

Review

Investigating the change management For implementing e-learning projects in higher education

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Accepted 11th August, 2013

Although educational technologies (ETS) are mushrooming in higher education institutions (HEIs) but their role entirely depends on the acceptance and execution of required-change in the thinking and behavior of the developers and users of eLearning. It is very hard to change the mindset, cultural bonds and lifestyle of the human actors in the educational institutions. Teachers, students and administrators are used to traditional pedagogy and educational administration and research is constantly reporting that many eProjects of eLearning are falling short of their objectives due to many reasons but on the top is the 'user resistance' to change according to the digital requirements of new gadgets. It is however, argued that the only panacea for change management in eLearning environment is the eTraining of users with a view to enhancing their digital literacy and thus gradually changing the users attitude in positive direction.

Keywords: ICTs, ETS, HEIs, eLearning, Change-management, User-resistance

INTRODUCTION

The dependence on information and communication technologies (ICTs) is transforming the universities (UQA, 2001). eLearning is not merely another medium for the transmission of knowledge rather it changes the relationship between the teachers and learners (Gray et al., 2003). Successful integration of ICTs in education depends on the management of changes demanded by the new technologies (Aaron et al., 2004). 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 learning process (Mehrasociety and Mital, 2007; (Sasseville, Komba, 2009; 2004)." The paradigm shifts Nawaz have and Qureshi, changed 2010b). not only the way of computing but also how the technology itself is perceived by society (Thieman, 2008; Kundi and Nawaz, 2010).

New technologies are introducing technological changes as well as, social imbalances and affecting the way people use information (Sasseville, 2004). ICT-

related change is the most critical issue for the contemporary educational institutions because this change is not only determining the form of education but also its nature and future prospects for coming generations (Aviram and Tami, 2004). For example, one of the most obvious organizational transformation of blue-collar employees into white-collar workers (Ezziane, 2007)." Sim transforms the teacher from "sage on the stage" into "guide on the side", and student has to change from being passive content-receiver to a stakeholder in the

There is no denial that ICTs have opened up new opportunities for students and teachers but they have also created mundane challenges (Sahay, 2004). For example, researchers suggest that digital change is not perceived as a collective experience or social change rather, personal challenge and experience (Sasseville, 2004). Likewise, there is uncertainty among the users about the nature and role of ETS, for example, teachers apprehend that eLearning is a threat to formal education and it is not the technology which is increasing learning

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with computers rather the differences in instructions and content, or novelty effects (Abrami et al., 2006). ICTs can facilitate learning they cannot deliver it (Nyvang, 2006). In most of the developing states, eProjects fail because of: inappropriate technology, poor project-implementation, inadequate use of equipment, improper follow-up, weak user-training and project-incompatibility with changing context (Wells, 2007; Thieman, 2008; Nawaz and Kundi, 2010b).

E-learning in higher education

Education technologies (ETS) have become the most effective tools for teachers, students and administrators to achieve the objectives of lifelong learning, continuous education and education for all particularly in developing states (Oliver, 2002). The Internet is deleting the barriers of time and space for learning (Shimabukuro, 2005). The research has established the relation between ETS and academic behaviors, such as, motivations for eTeaching and eLearning (Haddad and Jurich, 2006) and elimination of isolation through better communications (Abrami et al., 2006). So, ICTs, are taking the driving seat in shaping the way in which universities are responding to the new world calls (Goddard and Cornford, 2007). Thus, eLearning offers exciting opportunities for teachers, students and administrators (Manochehr, 2007; Komba, 2009; Purnomoi and Leeii, 2010).

Roles of eLearning

New technologies are providing challenging and authentic learning through an environment where sound effects, songs, dramatizations, comic skits, and other performances motivate the students to get involved (Tinio, 2002). So within education, ICTs have started penetration (Oliver, 2002). In Western Europe, it is common to use ICT for logistical, organizational and educational functions of HEIs (Valcke, 2004; Baumeister, 2006) thereby changing the nature and process of work for the teachers, students and administrators in the university (Ezziane, 2007). UNESCO (2007) reports that the use of ICTs in and for education is rapidly expanding in many countries and considered both as a necessity and an opportunity.

Research reports that education is the major consumer of software applications and web services indicating that eLearning is widening the picture of education (Baumeister, 2006) thereby creating several stakeholders including knowledge-industry, academia, designers, policy makers and other institutions involved in ICT-based higher education (Sife et al., 2007). ICTs are changing the organization and delivery of higher education because they are adopting alternatives to the

traditional classroom pedagogy and developing a variety of eLearning courses (Thieman, 2008; Nawaz, 2010).

Problems can emerge if eLearning is not designed according to the user perceptions and characteristics and the broader context (Graff et al., 2001). Effective integration of ETS in higher education is a complex and multifaceted process that involves, not just technology but also pedagogy, curriculum, institutional eReadiness, teachers' digital literacy resources (Tinio, 2002). Thus, educational technologies call for "sensitive handling the technical matters (Walsh and students can benefit more if eLearning matches their personal learning path (Cagiltay et al., 2006). Research

also suggests that ICTs offer new learning opportunities for students „eLearning“, de capabilities „ePedagogy“ and capacity „eEducation“ (Ezzi universities today offer some form of eLearning (Kanuka,

2007; VanFossen, and Berson, 2008; Komba, 2009; Nawaz and Qureshi, 2010b).

Development Process

The introduction of ICTs in educational settings is not automatic (Tinio, 2002). It is rather a social process where problems can occur due to development and use approaches and practices, for example, research tells that technologies can dominate the development process instead of pedagogies (Sahay, 2004). The education cultures pass through different phases of maturity in the change process including moving forward, backward, or nowhere without any change (Aaron et al., 2004). In the context -ofvillage“, „globalthe HEIs a challenges relating to external and internal factors (Loing, 2005). The knowledge revolution and economic globalization has created knowledge-based industries who work on the basis of computer-literate workforce thereby forcing all the countries to restructure their educational system to include digital literacy with priority (VanFossen, and Berson, 2008; Qureshi et al., 2009; Kundi and Nawaz, 2011).

Approaches to Development

A variety of approaches are used for the development of eLearning projects in different HEIs (Gray et al., 2003) showing that the pedagogical advantages of ICTs vary with specific contexts (Aaron et al., 2004). Approaches refer to the perceptions about the nature, roles and contributions of eLearning (Aviram and Tami, 2004). If developed and implemented under an appropriate approach, eLearning is beneficial for the teachers, students and education administrators and "may facil

the development of higher order thinking skills (Abrami et al., 2006; Thieman, 2008; Qureshi et al., 2009).

