Implementation of Information and Communications Technology from the Root to Manifest the People More Productive

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Abstract

Information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications.The ever-changing field of technology has made the world a smaller place, as information is easily and rapidly exchanged through devices of telecommunication. The Internet has proved a huge advancement in the ICT community. Videoconferencing and distance learning allow people thousands of miles apart to speak together as if they were in the same room. ICT involves more than just sharing of information, however. It also includes the quest to improve communication throughout the world, especially to more underserved areas of the globe. So, we should implement ICT in the early childhood education. As a result, we can make more productive people which help us to grow our economy as well as our country.

Keywords

ICT, rural, childhood, UNESCO, Women, Gender, Literacy, Farming, Implement
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Reasons behind the implementation in early childhood education?

The literature suggests at least three reasons why ICT matters in early childhood education. First, ICT already has an effect on the people and environments that surround young children's learning. Second, these technologies offer new opportunities to strengthen many aspects of early childhood education practice. Third, there is support and interest across the whole education sector for the development and integration of ICT into education policy, curriculum, and practice. However, there is a clear consensus in the literature that the introduction and use of ICT in early childhood education should be grounded in a clear understanding of the purposes, practices, and social context of early childhood education. There is a growing recognition of the many different ways that ICT can contribute to, or transform, the activities, roles, and relationships experienced by children and adults in early childhood education settings. The literature indicates the importance of practitioners and other adults in early childhood education settings having guidance and opportunities to become capable, competent, and informed about the educational role and potential of ICT, and support to use ICT to strengthen many aspects of early childhood education practice.

Remove extreme poverty

ICT can provide powerful tools in the fight against extreme poverty, including in emergency situations. In emergency response, one of the vital questions is how to make sure the right help reaches the right people who are most in need. In this context, ICTs can be used to trace and monitor supply chains to improve accountability and reduce corruption. Deliveries of emergency aid can be digitally tagged with an RFID chip (radio-frequency identification) and read/inventoried via chip readers. © UNICEF/NYHQ2011-2000/LeMoyne 3 10 Children, ICT and Development: Capturing the potential, meeting the challenges In disaster relief operations, mobiles can help generate a large amount of crowd-sourced data to inform the emergency response. Twitter outperformed other media in providing timely information in the 2008 Sichuan Earthquake in China (Li and Rao 2010). Mobile phones can also play a role in building preparedness and improved collaboration between different relief organizations (Hollow 2013). In addition, after the Haiti earthquake, for example, UNDP successfully used mobile money to send cash transfers to families for reconstructing their homes (Oxfam 2007). Sahu

(2011) offers many examples of how ICTs can support social protection assistance to targeted beneficiaries. Cash transfers to vulnerable groups reduce vulnerability and chronic poverty but delivering cash to remote and hard-to-reach rural areas can be expensive and insecure (Vincent and Devereux 2010). Now cash transfers to households can be based on existing mobile money infrastructures which are widely diffused in parts of Africa such as Uganda, Kenya (Muwanguzi and Musambira 2011) and Somalia. However, it is worth noting that many households are characterised by uneven power relations between men, women and children, with men often controlling the mobile phone if there is only one. Sending mobile money directly to households does not guarantee that women and children will receive the benefits. In order to claim social benefits in the form of cash transfers, mothers normally need to have the birth of their children registered. This can be difficult in rural areas where government offices are far away. In such cases, SMS-assisted birth registration can be introduced in combination with child-focused social transfers (Samson and Cherrier 2009).

