

## **Experts Roundtable**

### **University and Technology-for-Literacy/Basic Education Partnership in Developing Countries (UTLP)**

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#### **Roundtable Overview**

##### **ABSTRACT**

The University and Technology-for-Literacy/Basic Education Partnership in Developing Countries (UTLP) is a concept designed to be a catalyst for efforts to effectively and appropriately harness the benefits of information and communications technologies (ICTs) for the advancement of literacy and basic education in the world's poorest and least developed countries (LDCs). The main question underlying this concept is how institutions of higher education in developing countries could play a more active and substantive role in the national educational development of their respective countries through the use of the comparative advantage they have in trained know-how, teacher training, R & D structure, students, and ICT infrastructure. This paper presents the overview and rationale of the September 2001 UTLP Roundtable. It reviews and analyzes the three sectors under focus: (1) literacy, non-formal, and basic education, (2) higher education, and (3) ICTs in developing countries. The paper also considers the various relationships that may or may not exist between the above three sectors and briefly presents important aspects for a three-way alliance. Finally, the paper raises a number of questions relating to the problems posed by the UTLP partnerships.

##### **1. INTRODUCTION**

Worldwide technological and social changes bring serious challenges to existing educational structures as well as significant possibilities for reforms and innovations in education. Literacy, non-formal basic education (NFBE) programs belong to an area that has been continuously under-funded and under-researched, with relatively little professional development and a poor technological infrastructure. And, in many countries, the same can be said for basic education (BE). The University and Technology-for-Literacy/Basic Education Partnership in Developing Countries (UTLP) is designed to be a catalyst for efforts to effectively and appropriately harness the benefits of newer technologies for the advancement of literacy and basic education in the world's poorest and least developed countries.

In spite of growing public interest over the last few decades, problems of illiteracy and poor basic education have received relatively little attention from universities and institutions of

higher education (IHEs) in developing countries. These institutions have mostly kept to their traditional roles and functions, in most cases trying to struggle for their own survival in a current crisis that is characterized by loss of identity and direction, loss of relevance, and diminishing resources. Because of the economic uncertainty and political and social upheaval currently being experienced by developing countries worldwide, IHEs now have an opportunity to regain relevance and status by contributing to the solution of the literacy and non-formal education crisis. Their help in the areas of research, training, and distance education can be a boost to the field of literacy and NFBE and an important step towards the Dakar EFA goals.

## **1.1 ROUNDTABLE OBJECTIVES**

The educational system in most developing countries is currently faced with a ‘good news-bad news’ situation. The good news is that in terms of absolute progress, developing countries have made important steps towards responding to the Jomtien EFA objectives and achieving some social and human development over the past decade. The bad news is that in terms of relative progress, developing countries seem to have recently made additional steps backwards with the spread of digitalization and advanced Information and Communication Technologies (ITs or ICTs). The hope, of course, is that ICTs will have the potential to help developing countries achieve EFA goals, social and human development and even ‘leapfrog’ some barriers in the coming decades.

As the Roundtable title indicates, three elements define the focus of our discussions. They are (a) literacy and basic education in the poor and less developed countries (LDCs) of the world, (b) higher education (including universities and institutions of higher education or IHEs) in the same countries, and (c) educational technology, covering a wide range of technologies. A review of each of the above areas of interest will help set the Roundtable debate against a background of crisis, change, and the challenges for human capital development in the rapidly changing societies and economies of the developing world.

It is important to start by clarifying the conceptual framework of literacy, non-formal and basic education. All too often, ‘basic education’ has been taken by policymakers and some international donor agencies to mean only formal primary schooling. UTLP will use a broader definition of ‘basic education,’ which includes literacy and non-formal learning activities for out-of-school youth and adults, as well as formal schooling—all part of the notion of universal education or Education for All (EFA). The bias here is towards children, youth and adults who are the least advantaged, whether they attend school, dropped out, or never had a chance to go to school.

## **2. REVIEW OF KEY SECTORS**

### **2.1 LITERACY AND BASIC EDUCATION IN DEVELOPING COUNTRIES**

Although EFA 2000 assessment figures show that the global adult literacy rate has risen to 85% for men and 74% for women, the rates of adult illiteracy for populations 15 years of age and older are 46.3% for South Asia and 39.39% for Sub-Saharan Africa (World Bank, 1999). There are about 900 million illiterates in the world today. It is notable that the vast majority of

that quarter of the world's population is located in the poorest half of the world. Moreover, one out of four adults in the developing world are unable to read or write, most of them are women, and a large number are in remote and poor rural regions. With population growth, the absolute number of illiterates in developing countries may have modestly declined since Jomtien (if one believes such statistics; see Wagner, 2000). This situation is even more serious if one includes the rapidly growing numbers of low literates and school dropouts who are the victims of the poor quality primary schooling in the poorest developing countries.

Most policymakers and education specialists know that enrolling children in schools is not enough to solve the problem of illiteracy. The EFA 2000 Dakar meeting confirmed that the majority of developing countries have made important progress with increased net enrollment rates in excess of 80% in formal schooling. But the general agreement in Dakar was also that increased enrollment was not enough to take care of the growing education crisis. Keeping children in schools has become the major challenge, and each year more than tens of millions of primary school-aged children are added to millions of other out-of-school children, youth, and young adults. In many countries, these uneducated and often unemployed populations represent a serious threat to the political stability and economic development of their societies.