The development approaches for eLearning projects emerge from the prevalent eLearning paradigm, for

example, objectivism under the technical rationality is the purpose therefore „instrumental“ The exponential view development of technology of sophisticated communication technologies has forced universities, and guides the project-teams and development trajectory (Young, 2003). On the contrary, contemporary other educational institutions to try with alternatives to the constructivist thinking suggests traditional classroom „substantive teaching, which has resulted view“ na o eLearning (with a belief in the cultural impacts of ICTs wide range of online courses however, the design and therefore asserting on the development, collaborative „needs approach“ bes alt eProjects by involving-constituents“ all understanding the „iversity of students“ re

(Willis, 2006; Komba, 2009; Kundi and Nawaz, 2010). Seven approaches and five attitudes have been postulated about the development and use of eLearning. The approaches are: administrative, curricular, didactic, organizational, systemic, cultural and ideological and attitudes are: agnostic, conservative, moderate, radical, and extreme radical (Aviram and Tami, 2004). If new technologies are perceived simply as tools like other technologies, the development efforts will be more techno-centric but if efforts- picture“ of eLearning, then will be more „socio-technical“ (Jewels Nawaz and Kundi, 2010b; Sattar et al., 2011).

User-Need Analysis

Several techniques are used to record user needs including paper and online questionnaires, interviews, expert reviews and so on (Gray et al., 2003). The eLearning developers must work with departmental heads and select those faculty members who can serve as technology liaisons to their home departments. These role models can motivate their colleagues towards using ETS (Reilly, 2005). Research suggests that a sustained collaboration among teachers, students and administrators can foster effective identification of user-needs (Juniu, 2005). In an African university, it was found that faculty members have contributed significantly through participation in conducting a university-wide user-needs analysis (Thurab-Nkhosi et al., 2005). Understanding human requirements takes time and effort but these assessments are indispensable for integrating ETS with existing education communities (Hameed, 2007).

It is perceived that one day, learning will be delivered according to the needs of individual users and the eLearning context (LaCour, 2005). The developers need the abilities to identify and analyze user needs and take them into account in the eProjects for eLearning in higher education (Ekstrom et al., 2006). For example, the success of eLearning software is measured on how far the product fulfils stakeholders“ roles of managers, needs establishing and help desks requirement to supply users with required help, organizing computing for

on time and within a budget (Ward et al., 2006; Thieman, 2008; Nawaz, 2010, 2011).

Design and Development

The eLearning projects are complex and require a development team with multidisciplinary skills and the roles include: project manager, system and product instructional designers, administrators, tutors and writers (Gray et al., 2003). Project management, instructional design, team-based course development, and other academic and administrative techniques used in distance learning are also effective for technology integration within institutions (Aaron et al, 2004; Komba, 2009; are Nawaz and made Qureshi, to 2010b) perceive. a „big the development approaches and Ford, 2006; has undergone a paradigm shift; moving students away from instruction that was considered to promote technical rationality grounded in objectivism, to the application of computers to create cognitive tools utilized in constructivist environments (Young, 2003). The development of computer-based system for a business or government organization is different from eProjects for eLearning systems due to the difference of „organizational objectives“ (Sasseville, 2004). In eLearning, the main users are teachers and students where teachers have to be supported in teaching but both teachers and students have to be facilitated in learning (Juniu, 2005). Teachers need to be aware of differences between instructional design for eLearning as compared to traditional face-to-face situations (Abrami et al., 2006; Thieman, 2008; Sattar et al., 2011).

Implementation

Implementation of eLearning in HEIs is a challenging process involving multiple challenges and problems because new systems always change the existing behaviors and routines, which are disliked thereby producing user-resistance (Nyvang, 2006). Vrana, (2007) argues that „implementation o an act but it is a long last explains the process as made of: building a communication network, providing required hardware and software environment, implementing MIS for different

research and arranging for the training of all categories of users (Brush and Saye, 2009; Nawaz, 2010).

To handle the implementation issues, universities arrange for several structural arrangements such as: flat management structures, where there is team decision-making; the appointment of a full-time community manager to oversee; building a knowledge management system based on the ideas of user-community and establishing an advisory board that may contain some internal as well as external experts (consultants), to review and identify improvements (Gray et al., 2003). However, many models have been proposed for the implementation of ICT-based systems. Work in the 1990s used the concepts of interpretivism and social construction to view the implementation as a socially dynamic and contextualized process where people are the active enablers of implementation. These studies concede that technology evolves after the design phase as it is traced by relevant social groups through the construction of different meanings (Bondarouk, 2006; Nawaz and Kundi, 2010c).

Change management in e-learning

The experience of introducing different ICTs in the classroom and other educational settings all over the world suggests that the realization of potential

educational benefits "is not automatic (Tinio, 2002)." I

rather raising multiple debates over the substance, trajectory, purpose, and implications of ICTs in education, for example, ICTs can become an end in themselves rather than a means to support and enhance education (Sahay, 2004). In the context of globalization, international connectivity, instant communication via Internet and mobile technologies; the universities, all over the world, are confronting huge challenges, both external and internal (Loing, 2005; Qureshi et al., 2009; Brush and Saye, 2009).

The effective integration of ICTs into higher education is a complex and multifaceted process that involves not just technology but also pedagogy, curriculum, institutional eReadiness, teachers' digital literacy and consistent financing, per se (Tinio, 2002). The growth of innovative practices in eLearning has developed new skills and novel ways of using them within project teams for eLearning projects (Gray et al., 2003). However, the design and development of eLearning environments must be aligned with requirements the "student (Young, attitudes are 2003)" found in the development, use and change management of eLearning projects. It is one of the most obvious attributes of mankind meaning "whatever they observe and experience (Checkland and Scholes, 1991:1). Thus, whichever is the conception of technology, the same is expressed in the physical attitudes of the people. The administrative, curricular, didactic, organizational, systemic, cultural and

(2004), reveals that those who were running successful eLearning-initiatives, strongly perceived that the "developments needed to be the technology." Likewise, data on e in developed and developing countries provide enough evidence to understand that it is not technology (Jewels and Ford, 2006) rather human and cultural issues which can either work as critical success factors or turn into critical failure variables. For example, culture is a highly influential mediator in the present educational environments wherein pedagogical models are an integral part of the culture of every institute (Nyang, 2006; Brush and Saye, 2009).