Maternal and child health

Maternal and child health are two of the leading areas in which children are direct and indirect beneficiaries through the effective use of ICT. There are noteworthy examples emerging of how mobile phones are being used at a national scale to promote effective birth registration systems, including in Nigeria and Uganda (Wassago 2012). A well-documented and common challenge in maternal health is the time delay between the decision to seek care and arrival at a clinic because of the challenge of travel. If the time between deciding to seek care and receiving useful information related to that care can be reduced through the use of ICT then there is the potential to save mothers' lives (Noordam 2012). Linked to this is the way in which ICTs can be used to help health care workers to operate more effectively in their roles, especially in rural areas, with examples of the way in which videos on smartphones can be used to facilitate dialogue with and between health workers (Cuttrell and Ramahandran 2010). This links to ongoing debate regarding different forms of ICT access and the implications for healthcare workers if they have reliable access in their home as well as work environment (Bukachi 2007). Mosoke (2009) explores the way in which multiple technologies (such as SMS, radio and solar power) are often used in combination to advance maternal health objectives, especially through the distribution of pre- and post-natal information. It is worth noting here that more information is a useful step towards, but no guarantee of, active behavioural uptake. In addition, ICTs are also being used to promote maternal health at a system level through the introduction of improved medical information systems and subsequent improved referral systems. ICTs can also play an important role in directly enhancing child health in a wide range of different ways. These range from the use of technology to raise awareness on water, sanitation and hygiene (WASH) issues (Butterworth 2009) through to the potential for using technologies (mobile phones, internet and community radio) as effective tools for campaigning on female genital mutilation (FGM) (Thioune 2013). Throughout the literature there are repeated calls to recognise the need for contextualised approaches to using ICT for child health – with an appropriate blend of old and new technologies.

Quality of education

The question of how ICTs can be used to facilitate access to good quality education in the global South has been the focus of considerable study. Of particular interest is the wide range of backgrounds, pedagogical approaches and visions for education that co-habit in the emerging sector of 'ICT for education' (Mitra 2003, Selinger 2009, Isaacs and Hollow 2012). It is now widely recognised that the previous emphasis on simply placing hardware in schools is unlikely to lead to a substantial improvement in learning outcomes for children. Many debates within ICT for education parallel those of the wider education community. An example is the important distinction between interventions that improve access to education and interventions that improve the quality of educational outcomes (Hollow et al 2012). Similarly, ICTs can play different roles in facilitating both formal and non-formal education, and can have a particular role in helping girls to continue learning in school (Plan, 2012). There are also important ongoing research agendas regarding the ways in which ICTs can be used to help improve education for children with disabilities, noting the importance of inclusive design processes (Bomal Nkansah 2010, Larsson et al 2010), and the way in which ICTs can be used in promoting indigenous languages through bespoke, easy-to-use educational software for children (Azi, 2006). Much attention has been paid to the benefits of 'one per child' in the use of ICT for children in education (Negroponte 2009) and often this has been associated with constructivist approaches to education (Dangwal and Gope 2011).

However, alongside this are those who emphasize the potential for shared access to devices, rather than simply assuming that, whatever their circumstances, each child requires individual access (Wintz 2009). Regardless of pedagogy, research demonstrates that, if working with teachers, the approach adopted when introducing technology is of central importance. The major obstacles faced by teachers in utilizing new technology are: lack of time available, lack of appropriate course content, and technical malfunction (Wan Zah Wan Ali 2009).

Using ICTs to promote literacy training among women

Broad trends in the use of ICTs in literacy programs are emerging from recent research and country studies commissioned by UNESCO. These studies indicate that:

- Many countries do not use ICTs in literacy programs, nor have they formulated policies for the integration of ICTs into adult literacy programs;
- Many countries face challenges with regard to financial resources and a lack of technological infrastructure;
- Where ICTs are used, they are typically basic ones such as radio and television. When computers or the Internet are involved, they tend to be restricted to targeted users;
- There is a relatively greater use of ICTs in school education. The use of ICTs in community learning centers is still limited;
- Most ICT projects for adult literacy are pilot projects that are often funded by international agencies and have not addressed methods to promote sustainability;
- Little attention has been paid to gender issues. There is no effort to address issues of access, content and the impact of technology on women.

Traditional literacy programmes face many challenges, including:

- High costs,
- Shortage of teachers,
- High drop-out rates due to lack of motivation,
- A lack of access to training materials, and
- Long periods of time required to achieve literacy goals.

Computer-assisted learning can offer the digital learner many advantages, including the use of computer games and interactive activities that make learning easy and attractive. Digital content developed in local languages can be downloaded and accessed by learners at a time that suits them best. Similarly, by presenting reading lessons and numeracy education in a game form, computer programs encourage learners to compete against themselves and engage in repetition and practice without losing interest. Such computer programs repeat words and correct errors for large numbers of students at the same time, thereby reducing pressure on overworked teachers.

