The Input of Information and Communication Technology (ICT) In Ensuring Access and Equity in the Production of Teachers Using Open Distance Learning (ODL) Education

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ABSTRACT

Open learning and distance education (ODL) represent approaches that focus on opening access to education and training provision, freeing learners from the constraints of time and place, and offering flexible learning opportunities to individuals and groups of learners. Teacher training is an important area where ODL has made a major contribution. In this work, it was noted that to bridge the gap between teachers in rural and urban areas, ODL is of immense benefit to teachers who are in remote areas because it provides them with easy access and active learning environment that is cost effective. Also, ODL supported by an affordable and reliable Information and Communication Technology (ICT) facility can be of immense help to teachers who are aspiring to achieve greater heights in their chosen fields, irrespective of their geographical locations. When access and facilities for professional development are provided, teachers are advised to use them so that the efforts in providing such facilities will not be wasted. It was concluded that (i) the use of ODL and ICT has the potential to distribute opportunities for learning more widely and equitably across the teaching force and (ii) the centerpiece of ODL founded on ICT platform is for ensuring that all concerned have equal access to required resources.

Keywords – ODL, ICT, Pre – Service, In – Service, Teahers' Continuing Education.

1. INTRODUCTION

The pursuit of the goal of quality education for all must be premised on availability of quality teachers for all (Rivkin et al., (2005) and UNESCO, 2006). They identified that the availability of quality teachers is the single most important school variable influencing student's achievement. They also observed that it is also the most important element in promoting social justice in terms of educational quality in rural and remote areas. Their studies also showed that teachers in rural and remote areas tend to be less qualified than their urban peers and at the same time, they are less well-resourced and supported. In response to these important observations, support for teachers' continuing education has been receiving international and national attention. Teachers' professional development is often judged in terms of efficiency, effectiveness, and its impacts on teaching and learning, leaving aside the issue of whether or not teachers have rights to professional development. Studies conducted with regards to teacher's professional development showed that even when teachers were eligible for inclusion in training programs, it was not always easy for them to access such trainings programs. The reason being that the choices and decisions about participation were never made by the teachers themselves, but by planners and administrators at higher levels.

Removing these barriers to access will create an enabling environment that will widen participation and boost learning opportunities as well as enhance the production of quality teachers. Providing this enabling environment where teachers will have equitable access to relevant professional learning opportunities presents governments and planners with huge challenges. Learning opportunity here refers, not just to a training event that addresses equity and accessibility, but to an experience that will yield an anticipated or inferred learning outcome. This is precisely where the combination of Open Distance Learning (ODL) and Information and Communication Technology (ICT) comes in handy. With ODL and ICT, teachers from both urban and remote rural settings will be opportune to engage in productive professional learning.

2. CURRENT APPROACH TO TEACHERS PRODUCTION

Prior to being engaged as a teacher it is imperative that the prospective teacher earned a formal qualifications in what is referred to as pre-service teacher education programs. Subsequent professional development follows what is described as in-service professional development programs that may last throughout their careers. As observed in most underdeveloped and developing countries, teachers have little or no pre-service preparation before starting to teach and may not have opportunities to participate in in-service professional development activities.

2.1 In-Service Training

This is currently the adopted approach to developing teachers. The goal of this in-service professional development is to improve the knowledge, skills, and commitments of teachers so that they are more effective in planning. Sometimes, in-service refers to a prescribed, extended course of study, mirroring the pre-service teacher education curriculum and leading to some level of formal qualification. This form of in-service program is provided for teachers who are already working in the classroom but are unqualified in the sense that they do not hold pre-service certificates, diplomas, or degrees. These programs are found most frequently in countries with high percentages of teachers with no formal qualifications. Usually, in-service refers to professional development activities for all employed teachers, those with and those without formal qualifications. These programs range from occasional, ad hoc workshops to continuous, comprehensive, career-long programs of professional learning.

There are two basic sub classifications of in-service professional development programs of teachers as presented below.
(1) Staff development and in-service training: This is sometimes used for short-term workshops or short courses that offer teachers information or ideas, often abstract and unrelated to teachers' work. They can be based on the delivery of information by experts to teachers, whose role is largely passive.
(2) Professional development or continuing professional development (CPD): This is used for a continuous, career-long program that encompasses more comprehensive teacher learning and relies strongly on more-active forms of learning, sometimes facilitated in workshops but often in teacher groups at the school or cluster level (Villegas-Reimers, 2003).

Many countries are now shifting from the former to the latter approach to teacher professional development. In-service professional development programs help teachers acquire or deepen their knowledge about subject matter content, teaching skills, and assessment methods.
In-Service teacher professional development programs helps in achieving the following:

(1) Improving teachers' general education background

(2) Improving teachers' knowledge and understanding of the subjects they teach

(3) Understanding how children learn different subjects

(4) Developing practical skills and competencies

(5) Learning new teaching strategies

(6) Learning how to use new technologies

(7) Strengthening professionalism and ethics

In-service professional development programs are particularly important when reforms in teaching and learning are introduced. Many countries are seeking to shift from pedagogies based on rote forms of learning and memorization of facts to instructional practices promoting more-active forms of learning and emphasizing critical, analytical, and problem-solving skills. Such reforms can be successful only if all teachers, regardless of the nature of their initial pre-service preparation, have the understanding, knowledge, and skills to implement new practices in the classroom (Barrow et al., 2007; Ginsburg, 2010).