Along the same lines, Wagner (2000, p. 14) notes that if the newer standards of the industrialized (OECD) countries were used to measure literacy, "the number of adult illiterates in developing countries would likely go up by at least two or three fold." Because of the changing standards and definitions of literacy according to diverse world contexts and because of the more demanding basic skills needed to function effectively in the workforce, many literacy specialists warn against the growing gap that exists between the industrialized countries and the LDCs (Wagner, 2000). This "literacy divide," which affects disadvantaged individuals and those individuals in society who are most likely to be poor (girls, ethnic minorities, orphans, and people living in rural areas), requires an urgent solution.

During the 1990s, views on literacy, low literacy, and illiteracy have changed dramatically. Literacy is now broadly viewed as a product of educational, social, and economic factors that have become a chronic feature of the global educational landscape. It is even recognized that low literacy and poor levels of BE are more prevalent today in both developing and developed countries than has been assumed. Literacy problems, most specialists now realize, are long-term problems that need to be explored, studied, and understood (Wagner, 1998, 2000).

Critics of literacy work have often claimed that the field suffers from poor efficiency with high dropout rates and low skills retention so that sustainable learning outcomes produced in programs where literacy and NFBE are used would not warrant the cost incurred in producing them. Yet, the truth is that most governmental and non-governmental (NGO) agencies have very limited resources to undertake the evaluation studies needed. More serious research is needed to give literacy work an acceptable level of credibility based on a better understanding of the nature of literacy skills and their impact on society and on other non-educational sectors of development such as fertility, nutrition, mother's health, infant mortality, HIV-AIDS, and agricultural and worker productivity, or even political attitudes, civics, and democratic values. Literacy work is in great need of a solid knowledge base in order to build its expertise, improve

the documentation of its programs, and raise the level of its accountability, which is central to its visibility and the success of its future programs.

The seemingly poor results of adult literacy efforts in the last 40 years have led many governments and international donor agencies to hesitate in investing in literacy and NFBE. The results also led to the appropriation of adult literacy and NFBE by institutions outside the formal world of education. This trend placed an important emphasis on functional and action-oriented field approaches and on the use of principles of practical relevancy with concrete development gains, which has exacerbated the barrier between the formal and non-formal aspects of basic education, helping to further separate literacy concerns and work from the academic world.

An important difference between formal and non-formal education is that in the formal system, all children are expected to go to school, and literacy, which is not immediately linked to practical needs, is an expected outcome for all. Literacy work, on the other hand, have constantly been put to the test of concrete accountability (“did the person get a job, become empowered, etc.”) in order to justify its very existence. The literacy field also has to respond to customer satisfaction issues in order to increase customer motivation and demand and guarantee higher levels of program sustainability. Many donor agencies have been too reluctant in their support of programs where it is difficult to know which skills are learned, which ones are retained, by how many learners, how long, and for which concrete uses. Research and evaluation studies of literacy programs need expert staff and institutional support to be able to address the above questions. They also need the knowledge base of different disciplines for this highly specialized cross-sectoral work. This required type of research is urgently needed in order to serve as a foundation for the accountability that will bring the fiscal support of government and international donors’ agencies to literacy fieldwork in developing countries.

In spite of regained interest, literacy and basic education work is still in need of human and fiscal resources in order to increase its capacity to deal with the overwhelmingly large numbers of illiterates and low-literates resulting from galloping growth rates and the worsening conditions of formal education structures. Recent reports (e.g. Wagner, 2000a) show that the efforts of literacy field workers in developing countries has been hampered by the following weaknesses: (a) insufficient numbers and low professionalism of literacy /basic education teachers, instructors, and facilitators; (b) paucity of relevant quality educational materials for literacy, numeracy, and other life skills; and (c) disparity, when it occurs, between the language of instruction in literacy/BE programs and formal schooling. These remain three major challenges in literacy and basic education.

### **2.1.1 FUTURE ACTION IN LITERACY AND BASIC EDUCATION**

Reflecting the global concern over growing poverty in the world, the worsening state of developing economies, and the resulting educational crisis mostly in the LDCs, the 2000 EFA Dakar Plan of Action provides an answer by asserting the crucial role and contribution of literacy and non-formal adult basic education to the human and social development of LDCs. Nowhere is the advocacy stronger than in the latest World Bank publication, *Poverty Reduction Strategy Paper: A Sourcebook* (in press), where the chapter on education (see excerpt in box) highlights a

serious shift in World Bank policy on and attitude towards the crucial role of basic education in education reform and poverty reduction strategies in poor countries with high illiteracy rates.

“While the universalization of primary education for children eventually eradicates adult illiteracy, countries with high illiteracy cannot afford to wait a generation for the impact on incomes and poverty. Literacy and other basic skills imparted to adults and out-of-school youths through non-formal programs not only directly improve family income generation, but also have strong positive impacts on family health status, children’s educational attainment, and sustainable management of local natural resources (pages 2-3)... Effective adult basic education programs contribute directly and powerfully to poverty reduction. By definition, they target the poor, especially women and girls. They deliver crucial basic literacy and numeracy skills that equip disadvantaged individuals to improve their livelihoods and quality of life. Adult basic education also has strong complementarities with primary education, not only by giving a second chance to those who have been missed by primary schooling, but also because parents who take part in adult basic education become more effectively supportive of primary education for their children. Responding to demand for adult basic education in communities where many parents are illiterate has been shown to improve the conditions for community involvement in formal schools.” (Pages 40-41)

World Bank, *Poverty Reduction Strategy Paper: A Sourcebook*  
(In press)

The EFA 2000 Dakar Framework of Action (UNESCO, 2000, Article IV, Point 10, Paragraphs 71-74) points to the following top priorities in its recommendations concerning the future of literacy and NFBE: (a) the need to focus on teacher training and improving professional development and the building of human resources capacity and (b) the need to use advanced technologies, and specifically ICTs, to face the numerical challenge (large number of adult illiterates), time constraints, and political pressure. The EFA Framework, along with most development agencies, strongly recommends the building of partnerships between the government and civil society, as well as ways to maximize cooperation between local and central governments, national and international voluntary organizations, community organizations, and the private sector (Lauglo, 2001; Maamouri, 2001).

