

The Context and Impact of Information Communication Technologies (ICTs) on Open Distance Learning

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COMMONWEALTH of LEARNING

**Commonwealth Educational
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INTRODUCTION

In the current globalized scenario, education has acquired a whole new meaning. It has become the engine for economic development which in turn is critical for development. Education enables an individual to create, absorb and process the knowledge which provides choices and opportunities to generate wealth and reduce the twin burdens of poverty and diseases. If an educated individual also has a greater voice in society, the nation in turn gets a dynamic globally competitive workforce.

The recent debates and decisions under the World Trade Organization are fast resulting in education being treated as a global commodity for trade in services, enabling off shore providers to enter education markets.

The result of all these changes is that education systems have to respond to a multitude of challenges, from the knowledge explosion, the economic environments and also to the changing relationship and the blurring of the distinctions between the public and private spheres of activity. The challenge for policy-makers is to understand the merits and demerits of existing educational systems and to make informed decisions on the basis of the best information that can be gathered at the time, so as to capitalize on the advantages of far reaching changes. For policy-makers in the developing world who are facing dual disadvantages of poor educational

infrastructure and digital divide, responding to such challenges is even more urgent.

In this theme paper I shall try to address the context and the impact of Information and Communication Technologies (ICTs) on Open Distance Learning (ODL) from a developing nation perspective, even though the issues and the complexities may remain more or less the same even for developed nations.

NEW TECHNOLOGIES AND ODL

The new technologies, and we are referring to are ICTs, which have brought **e learning** as a generic term into the picture. The term covers a wide range of applications from the simple use of computers in the classrooms to distance education programs delivered entirely online. The Internet and the World Wide Web has become the latest tool for the delivery of educational resources. These resources range from print material in digital format to multimedia and also from the simple to high levels of expertise in subjects and disciplines. The technologies have introduced the culture of virtual classes that offer direct interaction with experts, greater autonomy and flexibility in the delivery and acquisition of knowledge. Some prestigious universities have used the potential of Internet to share teaching material all over the world. A case in point is the Massachusetts Institute of technology, which through its Open Courseware project, made all its course material available online. Many institutions adopt the same policy of openness and as much as seven million new pages of material are added every day in e-format. E learning has brought a "connectedness" in the picture. In a way it has made the term distance education ambiguous as "connectivity" dissolves distance. Interestingly conventional education, in which classroom teaching is pivotal, is enriched through the use of e learning. It could be argued that Internet has triggered the convergence of "conventional learning" and "open distance learning" processes.

What are the contexts and conditions in which e learning can take place? I would list these as those of info-structure,

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teachers—their mindsets and attitudes, content development, and policy and implementation issues.

INFO-STRUCTURE: AN ESSENTIAL CONDITION FOR E-LEARNING.

Today we are witnessing a Third Industrial Revolution- that of new efficient and powerful information and communication technologies— transforming education. However, the use of these technologies requires an infrastructure for the smooth and efficient flow of information and also access to computers. This demands massive investments, a constraint that is pushing developing nations away from use of new technologies. Creation of info-structure is not just a one time investment but it is driven by the costs of constantly improving technologies, making them more competitive as regards memory and speed. Moreover, maintenance of “connectivity” demand trained persons for keeping the network in operation.

Today, only eleven per cent of the world’s population has access to Internet. Ninety per cent of these people connected come from the industrialized countries – North America, Europe and Asia-Pacific. 82 per cent of the world’s population accounts for only 10 per cent of connections in the world. This digital divide is first and foremost question of access to ICTs and needs to be addressed in innovative way.

Several nations have been adopting different strategies for creation of ICT infrastructure. A government initiative such as the National Grid for Learning (NGfL) for school education and Joint Academic Network (JANET) for higher education in the United Kingdom is a good example. These are state-of-the-art networks for next generation Internet to support school and higher education teaching and research respectively. University Grants Commission in India also has set up a network that gives broadband connectivity to 150 public universities.

