Role of Teachers in Technology-mediated Distance Education: A Preliminary Synthesis

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Abstract

Technological advances in distance education have transformed the teaching learning processes. It has been realised that there are innumerable possibilities of using educational technology as a crucial pedagogical resource during teaching and learning. Technology has expanded the opportunities for students to access higher education but on the other hand it has presented challenges before the teachers to devise creative methods of teaching. Distance education today demands a change in the role of teachers so that meaningful leaner-centric interactions and discussions take place. However, at several occasions it is feared particularly in distance education systems that technology would replace teachers. In this context, it is necessary that teachers in distance education make use of the latest educational technologies as a resource to carry out effective teaching. In view of this, an attempt has been made in the current paper to explore the role of teachers in technology mediated distance education. The paper finally asserts that effective faculty participation is the key driving factor towards the success of technology-mediated distance education.

Keywords: *technological resources, teachers, distance education, learning*

Introduction

The nature and delivery of distance education has changed like never before. For example, previously, distance learning institutions sent study materials to students by post and received assignments back in the same way. Later, e-mail was used and content was merely dumped in a digital repository for students to access. The integration of social media tools and interactive platforms like blogs, wikis and discussion forums have enriched the learning experience of the learners.

The ever-evolving nature of technology continues to push distance educators to use new tools to create learning environments that will prepare students to be life-long learners, who can continue to acquire new set of skills and collaborate with diverse groups to achieve their objectives. In view of this, the teachers have to remain updated with the latest know how of the technologies and to carry out effective teaching process using technologies.

Educational technology has played a central role in improving teaching and learning and has been instrumental in bringing about educational reforms around the world. Numerous scholars argue that integrating technology and education can enhance teaching and learning activities in ways that can support student-centred teaching with more active student involvement in the learning process (Cope & Ward, 2002; Edelson, 2001; Jonassen, Hernandez-Serrano & Choi, 2000). Nowadays, because of the advent of technology, students are not viewing distance education as the last resort but are attracted to it because of associated benefits.

The benefits of technology are fruitful only when teachers make full use of it. University faculty in distance education are facing challenges in the areas of course design and development, delivery mechanism, communication media, creation of an engaging learning environment, assessment and evaluation, and use of new technologies. Due perhaps to lack of training and dearth of resources, distance education systems are not fully utilizing these technologies.

This paper probes the influence of technology on the distance education system and how the role of faculty has changed with the emergence of the technologies in distance education. The paper also emphasizes the role of professional development needed to update teachers regarding the use of technology in education.

Objectives of the Paper

This paper was prepared with the following objectives in mind:

- To explore the influence of technology on a distance education system.
- To explain the changing role of teachers in distance education.
- To identify the challenges faced by distance education teachers in adopting latest educational technology.
- To emphasize the role of professional development needed to update distance education teachers regarding the use of technology in distance education

What the Current Literature Says

The journey of the advent of technology in education has been well researched by scholars. The traditional correspondence or TV based style of distance teaching was enriched with (interactive) educational media, Web-based courses, Internet-enabled synchronous and asynchronous communication and collaboration (Qu & Nejdl, 2001). A number of studies have been conducted on the impact of technology on the quality of distance education. The usefulness, ease of use and effective delivery has attracted large numbers of fresh students and working professionals towards this mode of learning. Researchers have studied the various types of technological tools and their applications. Internet and other wireless communication facilities support the seamless continuation of interaction when the learner is away from his computer.

A lot of studies have also been conducted on the attitude of teachers towards the use of technology in teaching learning process. Chai & Khine (2006) argue that teachers' technology use is influenced by factors which can be classified in two broad categories, external environmental factors and the personal teacher characteristics.

Sadik (2006) in his study in Egypt reported that the more positive teachers' attitudes were towards technology the more likely they were to integrate it in classroom. Various studies on teacher attitudes conducted in different countries have revealed positive attitudes toward technology and computers (Hong & Koh, 2002). This study of Hong and Koh (2002) concluded that attitudes were more strongly influenced by prior computer experiences than by gender. Sadik (2006), in another study, also established a gender relationship with positive attitudes towards computers in favour of males.

