Essay V

ICT in Non Formal Education
Executive Summary

This essay on the use of ICTs in non-formal education provides a perspective on how ICTs are increasingly being used in the community in general to make available information and learning to a larger target group outside of the formal school system. This paper attempts to understand the penetration of ICT in delivery of NFE. It outlines the various modes of delivery of NFE using ICT tools and enablers, projects across countries that have achieved success more effectively through usage of ICT, the innovations in the same, and the emerging trends. In the process, this paper highlights the advantages accrued by the use of ICT in NFE, the critical success factors for such projects and impediments, and barriers faced in the implementation of ICT-enabled NFE. Quite often in the developing countries of South Asia, it is seen that when there is a wider dissemination of technology in the community by way of delivery of government services through the Internet, or by recourse to other e-government services, there is a greater demand for and adoption of technology in education in the formal system too. The widespread use of ICTs at this level for lifelong and continuous learning as well as community empowerment is a significant trend in making into a reality the 21st century ambition of living in truly “knowledge societies.”

ICT in Non Formal Education

Evolution of Non Formal Education (NFE)

Although education is a basic human right, there are millions of people who for various reasons have missed out on the opportunity of formal schooling, thereby constraining them from basic literacy. In the South Asian countries, NFE was encouraged to address this critical aspect and to provide mass education to the large majority who were outside the ambit of the formal school system. In many of these countries, NFE forms an integral part of the official programs of basic education, often with independent organizational arrangements as well as a program budget and portfolio of activities.

Definition of NFE

Coombs (1968) and Coombs and Ahmed (1974) defined NFE as an alternative form of education for adults and children that occurs outside of the traditional classroom environment. While globally NFE has come to imply lifelong learning and alternative learning models, in India and most of the South Asian region till very recently, it was understood as basic literacy and numeracy skills and was squarely in the framework of providing basic education to all citizens.

More recently, NFE has undergone resurgence in developing countries because of the realization that formal schooling, in its present form, has limited reach. Furthermore, it is now recognized that the educational needs of young people and adults are varied and should be addressed through suitable programs. In developed countries, NFE has assumed importance in the context of lifelong learning.

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learning, which sees learning as taking place not only in schools and colleges, but throughout the lifespan, in many different locations and times and in formal, non-formal, and informal modes.

**NFE Characteristics**
NFE may be defined as “any organized and sustained educational activities that do not correspond exactly to the formal education systems of schools, colleges, universities, and other formal educational institutions”. It may take place both within and outside educational institutions and cater to persons of all ages. Depending on country contexts, it may cover educational programmes to impart adult literacy, basic education for out-of-school children, life skills, work skills, and general culture. NFE programmes do not necessarily follow the ladder system and may have differing durations and may not confer certification of the learning achieved.

NFE has been gradually playing a critical role in achieving Education for all (EFA) goals and the MDGs. Recent phenomena such as the diversification of individual learning needs in a rapidly changing society, persistent problems of illiteracy and out-of-school children, limitation of formal schooling system in education delivery, and development of ICT, have spurred EFA stakeholders to revisit its potential.

NFE can address the diversified learning needs of preschool children, out-of-school girls and boys, young people, and women and men in a changing society. NFE emerges in varied forms such as early childhood education, community learning centers (CLCs) for village people and urban dwellers, adult literacy classes, skills and vocational training in workplaces, distance education for those who live in remote areas, public health education, civic education, and continuing education for youth and adults both in developed and developing countries.

**NFE For Strengthening Linkages between EFA and MDGs**
Through NFE, the linkages between EFA and MDGs can be strengthened by focusing on improving livelihoods and achieving more integrated and relevant educational and developmental interventions. This will be realized by connecting learning to individual empowerment and community development.

It is crucial for the EFA and MDGs stakeholders to reflect on a manner in which NFE can be integrated in the existing education and development framework. This is necessary in order to provide alternative learning to those in disadvantaged situations in developing countries and to address the changing learning needs of all aged population of developed countries beyond the school system.

**NFE as an Accelerated Learning Programme**
Accelerated Learning Programmes (ALPs) are “catch-up” initiatives to assist older children/youth, who have missed years of schooling, to complete their basic education and to obtain educational qualifications in a relatively short period of time. For example, an ALP can be a 3-year programme that condenses 6 years of primary schooling. Planned in partnership with educational authorities and covering essential elements of official curriculum, a programme attempts to cover rapidly
education content spanning years of missed schooling. In reality, accelerated learning is difficult to achieve, and will only become when effective teaching and learning methods are a strong focus. At the end of the “catch-up” period, students are integrated into a regular classroom. Specific target populations can include displaced children, girls or other disadvantaged.