There is a huge potential for ICT applications to promote literacy and numeracy around the world. In particular, ICTs can be enlisted to overcome the many obstacles outlined above by fitting into people's lives flexibly. The utilization of ICTs to promote literacy and numeracy can take the following forms:

Radio: It can help overcome geographical barriers by facilitating distance learning, bringing literacy education to people who live in remote areas. Although radio lacks the visual element, it is nonetheless entertaining, easily accessible and affordable. Radio transmission, used in combination with printed training materials, can make literacy



lessons more true-to-life and interesting. Also, local radio stations usually have close ties with the community, so they are in touch with local preferences, languages and cultures, and can tailor training accordingly. One clear disadvantage of using radios (and indeed television) in literacy education is that programmes are usually broadcast at fixed schedules over which learners have no control.

Consequently, learners are not able to learn at their own pace and convenience.

Gender equality and empowerment of women through ICT

"The so-called digital divide is actually several gaps in one. There is a technological divide—great gaps in infrastructure. There is a content divide. A lot of web-based information is simply not relevant to the real needs of people. And nearly 70 per cent of the world's websites are in English, at times crowding out local voices and views. There is a gender divide, with women and girls enjoying less access to information technology than men and boys. This can be true of rich and poor countries alike". United Nations Secretary-General, Kofi Annan Statement to the World Summit on the Information Society, Geneva, 10 December 2003.

A focus on the gender dimensions of information and communications technologies is essential not only for preventing an adverse impact of the digital revolution on gender equality or the perpetuation of existing inequalities and discrimination, but also for enhancing women's equitable access to the benefits of information and communication technologies and to ensure that they can become a central tool for the empowerment of women and the promotion of gender equality. Policies, programmes and projects need to ensure that gender differences and inequalities in the access to and use of ICT are identified and fully addressed so that such technologies actively promote gender equality and ensure that gender-based disadvantages are not perpetuated.

According to the latest UNESCO estimates for 2006, there are 771 million illiterate adults globally, or 18% of the world's adult population. Almost all adults who have yet to acquire minimal literacy skills live in developing countries, in particular those in South and West Asia, sub-Saharan Africa and the Arab States, where the literacy rates are about 60%. Women account for 64% of the adults worldwide who cannot read and write with understanding. The problem of illiteracy among women is particularly grave in the South Asia region. Most of the illiterate women are poor, live in rural areas, are older in age and belong to the linguistic, ethnic and religious minorities. In order to address the enormity of the problem, the United Nations launched the United Nations Literacy Decade (2003-2012) in 2003. The aim of the Decade is to bring literacy to all. The overall target for the Literacy Decade is the UNESCO Education for All (EFA) goal of increasing literacy rates by 50% by 2015. The Literacy Initiative for Empowerment (LIFE) is a global strategic framework and key operational mechanism for achieving the goals and purposes of the UN Literacy Decade. Because of the established relationship between illiteracy and poverty, the achievement of the Literacy Decade Goals is central to the realization of the Millennium Development Goals. The International Action Plan for implementing the Literacy Decade states that "literacy for all is at the heart of basic education for all and that creating literate environments and societies is essential for achieving goals of eradicating poverty, reducing child mortality, curbing population growth, achieving gender equality and ensuring sustainable development, peace and democracy" (UNESCO, 2002). The Action Plan calls for a renewed vision of literacy that goes beyond the limited view of literacy that has hitherto been dominant. The Plan elaborates, `it has become necessary for all people to learn new literacies and develop the ability to locate, evaluate and effectively use information in multiple manners." (p. 4) These developments have come during a time when rapid economic, social and technological changes are taking place globally. Economists acknowledge that increasingly knowledge and technology are playing a significant role in what is termed as `knowledge economy.' A linked development--sometimes called the `information society' is the social transformation that is taking place due to the advent and spread of the information and communication technologies, in varying degrees, through all the countries of the world. The economic, social and technological transformations have significant implications for the skills needed by the workers of the knowledge economy and citizens of the information society. According to Wagner and Kozma (2005), personal participation in such knowledge and technology driven societies begins with literacy. But while it has to be conceded that notions of `knowledge economy' and `information society' characterize changes that are taking place in the developed world presently, the developing countries would need to gear up by providing their citizens with the education and training that they would require to function effectively as workers and citizens in the future. With rapid expansion of ICTs, while educational applications of technology would be made available to school-based programmes, there is a strong possibility that due to scarce resources, these would exclude the poorest and the marginalized groups. There is thus a danger that with growing importance of ICTs in knowledge-based societies, those groups with little or no literacy will fall even further behind those who are literate. The literacy gap that already