India is adopting a mixed basket approach through terrestrial and satellite connectivity. China is also setting up a University network. These are heavy investments initiatives supported by the Governments. It appears that private initiatives are now happening in few nations but private ISP providers like to invest provided they find that there is a market for connectivity among industries and public in general. Hence it is the participation of a nations’ industry in the knowledge led economy, which in turn enhances the demand for contemporary education that decides the interest of the private sector. It may therefore be

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essential for the government to invest in the creation of information flow networks connecting higher education institutions. Such an investment, even though of a higher nature, would bring a rich dividend in the future. One lesson that emerges from these experiences is that each nation has to develop its own approach, suitable for its geography and finances, to create info-structure.

TEACHERS: CHANGING THEIR MIND SETS AND DEVELOPING NEW SKILLS AND EXPERTISE

The introduction of ICTs in education requires in effect, a complete rethink and redesign of teaching systems and skills of the academic and administrative staff.

This is the most difficult part. Apart from the change of mind set the teacher needs to develop:

- ❖ a holistic understanding of the ways in which IT contributes to teaching and learning;
- ❖ an understanding of the developing nature of IT capability and awareness that it is integral to the whole structure and purpose of the Curriculum.

The use of such skills allows a competent teacher to

1. use the computer to support everyday classroom or fieldwork activities at an appropriate curriculum level, to address the learning which takes place and also to ensure progression.
2. bring to such use an evaluative framework that enables critical reflection on how IT changes the teaching and learning processes.

The competence could be broadened through continued teaching and in-service education so that the proficient teacher can:

- ❖ adapt to curricular changes, to the needs of learners and to emerging technologies.
- ❖ maintain a holistic understanding on IT in the curriculum.
- ❖ Continue to implement and evaluate IT-supported learning activities.

Training of Teachers requires a well-defined strategy. It has been realized that a nation that has a teacher-acceptable training policy which is implemented as a continuous process has a good chance of using ICTs effectively in the education process.

DEVELOPMENT OF E - CONTENT

The use of ICTs in teaching allows presentation of course material in e formats. Today several support tools are available to create learning material in electronic formats. However the creation of such e learning content requires imagination and good understanding of the learners thinking process. Teachers need to have sound base in core subject and should also have skills and the vision about the gaps in the process of understanding that need to be filled through the process of e learning. A teacher who is able to imagine these aspects well turns out to be a good e learning content creator. Graham Attwell, who had an e-learning project to develop a face-to-face and e-learning program for teachers in adult education, has spelled challenges in development of e content and we list them bellow:

Challenge 1 – Basing e-Learning on Learner’s Own Experiences.

Most e-learning provision – even for programs that claim to be constructivist in pedagogic orientation - is based not on the experiences of learners but on the provision of text or video based leaning materials developed from a teaching perspective. Of course many e-learning programs offer

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opportunities for discussion and reflection but this still takes place within the context of the e-learning materials developed prior to the program. The first challenge is how to develop an e-learning program which is centered on the experiences of the learners themselves and where the outcomes are reflection and self-evaluation of those experiences.

Challenge 2 – Developing a Rich and Powerful Learning Environment.

The second challenge is the development of a rich and compelling learning environment. There is plenty of evidence that e learning has struggled to take off because many e-learning programs are simply boring. Course management systems have made it easy to add text and even pictures to a web interface but the result is less than compelling. Many students simply print the documents and read them off line. Whilst games and simulations may offer a much richer learning experience they are both time compelling and expensive to produce. Video can provide multi media learning materials but the opportunity for learner interaction is usually very limited.

What might constitute a rich learning environment? Griiffey and Hughes (1995) have produced the following rubric. A powerful teaching and learning environment occurs where:

- ❖ It is based on the provision of direct experience rather than indirect experience and the use of representational system.
- ❖ It is based on learning through action.
- ❖ Learning takes place in the presence of experts practicing in the contexts in which the learning is to be applied.
- ❖ Experiences challenge the learners.
- ❖ Individuals become conscious of their implicit theories about learning.
- ❖ Individuals view learning as under their control and as intrinsically rewarding.
- ❖ Learners become conscious of their thinking and learning strategies.
- ❖ There are the conditions of collaborative teamwork, which provide experience for the learner in the form of modeling, feedback and encouragement to reflect.
- ❖ Facilitators of learning such as tutors themselves engage in learning to learn, facing problems, adapting to these in the practical context and reflecting on problem formulation and problem solving strategies.