It has also been found that distance education teachers are hesitant to use newer educational technology and are resistant to changing their style of teaching. For example, studies in various countries have indicated interesting ways educators use technologies of learning. Ball and Levy (2008) investigated the impact of self-efficacy, computer anxiety, and technology experience on instructor intention to use emerging learning experience in a small private university in the US and found that self-efficacy was the only major determinant of instructor intention. Teo (2009) found that computer self-efficacy directly impacts pre-service teacher's perceived usefulness, perceived ease of use, and behavioural intention in Singapore. Liaw et al. (2007) found that perceived self-efficacy determines instructor behavioural intention to use e-learning in Taiwan. Albirini (2006) investigated the perception of school teachers regarding the use of ICT in education in Syria, and the results highlighted the importance of teachers' vision of technology, their experiences and the cultural conditions on their attitudes towards technology. Mahdizadeh et al. (2008) found that a teacher's previous experience with e-learning environments and ease of use explain teachers' perception of the usefulness of e-learning environments and their actual use of these environments. Instructor innovativeness is important to the satisfaction of e-learning (Van Raaij & Schepers 2008). The notable work has been carried out by O Niel (2006) where he has observed that the teacher is no longer the "dispenser of information", with the increase access to resources on the Web. Similarly Sellers (2001) writes that the traditional classroom teacher is often viewed as the initiator of all classroom activities, and as such is held responsible for students' learning opportunities. It has also been mentioned in his study that the role of teachers and learners is changing with the advent of technology. In her research on the role of teacher and learner in technology-mediated learning Vaghela (2015) mentions that the teacher is not actually teacher in the traditional sense of the term, but an instructor of technology-mediated learning which is not based on traditional teaching method but on method of giving instruction for use.

In recent years, technology and computers require lesser financial resources, thus spreading at faster rates (Cepni, Tas & Kose, 2006; Newhouse & Rennie, 2001), and the teachers have always been the central agents in the utilization of any reform based innovation. Even if the school has sound technological infrastructure, and the teachers have no willingness or attitude to learn new technology, there is no use of technological support. If the goal is to promote technology enhanced education, it is of primary importance to investigate what teachers perceive of technology and its use in education, what their knowledge and skills are or what skills they need to further develop (Kahveci, et.al., 2011).

The Process of Synthesizing Relevant Research Results

A review-based research was undertaken for 50 research papers which were evaluated and for which an attempt was made to establish the impact of technology on changing the role of distance education teachers. The inferences have been drawn based on taking the conclusions of these research papers. An attempt has also been made to figure out what prevented the faculty from giving away their traditional roles and what were the chief motivating factors for them. The information was collected from various secondary sources like reports, articles, journal papers, books, and other sources. The source of primary data was through informal interaction with the distance education teachers in various state and national open universities.

Distance Learning and Use of Technology

Openness and flexibility has made distance learning a viable quality alternative to full-time contact study. A number of programmes are designed and are on offer in distance mode because the learners find it more convenient to study in distance mode than in conventional classrooms. Earlier, distance education was considered as an option only for those who could not get admission elsewhere. However, the interference of technology has transformed the distance learning process. Moreover, the need for skill based courses requires more technological support to provide real time experience to the learners.

There are certain advantages of the use of technology in distance learning. The comfort and user-friendliness of digital media has reduced the load of faculty in several ways. For instance, faculty can upload the content of their lecture on a server or send through group mail and thus relieve students from the burden of taking notes during the lecture. The student who has missed any class also remains informed through this. Further, the distance learners come from different backgrounds and therefore learn in different ways and at different pace. Technology creates an environment in which potential of the individual learner is utilized in the best possible manner. The self-organized learners take an active role and personal responsibility in the development of their skills and competencies with the help of available technology.

In the past, there was only interpersonal contact between the teacher and learner in distance learning. There was no peer group interaction. But today with the use of technology, the learners are able to interact with each other in spite of being geographically separated. Moreover, the 21st-century learner wants to stay connected with peers and receive prompt feedback from the instructor. With the emergence of technology, participation and contribution from diverse students has become more equitable and widespread. The learner may access the information in real time while actively collaborating, or delayed time at the learner's convenience.