exists will therefore grow even wider. Undoubtedly, this would exacerbate the problem of digital divide. If the United National Literacy Decade goals are to be achieved, efforts would have to focus on reaching those at the very bottom extreme of the literacy divide, and there needs to be consideration of how ICT can contribute to achieving those goals.

Literacy and Livelihoods

One of the major problems organizers of literacy programmes for poor women face is that relating to lack of poor women's motivation for literacy. The demand of poor women is invariably for the economic betterment of their lives, rather than a traditional literacy programme. It has therefore been argued that literacy per se means little to poor women unless it leads to a perceptible change in bettering their lives. In other words, the link between literacy and livelihoods has become a central issue. The concept of livelihoods, however, needs to be unpacked. The report of the Uppingham Seminar on Literacy and Livelihoods Revisited held in June 2002, outlines a continuum of meanings that exist among international and national agencies and development practitioners that range from a very narrow economic definition, stretching to a much broader view of livelihoods as including individual and social well being, health and environment. A three year project titled `Women's Empowerment through Literacy and Livelihood Development (WELLD)' funded by World Education and in partnership with PRIA (Participatory Research in Asia) and state level NGOs in Madhya Pradesh and Andhra Pradesh in India, showed how a holistic programme that combines the cycle of acquiring and using the basic literacy skills and an economic knowledge base, can be developed. The important and innovative component of the project was to provide women with the foundation for making their own choices for an improved quality of life. As an `economic education programme' it aimed at helping women acquire the basic knowledge and skills they would need to make informed financial and livelihood decisions. In working with women's self-help groups, it was assumed that once women acquired the skills of reading, writing and numeracy, they would efficiently manage an independent savings and credit group. In other words, the goal of WELLD was to prepare women to master basic literacy skills and make informed decisions about whether and how to expand and improve their current livelihood activities or to take advantage of new livelihood opportunities. At the end-of-the-project dissemination meeting, the achievements of the project were presented. According to the project document, 50% of the women had acquired literacy skills and were now using their skills to write provision list, read scraps of paper, and other private materials. While actively encouraging their children to go to the school, there was a growing interest in women to attend the literacy classes. They wanted to use their literacy skills to acquire new knowledge. Thus, some of them wanted to know how to read bank passbooks. Women had started improving livelihoods through credit and learning a skill from the NGO partners. It was evident that the project had been empowering for women. For in many instances they had used their newly acquired skills and confidence in dealing with people in authority. Women in both states were taking up issues of social justice by demanding equal and minimum wages, intervening in village Panchayats (elected body at the village level) and safeguarding citizens' rights. Most literacy programmes, however, that include a livelihood component, adhere to a rather more restricted economic view of livelihoods that is often labeled as an `income-generation' programme. Interestingly, an analysis of some of the on-going literacy for livelihoods initiatives undertaken mainly in some African countries revealed that those who conceptualized livelihoods in terms of economic benefits seemed to hold a view of literacy that saw it primarily as a prerequisite for the acquisition of knowledge and practical and vocational skills. In other words, what was noted was that `within many literacy and livelihood programmes, a narrow economist view of livelihoods was coupled with a functional, utilitarian and technicist view of literacy' (Papen, 2002) A World Bank and IIZ/DVV (Institute for International Cooperation of the German Adult Education Association) study makes a powerful case for providing livelihood skills training for teaching literacy (Oxenham et al, 2002). The study that was undertaken in four African countries concluded that there was evidence to suggest that it would be worthwhile for vocational or livelihood education policy makers to develop livelihood training with literacy-numeracy instruction for very poor non-literate people, most of whom tend to be rural women. Their study showed that the minimum period needed by a non-literate person to attain a degree of literacy and numeracy sufficient to support advancement in a livelihood seems to be about 360 hours of instruction and practice. The other findings were that the success of livelihoods-plus-literacy/numeracy programme can be reinforced if they start from or, at least incorporate, training in savings, credit and business management, along with

