

Challenges of e-Teaching: Contemporary Paradigms and Barriers

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Abstract: In this study we investigated the challenges of e-teaching in Higher Educational Institutions. With the advent of e-Learning tools, role of teachers have gone through phenomenal changes and teaching-community is struggling hard to tune up with contemporary requirements of mundane teaching modes called 'e-Teaching.' Research indicates that teachers hold different perceptions about the role of technology: behaviorist (instrumental) and constructivist (substantive). Behaviorists assert on the visible aspects of learning with no value-implications for society while constructivists emphasizes more on the intellectual progress of the learner and community. Whatever the paradigm, teachers are confronting multiple barriers in adopting new-teaching styles including demographic differences, training problems and resistance to change etc.

Key words: e-Courses, e-Maturity, e-Pedagogy, e-Teaching, net-genres, paradigm-shifts

INTRODUCTION

In a 'knowledge-society' with digital gadgets, a classroom in higher education institution will not be complete without computers, software, Internet connections, projectors and many other high-tech devices (Oh and French, 2004). ICTs are being deployed in university setting all over the world from using computers as assistant to teaching to offering online pedagogy (Sahay, 2004). Most educationists agree that new teachers need to graduate with the knowledge and skills to integrate technology into their daily teaching. Although some teacher candidates already have those skills but unfortunately many have no computer skills to the disadvantage of students (Valdez *et al.*, 2004). Technology is a potentially powerful tool for more effective teaching and deeper learning. Used wisely and well, it may break down barriers to learning that traditional classroom-based instruction has unintentionally created (Kuriloff, 2005). The modern eLearning refers to much broader sense than computer-based learning of 1980s (Nawaz and Kundi, 2010a, c).

eTeacher has to personify the role of 'guide on side' as opposed to his/her traditional character of 'sage on stage' (Tinio, 2002) because over the decades, educational technologies is playing critical role by providing options and flexibility to both teachers and students in teaching practices (Oh and French, 2004). It is rather an obligation for the teachers to keep track of advances theories and technologies of teaching (Russell, 2005). Given this shift, a wide range of changes are supposed to occur in teachers and teaching, particularly in Universities. The departure

tells that teacher is no more the only source of scholarship rather 'new sources' have emerged where teacher has to play the roles of guide, mentor, coach, counsel and a support (Mehra and Mital, 2007; Kundi and Nawaz, 2010).

However, the success of technology infusion in education is anchored over 'teacher-training' (Oh and French, 2004). Similarly, without 'proper support and maintenance' of even the most current and sophisticated hardware and software, the ability of teachers and students to access and use technology is severely compromised (Valdez *et al.*, 2004). Likewise, research tells that eLearning systems in Higher Education Institutions (HEIs) are developed "in relative isolation from the educators who face this challenge in their teaching (Juniu, 2005). Adding fuel to the fire is the reluctance of teachers to change due to several problems. A research in India reports that majority of the respondents find new tools and techniques more complex and feel intimidated. They say that they have lost the personal touch with students and that eLearning requires high administrative support (Mehra and Mital, 2007).

To bring teachers in line with new requirements, several suggestions and guidelines have been tabled including "effective teaching strategies, sound pedagogy, appropriate curriculum, faculty development and updating equipment (Oh and French, 2004)." However, availability of state-of-the-art resources, effective and continuous training and teachers' willingness to adopt new technologies are primary requirements to enhance ePedagogy. The instructors are under constant pressure from government, market and society to apply ICTs in teaching and learning (Ezziane, 2007; Kundi and Nawaz,

2007). The HEIs around the world are struggling hard to gain required level of “e-Maturity (Moolman and Blijnaut, 2008).” This article explores the dynamics of e-Teacher, e-Teaching paradigms, and barriers to the role with an objective of painting a picturesque of ‘challenges for eTeaching’.

