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Tayyaba Batool
Old Dominion University

Ginger Watson
Old Dominion University, gswatson@odu.edu

Saul Carliner (Ed.)

Catherine Fulford (Ed.)

Nathaniel Ostashewski (Ed.)

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Tayyaba Batool, Doctoral Student
Instructional Design & Technology Program
Old Dominion University
Norfolk, VA
United States
batool.tayyaba786@gmail.com

Ginger S. Watson, Ph.D.
Instructional Design & Technology Program
Old Dominion University
Norfolk, VA
United States
gswatson@odu.edu

Distance education is a widely adopted technology in many developed parts of the world where educational agencies are constantly considering new technologies that can serve as a medium for instructional delivery and interaction. Mobile phones are one of the most recent technologies to gain much consideration and use. This brief paper outlines the current state of distance education, delivery mediums, and instructional approaches that foster interaction to promote effective learning. Particular emphasis is given to the potential for mobile devices to be used as effective instructional tools in distance education in Pakistan and other underdeveloped countries. The proposed study will measure the willingness of instructors and learners to adopt the use of mobile technologies for interactive distance education. The proposed research design, sample size and selection, instruments, procedures, and analysis are open for discussion and critique.

Introduction

Distance education is a mode of education that is often considered a little different than the formal or traditional, face-face to or classroom instruction. It may be defined as a teaching learning process in which learners are separated from the instructors by a physical distance which is often bridged by modern communication (Adeyemi, 2011). A technology-oriented medium is required to impart instruction in the distance mode of education in order to compensate for the physical separation of the instructor and the learner. This medium facilitates communication between the sender and receiver either in real-time or separated through time and space. (Garrison, Anderson, Archer, 2003)

The instructor should be competent and skilled enough to make use of technology in such a way that the distance between the instructor and the learner is not felt as a barrier to the teaching learning process. To ensure success in the distance education setup, the instructor's competency in addressing the learner's needs is crucial (Ustati, & Hassan, 2013). The instructor can address the learners' needs through interaction which is defined as "degree to which the technology permits interaction between the teacher and the student, and among students." (Gunawardena & Mc Isaac, 2004). Similarly for a student, interaction is required to know the instructors opinion about something and receive feedback. One known medium that can be used for this interaction is the mobile phone.

Literature Review

According to Gunawardena and Mc Isaac, (2004) technologies used in distance education can be classified into two categories; one-way media transmission which includes printed texts and material, radio programs, open broadcast television programs, audio- and videocassettes. These permit one-way interaction. Technologies that permit two-way transmission or interaction can be classified as either synchronous or asynchronous systems. Audio and video teleconferencing, audio graphic teleconferencing, interactive television are synchronous technologies that permit real time two-way communication and interaction. Computer-mediated telecommunications as the electronic mail, the bulletin boards provide time-delayed or asynchronous communication or interaction. In this sense interaction may be defined as a two-way reciprocal communication. As interaction increases the chances of the students to fulfill their individual learning needs also increase (Kaymak, & Horzum, 2013). Interaction is a two way reciprocal communication. In education interaction is categorized in three types; learner-instructor, learner-learner, and learner-content interaction. Learner- instructor interaction takes place between the leaner and the instructor mainly to provide and receive feedback and/or clarification of concepts by the students, and from the instructor to make sure that the learners have learned what is being taught. In learner-learner interaction, the learners communicate and interact with each other for clarification of some material or concepts taught or present in their content, to clarify due dates of projects and assignments as well as any misperceptions about these. In learner-content interaction the learners interact with their text books, lecture-videos, or any other material provided as the main reading material or as a supplement to it.

To answer the question about why interaction is required, Keegan (1996), summarizes the arguments given in favor of interaction by Holmberg, which he has termed as resulting in personal relation in his guided didactic instruction (1978, 83), as:

> "The feeling of personal relation between the teaching and learning parties promote study pleasure and motivation which are favorable to the attainment of study goals and the use of proper study processes and methods. These feelings can be fostered by well-developed self-instructional material and suitable two-way communication at a distance. It is also maintained that the atmosphere, language and conventions of friendly conversation favor feelings of personal relation and messages given and received in conversational forms are comparatively easily understood and remembered." (Holmberg 1978: 20, repeated 1983: 115-16)

Due to the more than one kind of interaction in the education system, we need to know what kind of interaction is actually required. In a study conducted by Ustati and Hassan (2013), Michael Moore's theory of transactional distance was used as the guiding framework to gain insight on learning and interaction in the e-learning setting where Learning Management System (LMS) was a vital instructional medium for distance education students. For better understanding of the phenomenon under study, instructor-learner interactions were analyzed. The authors report that the findings indicated that in terms of usability LMS is considered as a good platform to receive feedback and acquire information on content from the instructor. However, the learners hope for more interactivity where they can communicate among themselves besides engaging in the instructor-learner-content interactions that they experience through this system. Findings of

the study included that distance learners need a two way communication with their instructors and their peers.