- ❖ Learners gain conscious cognition of unconscious learning through strategies such as meditation, spontaneity, reflection, intuition, imagination and fantasy.

Challenge 3 – Localizing the Program.

The e-learning program and materials, many a time, will need to be translated into different languages. The culture and approach to adult learners varies greatly in different countries. More critically the program and materials will have to be localized in terms of content to take care of cultural variations. Ideally the e-learning environment should enable teachers and trainers to directly localize materials themselves – without the necessity of high levels of technical expertise.

Challenge 4 – Supporting Individual Learners.

It has been found that teachers themselves come from different cultures and systems and they may have different levels of formal training, different experiences and levels of achievement. Their subject backgrounds will be different. Therefore the e-learning program and materials need to be very flexible to allow different learners to engage in different ways. One course will not fit all. The program and materials need to be designed in such a way to allow individual learners to develop their own personal learning programs. Furthermore, different program participants will have varying amounts of available time. The learning opportunities need to be self paced, to fit in with the schedules of part time learners and allow learners to progress at different speeds.

Challenge 5 – Developing Dynamic and Sustainable Content.

One of the big challenges in developing e-learning content is how to support a dynamic development process. In reality content creation is iterative. Teachers develop materials and pedagogies to support a particular session, test the materials and refine them, go back and add, change and adapt as new needs arise and new ideas occur. Such a natural workflow process is often in conflict with the workflow demanded by e-learning technologies, which rely on the materials being finished prior to their use. This is a particular constraint when developing an innovation and new approach to learning. The

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challenge is to design a workflow process that can support the iterative development of content and is sufficiently dynamic to allow the materials to be revised and adapted and extended and further developed in a continuous process. One interesting idea in developing sustainable and dynamic contents is that the outcomes of learner activities should themselves become part of the content and materials for future participants. This can allow the emergence of ecology of e-learning materials.

Challenge 6 – Recording, Validating and Presenting Learning.

Students will have different motivations for undertaking a program in self-evaluation. Some will want to extend their knowledge and expertise; others will have an interest in using self-evaluation as part of their professional practice. Some may wish to use the experiences and competences gained through the course for assessment and accreditation, dependent on accreditation procedures and schemes in different countries. In this case they may need to validate their learning all learners will need some way of recording their achievement and of reflecting on learning. That means of recording needs to be flexible to meet the needs of different learners.

Challenge 7 – Developing a Community of Learners.

Learning is a social activity and learning and understanding are most powerfully extended within communities of practice. Participation in e learning can be an isolated and lonely experience. The e-learning program needs to develop a community of learners and should facilitate the sharing of practice and experience between learners. The challenge in

program and material design is how best to support the development of such communities of learners.

Challenge 8 – Developing Programs Capable of Flexible Modes of Delivery.

Teachers may wish to use the e-learning program and learning materials in different ways. Some may wish to provide purely on-line learning, albeit with tutor support. Alternatively they may wish to use the materials for self-supported learning without any tutor intervention. Other may prefer to use the e-learning materials as support for face-to-face provision. The challenge is how to develop the e-learning program and materials in such a way that it can be implemented for different modes of delivery.

POLICY AND IMPLEMENTATION ISSUES

While the earlier sections have brought out many aspects in relation to the use of ICTs in ODL, we now draw these issues together and it is essential to discuss them.

- ❖ **Access to technology is of prime importance.** What is important is to decide upon what type of ICTs and how these technologies are to be applied so as to create efficient network for flow of information. It is essential to address these aspects constructively.
- ❖ **The Faculty using ICTs need very well developed training programs.** It is the mindset of faculty that could serve as a big stumbling block in implementation strategy. The institution needs to create an all accommodating and non-threatening approach right from planning for ICTs network to its gradual integration in teaching learning process. This cannot be one time process and it is essential to create support systems to develop their skills on a continuing basis.