E-teaching in HEIS: The mushrooming development of ICTs is constantly pressing individuals, institutions and governments to experiment with alternatives to the traditional teaching methods therefore using educational technologies in multiple modes (Favretto *et al.*, 2003). As the demand for ICT graduates is rising, “the role of higher education is becoming wider and a great deal more complex (McPherson and Nunes, 2004).” Like new generation of students, new creed of teachers is emerging. Teachers are embracing ICTs as an indispensable tool for teaching, learning and administrative purposes. New teachers already have some computer proficiency but existing faculties are facing problems in filling the gap between traditional and digital environments (Kuriloff, 2005). Whatever the state-of-affairs, educational technologies are providing “tremendous possibilities in: enhancing students’ learning, developing teachers’ professional capability, and strengthening institutional capacity (Ezziane, 2007).”

E-teaching: The “e-pedagogy ... is a potentially powerful tool for more effective teaching and deeper learning (Kuriloff, 2005).” Educational technologies offer a complete technology-support to these innovations in pedagogy (Dinevski and Kokol, 2004). Used wisely and well, it may break down barriers to learning that traditional classroom-based instruction has unintentionally created (Kuriloff, 2005). 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 (Abrami *et al.*, 2006). 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’ (Manochehr, 2006; Nawaz and Kundi, 2010c).

Traditionally, students used transmissive modes of learning, however, now there are shifts from content-centered to competency-based curricula as well as departures from teacher-centered delivery to student-centered delivery where students are encouraged to take on the driving seat for their own learning (Oliver, 2002). Broadly, there are two types of e-Teaching: a. self-managed (asynchronous - offline) and b. teacher-led (synchronous - online). In offline e-Pedgagy, teachers post learning materials on internet/intranet and accessed at anytime from anywhere (Manochehr, 2006; Qureshi *et al.*, 2009).

Educational technologies: The researchers classify educational technologies into:

- Infrastructure: Computers, Networks; Internet, Intranet and facilities for offline/online access.
- Learning Content Management Systems(LCMS)to handle delivery, tracking, management and reporting of online content.
- Learning Management Systems (LMS) for performance management, employee development plans, financial and activity tracking/reporting, and integration with other systems.
- Learning technologies for mentoring, chatting, forums, discussions, Web seminars, online meeting and virtual classroom sessions.
- m(Mobile)-learning technologies (Dinevski and Kokol, 2004).

There are old (radio, television, telephone, fax, telegram, etc..) and new ICTs (computer-networks, Internet, e-mail, and mobile learning) (Hameed, 2007). Although eLearning technologies refer to several tools and techniques, computers and networking are the core paradigms at the moment (Ezziane, 2007).

Computer: A computer is an intelligent-machine and a powerhouse for users in terms of its processing capabilities and speed (i.e., user command is executed on a click), storage capacity (hard-disk and from floppy to flash and XDrives), and graphic interfaces (i.e., graphical-user-interface GUI) to interact with different parts of the machine, like, activating a software, using CD-drive, printing a document or picture, copying a file from hard disk on a ‘data-traveler.’ However, for a long time, computers were being used as ‘stand-alone’ systems and the energies of this machine remained self-contained within a ‘single user-single computer’ format. The emergence of computer as a ‘connecting-machine’ was the ‘innovative-explosion’ which presented the PC as an ‘integrating-machine’ to bring all the existing technologies controlled from a single platform. Obviously, the integration between the computers themselves stand-out as the most powerful integration of machines. This gave birth to the concepts of ‘networking.’

Networking: Connecting computers together to share resources and communicate is called ‘network’. Networking has elevated the computers therefore a huge body of research is underway to make connectivity more and more powerful. Networking is evolving from simple into complicated forms of Internet, intranet and extranet along with web-technologies thereby converting the world into a ‘global-village’. Networking technologies offer a multitude of tools and techniques based on the communication-protocol of TCP/IP, onto which Internet

is anchored. According to Glogoff (2005) a network is a platform (internet, intranets and extranets) decorated with web-based tools of hypermedia and multimedia applications managed through learning and content management systems (LMS, LCMS). It is therefore evident that Internet is becoming an indispensable tool for learning and social life (Barnes *et al.*, 2007).