The desired professional development of teachers requires major reforms that can be attained when teachers learn over time through a process that combines new learning with structured follow-up practice in the classroom. It is now recognized widely in the literature of capacity building that teachers, or other professionals, rarely change their practice in significant ways as a result of participating in occasional or one-time expert-driven workshops. Another important dimension of teacher in-service programs is mentoring new teachers or supervising and supporting novice teachers during an induction phase, often the first 2 years of practice. Mentoring, either teaming of a new teacher with an experienced teacher, group mentoring through a school-level teacher community of practice, or both, has been shown to help retain new teachers and improve their effectiveness in their classroom and other roles (Johnson, 2008).

The effectiveness of teacher in-service professional development programs is often questioned, particularly in relation to the high costs of even modestly budgeted programs. There is an urgent need, particularly in developing countries, for further study of the impact of different kinds of teacher professional development programs in terms of their effect on teachers' practices, students' learning, and other outcomes. Whatever the policy stance may be on teachers' continuing professional development, the mechanisms and resources for enabling teachers' career-long learning commonly fall short of what they need to be. In most developing countries, local government administrators spend a substantial part of their education funds on teachers' salaries, leaving little funds for a number of competing demands including teachers' professional development. In addition to these financial constraints, traditional in-service education may be strongly entrenched in both the institutional practice and the structure of budgetary allocations. This limits the learning opportunities for teachers.

In this scenarios, rural and geographically remote teachers are frequently at a disadvantage and this contributes to the rural-urban educational quality gap observable in many countries.

3. ODL MODE OF PRODUCING TEACHERS

Two main factors have led to an explosion of interest in distance learning: the growing need for continual skills upgrading and retraining; and the techno-logical advances that have made it possible to teach more and more subjects at a distance. The terms open learning and distance education represent approaches that focus on opening access to education and training provision, freeing learners from the constraints of time and place, and offering flexible learning opportunities to individuals and groups of learners. Open and distance learning is one of the most rapidly growing fields of education, and its potential impact on all education delivery systems has been greatly accentuated through the development of Internet-based information technologies, and in particular the World Wide Web.

Major changes have occurred in the world economy, in particular with regard to the information-bearing technologies. These demand the attention of governments for education and for human resource development. While the last two decades have seen considerable growth in education and training, the world still suffers from intolerable inequalities at the international level and sometimes within nations. Many countries are struggling with limited access to education and training for children and young people, and at the same time have to address the basic needs of an older generation. Low quality and insufficient relevance are other concerns. At the root is often the problem of financing adequate provision, and of outdated structures for education and training

For the student/learner open and distance learning means increased access and flexibility as well as the combination of work and education. It may also mean a more learner-centred approach, enrichment, higher quality and new ways of interaction. For employers it offers high quality and usually cost-effective professional development in the workplace. It allows upgrading of skills, increased productivity and development of a new learning culture. In addition, it means sharing of costs, of training time, and increased portability of training. The term open and distance learning denotes both the fact that all or most of the teaching is conducted by someone removed in time and space from the learner, and also the fact that the system is characterized by openness and flexibility, whether in terms of access, curriculum or other elements of structure.

Teacher training is an important area where open and distance learning has made a major contribution. This includes initial training for formal qualifications, in-service supplementary training for formal upgrading, and continuing in-service training in particular subjects and topics. Many examples, particularly from developing countries, show that teacher training at a distance may reach large groups of teachers and have profound impact on the development of national education systems. The use of open and distance learning for teacher education is therefore a crucial strategy when expansion or quality improvement is needed in the public education system. As a force contributing to social and economic development, open and distance learning is today one of the most rapidly growing fields of education and training. It is fast becoming an accepted and indispensable part of the mainstream of educational systems in both developed and developing countries, with particular importance for the latter. This growth has been stimulated in part by interest among educators and trainers in the use of new, Internet-based information technologies, but also by recognition that traditional ways of organizing education need to be reinforced by innovative methods if the fundamental right of all people to a life of learning is to be realized

Open and distance learning is a powerful tool for achieving education and training needs and a potent instrument in creating a learning society capable of bringing about scientific, technological, social and economic development. Open and distance learning (ODL) education benefits the individuals who are in remote areas because it provide them easy access and active learning environment that is cost effective. ODL has the flexibility to accommodate varying levels of enrolments and the capacity to reach out to all corners if it is built on a reliable ICT infrastructure. ODL provides opportunities for the fulfilment of the lifelong learning ambitions of some individuals. If the ODL is supported by an affordable and reliable ICT facility, all those aspiring to achieve greater heights in their designated areas, can explore the opportunities provided without their remote geographical locations constituting any obstacles.