## **2.2 HIGHER EDUCATION IN DEVELOPING COUNTRIES**

Institutions of higher education (IHEs) in developing countries have mostly kept to their traditional functions and objectives, and the ‘ivory tower’ idea that they should only deal with theoretical knowledge, show interest to the formulation of theory and research, and value knowledge ownership and preservation. These traditional roles have restrained these IHEs to a focus on the process of knowledge creation and transfer within a culture of transmission (UNESCO-BREDA, 1994).

Universities in the developing world, following the Western model of higher education, were created at the end of the last century with the primary goal of training young people for civil service. They were structured along the classical subdivisions of learning into departments of philosophy, literature, history, geography, anthropology, and other such departments in faculties of arts, science, law, economics, agriculture, or medicine (Hountondji, 1998).

Because of the low relevance of their content base, lack of up-to-date resources, limited choice of subjects and programs, lack of flexibility of structure and management, and mostly, the decreasing overall quality of the knowledge they provide, universities in the developing world are experiencing a loss of identity and direction (UNESCO-BREDA, 1994). The consequence of the increasing gap between curricula and amount of knowledge and know-how required for the new job market is that IHEs have ceased to prepare youth for effective employment and active professional life. For instance, education specialists and many other people as well believe that enrolling in a university in Africa is either 'putting oneself on the sidelines' or preparing oneself to joining the growing numbers of unemployed graduates (Hountondji, 1998). This lack of mission focus of IHEs has led to the alienation and disrespect of governments and local populations for the role of higher education institutions, which are seen as irrelevant and useless (Hountondji, 1998).

### **2.2.1 HIGHER EDUCATION, FORMAL AND NON-FORMAL BASIC EDUCATION**

Great policy and fiscal attention has been given to formal primary education over the past 3-4 decades, at the expense of higher education. Further, the rising costs of higher education in developing countries, partly resulting from the negative impact of structural readjustment, have led to a situation where universities in poor developing countries have had to face economic uncertainty and are chronically underfunded. According to some higher education specialists, the renewed EFA focus on basic education for all could mean increased difficulties for an already struggling higher education structure and further serious damage to tertiary education (Brock-Utne, 1999; King, 1995).

The field of literacy and NFBE has received relatively little attention from university-based education researchers in the developing countries. The research concerns of IHEs in developing countries appear to be mostly academic with a sharp divide between theory and practice that comes at the expense of practical and vocational issues. In reviewing the vast field of educational research, one is struck by the disparity that exists between the traditional areas of education, such as child development, pre-schooling, and school-age learning and teaching, that enjoy the support of both specialists and donor institutions, and the field of literacy and NFBE, which receives little attention. Moreover, little of the research on reading, for example, is relevant to Third World literacy programs. According to Wagner (1987, p. 13), "one prime reason for this paradox...is that researchers have been motivated more by theoretically derived questions than by research questions based on policy needs."

Whereas literacy work has suffered from the marginal nature of their clientele and lack of underlying institutional backing, formal education (especially at the secondary level) appears to have taken more advantage of their formal link with universities, their researchers, and overall education infrastructure. Moreover, as seen earlier, the existing divide between formal and non-formal basic education has separated the academic world from literacy and NFBE and prevented serious funding for much-needed R&D. Relatively little attention has been given by IHEs in developing countries to research and evaluation of activities that address literacy/NFBE; more has been provided to BE, but still at insufficient levels. Wagner (1995) estimates that the large majority of all expended resources, both fiscal and human, coming from universities and IHEs to

general educational research were focused on children in schools (primary and secondary schools combined) while only 5% at most, went to the out-of-school populations.

### **2.2.2 HIGHER EDUCATION AND TEACHER EDUCATION**

In many developing countries, more children are at school and the number of those graduating from secondary schools is increasing. In spite of bad results and the growing number of drop-outs in most developing countries, numerous universities and IHEs are experiencing a dramatic expansion of the numbers of students who would like to enroll in them every year, what Saint (2000, p. 2) calls ‘the political time bomb’ of tertiary enrollments. As an example of the numerical challenge and shift to mass higher education, only 6088 students were admitted to IHEs in Ghana in the academic year 1996-97 out of 22,477 applicants—about 25%—while in the same year less than 20% of the 475,923 applicants were admitted in the Nigerian higher education structure. The enrollment situation of IHEs in South Asia is even more catastrophic and the flow of students has become almost impossible to contain (Muskin, 1992).

As a result, the teaching profession has expanded dramatically over the past quarter century (60 million teachers worldwide) and has become the focus of critical attention of governments and education specialists on grounds of quantity and quality. Perraton and Potashnik (1997) state that (a) teacher education has not delivered the numbers needed mostly in some middle and low-income countries; (b) the most severe shortages are in south Asia and in Africa where there are not enough trained teachers at primary and secondary levels; (c) girls’ education in some countries is hampered by a shortage of women teachers; (d) research about the effectiveness of teacher education is mixed and there is little evidence about which approaches work best in training teachers to undertake their various educational roles; (e) there is a lack of knowledge about matching the curriculum of teacher education with the background of the targeted students; (f) the teacher education curriculum is too narrow; (g) teacher education is costly—as much as 35 times the annual cost per student of a general secondary education according to a study by Lockheed and Verspoor (1991, pp. 95-96); and (h) there is a psychological distance and open hostility between the “colleges that teach teachers and the schools where they go to work.”