ICTs are used almost interchangeably with the Internet (Beebe, 2004). Most of the online education is delivered over Web and supported by a variety of technologies like e-mail, digital presentations, film clips to network geographically dispersed community where the educators are rapidly learning about the powers of Web and striving to incorporate it into eLearning environments (Glogoff, 2005). Academics discovered the communication potential of internet in late 60ies (Baumeister, 2006). The Internet tools like, WWW, conferencing and emailing are increasingly making some fundamental academic skills easier, such as surfing knowledge databases and communication as a medium of academic exchange. Roknuzzaman (2006) asserts that as an important tool for information and communication, the Internet plays a dynamic and multifaceted role in higher education and research. Laffey and Musser (2006) note that the use of Internet for teaching and learning has received increasing attention over recent years and 'Internet-based educational technology, digital content and networked applications' can contribute to substantial improvements in education by transforming teaching and learning theories and practices.

This is true that many of the eLearning efforts in HEIs do nothing more than delivering the traditional print syllabus via the Internet but many studies confirm that innovative applications of Web are endless (Wood, 2004). Likewise, Thompson (2007) notes that accessing the Internet is like going to the library for a book however, Internet offers opportunities which need to be explored the technologies are designed well and used as intended (Wijekumar, 2005). Internet technologies (including Web 2.0: blogs, wikis, RSS, etc.), virtual reality applications, and mobile devices are providing communication and entertainment in common life as well as education (Chan and Lee, 2007). Web 2.0 is "a social phenomenon that creates and distributes Internet content through a paradigm of open communication, decentralization of authority, freedom to share and re-use material (Wikipedia, 2009)."

E-teaching paradigms:

Teachers-centric pedagogy: Teacher-centered teaching refers to a learning-situation where all or most of the 'learning-decisions' about 'learning contents and processes' are made by the teacher and students have to follow and thereby learn. Several terms have are used to express this kind of pedagogy like "teacher-centered and

whole-class instruction (Jager and Lokman, 1999)", "teacher-centered model (Tinio, 2002)", "teacher-centered form of delivery (Oliver, 2002)", and "teacher-centered education (Dinevski and Kokol, 2004)."

The main features of teacher-centered pedagogy include one-way communication, content-based learning, one-model-for-all and least student-involvement (Tinio, 2002; Oliver, 2002). It is developed around the transmission and retention of information through the instructional models, which are founded on realist and objectivist views of scholarship (Young, 2003). Similarly, "traditional instruction may tend to discourage social interaction (Zapalska *et al.*, 2004)." In traditional classroom settings, instructors present information in a linear model (Cagiltay *et al.*, 2006) where communication is uni-directional flowing from the teacher to the learner and learning materials are disseminated to the students in a print format (Allan, 2007; Kundi and Nawaz, 2010).

The research shows that contemporary pedagogy is dominantly teacher centered and little attention is paid to the full exploitation of communication facilities and interaction (Valcke, 2004). It has been found that mostly students are not prepared for the new learning environments because technological developments are occurring rapidly (Cagiltay *et al.*, 2006). Similarly, there is evidence to preference of print over other forms of presentation confirming the prevalence of traditional dynamics of teacher centered learning contexts (Allan, 2007).

Thus, there is evidence that "teachers are reluctant to integrate technological innovations into their daily scholarly activities (Sasseville, 2004)" due to many reasons. Although teacher education institutions are trying best to train teachers but still many concerns are voiced about "the best means of integrating technology into teacher preparation and preparing teachers to do the same in their classrooms (Oh and French, 2004)." Researchers suggest that to handle this problem both the previous and current approaches of learning should be applied simultaneously (Cagiltay *et al.*, 2006; Kundi and Nawaz, 2010).

Student-centered teaching: The learner-centered approach derives from the theory of constructivism, which argues that knowledge is neither independent of the learner nor a learner passively receives it, rather, it is created through an active process where a learner transforms information, constructs hypothesis, and makes decisions using his mental models or schemas based on experience of the individual, which also assist learners to ultimately give meaning and organization to individual experiences (Tinio, 2002). The use of ICT in education offers more student-centered settings, which are constructivist in nature due to their provision and support for resource-based, student centered settings and by

Table 1: Differences between teaching and e-Teaching

Pedagogy (Teacher)	e-Pedagogy (e-Teacher)
Content-oriented	Contemporary-focused
One model for all	Individualized/Personalized Teaching
Teacher is active both are active	Teacher and students
One way communication	Two way communication
Autocratic	Democratic
Print media	Digital media
Limited sources for teachers/students	Mul teachers/students
Transmitted knowledge	Negotiated and harvested knowledge

enabling learning to be related to context and to practice (Oliver, 2002; Young, 2003). As the Web has afforded new ways to network people dispersed across a broad, educators have learned a great deal about the ability of the Web to nurture, foster, and enable community (Glogoff, 2005).