Most educators accept the premise that, in an ideal world, learning will be delivered in a manner and context that best suits the needs and learning styles of individual learners (LaCour, 2005). The developers need the abilities to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems and an ability to effectively integrate eLearning-solutions into the user-environment (Ekstrom et al., 2006). For example, the success of an eLearning software is measured on how far the product fulfils stakeholders needs and requirements on time and within a budget (Ward, Monaghan and Villing, 2006). Understanding human requirements takes time and effort but these assessments are indispensable in planning the introduction of ICTs to education communities (Hameed, 2007; Qureshi et al., 2009; Kundi and Nawaz, 2010).

Results show that promoters of technology view ICTs as a way of transforming education (substantive-approach) whereas most of the teachers view it only as a means to an end (instrumental conception). The advocates of technology base their vision on broader social changes; the other group considers only the student-requirements and the practical ways to meet them (Sasseville, 2004) therefore, the developers must balance the needs of all stakeholders (Abrami et al., 2006) by getting academic computing staff, faculty, and administrators together (Kopyc, 2007; Nawaz and Qureshi, 2010b).

Approaches and Attitudes

There are different views about the nature and aims of ICTs in education therefore varying behaviors and attitudes are found in the development, use and change management of eLearning projects. It is one of the most obvious attributes of mankind meaning "whatever they observe and experience (Checkland and Scholes, 1991:1). Thus, whichever is the conception of technology, the same is expressed in the physical attitudes of the people. The administrative, curricular, didactic, organizational, systemic, cultural and

A research from universities by Lewis and Goodison

Table 2.3. Approaches to ICT-Related Change in HEIs

	Approach	What to change?
1	Administrative	Achieve a certain ratio of computers –technical change
2	Curricular	Curricular changes only
3	Didactic	Inevitable or desirable change in the teaching/learning of the subject matters
4	Organizational	Involve organizational changes in school, consisting of more flexible attitudes
5	Systemic	Didactic and organizational changes in school will not be possible without systemic changes
6	Cultural	ICT revolution is a deep cultural revolution changing all modes and patterns of our lives
7	Ideological	Demanding most basic social and educational changes

Table 2.4. Attitudes to ICT-Related Change in HEIs

	Attitude	How to change?
1	Agnostic	Don't have a clear opinion as to the imp
2	Conservative	Believe that education will survive, ICT with minimal change, as it has survived other Technologies
3	Moderate	Extensive change in their didactics.
4	Radical	Have to go through such changes if they are to survive the ICT revolution
5	Extreme radical	De-schooling, mega changes

ideological approaches are physically implemented through agnostic, conservative, moderate, radical, or extreme radical attitudes towards the eLearning development and implementation trajectory (Aviram and Tami, 2004; Brush and Saye, 2009).

Likewise, the research shows that developers (promoters) view ICTs as a way of transforming education whereas users (teachers, students and administrators) see it only as a means to an end (Sasseville, 2004). At the broader level, however, there are two extreme views of ICTs for education (Macleod, 2005). Some educators are strong advocates of technological innovation while others are reluctant to accept ICTs as indispensable to the learning process. These divergent reactions and concerns have thus created a continuum that represents various attitudes towards technology (Juniu, 2005). On one extreme is the instrumental view, which takes eLearning gadgets as an addition to the technology cache. The impact of this view and resultant use is only at the technical levels. On the contrary, there is substantive view, which posits that ICTs are more than tools with positive and negative impacts for both technical and broader social changes. The approach-attitude matrix by Aviram and Tami (2004) helps in extracting the guidelines about „what to change and „how to change?“le2.3andTable 2see.4.

Issues and Challenges

Contemporary research on eLearning reveals that more than half of all ICT-projects become runways, with overshooting budgets, delayed timetables, escalation in decision making and failing to deliver their objectives (McManus and Wood-Harper, 2004:3). Similarly, though ICTs are emerging in HEIs but the pace and depth of

their impact is, “as yet, rat Several researchers have identified the problems for the development, use and integration of ICTs into teaching, learning and educational management (Drinkwater et al., 2004; Bondarouk, 2006; Vrana, 2007; Kanuka, 2007; Sife et al., 2007; Wells, 2007; Thieman, 2008; Brush and Saye, 2009; Purnomoi and Leeii, 2010) such as:

1. Inertia of behavior of people, like their resistance to changes, etc.
2. Underestimation, lack of awareness and negative attitudes towards ICTs.
3. Lack of systemic approach to implementation and lack of follow-up.
4. High rates of system non-completion.
5. Lack of user-training.
6. Lack of administrative and technical end-user support.
7. User dissatisfaction with new systems.
8. Mismatches between technologies and the context, culture and work practices.

Perceptual Diversities

change

Research tells that one way to assess an individual's

approach to computer use is by testing an individual's attitudes to these technologies because numerous studies have explored individual differences in attitudes towards computers (Graff et al., 2001). For example, understanding teachers' perception integration training and its impact on their instructional practice can help both the technology training programs and eLearning development process (Zhao and Bryant, 2006). As teachers' attitudes are strongly related to their success in using technology, also depends on the perceived usefulness of these

resources in terms of effective communication and access to information (Bataineh and Abdel-Rahman, 2006). It is however, notable that very little research has been published about students' perceptions of their computer literacy, especially in third world countries (VanFossen, and Berson, 2008).

It has been unearthed that the use of ICTs is dependant on the perceptions of developers and users about the nature of technologies and their role in different walks of life (Aviram and Tami, 2004). Sasseville (2004) have

found that technology-related changes are "not perceived as a collective experience or social change rather, **Demographic Variations** personal challenge." An analysis of the literature

suggests that two broader theories are discussed over Despite the theoretical benefits that e-learning systems and over saying that ICTs can either can offer, play difficulties „instrumental“ can often occur when systems are or „substantive“ role in the learning not developed according to process to the (Macleod, learner characteristics 2005). Instrumental view asserts that ICTs are just technologies and their role depends on their use while substantive view posits that these technologies have the power to change the society and their mere existence can make the difference. Likewise, Ezer, (2006) personifies the same issue into „instrumental“ on their and personal „liberal“ characteristic of age, conceptions gender, teacher-led or self study, familiarity with computer applications, and preferred way of learning (Cagiltay et al., 2006). Likewise, teachers' influenced use by multiple of IC factors including: demographics (like age, educational background); accessibility of hardware; experience in use of instructional technology, perception about the usefulness and ease of using digital gadgets (Mehra and Mital, 2007; Nawaz and Kundi, 2010b).

