International Scholars Journals

International Journal of Management and Business Studies ISSN 2167-0439 Vol. 6 (1), pp. 196-202, January, 2016. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Emerging roles of teachers in digital eTeaching

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Accepted 21 December, 2015

Although the newly joining university teachers are coming with some prior knowledge and expertise in digital literacy, the existing lots of university academicians have to begin from the scratch, that is, they need a paradigm-shift from 'teacher-to-eTeacher' to survive and keep the pace with the new environments. This story is very true in the developing countries like Pakistan where computer literacy has just started taking grounds in Higher Education Institutions (HEI). The purpose of this paper is to juxtapose the facts and figures from literature with a view to constructing a 'theoretical-framework' that could be empirically tested in the future research. The emerging model suggests that departure from traditional teaching to modern digital eTeaching is intervened by a critical role of teachers' digital-literacy.

Key words: Higher education institution, information and communication technologies, eLearning, eTeacher, digital-literacy.

INTRODUCTION

Technology is meaningless if it is not used however usability depends on the motivation of users towards eLearning and users' level of digital literacy (Kanuka, 2007). People need digital gadgets not to survive rather to command efficient ways of sharing information about livelihoods; therefore 'information and communication technologies (ICTs) for human development' is not about technology rather it is about its users (Nawaz, 2011). For enhanced use of ICTs, there is need of better support for teachers and students, researchers, instant access to databases, and better connectivity with rest of the world but unfortunately, these high expectations are often in a sharp contrast with reality (Nawaz, 2012b).

Considering the current trends in education, a modern classroom would not be complete without computers, software, internet connections, projectors and a variety of other high-tech devices (Juniu, 2005; Moolman and Blignaut, 2008). The success of technology infusion in education depends on training both in-service and pre-service teachers (Nawaz et al., 2011a). The teacher in the 21st century faces a challenge of having to update their knowledge to be able to make appropriate use of ICTs either as a teacher who uses it in the classroom, or as an eTeacher or eModerator of distance learning (Kundi and Nawaz, 2012a).

The ePedagogy is an emerging tool for effective teaching and deeper learning which is completely supported by the existing digital technologies. If used wisely, it may break the barriers of traditional classroom-based instruction to learning (Johnson et al., 2006). Its tools and techniques can be applied in any learning situation, no matter whether it happens face-to-face, in blended or hybrid form, or online virtual teaching (Nawaz and Kundi, 2010). ePedagogy is a personalized learning facility that is accessed over public (Internet) or private (Intranet) computer networks, therefore, it was first known as 'internet-based training' and then 'web-based training' (Nawaz et al., 2011a).

The burden of bridging this gap between technology and teachers is placed squarely in the laps of teachers. They face the daunting task of not only using the technology, but also showing the expected benefits of its use (Kanuka, 2007). Thus, teachers' 'fear of technology' or lack of technological expertise is often linked to teachers' use of technology in their classroom/instructional practices (Nawaz, 2011). Another barrier often cited is the contextual restraints of institutional settings which hinder the implementation of any change. However, there is need to look at the specific technology and its usability as a factor contributing to the failure of technology integration in teaching (Qureshi et al., 2011).

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The objectives of this paper include the identification of the new dimensions added to the job of a university academician due to the digital revolution in all walks of life. A big stream of research is underway to explore the new roles as well as the emerging obligations of teachers in higher education. They are supposed to understand and implement the shift from teaching to eTeaching by enhancing their digital literacy. New generation of students is known as 'Net-Generation' who joins the universities with enough digital know-how thus, faculty has to stay compatible with new teaching environments by familiarizing themselves with educational technologies.