The low production rate of conventional teachers colleges in developing countries has exacerbated the gravity of the unacceptable teacher/student ratios, mostly affecting the quality and learning outcomes of primary schooling, literacy, and adult basic education. Taking Africa as an example, a UNESCO statistic shows that in 1998 Africa had only 4.5 million teachers—mostly in formal primary schools—which is about half the number needed for successful universal education (Fontaine, 1999). Furthermore, AIDS has been taking a heavy toll on the teaching profession in the poorest parts of the developing world. The overall effect of HIV-AIDS on education in sub-Saharan Africa and South Asia is devastating. Everyday a teacher dies from AIDS in Ivory Coast and in many other countries in Sub-Saharan Africa or South Asia.

Until recently, teacher training for literacy and adult non-formal basic education has rarely been included in the curricula of most Third World universities. IHEs in developing countries usually relinquish the training of primary school teachers to teacher training colleges

created for that purpose, while the training of literacy and NFBE instructors and community development workers seems to be either totally marginalized or non-existent in most academic institutions (Maamouri, 1994). Community-based volunteerism and the efforts of young and inexperienced primary and secondary school leavers have made up a significant share of the teaching corps of literacy and NFBE in most developing countries. A report from the Geneva 1990 UNESCO Roundtable on “Literacy and the Role of the University” pointed out that in most parts of the world, in both developing and developed countries, universities have not, in general, assumed a significant role in the promotion of literacy and adult basic education (see also, Wagner, 1998).

Since it is highly unlikely that conventional teacher training approaches can meet the growing needs of both formal education and literacy/NFBE effectively and in a timely way, many specialists agree that only distance education presents the potential of realistic opportunities to do so. Distance education, as discussed below, provides considerable potential for increasing numbers and lowering cost.

### **2.2.3 TEACHER EDUCATION AND DISTANCE EDUCATION**

A wide range of technologies have been used in developing countries to provide training to inexperienced teachers in pre-service and in-service teacher training courses in all fields of education. One should make a useful distinction between the different applications of technologies that have been used to raise quality in formal education and those that have been used for the upgrading of literacy teachers and extension workers. Though print and correspondence courses have by far prevailed, one is struck by the popularity of distance education delivery approaches, which seem to have dominated both higher education and literacy in the past decade or so.

Two models of distance education have been much in use up to the present: (a) the ‘Broadcast Model,’ which is the most well-known and most broadly used mix of technologies, based on the use in direct teaching of radio and television broadcast usually in combination with print; and (b) the ‘Open Schools Model,’ which is based on the use of print, radio, and face-to-face meetings in formal settings. The latter model has been mainly used for teacher education, and to offer an out-of-school alternative to junior secondary education. Statistics from Asia are impressive with hundreds of thousands of trainees following distance education courses in the various open universities of China, India, Indonesia, Sri Lanka, Singapore, Bangladesh, and South Korea. These distance open universities have become the main vehicles for addressing the education, training, and human resource development needs of Asian nations. China offers the example of an extensive system of broadcast/TV-based distance education; its central radio and TV University network (CCRTV) has been successfully used to provide in-service training for millions of teachers. Moreover, for more than 25 years, radio—Interactive Radio Instruction (IRI)—has been used successfully in diverse educational contexts (Bosch, 1997; Dock & Helwig, 1999). The best teacher education, however, remains that which uses a variety of approaches, which are all integrated now, in the ICT Model, with the advent of digitalization and the convergence of radio, television, and the computer.

Distance education (DE) has gained popularity among educational economists and policymakers because of the cost-effectiveness of its prevailing modes of delivery. Numerous success stories indicate that the outcomes and costs of distance education are highly competitive in the area of teacher training. For instance, Nigeria set up a National Teachers Institute in 1976 that specialized in distance education for the training of unqualified teachers. In 1994, this institute produced 21,000 teaching certificate holders, equivalent to the production of all 58 conventional teachers' colleges. Ten years after its independence, Tanzania needed 40,000 teachers to move towards its EFA goals. All its training colleges were only producing a total of 5,000 new teachers a year. By recruiting and training secondary school leavers, partly through distance education over a span of three years, 38,000 completed the course and passed their examinations. In South Africa, nearly 130,000 teachers were studying at a distance.

Further, it is important to note that though cost effectiveness evidence seems to be available, very little research exists relating to a comparative analysis of the relative performances of teachers trained via distance education and those trained with conventional approaches. This is an area in which more research is needed (Perraton, 2000).

Finally, a note of caution—Ruth and Min (2001) suggest that distance learning is perhaps the most significant method for accomplishing “a miraculous, leapfrogging transformation” in developing countries. However, they advocate a “careful migration up the technology curve (because) the example of virtual universities trying to succeed in Africa in spite of the severely limited Internet technology infrastructure is a reminder that the predecessor distance learning technologies need to be mastered and ramped up before attempting to leap to higher technology levels” (Ruth & Min, 2001, p. 38).