**NFE for Out-of-School Youth and Adults**
Most countries in the Asia Pacific region have actively promoted NFE programs for out-of-school youth and adults. Many of these programs were well under way even before the Education for All (EFA) Conference held in Jomtien, Thailand, in 1990. In fact, by then most countries in the region had already established separate organizational arrangements for promoting NFE as an effective channel of basic education. Apart from national NFE programs initiated by governments, the last decade has also witnessed the emergence of non-governmental initiatives in NFE.

**NFE for Lifelong Learning**
A number of important socioeconomic forces are pushing for the lifelong learning approach. The economic rationale for lifelong learning comes from two principal sources. First, with the increasing importance of knowledge-based economy the threshold of skills demanded by the employers is being constantly raised. There is a relative decline in demand for low-level skills. Second, as firms respond to a more volatile market and shorter product cycles, career jobs are fewer and individuals experience more frequent changes in jobs over the working life. The shelf life of skills is shorter. There is a need for continuous renewal and updating of skills, which is essential for structural adjustment, productivity growth, innovation, and effective reallocation of human resources.

**ICT in NFE**
Attempts to encourage full and effective participation in NFE now forms a central part of current educational and economic policy making in most developed countries—under the various banners of creating “learning ages,” “smart countries” or “knowledge-based societies.” ICT has been viewed by many Governments as having profound and far-reaching implications for the ways in which to achieve these aims.
Over the past 30 years, NFE initiatives have effectively used ICTs for mass literacy campaigns, training of health workers, and capacity building under the rural community development projects. NFE has a critical role to play in reaching marginalized groups, and ICTs are a tool in the effective performance of this role.

The Asia-Pacific Programme of Education for All (APPEAL) Resource and Training Consortium (ARTC) study that was undertaken in 2002 (UNESCO 2002) and the APPEAL study (UNESCO 2005) highlight the following benefits of integrating ICTs in NFE programs:

- **ICTs are used to develop Livelihood Skills and thus contribute to Poverty Alleviation:** Livelihood skills training is a common activity in CLCs. The use of ICTs as a tool in such training is an engaging way for learners to develop these livelihood skills (UNESCO 2005).
- **ICT is a tool for Capacity Building:** More specifically, ICT can be used as an effective and affordable tool in the professional development of NFE teachers. This is important because
although qualified and trained teachers are the key to quality learning and increased learner motivation, in many countries professional expertise, particularly for the provision of non-formal literacy education, is limited and thinly distributed and training in teaching and learning in NFE contexts consists of one-off programs and lack follow-up and sustainability.

- **ICT facilitates Documentation and Information sharing:** ICT can facilitate the print, visual, and video documentation that is needed for the dissemination of information about successful NFE projects. When undertaken by the members of the community, this documentation can help foster a sense of community pride and ownership and ensure continuing support and enthusiastic participation. And while ICT can promote information sharing between communities, they can also be effectively used to mobilize policy dialogue on the use of ICT for community empowerment.

- **ICT can be used to facilitate the process of networking among organizations engaged in the design and delivery of NFE programs:** It is essential for the Government and other organizations to coordinate their NFE activities to maximize available resources and expertise, including ICT equipment.

- **ICT tools can improve the overall effectiveness of monitoring and evaluation:** Monitoring and evaluation should be built into the entire planning and management of NFE programs.

**Delivery modes of NFE using ICT**

The delivery modes and domain of NFE are wide ranging but it has common denominators, that is, “need-based approach,” “contextual relevancy,” and “flexibility in learning contents, time and place” that show a good contrast to formal schooling.

By transcending physical and spatial constraints, ICT and mobile devices bring unprecedented educational opportunities to people of all socioeconomic levels. Early distance education NFE projects used print, radio, television, audiotape, videotape, and satellite transmission as an efficient and cost-effective way to provide illiterate adults and out-of-school learners with educational opportunities. Further innovations in ICTs like Very Small Aperture Terminal (VSAT) satellite communications, the Internet, and CD-ROMs are helping to create new innovative learning tools that will profoundly change the way NFE is delivered.