4. ICT IN ODL MODE OF PRODUCING TEACHERS

The growth of Information and Communication Technologies (ICT) has added new options for teachers' professional development (Unwin, 2005 and Leach et al., 2006). However, understanding how open distance education and ICT addresses critical issues of equity, access and achievements in teacher's development poses some questions. For example:
   (1) How does ODL and ICT support goals of social justice in teacher education in rural and resource-poor areas?
   (2) What kind of criteria should we use in judging their achievement?

Through using ICT, teachers have the latest knowledge of the new curriculum reform and can get guidance and support in putting it into practice. Teachers can now provide more chances for communication, cooperation and conscious inquiry in their lessons.

While distance education and ICT can facilitate teachers' continuing education, their use cannot be divorced from the complex issues surrounding teachers' rights to it.

In situations like these, open distance learning education and ICT can bring benefits to disadvantaged groups and make educational provision more equitable. But how can we focus attention consciously, rather than incidentally, on social justice in distance education projects for teacher development? If a rights-based or social justice perspective is adopted, what would be the basic criteria to use? The next section offers a possible framework for this. Providing access and facilities for professional development is one thing while teachers' use of them is another. The opportunity to learn to use ICT by rural teachers will be a big step up in achieving equity with teachers in urban areas. This is because their quality will be raised, their ideas will change, their teaching skills will improve as they will have a good command of new teaching means and their vision will be widened.

4.1 ICT Infrastructure For ODL Mode Of Producing Teachers

Information and Communication Technology (ICT) is at the core of the facilities required for open and distance learning (ODL) education. ICT has various proven tools and technologies needed to meet the requirements of a learner at various phases of any learning cycle. As a result of the heterogeneous requirements in open distance learning, there are   issues and challenges that must be addressed in the usage of the technology and the service(s) being provided through ICT.

Typically, ICT makes it possible to overcome the challenges of distance and limited human resources in ODL. Unlike in the conventional ODL learning environment, ICT makes it possible to provide services of the same quality to different learners at different locations and at different phases of the same training program. Thus ICT engenders equitable access in the development of teachers using ODL education.

4.2 Hardware, Software And Networks Needed To Promote Access And Equity In Education

The ICT infrastructure required to support ODL education can be categorized into the following. These are the network infrastructure, the computing infrastructure, the system and application software, the Internet Service Provider (ISP), the bandwidth, the policy framework and the security infrastructure.

4.2.1 Network Infrastructure

To provide open distance learning education a reliable network infrastructure is required. All services must be accessible readily by all legitimate users of the network and access to desired contents, must be equitable.

4.2.2 Hardware Infrastructure

The standard hardware infrastructure required for ODL education include standard computer servers (database servers, web servers, backup/recovery servers and application servers) to host various learning and support services being provided. At the infrastructure users end, personal computers (desktop computers, laptops and note books), IPad, IPhone or any other smart mobile devices are required   to access and utilize services.

4.2.3 Application software

Software is a main component in open distance learning education. Presently, software applications that supports Web based technologies are at the core of system and application software for developing ODL education platforms. Such Web-based software provide for the development and deployment of services that can be accessed anywhere and at any time. Some typical examples of such software, most of which are open source are LAMP (Linux, Apache, MySQL and PHP) and WAMP (Windows, Apache, MySQL and PHP). There are several learning management systems (LMS) available and MOODLE is one of popular LMSs. LMS is a complete system that covers all phases of a system learning life cycle.

4.2.4 Internet Service Provider (ISP)

ISP's are organizations who provides Internet bandwidth services Internet bandwidth is needed to access Web-based ODL learning and support services. The Internet bandwidth required for effective delivery of services depends on the number of users that will be accessing service(s) and the contents of the information being conveyed. .

4.2.5 Security

Security must be provided to safeguard all the ICT infrastructure supporting the ODL infrastructure. The standard security devices used to protect Web based systems of this nature are firewall, Intrusion Detection System (IDS), Intrusion Prevention System (IPS) on the server side and at the user end, Internet security software or antivirus, antispyware or other systems monitoring software are required to prevent the users systems against malicious attacks and damages. Other security controls required are access to the network infrastructure itself, and the controls relating the setting up of privileges and access rights to designated information by authorized users.

5. CONCLUSION

The use of distance education and ICT has the potential to distribute opportunities for learning more widely and equitably across the teaching force. It can also improve the quality and variety of the resources and support available to teachers, opening up new avenues to professional development. If social justice is to be achieved however, in terms of equity of educational opportunity and services, the provision needs to be planned in ways that make it available, accessible, acceptable, and adaptable to all teachers, empowering them to make choices in what and how they learn.

ODL based on a reliable ICT infrastructure will make the core objective of the educational policies and philosophies of nations less farfetched. This is because it will provide for an accessible, equitable, qualitative, affordable and democratic national education service. **O**pen and distance learning system of education that is established on a reliable and affordable ICT infrastructure will constitute a veritable platform for effective production of quality teachers that are needed for development of any nation's capacity for social and economic improvement. The ODL founded on an affordable and reliable ICT platform is exceptionally suitable for the production of teachers who will remain abreast of developments in science and technology courses In summary, the centerpiece of ODL founded on ICT platform is for ensuring that all concerned have equal access to required resources.

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