Changing Role of Teachers

There is no question that the role of the teacher is changing (T.H.E. Journal, 2000). It is expected that distance learning enrolments within the next decade will increase and therefore it will have profound impact on faculty members' instructional roles. For instance, Beaudoin (1990) recognized that faculty would have to adjust monitoring and evaluating the work of geographically distant learners rather than transmit information in person. Electronic technologies have increasingly changed the interaction between instructor and student. For most of the 20th century, distance education involved pen and paper, the typewriter, and the postal service, which provided the sole link between the individual instructor and the individual student. With the development of the radio and then television, it became possible to transmit educational courses, programs and content widely using these mass media distribution channels. (Moore & Anderson, 2003). Likewise some organisations are doing away with traditional buildings, providing flexible hours, making available large amounts of multimedia, etc. to accommodate the changing the role of the distance teacher in today's times. The teacher no longer has to be in charge, but can give some of the control over to the students and the technology. The task for the teacher is to arrange the learning environment in such a way as to provide situations in which students use their own knowledge to construct meaning of a particular problem.

Teachers should themselves be well-trained in order to guide the students on the right path of Technology Mediated Learning. It doesn't mean that there is no place for the teacher in the classroom but it means that the teacher has to play different and multiple roles. Most of the time teachers may continue with their traditional roles of lecturer, information giver, or discussion leader. The new teacher roles are in the areas of instructional design, training, collaborative partner in learning, and team coordinating. "Each role is associated with specific set of activities and is made possible by the use of technology a project-based learning in inquiry-based instructional methods." (Daithí Ó Murchú, 2015).

Technology-mediated learning is not based on teaching method but it is based on how the teachers are giving instructions in the classroom. As the teaching becomes more learner-centred, the faculty fear that their role would be replaced by technology and ultimately they would lose their authority over the classrooms. To come out of this anxiety, it is essential that the teachers have a keen understanding and appreciation of their changing role. They must stay motivated and enthusiastic about the intrinsic and extrinsic motivating factors (Lee, 2001; Schifter, 2000). Personal motivation to use the technology is an intrinsic motivator and chances of promotion and increment are the extrinsic motivators for the faculty to use technology in preparing their lessons and taking classes. Likewise there are intrinsic and extrinsic barriers too. Intrinsic barriers are that the faculty feel threatened by the technology and are concerned that online courses and programs will replace the on-campus learning experience. They worry about their career and the changes within the field and what those changes may do to their job security (Dooley & Murphrey, 2000). According to Levy (2003), faculty members are faced with a number of new situations when teaching an online learning class as opposed to a traditional class.

The most important role of the instructor these days is to model effective teaching and accept "the responsibility of keeping discussions track, contributing special knowledge and insights, weaving together various discussion threads and course components, and maintaining group harmony" (Berge, 1995). The desired role of distance education teachers are discussed below:

1. **Team Member.** Sellers (2001) wrote that the traditional classroom teacher served as the initiator of all classroom activities, and as such, he/she was responsible for students' learning opportunities. Technology mediated learning is ultimately student-centred and student-driven. It encourages student-centred learning in which intellectual attainment replaces the didactic force of the teacher as the main impetus of learning. As evidenced by various studies mentioned, the most critical issue in this educational revolution is the role of the instructor. The distance instructor loses a certain autonomy common in the traditional classroom. In technology driven learning, the instructor becomes a member of a team; subsequently, the instructor no longer has total control of the learning environment. For a number of years, teachers have managed classes by virtue of their control on information. Now, with instant access to vast resources online, students are no longer dependent on the teacher alone for knowledge.

   The Office of Technology Assessment (OTA) states that, "...teachers have to be allowed to choose, willing to make choices, and qualified to implement their choices effectively. OTA finds that, just as there is no one best use of technology, there is no one best way of teaching with technology. Flexibility should be encouraged, allowing teachers to develop their personal teaching approach utilizing the variety of options offered by technology" (US. Congress, 1988, p. 17).

One of the important areas that affect the change of the role of the instructor in distance education is the Transactional Distance Gap. Moore's Theory of Transactional Distance defines the role of faculty in distance education. This concept of "transactional distance" defined the relationship of instructor and learner. (Moore & Anderson, 2003) According to Moore, transactional distance is the gap of understanding and communication between the teachers and learners caused by geographic distance. It is filling this 'gap' of understanding and communication between the teacher and learner that defines the role of the instructor. The instructor must be the one to bridge that gap through special teaching techniques, distinctive procedures in instructional design and the facilitation of interaction. (Moore & Kearsley, 2005).