Users' Resistance

Research tells that one of the biggest threats to ICT-enabled projects is resistance to change (Tinio, 2002). Teachers are reluctant to integrate ICTs into their daily scholarly activities and this situation has not changed over the past few years (Sasseville, 2004). Research shows that technical issues are given priority over the educational change, for example, digital-change management are hardly linked with the institution-wide digital strategies and management (Valcke, 2004). While most educators acknowledge the significance of eLearning, problems continue to recur in the adoption process showing a critical gap between perceptions, theories and practices of teachers (Knight et al., 2006). Thus, there are many problems and concerns related to eLearning such as, low rates of participation, learner resistance, high non-completion rates, poor learner performance (Kanuka, 2007; Thieman, 2008).

Similarly, in most of the eLearning projects, the academics sometimes refuse to change curricula and pedagogic approaches; teaching staff and instructors lack incentive and rewards; there is a lack of feedback towards higher levels of decision and policy-making, and little impact on strategy definition and implementation (Loing, 2005). Furthermore, since digital systems create winners and losers due to redistribution of organizational resources therefore there can also be political-manoeuvring to sabotage the eProjects for individual or

group interests within or outside HEI (Nawaz et al., 2007). Thus, there are many barriers in the implementation of eLearning solutions in HEIs where some are classical such as inertia of behavior or natural resistance to changes, while others who lack access to information develop a fear of isolation however, if proper eLearning environments are created, user resistance can be transformed into a collaborative learning workplace (Vrana, 2007).

Furthermore, new generation of students (Net Generation) use media in many different formats, which shows another notable characteristic of new learning styles as is their behavior of multitasking – using computers and the Internet at the same time as video games, print media, music, and phone (Barnes et al., 2007). Thus, teachers, students and any other users of ICTs, behave according to their demographic characteristics of age, educational level, cultural background, physical and learning disabilities, experience, personal objectives and attitudes, learning preferences and styles, motivation, reading/writing skills, ability to work with diverse cultures, familiarity with differing instructional methods and previous experience with eLearning (Moolman and Blignaut, 2008; Thieman, 2008).

Tools for Change Management

E training for e-learning

The success of ETS in higher education depends on the training of teachers because it is them who prepare students as well as administrators as digital users (Oh and French, 2004). The learning of eLearning is a lifelong

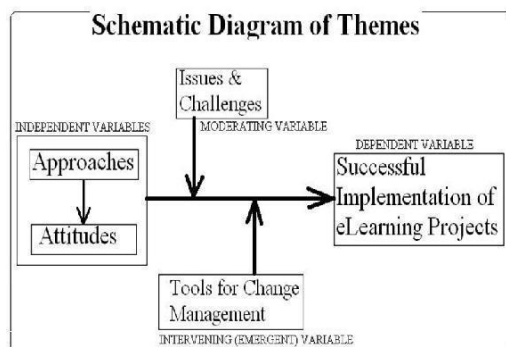


Figure 1. Showing the Theoretical Framework of the Emerging Themes in the Paper

learning process however, for immediate uses in the universities; users have to quickly learn to use the new technologies. Training is a narrow term than education which aims at preparing someone for a particular job, function, or profession. Education refers to a lifelong learning process with high level objectives of developing moral, cultural, social and intellectual dimensions of an individual and society (Drinkwater et al., 2004). Research asserts that lack of technology integration among teachers is considered a major concern for educators in the perspectives of information based, global society (Gray et al., 2003; Zhao and Bryant, 2006; Nawaz, 2011).

Both instrumental and substantive approaches to eLearning recognize the role of eLearning-users (Young, 2003). Instrumentalists believe that technology is neutral and therefore its impacts entirely depend on how they are used for individual to international purposes (Macleod, 2005). While substantive theorists argue that ICTs can be used more effectively with deeper impacts on society by providing maximum possible services to the users (Ezer, 2006). However, use of either instrumental or substantive applications of ICTs in the learning environments squarely depends on the quality and Díaz, 2006)" extended to the teachers, students, administrators (Qureshi et al., 2009).

A research from universities by Lewis and Goodison (2004), reveals that those who were running successful eLearning-initiatives, strongly perceived that the "developments needed to be driven programming abycomputer pedagogy,(Johnsonetal., 2006)not.Today,the technologywise,.data" onLikeeLearning experiences in developed and developing countries provide enough evidence to understand that it is not technology (Jewels and Ford, 2006) rather human and cultural issues which can either work as critical success factors or turn into critical failure variables. For example, culture is a highly influential mediator in the present educational environments wherein pedagogical models are an integral part of the culture of every institute (Nyvang, 2006).

Users' Computer Literacy

The demand for a universal computer-literacy stems from the manner in which-down"ICTsdifferent ar aspects of the contemporary I

The advocates of social inclusion through ICTs propose a focus on electronic literacy as a key to overcoming the digital divide (Macleod, 2005). Different groups of people: students, teachers, and employers, have different views about what computer literacy means (Johnson et al., 2006). During the last 25 years, several models and approaches of computer and information literacy have started to emerge (Ezziane, 2007). Now, digital literacy skills are considered necessary for effective and mindful learning in the contemporary digital environments (Aviram and Eshet-Alkalai, 2006; VanFossen, and Berson, 2008). People acquire their technology literacy in two ways: formally through courses on technology or informally at home/workplace, from friends or by themselves (Thieman, 2008; Nawaz and Kundi, 2010c; Nawaz and Qureshi, 2010b).

The illiterate of 21st century is not the one who cannot read and write rather, one of "eTraining (Blázquez and relearn (Tinio, 2002)."

literacy has evolved overtime with the improvements in technology increased dependence of society on ICTs, for example, 50 years ago when a single computer almost filled the room, computer literacy referred to the ability of programming abycomputer pedagogy,(Johnsonetal., 2006)not.Today,the when every user owns a computer, computer literacy is defined as an understanding of computer characteristics, capabilities, and applications, as well as an ability to implement this knowledge in the skillful, productive use of computers in a personalized manner (Martin and Dunsworth, 2007; VanFossen, and Berson, 2008). Terms such as computer competency, computer proficiency, and computer literacy are used interchangeably to express digital literacy (Thieman, 2008; Brush and Saye, 2009).