The National Research Council of the U.S. defines learner-centered environments as those that “pay careful attention to the knowledge, skills, attitudes, and beliefs that learners bring with them to the classroom (Tinio, 2002).” Moves from content-centered curricula to competency-based curricula are associated with moves away from teacher-centered forms of delivery to student-centered forms, which encourage students to take responsibility for their own learning (Oliver, 2002). For example, ‘instructional blogging’ offers opportunities to engage students and thereby acknowledge the learner-attributes as individuals and groups (Glogoff, 2005).

Similarly, Adaptive Hypermedia (AH) moves away from broadcast-based teacher-centered applications to individualized learner-centered education delivery systems (Spallek, 2003). ICT can be seen as a means to define oneself professionally. Teachers are seeing themselves, whether they like it or not, at the forefront of a new wave of teaching. The use of ICT, even minimally, is helping them build a positive self-image as professionals (Sasseville, 2004). However, in practice, as Allan, (2007) found in New Zealand, there are “low collaborative activities and the significant preference is still given to the print over other forms of presentation” showing that the traditional dynamics of teacher-centered learning contexts are still dominating. Table 1 summarizes the differences between pedagogy and ePedagogy.

Threats to e-Pedagogy: As learning shifts from the ‘teacher-centered model’ a teacher’s primary task is to prepare the students in “how to ask questions and pose problems, formulate hypotheses, locate information and then critically assess the information found in relation to the problems posed (Tinio, 2002).” For example, new hypermedia applications are offering individualized learner-centered education delivery systems (Spallek, 2003) emphasizing the learning with technology because it is quick way of acquiring knowledge (Sasseville, 2004).

However, research shows that ePedagogy has hardly affected the actual teaching, which is dominantly teacher centered and there is little communication and interaction between teachers and students (Valcke, 2004). Computers can be powerful teaching tools, but educators are using them in isolation from their teaching practices (Barnes *et al.*, 2007; Nawaz and Kundi, 2010b; Qureshi *et al.*, 2009).

Though efforts are going on to digitally prepare the teachers for ePedagogy, there are still challenges and concerns regarding teacher’s ability to integrate technology into teaching and learning activities (Oh and French, 2004). Most of the contemporary eLearning programs are delivering the traditional print syllabus via the Internet (Wood, 2004). The technologies are simply being used to replicate the traditional ‘chalk and talk’ ways of teaching and learning (Drinkwater *et al.*, 2004). There is evidence of preference of print media by teachers and students with objectivist mode of pedagogy (Allan, 2007; Qureshi *et al.*, 2009).

Technology-integration into pedagogy is not unanimously perceived by all the teachers (Young, 2003; Sasseville, 2004). Researchers (Aviram and Tami, 2004; Sahay, 2004): have classified the teacher’s approaches to or conceptions of ICTs in teaching and learning:

- **Technocrats:** They postulate ICTs as a tool to enhance productivity and effectiveness with no social implications thereby demanding no big changes.
- **Reformists:** They consider ICTs as powerful tools to change didactics and teaching/learning methods.
- **Holists:** This group idealizes ICTs with the expectations of socio-cultural changes through digital innovations and revolution.

Furthermore, educators lack technological expertise for ePedagogy (Thurab-Nkhosi *et al.*, 2005). They are overwhelmed by keeping abreast of a rapidly changing technological environment and then effectively integrating them into their teaching contents and processes (Juniu, 2005). Likewise, teachers feel that they have lost the essence of teaching due to ePedagogy because face-to-face, real-time interactions offer immediacy, personal contact, and community, which is absent in online environments (Kuriloff, 2005). A Birdseye view of literature suggests that leading barriers to wholesale uptake of ePedagogy by teachers in HEIs are their perceptions, teacher-demographics, resistance to change and most importantly, the teacher-training.