E-LEARNING IN HIGHER EDUCATION

The dependence on ICTs is transforming the universities because eLearning is not just another alternative for the transmission of knowledge rather it is changing the relationships between teachers and students and university-relationships with society, but successful integration of ICTs in education depends on the management of changes demanded by the new technologies (Juniu, 2005). Cultural change is occurring due to the greater access to information. Furthermore, cultural change creates the stress to stay in tune with changes otherwise they fear to become misfit in the information society (Phillips et al., 2008). The paradigm shifts have changed not only the way of computing but also how the technology itself is perceived by society (Nawaz and Zubair, 2012a).

eLearning refers to any level of applying computers and related technologies in teaching, learning and administration of the institution (Kanuka, 2007). For example, most of the teachers and students in higher education use Internet for browsing, emailing, chatting or any other purpose and thereby learn to add new aspects to their teaching and learning experiences (Nawaz and Qureshi, 2010). Likewise, using a computer to prepare a lecture (by teacher), an assignment (by student) and typing and publishing a notification in a word-processor (by administrator) or doing all this online is included in eLearning (Nawaz and Zubair, 2012b).

The educational applications of ICTs are multiple; starting from a simple information delivery (online catalogue of a digital library) and ending with modern uses of cognitive tools (Web 2.0), which belong to the family of adaptive technologies or systems that support and enhance customized learning (Nawaz et al., 2011a). eLearning therefore, covers a continuum of educational applications with MS-Office as the main package on one end with little social impacts but on the other end are the virtual learning environments which have far-reaching impacts on teaching, learning and educational management (Nawaz, 2012b).

The contemporary learning environment in higher education is characterized by the following shifts in teaching, learning and administration of the education system (Nawaz and Qureshi, 2010). There are conspicuous departures from:

1. Teacher as transmitter to the teacher as facilitator.
2. Teacher-centered to learner-centered education.
3. One-size-fits-all to personalized learning.
4. Instruction to construction and discovery.
5. Schooling to lifelong learning.
6. Linear to hypermedia learning.
7. Absorbing contents to learning how to navigate and how to learn,
8. Learning as torture to learning as a fun.

EMERGING ROLES OF E-TEACHERS

The 'University-Constituents – teachers, students and administrators (Juniu, 2005)' all use ICT-based tools in an eLearning environment; however their use varies from one group to another. The nature and extent of use is different under traditional computer-based learning, blended learning and virtual learning facilities (Nawaz and Kundi, 2010). In blended and virtual learning, all teachers, students and administrators are supported with highly user-friendly and networked facilities where ICTs are used both individually as well as collectively in a collaborative manner. Whatever the form of eLearning, the functions of universities are going through changes from narrow focus to broader and global roles of education for all, lifelong learning, pioneering role in national education, mega universities and so on (Nawaz, 2012b).

Five types of teacher-users of eLearning have been identified by the researchers: builders of eLearning tools, tool-users, tool-adapters, tool-abiders and those who are indifferent to the use of computers (Johnson et al., 2006). They further suggest that universities must develop a large body of tool users. Then motivate some creative faculty members to become adapters by providing them incentives and support from the highest level of administration. The most important type of teacher users is the 'tool adapters', who are skilled users and can adapt/utilize it to fit the student and faculty requirements. Tool adapters should be tenured faculty who enjoy teaching and do not fear technology (Nawaz and Kundi, 2011).

The challenging nature of ePedagogy demands greater preparedness by the teachers by possessing a wider repertoire of teaching techniques (Nawaz and Qureshi, 2010). An eTeacher is considered as a mentor, coach or facilitator and expected to perform diverse functions particularly:

1. Managerial: The teacher plans the teaching program, which includes objectives, content development, rules and procedures, timetable, and layout of the practical work and interactive activities.

Table 1. Gaps between teacher and eTeacher.

Pedagogy (Teacher)	e-Pedagogy (eTeacher)
Content-based	Current-requirements oriented
Autocratic mode of teaching	Democratic and participative teaching
One model for all	Individualized/personalized teaching
Teacher is active	Both teacher and students are active
One way communication	Two way communication
Print media	Digital media
Limited sources of knowledge	Multiple sources of knowledge
Transmitted knowledge	Negotiated and harvested knowledge

Source: Nawaz et al. (2011a): Challenges of eTeaching.

2. Intellectual: This is the traditional function of teaching. The teacher should know the syllabus and the subject that will substantiate the learning content.