#### **2.2.4 FUTURE ACTION IN HIGHER EDUCATION IN LDCS**

Five important factors summarize the higher education crisis in developing countries: (a) an inability to accommodate the volume and variety of student demand; (b) education that is too costly and not sufficiently relevant to the labor market; (c) teaching methods that are too inflexible to accommodate a diverse student body; (d) educational quality that is not assured; and (e) the university sense of academic community that is being eroded (Daniel, 1996, p. 11). How can IHEs increase their low education enrollments, prepare themselves for the demands of the 21<sup>st</sup> century, and accomplish these goals with limited resources without sacrificing educational quality and bringing further damage to their already suffering credibility?

Saint believes that it is highly unlikely that developing countries will be able to expand higher education access only by using the conventional teacher education model. Speaking specifically about Africa, Saint adds, “...distance learning techniques augmented by a judicious use of new information and communication technologies, are a viable option for African governments and societies that wish to expand higher education enrollments in the decade ahead. Distance learning programs are not by themselves the solution to this problem. However, they can make a much larger contribution to meeting this challenge than they have to date” (Saint, 2000, p. 2).

In the same study, Saint cautions against two important attitudinal barriers. The first one concerns institutional resistance to change coming from established procedures and the staff responsible for implementing them. The second comes from the belief that educational quality will not be maintained and time-tested traditional methods are better and more trustworthy. Unfortunately, this belief is shared by many people in developing countries, who disregard distance education and non-formal venues of teacher training as a second rate training. This bias also applies to the various contributions of DE in education as DE is looked down upon as a system that is geared to providing a second-chance education to those who dropped out or who were forced out of school for economic or other constraints (Murphy & Zhiri, 1992).

Four major recommendations from various reports on higher education, including the provisional text of the Declaration of the 1998 World Conference on Higher Education for the Twenty-First Century, seem to be of special relevance. These recommendations are (a) increasing mass access to updated knowledge and learning and the provision of relevant know-how with flexible entry and exit modes; (b) improving training and capacity-building and open and innovative community service functions; (c) creating multiple partnerships, stakeholder consultation, and accountability; and (d) making a substantial investment in technology and ICTs (NORRAG News, 23, 61-69).

Finally, after exploring the current crisis of higher education in developing countries, the World Bank Task Force on Higher Education and Society (2000) stated that higher education is “the modern world’s basic education” and no longer a luxury because it is essential for survival. The Task Force also stated that “Distance learning is an increasingly important part of the higher education system, with its ability to reach students in remote areas and address the higher education needs of adults” (p. 49).

### **2.3 ICTS IN EDUCATION: OBSTACLES AND OPPORTUNITIES**

Technology is only a tool and educational choices have to be made on the basis of educational objectives and affordability before decisions on the appropriate technologies can be made. No technology can fix a bad educational policy and practice. Unless technologies are integrated as part of a profound shift in the education process from teaching to learning and from supervision to facilitation of learning, they are going to remain a marginal and costly add-on (Haddad, 1999). This belief that technology is an “add-on” encourages the thinking that technology tries to bring about more efficiency, equity, and cost-effectiveness without helping towards the realization of the more important systemic changes leading to structural thinking and the re-engineering of the entire education system.

The disappointing reality remains that not enough technology is yet incorporated into the field of literacy and basic education, due to a number of significant barriers. One important barrier relates to cost and risky decision-making choice within tightly constrained budgets. Another relates to the issue of equity and the problem of who is benefiting from the vast opportunities that the new technologies provide and who is left out. This concern is balanced by the daily expansion of the information superhighway as a matter of public policy in most developing countries. However, the question remains as to how to provide access for the poorest individuals who have the most to gain from the expanding potential of cyberspace. A last

important barrier relates to the often-neglected area of staff expertise and training. This question reveals gender and age-related disparities in technology use, sophistication, and motivation in most developing countries. It also shows the existence of a high turnover among service-providing staff, which is a serious problem that should be included in the early stages of technology planning and implementation.

### **2.3.1 THE DIGITAL DIVIDE AND BASIC EDUCATION**

There is an increasing awareness of the important role and place of computers in our global society. Policymakers and government administrators, even in the LDCs, are more and more aware of the potential of ICTs and of their impact on individual lives, emerging societies, and world economy (see box below). Computing and communications play a central role in the emerging information-based global economy and in the changing job-market. Today, computer-related occupations and knowledge of computer technology skills (technological literacy or e-literacy) have gained increasing importance for the changing workplace and give a competitive edge to individuals and countries alike. The steadily declining production costs of computers, the improved efficiency of their data storage capacities, and the decreasing cost and improved quality of software are enabling more and more people to access computer and telecommunications technology at work, in schools, and at home.

[In Rovieng] This dusty farming village deep in Cambodia's northern hinterland has been cocooned from even the weakest winds of development by mountains, impenetrable jungles and the brutal Khmer Rouge which kept outsiders away by sprinkling land mines in the countryside... Like countless other Cambodian villages it has no telephones or electricity. Paved roads and mail deliveries are alien concepts. Most people in this hamlet of 128 families eke out a living as subsistence farmers, making less than \$40 a year.

But lately the villagers have been doing some unusual things. School children ogle pictures of Thai movie stars, even though they have never seen a movie. They make friends with children in other cities without leaving town. Women weave scarves that are sold in far-off countries. The changes are the result of a couple of desktop computers, a set of solar panels and a satellite dish that have connected the village to something called the Internet. "I don't really know what the Internet is, or how it works," says the village chief, Mit Mien. "But it is changing our lives."

From *Guardian Weekly*, June 14-20, 2001, page 22.