Multiplicity of perceptions about e-Pedagogy: An individual’s approach to ICTs is predictable on the basis of his/her attitudes to computers (Albion, 1999). Understanding teachers’ perceptions of technology can help the technology training programs (Zhao and Bryant, 2006). Teachers’ attitudes are significantly related to their

use of technology (Bataineh and Bani-Abdel-Rahman, 2006). Students use computers and Internet on the basis of their perceived usefulness and ease of use. Very little research has been documented about user perceptions of computer literacy, especially in third world countries (Bataineh and Bani-Abdel-Rahman, 2006). However, technology paradigm shifts have changed not only computing itself but also the perception of society about the technologies (Ezziane, 2007; Kundi and Nawaz, 2010; Nawaz and Kundi, 2011).

ICT is generally perceived as a welcome addition to the arsenal of pedagogical tools in the classroom (Sasseville, 2004) however, by compelling instructors to collaborate with people outside the classroom (government agencies, university administrators, technical support staff etc.), technology can be perceived as a threat to the private practice of pedagogy (Aaron *et al.*, 2004). Thus 'how well teachers perceive and address the challenges for education?' becomes an issue (Knight *et al.*, 2006). Based on the perceptual differences of eLearning users, Mehra and Mital (2007) have categorized, teachers, into:

- **Cynics:** They have negative perceptions about eLearning but strong pedagogical beliefs therefore unwilling to change
- **Moderates:** They like ICTs and ready to change and adapt to new pedagogical practices with some guidance and training
- **Adaptors:** These are the intellectual leaders who use eLearning for inner progress and external enhancements by continuously embellishing their pedagogy with latest technologies

Demographic diversities: Decisions made by teachers about the use of computers in their classrooms are likely to be influenced by multiple factors (Albion, 1999). Despite the theoretical benefits that e-learning systems can offer, difficulties can often occur when systems are not designed with consideration to learner characteristics: nationality, gender, and cognitive learning style. The researchers have found that the learners' preferred learning path depends on their personal characteristics such as age, gender, and preferred way of learning (Cagiltay *et al.*, 2006). Other researchers assert that "a host of factors may either support or prohibit the use of technology in the classroom such as age, gender, attitudes toward technology, teaching experience, and rate of technological change (Bataineh and Bani-Abdel-Rahman, 2006)." While Nawaz *et al.* (2011) and Qureshi *et al.* (2011) have used stepwise regression to predict the impacts of demographics on the eLearning user problems, their satisfaction prospects of eLearning in Pakistan.

Resistance to change: Teacher-resistance to change is widely reported across the research (Sasseville, 2004;

Loing, 2005; Vrana, 2007; Mehra and Mital, 2007; Kanuka, 2007). Teachers decide about everything that happens in the classroom so their acceptance of ICTs is critical for technology integration (Aaron *et al.*, 2004). However, at the movement teachers are constantly advocated and pushed to adopt ICTs "by various agencies including media, educational government, professional associations, and parents (Zhao and Bryant, 2006)." Although a good number of teachers are adopting ePedagogy, there are still many who are still unwilling to use computer-based teaching tools (Mehra and Mital, 2007; Nawaz and Kundi, 2010b).

New things are intimidating and commonly lead to resistance (Jager and Lokman, 1999). Due to the innovative nature of ICT-enabled projects, the developers must have a keen understanding of the innovation process, identify the corresponding requirements, and customize planning and actions accordingly (Tinio, 2002). In Canada, teachers are reluctant to integrate technological innovations into their daily scholarly activities (Sasseville, 2004). Thus, the implementation of ICTs in HEIs includes handling the issues like: reluctance of decision makers and educators to modify curricula and teaching approaches and/or lack of incentives and rewards for teachers' motivation and involvement (Loing, 2005). Research identifies 'inertia of behavior of people and their resistance to changes' as common issues of eLearning in higher education (Vrana, 2007; Qureshi *et al.*, 2009).