In recent times, NFE projects have been making use of devices such as Personal Digital Assistants (PDAs), laptops, Pocket PCs, and mobile phones to provide interactive content to previously unreachable and remote locations. At the same time, conventional classroom approaches to learning are being supplemented by learner-centered anytime-anywhere mode of learning, with the potential to increase participation and school retention rates.

Many nations have developed e-learning and m-learning strategies, and are rapidly expanding the use and knowledge of ICT in educational activities by incorporating ICT into lesson plans, teaching methodologies and curricula, and devoting funds to procuring ICT-related resources. Currently there are at least three types of learning spaces where ICTs are used to enhance NFE:
Telecentres, Community Multimedia Centers (CMCs) and Community Learning Centers (CLCs)

1. A Telecentre is a public space where community members can access telephones, computers, the Internet, and other digital technologies that can help them gather information and communicate with others. The simplest kind of telecentre is a booth in which the owner of a telephone sells user-time. This initially worked well in countries like Bangladesh where the Grameen Bank has been lending money to rural women to buy telephones since 1997, but has latterly been overtaken by higher rates of mobile ownership. A telecentre has a limited educational function but it is empowering to those who are enabled access to information easily. In the case of Grameen Bank, it has also helped in alleviating poverty by augmenting the income of the village women in Bangladesh.

2. CMCs are nonprofit telecentres that aim to promote community empowerment and addresses the problem of the digital divide. Also known as a community e-centre (CeC), a CMC combines community telecentre facilities (computers with Internet and e-mail, phone, fax, and photocopying services) with a community radio run by local people in the local language. The radio, which is low-cost and easy to operate, not only informs, educates and entertains, but also empowers the community by giving a strong public voice to the voiceless and encouraging greater accountability in public affairs. CMCs provide a gateway to active membership in knowledge societies by enabling everyone to gain access to information and communication tools that they can use to improve the quality of their lives.

3. CLCs is “a local place of learning outside the formal education system usually set up and managed by local people for local people.” CLCs, which may be located in urban and rural areas, “are home-grown institutions that provide education programs that address the specific needs and desires of the populations they serve.” Their aim “is to help individuals empower themselves and promote community development through lifelong education for all people in the community, including adults, youth, and children of all ages. A CLC does not necessarily require new infrastructure, but can operate from an existing health center, temple, mosque, primary school, or other suitable venue.”

The emphasis on using the newest ICTs has begun to shift the focus of NFE away from local community development and toward individual lifelong learning. The future use of the new ICTs in NFE in developing countries will greatly depend upon how well NFE practitioners manage the issues associated with the use ICTs in NFE.

The latest ICTs are also being used to develop virtual learning communities for NFE purposes. Virtual learning communities are learning groups with a shared interest, who are able to overcome barriers of time, geography, age, ability, culture, and social status (Blurton, 1999). For example, the Global Learning and Observations to Benefit the Environment (GLOBE) project “… links students, teachers, and the scientific research community worldwide in a virtual learning community to study the global environment” (Blurton, 1999, p. 13). New pedagogical techniques that utilize new

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2 UNESCO study (2002)
ICTs are very promising in allowing communities to become owners of the technology as they learn to use them.

**Public-Private Partnerships**

Strategic Partnerships between Private Sector and Public Sector Enterprises/Governments to either pilot or fast track ICT-based projects is a strategy that has gained importance among Ministries of Education in most of the developing countries. These partnerships take many forms, including private sector grants with Government counterpart contributions, donations of equipment and education-related content by corporations to Government-run institutions or programmes, provision of technical assistance by the Corporates or institutions of excellence, for planning, management, and strengthening human resources at the grassroots level of the Government’s service delivery. Multilateral organizations and international aid agencies have also driven many of the most significant ICT in education efforts in the developing world. Evidence strongly suggests that, in order to reap the benefits of ICT at a national, regional or sector level, it is necessary to create a new form of collaboration that involves the full range of actors in the public and private sectors in a process that is inclusive, open and participatory.\(^3\)

The public sector includes various Government institutions or agencies at national, regional and local levels. The private sectors may include for-profit and not-for-profit organizations, professional associations and individuals, who are able and willing to complement the programme requirements by partnering with the Public/Government institutions.