Sustained Technical Support

The completion of an eProject for eLearning does not guarantee the successful operation of the new system rather it is the existence of an uninterrupted technical support for teachers, students and administrators in tackling their day to day digital problems. The significance of this dimension is evident from the fact that almost all the researcher on eLearning in HEIs have empirically proved that successful eLearning projects depend on timely and consistent technical support (Zhao and Bryant, 2006). However, researchers tell that provision of uninterrupted technical support is challenging therefore most of the HEIs are failing to serve teachers, student and administrators effectively and on continuous basis (Ezziane, 2007; Nawaz et al., 2007; Nawaz and Qureshi, 2010a).

According to Dinevski and Kokol, (2005) "eLearning informationFall/Autumn.technologyRetrievedAugust19,2010,support"fromhttp://www.cjlt.ca/. in eTeaching and eLearning processes. Similarly, ICTs are different from all the so far introduced technologies in the sense that they are integrative in their nature. Television, Phone, and Fax technologies did not connect until the computer and networking technologies emerged. Today one can telephone, send a message in multimedia, fax or watch a movie all through a single PC on network (Macleod, 2005). But, critical factor in eLearning is not access to infrastructure (thereby filling hardware-divide) only rather the access should empower the users to get knowledge, skills, and consistent support of organizational structures (Qureshi et al., 2009; Nawaz, 2010).

CONCLUSIONS

The above literature review on the implementation of eProjects of eLearning in higher education reveals that it is a social process which contains technical, organizational, human and contextual factors as well as concerns. The project management has to be careful in covering all the indispensable dimensions of the implementation process including the approaches and attitudes (see Section 3.1), issues and challenges (see Section 3.2), available tools for change management (see Section 3.3) to reach the stage of getting a successful implementation of the eLearning projects in higher education. This conclusion and its theoretical underpinnings (discussed above) are portrayed in the following schematic diagram

Above figure shows that „approaches“ the „attitudes“ccessultowardsimplementation theof the eLearning by the „issues“ However, interfered and the „tools“ factors) and the „tools“ (intervening variables) which emerge as the

consequence of implementing an eLearning project. The dynamics of these relationships are critical for every eProject implemented in higher education institutions. The nature and intensity of these factors may differ from country to country and even setting to setting. The contextual diversities must be recorded while analyzing the relationships between all the above cited factors in the implementation of eProjects.

REFERENCES

- Aaron M, Dicks D, Ives C, Montgomery B (2004). Planning for Integrating Teaching Technologies. *Canadian J. Learning and Tech.*, 30(2), Spring. Retrieved January 23 2011, from <http://www.cjlt.ca/>.
- Abrami PC, Bernard RM, Wade A, Schmid RF, Borokhovski E, Tamim R, Surkes MA, Lowerison G, Zhang D, Nicolaidou I, Newman S, Wozney I, Peretiatkovicz A (2006). A Review of e-Learning in Canada: A Rough Sketch of the Evidence, Gaps and Promising Directions. *Canadian Journal of Learning and Technology*, 32(3), offers a complete
- Aviram A, Eshet-Alkalai Y (2006). Towards a Theory of Digital Literacy: Three Scenarios for the Next Steps. *European Journal of Open, Distance and E-Learning*. Retrieved January 23, 2011, from <http://www.eurodl.org/>.
- Aviram R, Tami D (2004). The impact of ICT on education: the three opposed paradigms, the lacking discourse. Retrieved August 19, 2010, from http://www.informatik.uni-remen.de/~mueller/kr-004/ressources/ict_impact.pdf.
- Barnes K, Marateo RC, Ferris SP (2007). Teaching and Learning with the Net Generation. *Innovate Journal of Online Education*. 3(4). Retrieved August 19, 2010, from <http://Innovateonline.info>.
- Bataineh R F, Bani-Abdel-Rahman A A (2006). Jordanian EFL students' perceptions of their computer literacy: An exploratory case study. *International Journal of Education and Development using ICT*, 2(2). Retrieved March 12, 2011, from <http://ijedict.dec.uwi.edu/viewarticle.php?id=169&layout=html>.
- Baumeister H (2006). Networked Learning in the Knowledge Economy - A Systemic Challenge for Universities. *European Journal of Open, Distance and E-Learning*. Retrieved March 12, 2011, from <http://www.eurodl.org/>.
- Blázquez FE, Díaz LA (2006). A Training Proposal for e-Learning Teachers. *European Journal of Open, Distance and E-Learning*. Retrieved August 19, 2010, from <http://www.eurodl.org/>.
- Bondarouk TV (2006). Action-oriented group learning in the implementation of information technologies: results from three case studies. *European Journal of Information Systems*, 15, 42–53. Retrieved March 12, 2011, from <http://www.palgrave-journals.com/ejis/>.
- Brush T, Saye JW (2009). Strategies for Preparing Preservice Social Studies Teachers to Integrate Technology Effectively: Models and Practices. *Contemporary Issues in Technology and Teacher Education*, 9(1). Retrieved September 5, 2011 from <http://www.citejournal.org/vol9/iss1/socialstudies/article1.cfm>
- Cagiltay NE, Yildirim S, Aksu M - (200) Based Instruction: linear or non-linear. *Educational Technology and Society*, 9 (3), 122-136. Retrieved March 12, 2011, from <http://www.ask4research.info/>
- Checkland P, Scholes J (1991). *Soft systems methodology in action*. John Wiley and Sons.
- Dinevski D, Kokol DP (2005). ICT and Lifelong Learning. *European Journal of Open, Distance and E-Learning*. Retrieved January 23, 2011, from <http://www.eurodl.org/>.
- Drinkwater PM, Adeline CM, French S, Papamichail KN, Rickards T (2004). Adopting a Web-Based Collaborative Tool to Support The change management" Manchester Method Approach to Learning. *Electronic Journal on e-*