3. Social: In eLearning and eTraining, the teacher creates conducive learning environment to interact with students and examine their feedback. Therefore the eTeacher must motivate, facilitate and encourage the students in new learning environments (Nawaz et al., 2011a).

In order to perform these teaching functions, teacher training should focus on how to develop a series of abilities and strategies that can be divided into the following (Nawaz and Zubair, 2012a):

1. Professional: Knowledge of the material, contents, didactic methods and teaching plan.

2. Technical: It is not necessary for them to be technical experts, however, they must command the basic skills to carry out their function properly.

3. Personal: The teacher must be interactive, receptive and give feedback with initiative, creativity and empathy.

In the past, the role of teacher in an educational institution was a role given to only highly qualified people (Sattar et al., 2011). With technology-facilitated learning, there are now opportunities to extend the teaching pool beyond this specialist set to include many more people including workplace trainers, mentors, specialists from the workplace and others. And within this changed pool of teachers will come changed responsibilities and skill sets for future teaching involving high levels of ICT and the need for more facilitative than didactic teaching roles (Nawaz, 2012a). The new technologies like Internet, web-based technologies, and Web 2.0 products are all reengineering the learning theories and practices of pedagogy (Nawaz, 2012c).

There are shifts from objectivism to constructivism in teaching and learning, technocratic to reformist and holist paradigms in eLearning development and use, and from instrumental views of ICTs to their substantive perceptions and roles in the education and society as a whole (Johnson et al., 2006). As learning shifts from the 'teacher-centered model' to a 'learner-centered model', the teacher becomes less the sole voice of authority and more the facilitator, mentor and coach - from 'sage on stage' to 'guide on the side' (Phillips et al., 2008). The teacher's primary task becomes to teach the students how to ask questions and pose problems, formulate hypotheses, locate information and then critically assess the information found in relation to the problems posed (Table 1) (Nawaz et al., 2011a).

The eTeacher is expected to operate as coach, mentor, and facilitator within the digitally conceived learning environment where the constructivism and social constructivism prevails.

Coaching

Coaching stems from the popularity of the concepts like 'Constructivism' and particularly 'Social-Constructivism' in the higher education system (Baumeister, 2006). Coaching is not just feeding and filling with information rather providing guidelines to the learner for self-learning. It is a kind of independent learning under supervision of an expert. The teacher plays the role of 'GUIDE-ON-THE-SIDE' and no more a 'sage-on-the-stage' (Nawaz and Kundi, 2010).

The eTeacher as a coach focuses on the following (Nawaz and Zubair, 2012b):

1. Monitoring and regulating learner performance and providing feedback: After giving instructions, the teacher keeps a watch on the performance of students to record the learner's performance for analysis.

2. Conducting diagnosis and providing motivational prompts to update the learners' models.

3. Giving directions to provoke reflections rather than just following the teacher.

4. Encouraging the students to take the driving seats for self-learning.

Mentoring

Mentor is an adviser, counselor, guide, tutor, teacher and

guru for the new generation of learners in the digital learning environments. He operates as a support for learning through continuous contact at all levels of learning. He plays as a fatherly figure who cares about each and every move of the student to keep it in line (Nawaz and Kundi, 2011). Mentoring systems are necessary after the initial technology integration training to foster collaboration and support, to address daily challenges, and ultimately to have more frequent and effective use of technology in the classroom. The current teaching force needs to be better supported through provision of technology integration specialists who can support classroom technology integration via mentoring and/or team teaching (Nawaz et al., 2011b).

Mentoring is a one-to-one relationship between an expert and learner in which the expert guides the student by (Sattar et al., 2011):

1. Behavioral and cognitive modeling: The mentor makes efforts to understand the cognitive and behavioral movements of the students and then works to bring required changes at the cognitive and intellectual levels of student's learning.

2. Emotional and scholarly support: Besides cognitive tools, the teacher also stands ready to provide emotional guidance and support during the high-tension academic activities. The mentor performs as an expert who understands the learner's psychology as well as intellectual growth process.