**The Stakeholders**

NFE, when implemented through the PPP model, involves a multitude of parties or stakeholders viz. Governments, donor agencies, community (incl. community-based organizations, self-help groups, etc.), corporate, not-for-profit organizations, and beneficiaries. Initially, the Government was seen as the body responsible for implementing education programs. However, over the years, Corporates, Not-for-profit organizations and the community-groups, that is, people themselves have evinced interest in this domain and the Government is being vested the responsibility of policy formulation, regulation, and monitoring and evaluation. The following table provides an illustrative list of stakeholders identified from a select set of NFE programmes implemented across various countries:

<table>
<thead>
<tr>
<th>Sector/Geography</th>
<th>Public/Multilateral Agencies</th>
<th>Nonprofit/NGO</th>
<th>Private/Corporate</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>• World Bank&lt;br&gt;• UNESCO</td>
<td>• WorldSpace Foundation&lt;br&gt;• International Extension College</td>
<td>• AT&amp;T&lt;br&gt;• British Telecom&lt;br&gt;• CISCO&lt;br&gt;• ITC</td>
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All stakeholders have an important role to play in the Information Society, especially through partnerships:

a) Governments have a leading role in developing and implementing comprehensive, forward-looking and sustainable national e-strategies. The private sector and civil society, in dialogue with Governments, have an important consultative role to play in devising national e-strategies.

b) The private sector plays the role of developing and diffusing ICTs infrastructure, content, and applications.

c) The civil society is responsible for creating an equitable Information Society, and in implementing ICT-related initiatives for development.

d) International and regional institutions, including multilateral agencies (incl. International Financial Institutions), play a key role in integrating the use of ICTs in the development process and making available necessary resources for building the Information Society and for the evaluation of the progress made.

**ICT in NFE International Experiences**

This section portrays select few notable experiences across the globe on implementing ICT-based NFE.

The UK Government has pursued a set of policy initiatives aimed at a technological reengineering of the NFE sector under the aegis of the “University for Industry” (UfI) and “UK Online.” UfI most prominently takes the form of a telephone-based helpline and Web site for directing individuals to approved and kite-marked learning opportunities as well as providing its own technology-mediated learning opportunities via a network of more than 2,000 “learn direct” centers and 6,000 “UK Online” centers in community sites throughout the UK. The initiatives not only aim to widen participation and achieve a “mass-market penetration of learning,” but to reduce the current inequalities in participation among those groups traditionally under-represented in adult education. The “People’s Network” has established public Internet connections in England’s 4,300
libraries alongside a host of other initiatives aiming to bring ICT and ICT-based learning to those currently without.\footnote{ICT in Non-Formal Youth and Adult Education: Defining the Territory, Neil Selwyn – University of Cardiff, U.K., 2003.}

Similar initiatives have been introduced across Europe, South America, East Asia and Australasia. From the German “IT in Education: Communication Rather Than Isolation” programme to the Indian “IT for all by 2008” initiative, Governments have firmly stated their faith in ICT to establish inclusive learning societies. These initiatives, coupled with the ever growing rates of domestic and work-based access to ICTs such as computers and the Internet, are now prompting politicians and educationalists to make wide-ranging claims about the combination of NFE and new technology as at last overcoming existing social inequalities and leading to a “renaissance” of lifelong learning. For some, therefore, the ability to learn with and through ICTs has solved the NFE conundrum in one fell swoop.

The prime objective of any ICT-enabled NFE programmes can be conveniently classified under one of the following heads.

1. Programmes for fostering adult/child education
2. Programmes for creating community awareness
3. Programmes for community empowerment/development

**1. Programmes for Adult and Child Education**

In the context of the Education for All and the Millennium Development Goals, the United Nations General Assembly proclaimed the years 2003–2012 to be the United Nations Literacy Decade (UN, 2002a), which was officially launched on 13 February 2003. The founding resolution (Resolution 56/116) reaffirmed the Dakar Framework for Action (UNESCO, 2000a) in which, the commitment was made to achieve 50 percent improvement in adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults.

The current emphasis on creating “knowledge-based” societies has made “learning” throughout life more important, which in turn requires an education system to have greater flexibility to enable learners to enter and leave the system at different points in time. Moreover, a wide range of education providers, including universities, NGOs, Government agencies, and the private sector, needs to be involved, particularly because learners, who have diverse learning styles, would need different kinds of skills from formal, non-formal, informal, and distance and open learning institutions. This has set the context for improving adult literacy worldwide and countries have been trying to harness the power of ICT to achieve the same.