- Learning, 2(1), 61-68. Retrieved January 23, 2011 from <http://www.ejel.org/volume-2/vol2-issue1/issue1-art23-drinkwater.pdf>
- Ekstrom JJ, Gorka S, Kamali R, Lawson E, Lunt B, Miller J, Reichgelt H (2006). The Information Technology Model Curriculum. *Journal of Information Technology Education*, 5. Retrieved March 12, 2011, from <http://jite.org/documents/Vol5/>.
- Ezer J (2006). India and the USA: A Comparison through the Lens of Model IT Curricula. *Journal of Information Technology Education*, 5. Retrieved January 23, 2011, from <http://jite.org/documents/Vol5/>.
- Ezziane Z (2007). Information Technology Literacy: Implications on Teaching and Learning. *Educational Technology and Society*, 10 (3), 175-191. Retrieved March 12, 2011, from <http://www.ask4research.info/>
- Goddard JB, Cornford J (2007). The University, ICTs and Development in the Information Society. Retrieved July 21, 2007 from <http://www.lirne.net/resources/netknowledge/goddard.pdf>.
- Graff M, Davies J, McNorton M (2001). Cognitive Style and Cross Cultural Differences in Internet Use and Computer Attitudes. *European Journal of Open, Distance and E-Learning*. Retrieved August 19, 2010, from <http://www.eurodl.org/>.
- Gray DE, Ryan M, Coulon A (2003). The Training of Teachers and Trainers: Innovative Practices, Skills and Competencies in the use of eLearning. *European Journal of Open, Distance and E-Learning*. Retrieved March 12, 2011, from <http://www.eurodl.org/>.
- Haddad WD, Jurich S (2006). ICT for education: Potential and potency. UNESCO. Retrieved March 12, 2011, from http://web2.iastate.edu/~ilet/reading_groups/Pdf_files/03UNESCO.pdf.
- Hameed T (2007). ICT as an enabler of socio-economic development. Retrieved June 24, 2007, from <http://www.itu.int/osg/spu/digitalbridges/materials/hameed-paper.pdf>.
- Jewels, T. and Ford, M. (2006). The Development of a Taxonomy of Desired Personal Qualities for IT Project Team Members and Its Use in an Educational Setting. *Journal of Information Technology Education*, 5. Retrieved January 23, 2011, from <http://jite.org/documents/Vol5/>.
- Johnson DW, Bartholomew KW, Miller D (2006). Improving Computer Literacy of Business Management Majors: A Case Study. *Journal of Information Technology Education*, 5. Retrieved July 14, 2007, from <http://jite.org/documents/Vol5/>.
- Juniu S (2005). Digital Democracy in Higher Education Bridging the Digital Divide. *Innovate Journal of Online Education*, 2(1), October/November. Retrieved March 12, 2011, from <http://innovateonline.info>.
- Kanuka H (2007). Instructional Design and eLearning: A Discussion of Pedagogical Content Knowledge as a Missing Construct. *e-Journal of Instructional Science and Technology (e-JIST)*. 9(2). Retrieved August 19, 2010, from http://www.usq.edu.au/electpub/e-jist/docs/vol9_no2/default.htm.
- Knight, C., Knight, B. A. and Teghe, D. (2006). Releasing the pedagogical power of information and communication technology for learners: A case study. *International Journal of Education and Development using ICT*, 2(2). Retrieved August 19, 2010, from <http://ijedict.dec.uwi.edu/>.
- Komba, Willy LM (2009). Increasing education access through open and distance learning in Tanzania: A critical review of approaches and practices. *International Journal of Education and Development using ICT*, 5(5). Retrieved September 5, 2011 from <http://ijedict.dec.uwi.edu/viewissue.php?id=23>
- Kundi GM, Nawaz A (2011). Predictor of e-learning development and use practices in HEIs of KPK, Pakistan. *Turkish Online Journal of Distance Education (TOJDE)*, 12(1), Article 5.
- Kundi GM, Nawaz A (2010). From objectivism to social constructivism: The impacts of information and communication technologies (ICTs) on higher education. *Journal of Science and Technology Education Research (JSTER)*, 1(2):30-36.
- LaCour S (2005). The future of integration, personalization, and ePortfolio technologies. *Innovate Journal of Online Education*, 1(4), April/May. Retrieved March 12, 2011, from <http://innovateonline.info>.
- Lewis D, Goodison R (2004). Enhancing learning with Information and Communication Technology (ICT) in Higher Education. Research Report RR533, Department for Education and Skills. © University of Wolverhampton 2004, ISBN 1 84478 225 5. Retrieved August 19, 2010, from <http://www.dfes.gov.uk/research/data/uploadfiles/RR533.pdf>.
- Loing B (2005). ICT and Higher Education. General delegate of ICDE at UNESCO. 9th UNESCO/NGO Collective Consultation on Higher Education (6-8 April 2005). Retrieved June 24, 2007, from <http://ong-comite-liaison.unesco.org/ongpho/acti/3/11/rendu/20/pdfen.pdf>
- Lynch J, Sheard J, Carbone A, Collins F (2005). Individual and Organizational Factors Influencing the Scholarship of Teaching ICT. *Journal of Information Technology Education*, Vol. 4. Retrieved March 12, 2011, from <http://jite.org/documents/Vol4/>.
- Macleod H (2005). What role can educational multimedia play in narrowing the digital divide? *International Journal of Education and Development using ICT*. 1(4). Retrieved January 23, 2011, from <http://ijedict.dec.uwi.edu/>.
- Manochehr N (2007). The Influence of Learning Styles on Learners in E-Learning Environments: An Empirical Study. *Computers in Higher Education and Economics Review*, 18. Retrieved August 19, 2010, from <http://www.economicsnetwork.ac.uk/cheer.htm>.
- Martin F, Dunsworth Q (2007). A Methodical Formative Evaluation of Computer Literacy Course: What and How to Teach. *Journal of Information Technology Education*, 6. Retrieved January 23, 2011, from <http://jite.org/documents/Vol6/>.
- McManus J, Wood-Harper T (2004). Information systems project management: Methods, tools and techniques. Pearson Education, Limited, UK.
- Mehra P, Mital M (2007). Integrating technology into the teaching-learning transaction: Pedagogical and technological perceptions of management faculty. *International Journal of Education and Development using ICT*, 3(1). Retrieved January 23, 2011, from <http://ijedict.dec.uwi.edu/>.
- Moolman HB, Bignaut S (2008). Get set! e-Ready,-Learn!... The e-Readiness of Warehouse Workers. *Educational Technology and Society*, 11(1):168-182. Retrieved January 23, 2011 from <http://www.ask4research.info/>.
- Nawaz A (2010). Using eLearning as developing states. *International Journal of Science and Technology Education Research (IJSTER)*, Vol 1(6).
- Nawaz A (2011). Users' training: Training The in HEIs. *Global Journal of Computer Science and Technology* (GJCST), 11(4):1-8.
- Nawaz A, Kundi GM (2010b). Demographic implications for the eLearning user perceptions in HEIs of NWFP, Pakistan. *Electronic Journal of Information Systems for Developing Countries (EJISDC)*, 41(5), 1-17.
- Nawaz A, Kundi GM (2010c). Digital literacy: An analysis of the contemporary paradigms. *Journal of Science and Technology Education Research (JSTER)*, 1(2):19-29.
- Nawaz A, Qureshi AQ (2010b). E-Teaching/E-Pedagogy: Threats and Opportunities for teachers in HEIs. *Global Journal of Management and Business Research (GJMBR)*, 10(9):23-31.
- Nawaz A, Kundi GM, Shah B (2007). Metaphorical interpretations of information systems failure. *Peshawar University Teachers Association Journal (PUTAJ)*, Vol. 14, 15-25.
- Nawaz A, Qureshi AQ (2010a). Sustained technical support: Issues and prospects for eLearning in HEIs. *Global Journal of Management and Business Research (GJMBR)*, 10(9):32-39.
- Nyvang T (2006). Implementation of ICT in Higher Education as Interacting Activity Systems. Retrieved January 23, 2011 from <http://www.networkedlearning.conference.org.uk/abstracts/pdfs/P27%20Nyvang.pdf>.
- Oh E, French DR (2004). Pre-service Teachers' Perceptions of Introductory Instructional Technology Course. *Electronic Journal for the Integration of Technology in Education*, 3(1). Retrieved August 19, 2010, from <http://ejite.isu.edu/Volume3No1/>.
- Oliver R (2002). The role of ICT in higher education for the 21st century: ICT as a change agent for education. Retrieved August 19, 2010 from <http://elrond.scam.ecu.edu.au/oliver/2002/he21.pdf>.
- Purnomo, Sutrisno Hadi and Leei, Yi-Hsuan (2010) An Assessment of Readiness and Barriers towards ICT Program Implementation:

Perceptions of Agricultural Extension Officers in Indonesia.

International Journal of Education and Development using Information and Communication Technology (IJEDICT), 6(3):19-36.

Qureshi QA, Ahmad S, Najibullah, Nawaz A, Shah B (2009). eLearning development in HEIs: Uncomfortable and comfortable zones for developing countries. *Gomal University Journal of Research (GUJR)*, 25(2), 47-56.

Reilly C (2005). Teaching by Example: A Case for Peer Workshops about Pedagogy and Technology. *Innovate Journal of Online Education*, 1(3), February/March. Retrieved August 19, 2010, from <http://innovateonline.info>.

Russell G (2005). The Distancing Question in Online Education. *Innovate Journal of Online Education*, 1(4), April/May. Retrieved August 19, 2010, from <http://innovateonline.info>.

Sahay S (2004). Beyond utopian and nostalgic views of information technology and education: Implications for research and practice. *Journal of the Association for Information Systems*, 5(7), 282-313. Retrieved April 10, 2007, from

Sasseville B (2004). Integrating Information and Communication Technology in the Classroom: A Comparative Discourse Analysis. *Canadian Journal of Learning and Technology*, 30(2), Spring. Retrieved January 23, 2011, from <http://www.cjlt.ca/>.

Sattar, A., Nawaz, A., and Najibullah (2011). Evolution of eLearning in HEIs: Challenges and Opportunities for Developing Countries like Pakistan. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*.

Sife AS, Lwoga, ET, Sanga C (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International Journal of Education and Development using ICT*, 3(1). Retrieved January 23, 2011, from <http://ijedict.dec.uwi.edu/>.

Thieman, Gayle Y (2008). Using technology as a tool for learning and developing 21st century citizenship skills: An examination of the NETS and technology use by preservice teachers with their K-12 students. *Contemporary Issues in Technology and Teacher Education*, 8(4). Retrieved September 4, 2011 from <http://www.citejournal.org/vol8/iss4/socialstudies/article1.cfm>

T hur ab- N khosi D, Lee M, Giannini- G ac hago D (2005). Preparing Academic Staff for e-Learning at the University of Botswana. *Innovate Journal of Online Education*, 2(1), Oct/Nov. Retrieved January 23, 2011, from <http://innovateonline.info>.

Tinio VL (2002). ICT in education. Presented by UNDP for the benefit of participants to the World Summit on the Information Society. UNDP's regional -Pacific project. Development Information the Asia Program (APDIP), in association with the secretariat of the Association of Southeast Asian Nations (ASEAN). Retrieved January 23, 2011 from <http://www.apdip.net/publications/iespprimerseprimer-edu.pdf>.

UNESCO (2007). Education and ICT. Retrieved October 10, 2007, from http://portal.unesco.org/ci/en/ev.php-URL_ID=19487andURL_DO=DO_TOPICandURL_SECTION=201.html.

UQA (2001). Policies and trends in higher education. The University of Queensland Australia. Retrieved January 23, 2011, from http://www.tedi.uq.edu.au/largeclasses/pdfs/LitReview_6_policiesandtrend.pdf.

Valcke M (2004). ICT in higher education: An uncomfortable zone for institutes and their policies. In R. Atkinson, C. McBeath, D. Jonas-Dwyer and R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 20-35). Perth, 5-8 December. Retrieved August 19, 2010, from <http://www.ascilite.org.au/conferences/perth04/procs/valcke-keynote.html>.

VanFossen PJ, Berson MJ (2008). Civic literacy in a digital age. *Contemporary Issues in Technology and Teacher Education*, 8(2). Retrieved January 23, 2011 from <http://www.citejournal.org/vol8/iss2/socialstudies/article1.cfm>

Vrana I (2007). Changes required by ICT era are painful sometimes. The Paper was presented at CAUSE98, an EDUCAUSE conference, and is part of that conference's online proceedings. Retrieved August 19, 2010, from <http://www.educause.edu/copyright.html>.

Walsham G (2000). *IT/S in developing countries*. In: Zeleny, Milan (editor) *The IEBM handbook of information technology in business*.

Business Press, Thomson Learning. pp, 105-109.

Ward T, Monaghan K, Villing R (2006). MyVLE: A case study in building a universal telematic education environment for a small university. *European Journal of Open, Distance and E-Learning*. Retrieved January 23, 2011, from <http://www.eurodl.org/>.

Wells R (2007). Challenges and opportunities in ICT educational development: A Ugandan case study. *International Journal of Education and Development using ICT*, 3(2). Retrieved August 19, 2010 from <http://ijedict.dec.uwi.edu/>.