The institution needs to have policy and well-defined mechanisms for selection and use of e-content. What is more important is to encourage teachers to develop their own e-content material, but the in house creation of e-content is the most challenging task.

- ❖ **There has to be a well-defined approach for maintenance of network and other hardware.** The in house technical staff needs support and specialized training, and that to on continuing basis, and the institution needs to invest in this aspect. It must be realized that outsourcing of maintenance certainly gives relief to management but it is no substitute for in house supervision.
- ❖ **Institutions need to create a framework within which strategic decisions about use of ICTs can be made.** These strategies need to address strategies for teaching and learning, research, governance and even management of information. The use of ICTs goes beyond just the structure and presentation of courses – information infrastructure, keeping the network and other equipments running, support systems, revisiting curriculum, teachers role and participation learners become important aspects.
- ❖ **There is a necessity to have policy for accessing the e learning material.** The market is being flooded with e-learning objects and content. Various scenarios are emerging where institutions can subscribe to basis access to repository of multimedia material, fully developed e-course material or e-learning objects. Web based delivery of course material is also available. One can also buy these materials in CD-ROM and even DVD-ROM format. It is necessary to give teachers total freedom on the use of such learning material in the manner and the way they would like to use them. However the institution needs to have policy and well-defined mechanisms for selection and use of e-content. What is more important is to encourage teachers to develop their own e-content material, but the in house creation of e-content is the most challenging task. It has been found that academic and other incentives attract teachers to explore into this new terrain.
- ❖ **Making students a part of the entire process of e learning has to be planned in a strategic way.** It is necessary to have an approach and strategy to have students, response to use of electronic resources, both technology wise and e-content wise, with possibility of continual refinement as a built process in teaching and learning. Students' feedback help teachers to update their course material is also essential.

CONCLUDING STATEMENTS

Information and communication technologies have played a significant role in the growth of ODL. The developed nations have used these technologies successfully and have also

demonstrated what is achievable in enhancing the learner's experience. However there are a host of issues, from infrastructure, teacher mindsets and teacher training and maintenance of the information network. There are no generic solutions to these issues. Each nation has to analyze the situation with reference to its own strengths and weakness and decide the strategy suitable for it. However, one thing that is clearly emerging is that ICTs are bringing systematic evolutionary change in how to teach and learn. ICTs have triggered off more change and its impact is also evident in traditional campus-based education. The boundaries between classroom teaching and ODL are fast disappearing and new forms of education are emerging. The model of traditional education, campus based teaching, has dominated higher education for centuries, but today technologies have opened new opportunities. Technologies offer enormous expansion in the possibilities for communication and much more than this they offer different, hitherto unheard of, possibilities for making education-learning experience where understanding takes a center stage. It is for us as educationists to turn these possibilities into reality.

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Professor ARUN NIGAVEKAR, is a well-known Physicist and renowned educationist whose significant contributions to education have been the use of technology for enhancement of utility and quality of higher education and internationalization of higher education.

In his illustrious career of forty years, he has held several key leadership positions. He was Chairman and Vice Chairman of the University Grants Commission (UGC) of India between the years 2000-2005, where he was moving force behind formulating of strategy for development of higher education. Prior to that, he the Vice Chancellor of University of Pune. Basically a Professor in Materials Science in Pune University, he established Center for Advanced Studies in Physics in Pune in 1980. He went on to head the Educational Media Research Center at University of Pune, where he also established Communication Science Department. He was a founder Director of National Assessment and Accreditation Council, an autonomous body of UGC, where he developed a methodology and instruments for judging quality in higher education system. A Visiting Professor in University of York, U.K. and University of Western Ontario, Canada, he is a permanent member and was Vice-Chairman of Asian Physics Education Network, a UNESCO organization, and adviser to Commonwealth of Learning in Canada.

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