and the Copenhagen Declaration on Social Development which agreed (1995: 26: r): "to create a framework for action to recognize that the new information technologies and the new approaches to and use of technologies by people living in poverty can help in fulfilling

social development goals; and therefore to recognize the need to facilitate access to such technologies." The technological option such as this can be adopted to meet various challenges facing societies in the twenty-first century.

Many developing societies have undergone major changes throughout the last few decades. These changes, initiated by internal as well as external factors, have greatly affected the political, social and economic structures of these societies. Various problems such as poverty, ill health, unrestricted population growth, and unemployment have still continued, and the situation has turned more complex with the addition of new concerns and challenges. Distance education (DE) can serve as an important way to address serious and multiple challenges facing sustainable human development.

Gundani (1992) notes that distance education is the right alternative, since it increases access and also decreases the need for face-to-face contact with teachers. Moreover, it is cost-effective if planned, organized and implemented well. While the burden of ever-increasing public expenditure on education is a fact of life in many developing countries, traditional education (usually considered an agent of change and progress) has failed to meet the social and economic needs of the society (Coombs, 1968, 1985; Illich, 1973). The traditional educational method has, in fact, served to perpetuate the interests of an elite class at the cost of the education needs of the majority. This is "further complicated by the emergence of a new information elitism both among and within countries" (d'Orville, 1996: 484). Developing countries are threatened by domination, marginalization and even exclusion. Efforts must be made to check this trend by all possible means. The emergence of distance education provides an important way to address these concerns confronting the majority of mankind. One of the major objectives of distance education is to help widen access to education, to raise the quality of education by training and making resources available to the classrooms, and to bring new methods and approaches into the schools (Perraton, 1992)

Formal education field covers i) primary and secondary education, ii) in-service (including teacher) education, iii) tertiary education, and iv) education administration and management. This paper focuses on general developments in the area of primary and secondary education, and teacher education. Based on some of the developments and available studies in DE area, Perraton (1993) draws three models:

1. courses, for individual students working at home;
2. to use similar materials for groups of students in study centers, offering something like a school but at reduced costs;
3. using distance-teaching methods within conventional schools in order to raise their quality.
 - a) the use of more varied delivery options and approaches than is typically found in existing programs
 - b) the recognition that people learn in different ways and through various means and that those ways and means are neither the same for all people - nor constant across over

time, circumstances and types of learning efforts for the individual learner

c) the establishment of different paths connecting the learner with the sources of learning, recognizing different channels reinforce each other mutually

d) the complementarity of formal, non-formal and informal learning.

3. EFFECTIVENESS

Although distance education is catching up in almost all countries in the world, it is still little known and less studied. Educational literature shows that distance systems are usually ignored (Reddy, 1993), and it is surprising that distance education does not even merit "a paragraph in most volumes of educational philosophy, in guides to administrative practice or in analyses of didactic strategy" (Keegan, 1986: 4). Given such a lack of coverage even in the Western educational literature, the possibilities of finding in-depth exchanges concerning distance education in developing countries are very limited.

A bibliography compiled by Borge Holmberg and published in 1990 lists over 1,400 publications on distance education from the 1960s, 1970s, and 1980s. Not limited to works in English, this publication also contains a large number of works in German, French, Spanish, and Scandinavian languages. However, there is a severe lack of publications concerned with consistent research and evaluation of DE programs and activities. Its importance is now increasingly dawned upon many people "because of its usefulness and potential not only to provide greater access to education, but also its ability to make available an innovative and flexible system of education" (Reddy, 1993: 236).

Despite large variation in contextual factors, some believe that an understanding of the results of DE experiments, research and evaluation in Western societies can be helpful. A number of empirical research studies (Granholt, 1971; Childs, 1965) testify to the effectiveness of distance education in the cognitive domain generally and in the psychomotor domain as far as certain skills are concerned. There is evidence that distance education can be highly effective in the affective domain (Rogers, 1986), too. Experience shows that distance education can be effective in bringing about attitude change. This is demonstrated by studies of distance education programs in health and welfare work in Sweden and the United Kingdom (Rogers, 1986).

As Holmberg (1989) says, "While it is thus in the nature of distance education that it can serve individual learners in the study they do on their own, in the cognitive, affective and psychomotor domains, course developed can easily, and to great financial advantage, be used by great numbers of students. Distance education can be, and often is, a form of mass communication. This unity of individualization and mass communication may appear something of a paradox." This indicates that DE seems to have vast potential not only for independent study attractive to adults but also for mass education on a large scale.