Willis J (2006). Creating a Working Model for Technology Integration Through a Lesson Planning WebQuest. *Electronic Journal for the Integration of Technology in Education*, 5, 25-33. Retrieved August 19, 2010, from <http://ejite.isu.edu/Volume5No1/>.

Young LD (2003). Bridging Theory and Practice: Developing Guidelines to Facilitate the Design of Computer-based Learning Environments. *Canadian Journal of Learning and Technology*, 29(3), Fall/Autumn. Retrieved August 19, 2010, from <http://www.cjlt.ca/>.

Zhao Y, LeAnna Bryant F (2006). Can Teacher Technology Integration Training Alone Lead to High Levels of Technology Integration? A Qualitative Look at Teachers' Tech Mandated Technology Training. *Electronic Journal for the Integration of Technology in Education*, 5, 53-62. Retrieved January 23, 2011, from <http://ejite.isu.edu/Volume5No1/>.

Other Publications on ICTS, ETS and e learning

Kundi GM, Nawaz A, Shah B (2007). De-Escalating the IT projects. *Journal of Information Systems and Technology Management (JISTM)*, 4(3), 325-332.

Kundi GM, Nawaz A, Khan S (2010). The predictors of success for eLearning in HEIs of NWFP, Pakistan. *Journal of Information Systems and Technology Management (JISTEM)*, 7(3):545-578.

Kundi GM, Nawaz A (2007). Politics in IT Projects. *Gomal University Journal of Research (GUJR)*, 23(2), 54-58.

Kundi GM, Nawaz A (2009). IT in Pakistan: Threats and opportunities for eBusiness. *The Electronic Journal of Information Systems in Developing Countries (EJISDC)*, 36(1), 1-31.

Kundi GM, Nawaz A (2010). From objectivism to social constructivism: The impacts of information and communication technologies (ICTs)

on higher education. *Journal of Science and Technology Education Research (JSTER)*, 1(2):30-36.

Kundi GM, Nawaz A (2011). Predictor of e-learning development and use practices in HEIs of KPK, Pakistan. *Turkish Online Journal of Distance Education (TOJDE)*, 12(1), Article 5.

Kundi GM, Shah B, Nawaz A (2008). Digital Pakistan: Opportunities and Challenges. *Journal of Information Systems and Technology Management (JISTM)*, 5(2):365-390.

Nawaz A, Kundi GM (2010). Digital literacy: An analysis of the contemporary paradigms. *Journal of Science and Technology Education Research (JSTER)*, 1(2):19-29. (c)

Nawaz A, Ahmad B (1996). Management information systems: A raison d'être for new Gomalage University enterprises. *Journal of Research*. (GUJR), 13(2), 247-260.

Nawaz A, Kundi GM (2010). Predictor of e-learning development and use practices in higher education institutions (HEIs) of NWFP, Pakistan. *Journal of Science and Technology Education Research (JSTER)*, 1(3):44-54. (b)

Nawaz A, Kundi GM (2010). Demographic implications for the eLearning user perceptions in HEIs of NWFP, Pakistan. *Electronic Journal of Information Systems for Developing Countries (EJISDC)*, 41(5), 1-17.. (a)

Nawaz A, Qamar AQ (2010). E-Learning/E-Pedagogy: Threats and Opportunities for teachers in HEIs. *Global Journal of Management and Business Research (GJMBR)*, 10(9):23-31.

Nawaz A (2010). Using eLearning as a developing states. *International Journal of Science and Technology Education Research (IJSTER)*, Vol 1(6).

Nawaz A (2011). Users' training: The in HEIs. *Global Journal of Computer Science and Technology (GJCST)*, 11(4):1-8.

- Nawaz A, Kundi GM (2011). Users of e-learning in higher education institutions (HEIs): Perceptions, styles and attitudes. *International Journal of Teaching and Case Studies (IJTCS)*, Vol. 3, Nos. 2/3/4, pp. 161-174.
- Nawaz A, Qamar AQ (2010). Sustained technical support: Issues and prospects for eLearning in HEIs. *Global Journal of Management and Business Research (GJMBR)*, 10(9):32-39.
- Nawaz A, Shah B (1996). Databases: An expensive but indispensable warehouse. *Gomal University Journal of Research (GUJR)*, Vol. 1.
- Nawaz A, Ahmad B, Amanullah (1996). Public Administration: The major benefactor of Computec. *Gomal University Journal of Research (GUJR-B)*, 15(2), 223-236.
- Nawaz A, Amanullah (1996). Decider's Toolkit: The Information Technology. *Gomal University Journal of Research (GUJR)*.
- Nawaz A, Khan S, Khan H (2011). Stepwise Regression of Demographics to Predict e-Learning Problems and User-Satisfaction in HEIs of Khyber Pakhtunkhwa (KPK) Pakistan. *Global Journal of Computer Science and Technology (GJCST)*, 11(2) Version 1.0 February.
- Nawaz A, Kundi GM (2006). IT-organization alignment. *Gomal University Journal of Research*, 22(2), 202-206 (GUJR), December.
- Nawaz A, Kundi GM, Shah B (2007). Metaphorical interpretations of information systems failure. *Peshawar University Teachers Association Journal (PUTAJ)*, Vol. 14, 15-25.
- Qureshi QA, Ahmad S, Najibullah, Nawaz A, Shah B (2009). eLearning development in HEIs: Uncomfortable and comfortable zones for developing countries. *Gomal University Journal of Research (GUJR)*, 25(2), 47-56. (b)
- Qureshi QA, Ahmad S, Najibullah, Nawaz A, Zaman G (2009). ICTs for decision making: Problems and prospects. *Gomal University Journal of Research (GUJR)*, 25(2), 39-46. (a)
- Qureshi QA, Nawaz A, Najeebullah (2011). Prediction of the problems, user-satisfaction and prospects of e-learning in HEIs of KPK, Pakistan. *International Journal of Science and Technology Education Research (IJSTER)*, 2(2):13-21, February.
- Sattar A, Nawaz A, Khan S, Qureshi Q (2010). Digital literacy: The criteria for being educated in information society. *Global Journal of Computer Science and Technology (GJCST)*, 10(5).
- Sattar A, Nawaz A, Najibullah (2011). Evolution of eLearning in HEIs: Challenges and Opportunities for Developing Countries like Pakistan. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*.
- Shah B, Nawaz A (1995). Online professing: The crescendo of MIS. *Gomal University Journal of Research (GUJR)*, 12.3.1995.