**International Projects**
Both developing and developed nations alike have been trying to implement ICT-enabled NFE programmes for adults and children in order to ensure an environment where lifelong learning is possible. Some of the successful projects include:

**ASHA Project—India**

With a mission to educate illiterate adults by using Devnagri script in computers and also to train rural youths in computer applications in the most backward villages of Nagrota Surian block of Himachal, ASHA-2005 was launched in mid 2002. A joint initiate between the Science Awareness Trust (SAT) and the State Govt. of Himachal Pradesh, ASHA-2005 aimed to train 2,100 people in areas of health, social welfare and the environment, as well as educate 15,000 illiterate adults in three years. SAT invited officials of the district administration and other departments to create a platform for discussing and solving related problems.

[www.ashanet.org](http://www.ashanet.org)

**Skills.net (Australia)** is a State Government of Victoria initiative Connecting Communities and working to ensure that everybody is able to access the resources on the Internet. Skills.net creates or expands existing community-based Internet facilities, making available new technology, multimedia equipment and training to meet the information and communication needs of all Victorians. In particular, Skills.net focuses on technologically disadvantaged communities, including those in rural and remote Victoria, people with disabilities, women, older Victorians, people from non-English speaking backgrounds, indigenous Australians and low income earners.


**Rural Education and Development—Nepal**

READ Nepal has been established in 1991 to combat illiteracy in Nepal through the promotion and development of rural libraries. So far READ Nepal has a network of 35 rural community libraries in 29 districts. These libraries are established with a sustainable strategy integrating income generating projects through various other development initiatives in the respective communities. Depending on geographical location, the scope for income generation from the project selected and the need of the community, the libraries could have one or more sustainability projects. Income generating projects such as front stores, telecenters, fish ponds, printing press and ambulance ensure the sustainability of the libraries. The libraries function on the concept of Community Resource Center set up and managed by the local people, and at present, seven of these resource centers also provide telecommunication facilities.

*PPP-Led ICT Enabled Services in Rural Nepal, Policy Paper 14, April 2006*
All the aforementioned projects had utilized ICT for educating adults and children in the remote-rural and slum-dwelling urban communities. They were mostly community based with an active involvement of the community members that addressed their learning needs. Primarily Internet was used as the delivery medium.

2. **Programmes for Creating Community Awareness**

**Radio Sagarmatha—Nepal**

Radio Sagarmatha (RS) covers and discusses public issues, conducts training for public radio journalism, and provides a venue for local ideas and culture. The station also has regular focus on good governance, gender, women's issues, environment, economics, and ICTs. In 2000, the station added a weekly twenty five minute Internet radio programme featuring local and international ICT related news, and ICT glossary, radio web browsing, and interviews with relevant ICT resource persons.

The aforementioned projects successfully harnessed the power of radio to deliver lessons on ICT and ICT-based developments to the people of Nepal. Such programs are primarily intended to create awareness on various social issues such as alcoholism, female feticide, dowry, and so on. These have been found to be very cost effective with a wide reach.

3. **Programmes for Community Empowerment and Development**

ICT-based NFE programmes aim at improving functional literacy of the people and in turn empower the community by enabling them to make informed decisions in business, trade, health and education. Evidence suggests that such projects have mostly been effected through CLCs. Some of the successful projects include:

**Community Radio Programme, Lao PDR**

**Implementing Agency**—The NFE Department of the Lao PDR

**Objective**—To increase the village incomes among the rural ethnic minority youth and adult in Vientianne province.

**Implementation**—Radio broadcasts were done by the villagers themselves to solve the local problems and to educate the people. CD's containing information on good agriculture practices were distributed to the villagers by the NFE Dept. and this helped villagers to pick up new ideas to apply in areas to increase their productive capacity.

**Learning**—Radio and CDs are effective ICT mediums for community empowerment and increased income generation.
Multi Purpose Community Telecentre for Community Development—Sri Lanka

Implementation
The Sarvodaya Shramadana Movement, a leading NGO in Sri Lanka is administering this project at 18 sites under the supervision of the NFE unit of the Ministry of Education.