3. Academic and career counseling and advice: Through continuous communication, the mentor provides his students with academic counseling and advice during the studies and then career guidelines at the end of academic activities.

4. Assessment: The mentor stays as a keen observer of the learner's academic performance and then during the one-to-one communication, the teacher discusses the positives and negatives of students' academics for further actions.

Facilitating

Facilitating is providing technical, pedagogical, managerial, and social activities that maintain sustained and authentic communication between and among instructors and students (Blazquez and Diaz, 2006). Computer-mediated communication technologies such as instant messaging, bulletin boards, and computer conferencing can facilitate communication among students and teachers (Ezziane, 2007). Although, the use of ICT to facilitate communication between students and lecturers, and between lecturers is still not widespread at many colleges (Mokhtar et al., 2007), contemporary theory suggests that collaborative learning is the most effective means of facilitating learning in online environments (Phillips et al., 2008).

The current movement in technology is to create cognitive tools, computer environments that are adapted and developed for intellectual partnerships, which is an environment that enables and facilitates critical thinking and higher-order learning. These constructivist learning environments create engaging and content-relevant experiences and utilize scaffolding tools and resources to support unique learning goals and knowledge construction. These elements are central to the transformation of a learner's mental scheme through cognitive growth (Young, 2003). The role technology (for example, email or conferencing) plays in facilitating organizational learning is by enabling improved forms of communication and sharing (Laffey and Musser, 2006). When implemented appropriately, technology tools are beneficial to students' learning, and may facilitate the development of higher order thinking skills (Abrami et al., 2006).

One of the very first steps needed in order to qualify for the facilitation of the change processes is to actually understand what implementation of ICT in learning environments is and how it affects practice. Here, implementation is defined as the process leading from one practice to a new practice where the new practice is characterized by use of ICT. In addition, implementation is understood firstly as a social process and secondly as a process in which competent individuals decide to start to use ICT (Nyvang, 2006). Learning cannot be managed, it can, however, be facilitated (Dalsgaard, 2006). Without a team of instructional design experts, facilitation of effective eLearning is highly unlikely (Kanuka, 2007).

DISCUSSION

Many teacher educators and teacher education programs have been experimenting with the use of technology over the years. Despite their efforts, there are still challenges and concerns regarding teacher's ability to integrate technology into teaching and learning activities and their comfort in doing so (Oh and Russell, 2004). For instance, designing and delivering eLearning is not simply a matter of selecting a tutoring team with subject matter expertise and/or technical skills, but is also choosing educationalists with pedagogical, information and communication skills that are required to manage and facilitate online learning (McPherson and Nunes, 2004).

The research indicates that decisions made by teachers about the use of computers in their classrooms are influenced by multiple factors including the accessibility of hardware and relevant software, the nature of the curriculum, personal capabilities and teachers' beliefs in their capacity to work effectively with technology are a significant factor in determining patterns of classroom computer use (Nawaz and Qureshi, 2010). Furthermore, teacher anxiety over being replaced by technology or losing their authority in the classroom as the learning process becomes more learner-centered - an

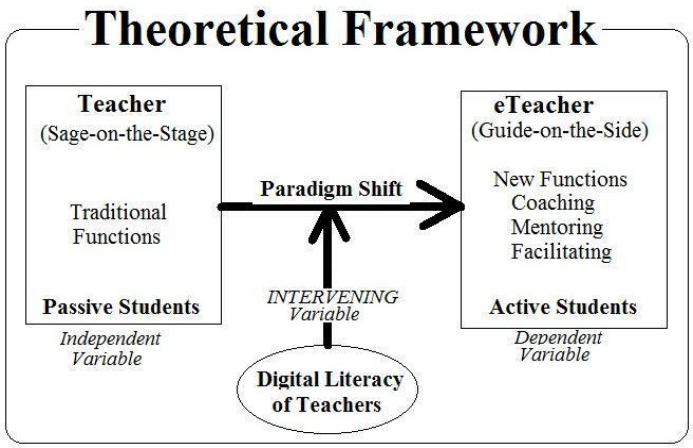

Figure 1. Schematic diagram of the theoretical framework.

acknowledged barrier to ICT adoption - can be alleviated only if teachers have a keen understanding and appreciation of their changing role (Nawaz et al., 2011a).