4. BARRIERS

In fact, barriers to learning relate to both the method of teaching and a learner's condition (physical and mental). For

learners various physical and psychological barriers stand in their way. In addition, there are various structural factors influencing the educational process. This paper focuses on the structural barriers related to DE. The three important barriers to distance education or learning are: 1) the lack of resources needed for meaningful development and sustenance of technology-based learning, as Foks (1984, 1990) has described, 2) lack of infrastructures (which includes information and communication hardware systems) to support modern technologies in least developed and/or low-technology countries, and 3) lack of recurrent funding necessary to acquire or develop appropriate software and courseware on a continuous basis, and maintain, service and replace the equipment.

6. WHAT WE HAVE LEARNED

Distance education or learning costs less. Perraton (1987) argues that despite lack of data showing the achievements of distance education in terms of its internal efficiency and its external effectiveness, researchers have produced a number of case studies in higher education, using a standard format, that confirm that both developed and developing countries can produce graduates at one-third to two-thirds of the cost of doing so in a conventional institution. In most cases distance education system may have little chance of survival if its costs are higher than those of conventional education. Perraton (1992) cites two examples: a) schools television service in Côte d'Ivoire were closed down partly because their costs were proving too high, and b) the Radio Language Arts Programme in Kenya was closed when US Agency for International Development (USAID) funds were no longer available.

Learners' motivation and overcoming various physical and psychological barriers to their participation are both important. Learners must be able to see clear benefits from their participation in the program or activity. Mechanisms should be developed to overcome such barriers and assess learner needs by making use of the considerable expertise so far gained in the technicalities of DE. Learner needs assessment, among others, is necessary to motivate learners.

Appropriate media options should be given full consideration because all media are not appropriate in the interests of developing countries. Advances in technology have greatly increased the number of media options currently available (Hancock 1993). Also, technological developments driven primarily by market forces do not always run parallel to the interests of developing nations.

Sound organizational infrastructure is required to manage information flow and to provide support to the learner. Visser (1995) notes that distance education institution is only part of the larger educational system, and a clear linkage should be established between the two plus other components of the system.

In addition, as Visser (1995) says:

Good instructional design is paramount to the success of education offered at a distance... Careful planning, based on sound knowledge of who is going to learn what, by what means, in what kind circumstances, to what effect and with what purpose in mind, needs to be combined with effective ways to ensure, through formative evaluation based on feedback from the learner that intended purposes are met. (p. 39)

Attempts to develop cheaper versions of sophisticated technologies for use in impoverished environments (Hermann and O'Connell, 1993) are welcome. However, so long as the trial experiments are done with small groups of tertiary students in high technology countries, the innovations are likely to be inappropriate to the mass distance education needs in low technology countries. New approaches to DE should be tested through pilot studies conducted in the developing country environment itself. Is distance education, as some believe, an information society's response to education? The answer is positive, and results of new studies will certainly serve as a pointer towards this trend.

Meanwhile, as Kinyanjui (1995) says, "Developing countries cannot afford not to experiment with new media and technologies. By borrowing from the experiences of industrially-developed countries, developing countries will be able to tap the potential of communications technologies and apply them in modified forms to suit their needs and circumstances." He argues that despite certain barriers to technology-based learning, efforts must be somehow directed towards increasing resources needed for such development.

Wijkman (1996) notes that recent developments in science and technology so far have done relatively little in terms of preventing poverty and environmental degradation. Most of the Developments in information and communication technologies, sometimes referred to as 'solutions looking for a problem' are usually influenced by a technology-led approach (Vincent, 1995), and many of the technologies that are supply-driven (Wizkman, 1996) can undermine the potential of using information technology. This trend must be reversed in favor of technologies that are driven by development needs and can be useful in solving problems in developing societies.

Development of educational products needs to give up the "fallacy that all human beings, whatever their cultural base and local imperatives, 'learn' the same way, should learn the same things for the same purposes, using the same techniques and the same materials" (Koul, 1995). The supplier countries/institutions should, as Koul (1995) suggests, enter the developing world, study the market and then modify their wares according to local needs with the help of local industry and labor-force. This is one important way of building meaningful collaborations and partnerships between the developed and developing countries.

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