Medium of delivery—CLC is equipped with computers

Objectives
The purpose of this project is to help village entrepreneurs by enabling them to use ICT in marketing and selling their products. Project activities include training in the use of ICT, development of a community database, dissemination of appropriate information to villagers and entrepreneurs, an entrepreneurial skills development Programme. Each telecentre provides a computer, printer, scanner, photocopier, and binding machine for community member’s use.

Critical Success Factors for Using ICT in NFE
A review of the successful ICT projects in NFE has shown that critical success factors include the following:

1. Need for a coherent policy. A meta-survey of ICT integration in 44 countries in the Asia Pacific region conducted by UNESCO Bangkok in 2003–04 showed countries at different stages with regard to policies pertaining to the integration of ICT in the education system. While all of the countries surveyed had stated that the development of ICT capacity was important to national development, few had grappled with the policy questions related to ICT applications in education, especially in NFE.

2. Technology infrastructure. A second factor for success of ICT-supported NFE is providing technology infrastructure and ensuring access. ICT-based non-formal literacy programmes have often suffered from inadequate infrastructure and technical support. This was highlighted in a study on the use of ICT in education in seven of the E-9 countries (Bangladesh, Brazil, Egypt, India, Mexico, Pakistan, and the People’s Republic of China) undertaken by UNESCO (UNESCO 2006). The study recommended that the Literacy Decade should be considered as an opportune time for the Governments to set up the required infrastructure—for example, phone lines, reliable electricity supply, and connectivity.

3. People-driven rather than technology-driven. A third factor in the success of ICT-supported NFE programs is to make them people-driven rather than technology-driven. Often, there is a tendency to invest in technology without making a parallel investment in people.

4. Effective planning and programme design. Effective planning and programme design is the fourth factor in the success of ICT-supported NFE. There is a need to take stock of existing infrastructure and to plan for hardware and software requirements, taking into account
connectivity, affordability, and capability. Equally important is the need to understand the existing information systems catering to the economically disadvantaged which on ICT-enablement will become more effective and efficient. There is a need to understand how ICT and culture intersect, because cultural factors can be a hindrance to ICT adoption in rural areas.

5. **Development of content that is relevant to the learners.** ICT can play an important role in stimulating interest and engaging learners, and it can be a useful tool in developing learning materials that are culturally and linguistically appropriate. One such literacy course offered by a CMC in the Madurai district of Tamil Nadu, India, enables learners to create their own personalized content using digital cameras, computers, presentation software, and CD-ROMs.

6. **Planning for sustainability.** Most of the ICT projects have high operating costs, given the pace of change in technology, the replacement costs are also relatively very high. Due to such higher costs, most ICT projects tend to close down as soon as the project funds are used up. It is therefore essential to address the problem of sustainability at the planning stage itself.

7. **Ensuring multistakeholder partnerships.** Given the need for a wide range of specific competencies and capabilities for successful implementation of ICT-based education programmes for NFE, and that, such competencies and capabilities are spread over a wide spectrum of interest groups, it is more critical to ensure strategic partnerships between these interest groups to achieve the desired ends of success. In such partnerships, the principal role of the Government would be to facilitate the creation and equitable diffusion of infrastructure and the adaptation and scaling up of successful pilot projects. In addition, the public sector should provide the lead through strong policy interventions and substantial public investment. The private sector could play an important role in supporting development of content and applications in the local languages. NGOs could partner with the Government to ensure the participation of various disadvantaged groups, and to facilitate capacity building.

8. **Continuous monitoring and evaluation.** Each project should have built-in mechanisms to understand, measure, and be informed about, how well the programme is progressing and the extent to which it is meeting the set objectives, and to provide feedback to the implementers and other critical stakeholders to the programme.

**Emerging Trends**

Traditionally, ICT in NFE programmes have been based on radio, TV, or Internet. Of late, countries have started experimenting with newer technologies such as mobile phones, WiMax and games-based platforms. A brief overview of such projects is given in the following:

1. **Mobile(m)-learning**
   The rate of adoption of mobile technologies in South Asia is among the highest in the world. Mobile phones have a greater penetration than Internet in developing countries of South Asia. Moreover, it is capable of overcoming the infrastructure divide between urban and rural areas. With the development of 3G and 4G networks, use of mobile phones in education could provide a way
forward. M-texts, downloadable lessons would enable any user with a cell phone to access the educational lessons.