Researches report that there is a great deal of uncertainty among the developers, trainers, learners, decision-makers, and managers about their mutual relationships and relations with eLearning tools and techniques. For example, instructors have to adopt new roles as tutors and facilitators in the learning processes (Ehlers, 2005). The users are thus, expressing doubts and suspicions about the nature of their relationship with ICTs and difficulties in working with new technologies (Bondarouk, 2006). Furthermore, the variety of students in the eLearning environments poses a challenge for the instructor (Moolman and Blignaut, 2008). Technology integration into education is thus re-engineering the roles of teachers and students from old models to new paradigms embedded in the digital environments of modern technologies (Nawaz et al., 2011b).

Likewise, the students criticize the current state of affairs in eLearning at HEI levels. At a broader level, the conceptions of students about ICT and education are very positive but they are extremely critical on the educational use of eLearning tools by teachers (Valcke, 2004). Furthermore, in majority of eLearning programs, the burden for learning is placed wholly on the shoulders of the learner (Dinevski and Kokol, 2005). Some educators are the strong advocates of digital technologies while others are reluctant to accept technology as an integral part of the learning process thereby creating a continuum of attitudes towards the use of technology in teaching and learning at higher education level (Nawaz and Zubair, 2012a).

Figure 1 is a graphical presentation of the findings, arguments and discussions on the issues of eTeacher with reference to shifting from traditional teaching models to new digital roles of eTeacher. As shown by the figure, traditional teacher was the only source and player in the arena of teaching his pupils. But modern teacher is no more the sole source of learning, rather a virtual network of knowledge has emerged in the form of Internet which has taken over many of the jobs of a teacher. However, this shift is intervened by the 'digital-literacy' of the teachers to personify as eTeachers. The computer-literacy is thus the challenge for university academicians to handle.

CONCLUSIONS

The universities of the developing states like Pakistan are expected to contribute to society by widening access to higher education, conducting applied research, supporting professional development, contributing to national economy, and improving social inclusion of the citizens. Due to these reasons, university academicians are under the increasing pressure to use ICT, but they commonly face several obstacles when attempting to use digital gadgets. Institutions of higher education must strategically develop ICT integration plans to overcome these barriers thereby addressing the needs of diverse pedagogical agendas and comforts with technology. Barriers can make technology use frustrating for the Net-Generation, let alone the many who are a kind of techno-phobic fellows.

Of course, new things are intimidating therefore causing resistance. Designing and delivering eLearning is not simply a matter of selecting a tutoring team with subject matter expertise and/or technical skills, but is also choosing educationalists that possess the pedagogical, information, and communication skills that are required to manage and facilitate online learning. Many teacher educators and teacher education programs have been experimenting with the use of technology over the years, however, there are still challenges and concerns regarding teachers' ability to integrate technology into teaching and learning activities and their comfort in doing

so.

The departure from technology-based education to modern collaborative virtual learning is replete with a history of many ups and downs. The changes are visible in all aspects of higher education during the technological transformations of individuals, groups and organizations. The roles and functions of teachers, students and administrators are going through mega changes. Teachers have to take-on the role of eTeacher, the new students are characterized as 'Net-Genres', and administrators are gradually adopting computer-based information systems to manage higher education institutions.

The new technologies have not only transformed the learning process but also the teaching models, theories, and practices. Modern teacher is an eTeacher with the knowledge and expertise of different digital gadgets in preparing lecture, delivery to the students, and coaching, mentoring and facilitating the learners. Thus, the current teacher is no more a 'sage on the stage' rather a 'guide on side' encouraging the students for self-learning. The research however informs that adoption of ICTs by teachers is neither effective nor quick due to several problems. This paper has brought together the threats and opportunities for eTeacher and eTeaching especially in higher education of the developing countries like Pakistan.

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