The effective use of ICTs still poses major challenges to developing countries, such as low accessibility, low connectivity, lack of maintenance training, high cost of physical and human infrastructure, and disproportionately low budget allocations resulting from very limited budgets and sometimes poor public reception. Many international education policymakers and specialists believe that significant cost reductions in communication technologies over the past 10 years, are not going to make ICTs more affordable any time soon for wide-spread use in LDCs. Nonetheless, in spite of significant obstacles, a growing number of developing countries have been seeking resources to introduce ICTs into their education systems. In the few countries

where this happened, it was only on a smaller scale and amidst a critical debate about the magnitude of the investments involved in buying and maintaining computers and their software. Further questioned is the relevancy of the expense when many of the LDC schools in the most remote rural areas lack basic shelter, basic books and literacy materials, electricity, and sometimes, even running water.

### **2.3.2 ICT ACCESSIBILITY AND CONNECTIVITY**

In an article on Cambodia (see box above), Chandrasekaran considers the Internet and its potential to revolutionize local economies and lifestyles across the developing world. The article questions whether governments, international lending institutions or donor agencies and aid organizations should spend their limited budgets on ICTs in developing countries where less than 0.1% of the people have access while residents of developed nations account for more than 85% of Internet users.

More recently, governments and policymakers of many developing countries seem to have bypassed the debate about accessibility, connectivity, and the high costs of ICTs, giving rise to a surprising change of vision and rhetoric, the intense development of pilot ICT projects. Developing countries seem to be more than ever before aware of the importance and inevitability of technology as a crucial factor in the process of development (Chung, 1999).

The growing presence of ICTs in the developing world is not uniform—glaring disparities are appearing between those with, and without, access to ICTs. This widening gap between the haves and the have-nots—sometimes referred to as the “information-rich” and the “information-poor”—has been popularized in the global media as the “Digital Divide” (OECD, 2000). Many experts have commented on the rapid growth of the digital divide, which is affecting the poor and disadvantaged peoples of the world in both industrialized and developing countries (Wagner, 2000). The problem of access is important; for example, South Asia is home to over 20% of the world’s population but had less than 1% of the world’s Internet users. Another example may be seen in Thailand, which has more cell phones today than all of Africa put together. Further, it would take Ivory Coast and Bhutan until 2050 to achieve the teledensity that Germany and Singapore have today (teledensity is measured in units of 1 telephone per 100 people) (Ruth & Min, 2001).

Connectivity is also presented as another serious obstacle. Poor connections and the high costs of Internet connectivity in Sub-Saharan Africa appear as major problems in the sustainability of ICTs in the LDCs. The use of radio is favored as a cheaper technology and because it is already used by a high percentage of people living in the poorest regions of the planet. In the latest survey on connectivity, Africa has 0.7% of the world’s Internet-users. Many of the poorest countries in South Asia show similar figures. Central and South America combined have less than 5% of the world’s total (Ruth & Min, 2001, p. 37). However, this situation is changing almost daily with increasing teledensity resulting from the startling spread of cell telephones in the most remote rural regions of the South. Another model for providing public access, which is also growing around the world, is the use of telecenters, cybercafés, and community information/learning centers (CIC or CLC). Yet, even if teleconnectivity is greatly

improved, poor people will have no significant access to the global information resources without basic literacy and basic computer (e-literacy) skills (Wagner, 2000b).

Research by Potashnik and Adkins suggests that affordability is a relative concept, not an absolute one. They assert that “[a] main tenet of this study is that the introduction of information and communications technology in education in developing countries should not wait until a country has reached some predetermined state of economic or educational development. Even in countries which do not believe in the cost effectiveness of information technology as a tool for mass education, it is important that they begin acquiring experience using this technology for educational purposes” (1996, p. 2).

### **2.3.3 ICTS AND INDIVIDUAL LEARNING**

ICTs and education—when considered together—are concerned with the transmission of information, knowledge, and skills to individual learners. Many educators believe that the main reason for the failure of educational systems in formal and non-formal settings alike, is that the individual needs of each student to sustain a successful learning process are ignored in traditional classroom practice (Osin, 1998). The 1996 Delors report, *Learning: The Treasure Within*, has placed an important emphasis on ‘learning’ rather than on ‘education.’ It has thus opened learning to children, youth, and adults and has placed a second emphasis on the continuity of learning through the lifespan. This major conceptual development, which applies to both higher education and literacy/basic education, is of considerable importance for the Roundtable’s discussions. Lifelong learning is widely recognized today as providing the broad framework for all future educational policies.

In spite of the relative lack of research-based evidence to support the positive effects of ICTs, a recent review (Mumtaz, 2000), based on a critique of more than 100 research studies on evidence of learning and the learning potential of educational ICT software, found evidence that (a) using the Internet facilitates communication and develops skills of searching, interpreting and organizing information often defined as ‘network literacy’ (communication through e-mail improves students’ writing skills as they take more care in grammar, spelling, punctuation, and conveying meaning to a peer audience); (b) ICTs enable students with reading difficulties to find different ways into the curriculum, and raise the status of visual and aural literacies to the level of literacy acquisition through text; (c) ICTs make the invisible part of concrete experimentations visible through dynamic images and animation aid, which provides a better understanding of abstract concepts and enables visualization of processes that are difficult to be seen in real life; (d) ICTs allow independent learning at an individual pace, facilitate repetition and improve “pupil contact” and teacher/pupil interaction, bring about a differentiation that provides enrichment, extension, support, and motivation especially for weaker learners; (e) ICTs provide motivation and variety, generate enthusiasm, interest and involvement, maintain attention and enjoyment; and (f) ICTs enhance thinking skills, problem-solving strategies, and challenging tasks and help create a responsive environment that enhances the students’ sense of learning competence.