2. **Team Coordinator.** "Team coordinator" was another teacher role that is identified in this paper. The focus of this role was on the active assignment of individual students to project or portfolio teams. In addition to opening up opportunities for collaborative and social learning activities, teachers who assumed the "team coordinator" role created opportunities for peer tutoring, apprenticeship modelling, and support between students with mixed ability levels." (Daithí Ó Murchú, 2015).

   Muirhead & Min (2001) wrote that distance education would demand changing the traditional role of teachers from information transmitters to guides who arrange meaningful learner-centred experiences. A good classroom teacher is not necessarily a good online teacher (Davis & Roblyer, 2005). Distance educators have more options than just wikis, blogs, or podcasts to enhance interaction. The teacher is no longer the "dispenser of information", with the increase access to resources on the Web. Sellers (2001) writes that the traditional classroom teacher as such is held responsible for students' learning opportunities. Online learning is ultimately student-centred and student-driven. As evidenced by various studies mentioned, the most critical issue in this educational revolution is the role of the instructor. The distance instructor loses a certain autonomy common in the traditional classroom. In technology mediated learning the instructor becomes a member of a team; subsequently, the instructor no longer has total control of the learning environment. A learning environment is created in which students are active participants in the learning process. (Sellers, 2001).

   New models of teaching can accommodate the needs of the 21st-century learner by including activities that allow students to contribute to the learning process at any time, from anywhere. Students may take on the role of the instructor by sharing expertise, presenting sections of the course content, and using the file-sharing capabilities to share documents with the instructor or peers. Learning "on the go" is more commonplace than ever before. The ability to conveniently add one's contribution to a collaborative project or connect with peers at any time facilitates access to education.

   The 21st-century learner requires educational opportunities not bound by time or place, yet allow interaction with the instructor and peers. Voice and videoconferencing, whiteboards, live presentation tools, application sharing, chats, and emails are just a few of the many tools available for interaction and collaboration. Blogs, wikis, and podcasts, as well as social software are emerging technologies that foster the sense of connectedness between the members of a group.

3. **Partner in Learning.** Emerging technologies that foster different forms of interaction may also affect the role of the instructor. Evolving theoretical frameworks and paradigm shifts may no longer support the role of facilitator. Formerly a deliverer of knowledge, the instructor's role changed over the years as technology advancements presented different kinds of responsibilities and new theoretical perspectives emerged. By the use of collaborative technologies such as wikis, blogs, and podcasts, the role of facilitator has now converted into an active partner. The instructor must view the students as contributors of knowledge, and thus allow them to participate in the creation of content. This radical change in view is supported by the contribution-oriented pedagogy used by Collis and Moonen (2005).

   Emerging technologies afford new opportunities as well as responsibilities. It is the responsibility of the instructor to maximize student interaction. As emerging technologies are implemented to support interaction, the instructor's role will include not just monitoring and facilitating the interactions, but also actively participating in the exchange of knowledge and reflection. As a partner in learning, both learner and instructor will benefit from the mutual learning process.

4. **Trainer.** "The role of "trainer" is also emerging as the technology widens its scope. "Trainers" give individual instruction to enable skill development. This training or mentoring was accomplished through modelling the use of multimedia and technology, and helping the students to see how they might use software tools to accomplish unique language learning tasks." (Daithí Ó Murchú, 2015)

5. **Technology Savvy Mentor.** As distance educators seek to incorporate technology in their classrooms they face the challenge of meeting the needs of a varied learner segment that is more mobile and technology-savvy than any previous generation. The teachers must understand that Gen Z kids will grow up with a highly sophisticated media and computer environment and will be more Internet savvy. Students usually adapt more quickly than their teachers to new technology. On the other hand, teachers who have begun to feel comfortable with the equipment don't mind having their students teach those new tips and tricks (Apple Classrooms of Tomorrow, 1992). Research on the educational uses of these emerging technologies is limited, yet the information available demonstrates their versatility. Wikis are flexible enough to serve different purposes and can be adapted in different courses. Researchers and practitioners are recognizing emerging technologies as powerful tools for building social interaction among teachers and learners. Higher levels of technology will make significant inroads in academics and customized instruction can be provided to the learners.