Several initiatives are ongoing in South Asia where Service providers are also offering information and educational services on different aspects to farmers, fisherman, and so on using mobile phones. For example, Fisher Friend M.S. Swaminathan Research Foundation, e Choupal ITC.

### Bangladesh—Mobile phone project

In 2007, Bangladesh Rural Advancement Committee (BRAC) came out with an interactive audio course to deliver information over mobile phones. Each course had a few points to convey, such as the importance of clinician-assisted birth, or the dangers of indoor smoke. As an incentive to take the courses, there was a short quiz at the end of each call and if the caller passed the quiz, free airtime was delivered to their mobile phone.

#### 2. Games-based platforms

There are countries which have used the methodology of games-based platform to further the cause of adult education. With the significant penetration of 3G and 4G networks and increased adoption of mobile phones, this methodology is expected to gain momentum in the near future.

Educational games can make a profound impact on the learning needs of underserved communities. At least two non-government organizations, Pratham and Azim Premji Foundation, have deployed computer games in their initiatives with children living in the urban slums and rural areas of India respectively. Most importantly, a large-scale evaluation by Pratham demonstrated significant gains on mathematics test scores from playing computer games that target mathematics learning. Early experiments by the Azim Premji Foundation with rural children in India have shown equally promising outcomes with e-learning games for English as a Second Language (ESL) and other subjects.

#### 3. WiMax technology

WiMax, meaning Worldwide Interoperability for Microwave Access, is a telecommunications technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable and fully mobile Internet access. WiMax provides high-capacity broadband wireless access (BWA) across a larger geographical area than other available wireless technologies like WiFi, thus offering a solution for point-to-multipoint last mile connectivity.

In India, Pakistan, and other countries in the South Asian region WiMax networks are being actively tested and deployed. BSNL the state owned service provider in India recently launched commercial 4G mobile WiMax networks in the states of Kerala and in Rajasthan at highly competitive prices. According to the Infonetics’s new report, *WiMAX Equipment and Subscribers in Key Markets*, India is
the single largest WiMax opportunity area in the world with all major service providers like BSNL, Tata, Bharti Airtel, and so on pursuing WiMax technology.\(^5\)

WiMax offers immense potential for the Education sector as well, since it provides a solution for affordable high speed broadband access in rural and under developed areas as well, thus facilitating distance education and e-learning. In Turkey, Turk Telekom offered a WiMax-based wireless broadband solution to the Ministry of Education for taking broadband connectivity to schools and children in rural areas. Countries in South Asia too are beginning to harness the potential of WiMax as the choice of technology for wireless broadband access in remote areas.

**Key Issues and Concerns**

1. **Policy formulation for ICT in NFE**
   A policy framework is essential as it provides a vision of desired outcomes and outlines a roadmap for how these outcomes are to be achieved. In such a framework, the vision of NFE would have to be broad-based and all-encompassing and within the overall framework of lifelong learning. Policy leadership\(^6\) will be the key to any successful effort to introduce ICT into literacy and adult education, particularly if these efforts are to contribute to economic and social development. Projects and programmes offered outside of a policy context will fail in the long run.

   Many countries have developed ICT national plans to provide a policy context that guides new technology-based programmes and projects. These master plans articulate a vision for how ICT can contribute to education reform and improvement and tie this vision to other national priorities. The national plan also authorizes specific projects and programmes to advance this vision and provide the resources needed to implement them. In a survey done by UNESCO to understand the issues in the development of policy for ICT in various countries, the following aspects came up for closer scrutiny:

   - **Different parts of Government are responsible for ICT in education policies in different countries**
     There does not appear to be a standard coordinating body responsible for the formulation of a country's ICT in education policies. In some countries this is strictly the purview of the Ministry of Education (which may have a separate ICT in education policy, or fold ICT's strategies into existing education policies), while in others it is handled by the Ministry of Science/Technology (if such an institution exists) as part of a larger technology or information policy, although in most cases there is no national policy at all.

   - **Lack of database of existing policies**
     There is no standard repository for existing ICT in education-related national policies, although there have been stray instance and attempts toward it by various agencies. On the other hand,

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regionally the European Union has done a good job of collecting them for European countries, as has UNESCO-Bangkok in the Asia-Pacific region.

- **Successful policy requires consultation with a diverse group of stakeholders**

  It is believed that the formulation of successful policies related to ICTs in education must include not only the Ministry of Education, but also a variety of stakeholders from other government ministries, as appropriate (often this includes the Ministry of Finance, the PTT and ministries related to science/technology/IT, labor and rural development), communities and other civil society groups (including NGOs) and the private sector.