Advances in ICTs are transforming the education world and offering a combination of benefits to the learning environment—both teaching and learning—via a new and powerful ICT-based model of distance education. This model improves cost-effectiveness and offers a real

alternative to conventional education. Computers provide for the first time a key ingredient that was lacking in previous technological tools—individualized interactivity. Most previous tools from blackboard to television were presentation tools only. Being an important gateway to external information, ICTs can not only present information with all the audio-visual possibilities, but they can also receive information from the user. Moreover, they can adapt the presentation to the user's needs and be a catalyst for a constructive teacher-user dialog beyond the walls of a class or school (Osin, 1998). It is for this reason, that it is increasingly recognized now that the ability to use ICTs in all sectors of education is not the “icing on the cake” of educational development, but an essential ingredient of the cake, as an educational technology expert so aptly put it.

Recent technological developments and ICTs offer important benefits to the learner: (a) through the Internet and the World Wide Web, new and important sources of information and knowledge, which enhance the opportunities teachers and students have for self development while enriching the classroom environment; (b) through e-mail and the Internet-related connection mechanisms, greater feedback, which reduces the isolation of the teacher and any time delay associated with more conventional distance education delivery; (c) through enhanced cable, wireless and satellite systems, faster software development, video conferencing, online interactive learning, and live interaction in distance education programs, both teaching and learning are enriched and telecommunications costs are made cheaper. The combination of ICT benefits can be made available through community access strategies and schemes to lower income people in remote rural communities worldwide.

Finally, since students who dropped out of school often end up in NFBE and literacy programs with the frustration of a negative educational experience in their past, a potentially important benefit of ICT use is that learning may be better viewed as an interactive, informal environment that might be better enjoyed. This is an hypothesis that has yet to be confirmed as broadly generalizable, however.

### **2.3.4 ICTS AND BASIC EDUCATION**

Over the past 20 years, ICTs have modestly made their way into the education arena, where they are now fast becoming an essential tool for communication, information, work, and entertainment (Alvarez et al., 1998; Jurich, 1999; Osin, 1998; Potashnik, 1996). The growing use of computers to support teaching and link schools has not eclipsed broadcasting and both television and radio continue to be used in schools and in non-formal education in community-based educational programs and projects for adult basic education. Examples of ICT-based programs are IDRC's *ACACIA*, *SHOMA* in RSA, *WorldLinks*, Chile's *Projecto Enlaces*, and the World Bank African Virtual University (AVU) Project.

Advanced technologies can provide support to teachers through effective and consistent access to relevant information, knowledge, resources, and sufficient opportunities for broader professional development in both content areas and pedagogy. Teachers can have access today, to very exciting educational software, which provides support by enhancing content presentation and combining quality with diverse multimedia applications such as digital video, computer-assisted design, desktop publishing, and other online (Internet) and off-line resources (CD-

ROMs). The ICT Distance Education Model enables teachers to explore, examine, and experiment with databases, simulation tools, and a rich diversity of case studies. Apart from greater control over pace, content, depth, and sequence of study and schedule, ICTs are well suited for useful collaboration and information sharing, peer feedback and networking, and frequent exchange of practical hands-on experience. They also develop questioning and research skills by opening access to other information and to diverse multimedia software. In summary, one can clearly see that ICTs and online networks may offer significant pedagogical advantages for the professional development of literacy/BE teachers. Through ICT-based teacher training, contact between peer-groups increases. The relative isolation of literacy/BE teachers decreases with the increase of live and real-time exchange of information and feedback via video, teleconferencing, and emailing.

### **3. ISSUES TO EXPLORE IN CREATING A UTLP**

The EFA Dakar Framework of Action literacy and basic education goals for 2015 cannot be achieved unless ICTs and distance education technologies are put to better and more effective use. The promise of technology should not be taken to mean that technology is the magic solution to all the EFA challenges. It should, however, highlight the fact that these challenges cannot be attained without technology. Answering the needs of literacy/BE is a daunting job that requires the participation of all interested stakeholders into a strategic partnership because only partnerships can achieve more than separate efforts. What arguments can one offer for the partnering of literacy/BE with ICTs and IHEs? What mutual benefits would come to each partners from this linkage? This section raises a number of questions that will need to be addressed if the UTLP is to move forward in the coming years.

#### **3.1. WHY ICTS FOR LITERACY AND BASIC EDUCATION?**

It seems certain that ICTs have the potential to overcome geographical distances and empower learners and teachers through information and interactive negotiation of information and knowledge. However, there is the claim that the utilization of the radio and TV is more appropriate because advanced ICTs are still too expensive to be effectively integrated in the struggling educational systems of developing countries. Does the use of ICTs in IHEs in developing countries offer solutions to the problems of basic education and literacy or does it mainly cause other problems? If so, what kind of problems? Moreover, ICTs may not be affordable today for the poor LDCs. Can these countries make use of them to narrow the digital divide?

One measure of effectiveness in the use of distance education in general, and ICTs in particular, is that of access. ICTs may be able show efficiency in reaching the large audiences in such populous countries such as India, Brazil, and China, but what about in small countries, such as Togo or Bhutan? The usefulness of ICTs are often limited by the cost and scarcity of quality, relevant educational software. In such circumstances, will smaller nations be able to organize themselves to share the costs of quality educational programming? Countries in specific regions of the developing world may feel that they could share their ICT experience in order to cut expenses and gain from the lessons learned. Moreover, will the cultural norms of a society be maintained or transformed by the use and spread of ICTs?