actual access to credit. The study also showed that two cadres of instructors, one for livelihood and business skills, the other for literacy skills, was more prudent than relying on a lay person to teach both sets of skills.

ICT on rural areas:The development of rural areas, including services such as an internet connection, is necessary to stop the decline of small-holder family farming, which experts see as vital for youth employment and food security.

The 500 million or so small-holder farms worldwide are estimated to supply some two billion people with regular food. In Europe, some 95% of farms are at least partly family owned.

The United Nations has declared 2014 the International Year of Family Farming (IYFF) to highlight their importance in the food security debate. But many such farms face the risk of disappearing unless young people can be persuaded to carry on the profession rather than seek "greener pastures" in cities, one expert quipped ironically at a family farming event hosted by the farming cooperative association Copa-Cogeca on Wednesday (19 January). One third of farmers are over 65 years of age and only 6% under 35.

"Intergenerational farming is essential. It is a very obvious model that has to be part of the solution to the challenge we face, with farmers leaving the business," said Gwilym Jones, a member of cabinet for the agriculture and rural development commissioner, Dacian Ciolo?. "If they [farmers] do not earn enough they will join those cities that are creaking under the weight of their [population]".

The agriculture groups present at the conference – including the World Farmers' Organisation (WFO), the Italian confederation of agriculture, Confagricoltura, and the development agency Agricord, as well as the UN ambassador to the EU for IYFF – called for governments to take measures to make the profession attractive to young people.

Copa-Cogeca and the WFO called for access to internet and other social infrastructures "in line with the rest of society".

Roberto Poggioni of Confagricoltura, the Italian agricultural confederation, said: "We need better policies to get young people to stay in rural areas, better infrastructure [and] internet in rural areas," he said.

Rural areas require services

The European Commission estimates that in 2008 41.7% of people living in areas of the EU with low population density had never used the internet. Only Cyprus, the Netherlands and the UK have 100% access to DSL internet in rural areas. The lowest areas of coverage are in Latvia (9%), Slovenia (11%) and in Lithuania (15%), according to the European Commission.

The theory goes that better access to the internet can provide farmers with access to innovation, training and market data. The lack of connectivity means that farmers may be unable to market their products sufficiently or access market data or agricultural research. Jones cites examples of coffee makers in Ethiopia who were able to market their products directly using technology, without relying on intermediaries, who "take away from the margins" of an already unsteady profession.

"It's about making farmers businessmen", a spokesperson for Copa-Cogeca said.

Commission proposals from 2009 said better ICT technology and access could play "a significant role in promoting entrepreneurship and economic progress in rural areas, this contributing to improve the competitiveness of agriculture and forestry, the quality of life and diversification of the rural economy". The proposals have not yet been passed by the European Council of Ministers and published in the Commission's official journal.

But the issue goes beyond internet access. Young farmers in many rural areas may feel that they do not have good enough access to services like healthcare, schools for their children and community centres.

"Farming policies should be part of a wider agenda for rural development to create an enabling social environment with services to make sure our rural areas are good to live in," said Piet Vanthemsche, the president of the Belgian Farmers' Union.

Social media may also be bringing more life to the farming profession, which is often viewed as dreary and lonely in the eyes of young Europeans.

The Twitter hashtag #AgriChatUK had reached the top 10 trends in the United Kingdom by October last year, with many farmers professing that social media was a "lifeline" when out on remote farms in the countryside.

"Farming can in many ways be very, very lonely. This is a great way to bring people together and enable them to communicate with each other in an easy manner," one Twitter user was quoted as saying by the Guardian.

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