Technological change is not perceived as a collective experience rather a personal challenge therefore, solutions to the problem of integrating technological innovations into the pedagogy are more focused on the individual teachers (Sasseville, 2004). Some teachers are strongly advocate the technological innovation but may resist in accepting technology as an integral part of the learning process. These divergent reactions and concerns have thus created a continuum that represents various attitudes towards technology (Junio, 2005). Similarly, "Inexperience may lead to developing learners' anxiety (Moolman and Blignaut, 2008)."

Technology-training problems: The problems of eTeacher mount up if teacher-training is not effective and this is reported by almost every researcher who is recording the perceptions and attitudes of eLearning-users (Loing, 2005; Johnson *et al.*, 2006; Wells, 2007; Mehra and Mital, 2007). Albion (1999) noted this some 18 years ago that "as community expectations for integration of information technology into the daily practices of teaching grow, it will become increasingly important that all teachers are adequately prepared for this dimension of their professional practice."

Volumes of literature suggest technology-integration training is the milestone to a successful e-Learning initiative in higher education because it helps teachers in

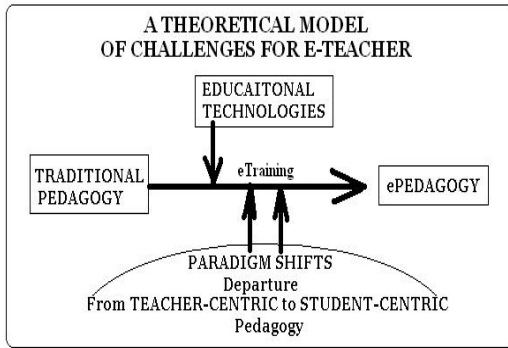


Fig. 1: Theoretical model of the challenges for e-Teacher

developing positive attitudes toward technology and technology-integrating (Zhao and Bryant, 2006). Teachers need training “in curriculum areas that can be replicated in their own classrooms not training that focuses on software applications and skill development (Schou, 2006).” However, just training in the use of technology is not enough rather support staff should also work to educate academics about the available technologies and their possibilities. There is need to get academic computing staff, faculty, and administrators talking to each other to develop new models of teaching (Kopyc, 2007).

CONCLUSION

The burden of bridging the gap between technology and teachers is placed squarely on the teachers and contextual restraints which hinder in the implementation of any change (Buzhardt and Heitzman-Powell, 2005). However, traditional institutions are obviously proving incapable “to cope with this growing demand in any systematic way (Baumeister, 2006).” The research indicates that traditional teaching is “too passive, too parochial, too hierarchical, and too artificial” however, “by harnessing IT effectively, educators can make instruction more graphic, dynamic, and active than it is now (Stephenson, 2006).”

The rapid growth of e-learning is occurring without our understanding the differences between how students learn in an online environment and in the more traditional setting (Luck and Norton, 2004). However, wherever used wisely and well, it is breaking the barriers to learning (Kuriloff, 2005) and assisting in adopting a learner-centered approach to education by encouraging and supporting two-way, communication between teachers and taught (Wims and Lawler, 2007). There is need to avoid an all-encompassing model of faculty development rather establish multiple links between computing staff and faculty to support the growth of sustained

partnerships for effective uses of technology in teaching (Kopyc, 2007). Furthermore, having faculty and technical staff in constant communication about emerging theories and practices can help in effectively adopting new digital tools (Ezziane, 2007).

Figure 1 gives a picturesque of the transition from traditional modes of teaching to e-Pedagogy. The transformation process is mediated by two forces of educational technologies and the movement in paradigm shifts. The technologies and shifts are the independent variables, while e-Pedagogy is the dependent aspect of the issues. The training of teachers can be used as an ‘intervening-variable’ to manage the change process according to the requirements of teachers, students and educational institutions. Because, research confirms that “teachers are not opposed to ICT integration; they’re interested in effective ways to implement learning (Sasseville, 2004). Furthermore, technology integration training is effective at a basic level, but it cannot lead to higher levels of technology integration (Zhao and Bryant, 2006). Along with a “diverse range of training and professional development opportunities, institutions need to connect faculty to current research that demonstrates the pedagogical value of technology in learning contexts (Kopyc, 2007)”. Researchers assert that “the transition from traditional instruction to online teaching is best accomplished by systematically addressing the needs of faculty (Phillips *et al.*, 2008)”.

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