ICTs bring with them the problems of globalization and the emergence of market economy norms and standards. A number of questions follow:

- Can poor nations maintain regulatory limitations on delivery systems while trying to develop a competitive information-based workforce?
- What will be the cultural impact on developing societies of ICTs and the digital technologies?
- Will the proper harnessing of ICTs help in reaching millions of disadvantaged illiterates and low literates, and out-of-school youth and adults, so that the EFA Dakar 2015 goals can be met in the coming decade?
- Will those who have limited literacy skills be left behind because they cannot read and write well enough to benefit from ICTs, even when the ICTs become easily accessible in developing countries?
- Will adults and out-of-school youth in LDCs take advantage of the learning opportunities available to them through ICTs in CLCs?
- Is 'surfing the net,' without clear training or educational objectives, a benefit or a waste of resources?

### **3.2 WHY TEACHER TRAINING AND CAPACITY-BUILDING?**

ICTs represent an immensely powerful technology for the delivery of literacy and non-formal basic education with an enormous potential reach that can cut across geographical, gender, ethnic, linguistic, socio-economic, and cultural boundaries. Opening up these opportunities for the intended beneficiaries to participate in the utilization of this powerful delivery system remains problematic.

ICTs seem to show benefits that can be used to enhance the field of teacher training. The use of ICTs in capacity-building activities aimed at training literacy teachers and at improving the management efficiency of literacy/BE programs is a crucial responsibility, which is a top priority for all policymakers and education specialists (Saint, 2000). However, should the benefits of ICTs be harnessed to improve the quality of literacy/BE by better teacher training and capacity-building? Or is it advisable to extend the use of these newer technologies to BE end-users who currently have little access to opportunities to use these technologies? If so, how can equity and cost of access be insured? Who will bear the cost of that training?

A major challenge faced by education service providers in the fragile economies of most developing countries is the principle of equal access to ICTs and to quality education. With the help of international funding, community-based organizations (CBOs and other NGOs) are helping enhance basic education (formal and non-formal) by creating and partly financing Community Learning Centers (CLC). These centers provide connectivity and help train teachers, develop local businesses, and emphasize the learning functions of ICTs. CLCs and cybercafés, are sprouting all over Africa and Asia. Successful stories from Latin America have demonstrated that the use of radio and television can be a powerful tool to reach large masses, even the distant and hard-to-reach students. Some Latin American countries have mastered the technologies they used and have maintained a high level of quality of content programming. They also dealt with cost issues by reaching out to large masses of students.

However, the use of ICTs in teacher training raises further questions that need to be explored, such as:

- Does installing computers in CLCs guarantee that they will be used to improve the learning experience of inexperienced teachers?
- How can one make sure that ICT use does not perpetuate the negative characteristics of traditional instruction?
- In what ways do ICTs enhance teacher training without adding additional cost burdens?
- Can we assume that ICTs will have the same success with the knowledge that reaching out to large numbers requires a heavy investment?
- Can IHEs establish partnerships with the private sector to reach the required levels of investment and are there tradeoffs to such partnerships?

Finally, although there is little documented research of ICTs in teacher training in developing countries, there seems to be a consensus that an appropriate environment needs to be available to sustain these ICTs. In what ways can IHEs use their ICT infrastructure for training of teachers?

### **3.3 WHY A PARTNERSHIP LIKE UTLP?**

Many policymakers and education experts agree that the challenges and goals of literacy and BE can only be met if sustainable partnerships are established between government, civil society, and other stakeholders. Overcoming traditional ivory tower attitudes, many higher education institutions in developing countries will need to open up and start providing outreach services to neighboring communities, the private sector, and other institutions in their respective environments. IHEs will need to play a more active and substantive role in, and become more relevant to, their own national educational development and the socio-economic development of their countries.

UTLP represents a strategic linkage between IHEs and literacy/BE around the use of ICTs in capacity building and provision of quality delivery of literacy services. This type of linkage also poses a number of questions, such as:

- What is the nature and viability of a partnership between higher education and formal/non-formal basic education?
- Can higher education and literacy/NFBE succeed in building a partnership based on trust and on the equal sharing of goals?
- How will the new linkage partners negotiate their priorities and their differences?
- Will IHEs be interested in, or even capable of dealing with the research issues of literacy and adult basic education? What do they know about adult education? Will they find the issues and problems of adult education relevant and worthwhile when compared to the daunting research issues of primary schooling?
- How will a UTLP strategic partnership bridge the gap between formal and non-formal education?
- Can IHEs deal with the politically active civil society and community-based groups that want to participate in the governance of issues that impact their life and future?

#### **4. CONCLUDING THOUGHTS**

Participation in the knowledge economy requires a more equitable provision of literacy skills and a new set of human lifelong learning skills. Higher education in developing countries has the potential to adapt itself to demand-based, learner-tailored knowledge and help with the impact of the above transformations on other educational sectors.

Through involvement in literacy and basic education, universities and IHEs can perhaps play a much more relevant and effective role in the social and economic development of their own countries. In this way, IHEs can demonstrate a renewed social and human orientation, and take advantage of the human and technological resources that are at their disposal. Thus, there seems to be a promising match between higher education and literacy/basic education in developing countries. However, in what ways can a useful partnership, like the UTLP, be brought into existence? In order to succeed, academics and those participating in education development will need to build greater trust and mutual respect for each other's social and educational purposes and goals.

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