- **Lack of ICT-Based Adult Education Policy**

  Most of the participants from the different countries cited that though there was a national-level ICT strategy or program, there was no specific ICT in adult education policy.

2. **Infrastructure**

   Public access to ICT is available to various extents in most of the larger urban centers in all countries through cyber cafés, but access is largely nonexistent in rural areas. Lack of infrastructure (electricity, telephone connections and hardware) is still the major challenge for introducing ICT in rural areas.

3. **Cost and Sustainability**

   The costs associated with setting up ICT infrastructure are forcing many Governments to make difficult choices. For most national Governments, the priority is primary education. Ironically, the pressure to achieve Education for all (EFA) goals could be forcing a number of national Governments to sideline the education of out-of-school youth and non-literate adults. Similarly, the pressure to produce the necessary human capital for a “knowledge-based” economy is resulting in greater investments being made in formal higher education systems.

   Further, meeting the ongoing costs of maintaining equipment, staff training, connectivity, content materials acquisition, and development and consumables is a major challenge. Donor funded projects have failed to run after the funding period ended as community funds was not mobilized for the project. Many ICT-based education programmes funded by aid agencies or by corporations could not be sustained because Government failed to step in with the necessary financing nor were the local communities in a position to generate the resources needed to continue these programs. This was the case with some of the Interactive Radio Instruction projects initiated by USAID.

4. **Lack of local language content**

   English is the dominant language of the Internet. An estimated 80 percent of online content is in English. A large proportion of the educational software produced in the world market is in English. For developing countries in the Asia-Pacific where English language proficiency is not high, especially outside metropolitan areas, this represents a serious barrier to maximizing the educational benefits of the World Wide Web.

**Key Learnings**

1. **Information sharing and documentation**

   Information on ICT policy, its implementation in practice and the lessons learnt on the successes and failures, within the region and across the world is very important. Hence, exchange of information related to policy and planning should be encouraged between countries and
communities, for creating more successes and sustainable models of ICT-enabled NFE. Documentation and information sharing on innovations and successful practices, latest developments in hardware, and software should be encouraged between the countries.

2. **Formulation of a comprehensive ICT in NFE policy**

Although ministries of education around the region and the world have already adopted usage of computers, both for teaching and learning, as well as administration, very few countries have developed coherent policies and strategies to fully integrate the usage of computers and other advanced ICTs as an effective tool of delivering NFE. Further, the holistic approach to adaptation of ICTs, which is looking beyond provision of access, is lacking in the policies developed by many countries. For a policy to be comprehensive enough, it should address the following issues:

- Policies must take into account ongoing capacity building of trainers/teachers in enabling them to effectively use ICT in NFE delivery. Teachers need to consciously redesign learning environments so that students can transfer their newly gained ICT skills to other applications that can be used in an ICT rich environment.

- Most educational policies reflect the need for ICT infrastructure but the need for local educational content is often left out. The development of instructional content-ware remains a neglected area, affecting investments in hardware and resulting in a heavy economic and educational loss.

- The focus of developing countries in this region should be on how ICTs can be used to compensate for the factors that are lacking in NFE, namely, remote learning features including online tutoring, the resources to pay for expensive equipment and others.

- The policy should clearly specify the strategy for dealing with adult education and education for school dropouts

**Conclusion**

ICT’s can be of great use in helping to achieve the goals of Education for All (EFA) and lifelong learning. Its focus should be on reducing digital divide between rural and urban areas and engendering community development and empowerment. ICT tools are very powerful and can go a long way in addressing certain issues like adult illiteracy, education for school dropouts and women empowerment.

The important factors for success of any ICT-based NFE Programme are Community involvement; formulation of a comprehensive policy; sharing of best practices among communities and countries; creating localized content; and constant technology upgradation/responsiveness.

Applications for NFE should be developed within the national framework which will in turn simplify the process of Monitoring and Evaluation. Though Governments will be responsible for overseeing the implementation process, it cannot be solely responsible for rolling out programmes. Corporate entities and communities should be actively engaged in such activities so that the projects remain sustainable in the long run. Finance and human resources are critical to sustain such projects; hence, the community member’s involvement is of paramount importance.

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