6. **Content Developers.** Content development is a critical area that is too often overlooked when it comes to the application of technology. Latest technologies can be used to develop the content in such a way that it becomes more informative and interesting for the learners. There is voluminous educational material which is mostly in English. With the help of technology, the print based content can be converted into digital media. Interactive learning materials on CDs-, DVDs can be used to develop educational content. In this way the teacher in distance education has to play the multiple roles of scriptwriters, audio and video production specialists, programmers, multimedia course authors, and web-developers also. However, to provide the technical support many universities with distance education programs have dedicated technical support and content development units.

7. **Instructional Designer.** "Instructional designer" is one of the more common new roles taken on by distance education teachers. Just as the students in distance education are termed as self learners, the teachers are also free to design and plan their lectures as per their choice by effectively utilizing the technology. Depending upon the topic, they can use A/V tools and design the instructions in their own unique ways. This is also rightly said that "technology does not teach students; effective teachers do." (Palloff & Pratt, 2000). It has been found that many times, the instructors do not design their lessons to take advantage of the technology presented. This affects the quality of the instruction.

Challenges Faced by Teachers

Proactive implementation of emerging technologies is dependent on comfort level, monetary resources, and visionary leadership of faculty. Revising course design and delivery structures is a time-consuming and a costly endeavour. However, time and money may not be the only factors that would inhibit the integration of emerging technologies. Visionary educators seeking to improve current practices face the conflict between the freedom afforded by emerging technologies and the administrative control enforced for legal reasons. Others are confined by lack of funds or support from government agencies. Many educational institutions are looking for ways to improve their current practices in regard to technology integration and how it enhances student interaction.

Many institutions are restricted by legal concerns and administrative control, other institutions around the globe face monetary or political constraints that may prevent them from integrating new technologies. Integration of emerging technologies is also difficult for countries that lack the connectivity. Lack of support from government is responsible for delaying the advancement of distance education in Brazil, forcing institutions to adopt a hybrid method of delivery only (Litto, 2002) Litto acknowledges that this is a frustrating problem for educators who recognize the need to revise the outdated educational system and see asynchronous delivery as part of the answer. In the meantime, it may be necessary to choose emerging technologies that extend face-to-face collaboration for those students participating in mixed-mode delivery.

Proactive leadership can minimize the limitations imposed by administrative control, lack of infrastructure, or lack government support. Some other limitations of the use of technology in distance education are lack of staff training, lack of expertise in course designing, development and delivery, lack of knowledge of technology, lack of support for distance learning , inadequate faculty selection for distance learning courses, inappropriate courseware, programme implementation and evaluation strategy.

Undoubtedly, the use of technological resources is rapidly expanding, but this takes place in contexts where the expectation is often highly ahead when possible technological solutions are directly experienced. Too often the opportunities and advantages of the use of technology in the learning process are poorly exploited. To effectively use the technology, the professional development of the teachers towards teaching tools is of prime importance. The teachers must be trained with particular skills to provide suitable applications.

Ideally, these should be addressed in pre-service teacher training and built on and enhanced in-service. In some countries, like Singapore, Malaysia, and the United Kingdom, teaching accreditation requirements include training in ICT use. ICTs are swiftly evolving technologies, however, and so even the most ICT fluent teachers need to continuously upgrade their skills and keep abreast of the latest developments and best practices.

Unfortunately, most teacher professional development in ICTs talks more about "teaching the tools" and less on "using the tools to teach." The integration of emerging technologies into new models of teaching must also take into consideration cultural differences and learning tendencies, respecting the individual.

Conclusion

For distance education to be successful, faculty needs to be trained in the technology as well as the pedagogy of distance learning. Teaching through technology is a new experience, different from teaching in the classroom. It requires a different set of skills and a different pedagogy. Training for teaching via distance education is essential (Wolf, et. al.,2005)

Faculty development workshops to introduce faculty to distance education technology and to the changes in pedagogical approach needed to effectively conduct distance education classes are a must. Through these types of workshops, faculty can learn, among other things, strategies to improve the interpersonal dimension of distance learning, a concern of many educators. Designers and administrators must understand how the technology tool selected will aid interaction and which types of interaction it will promote.

Emerging teaching models will undoubtedly integrate new technology tools, yet those tools that foster interaction must be deliberately integrated into the design process to ensure appropriate application. The possibilities are as varied as the tools themselves, the impact and implications of technology on new ways of learning and new models of teaching are far-reaching. Although administrators have identified student–student interaction as a weak area, they consider many of the emerging technologies explored in this article to be "unsafe" practices and therefore do not authorize their use.

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