In order to know whether interactions are required or whether they actually work, Bernard et., al. (2009) conducted a meta-analysis and reached at the following conclusions:

- interaction strategies affect achievement

- out of the three types, the learner-learner and the learner-content work best.

- And still out of the learner-learner and learner-content, learner-content was reported to have the strongest affect.

Kaymak and Horzum (2013) also reported the same results in their study that they conducted to determine the relationship between online learning readiness and structure and interaction of online learning students.

Interaction is important especially in an educational system where the students come from the traditional face-to-face system and may not be able to adapt to the distance education system without support. Dzakiria, Kasim, Mohamed, and Christopher (2013) conducted a study to examine the learners' perceptions about open and distance learning. They assert that in open distance learning, learners are expected to adapt to a different mode of learning that is mainly a shift from the way they have been learning for twelve years in primary and secondary education. Some students, they report are able to cope with this system but for most of them learning support and sufficient amount of interaction is required to engage in the new ways of learning. The findings of the study suggest that the infrequent face-to-face meeting between tutors and learners and the learners' dependence on the tutor leads to frustration and may even impede the learning process. Students find the new learning system and the expectations connected with it as too much. Such students need instructor's/tutor's help to come to terms with the new system. The instructors should also improve their teaching skills and adapt to the new system so that they are able to perform their duties as required and come up to the learners' expectations and satisfaction.

It depends on the context and from country to country whether interaction is required or not. In the developed countries because the students are aware of the use of the internet from the preliminary classes and may have gone through some form of online or distance learning in the high school, do not require much assistance. Therefore, learner-instructor interaction is not that important as it is thought by some people especially those advocating community of inquiry (Akyol et. al., 2009; Garrison, Anderson, & Archer, 2000, 2001; Garrison & Arbaugh, 2007). In this context Annand (2011), asserts that social presence (as in community of inquiry) has relatively unimportant effect on the online learning experience. He further says that teaching activities focused on individual intellectual development have significant effects on cognition.

In a literature review conducted by Rourke and Kanuka (2009) it is concluded that a synthesis of the data on perceived learning contradicts the notion that students engage in deep and meaningful learning through sustained communication in critical communities of inquiry (p.33). Which means that both the instructor-learner and the learner-learner interactions are insignificant.

On the other hand in the developing countries where students attend their classes in the traditional classroom for twelve years and don't even know how to use the computer or the internet (in some cases) are still instructor dependent and require frequent support and interaction from the instructor for feedback and assistance. Still in these countries, one of the three problems as pointed out by Olusala and Alaba (2011), is the energy crisis which is the main hindrance in

the use of internet on computers, especially lack of electricity in countries like Pakistan. In this situation the best solution that might be suggested is the use of mobile phones through which people learn with their fingertips and which helps learning (Ismail et al., 2013). It is also revealed through Pakistan Telecommunication Authority that there are about 123,597,202 mobile phone users in the country (Baloch, 2013).

Talking about the advantages of learning with the help of mobile or M-learning, Holotescu & Grosseck (2011) contend that it provides long lasting interaction for multiple purposes and that it reaches all students everywhere anytime.

Based on the above literature review the following hypotheses were formulated:

- Instructor in the distance education field are willing to adopt the process of interaction with the use of mobiles
- learners in the distance education field are willing to adopt the process of interaction with the use of mobiles
- Use of mobile phones will result in increased instructor-learner interaction
- The learners feel more satisfied with the learning process through interactions

Methodology

This section outlines the proposed methodology to test the hypotheses outlined above. Specifically, details of the proposed research design, sample size, sample selection, instruments, procedures, and analysis are presented.

Participants and Design

The sample will consist of 50 instructors and 200 graduate students from a large (more than 10,000 students), and two medium (more than 5,000 students) universities in Pakistan providing distance education. Both instructors and students will comprise various departments of the universities. A non-probability convenience sampling technique will be used because the focus of the research is the universities providing distance education. The other reason for using this technique is the availability of students and very few number of faculty members who might agree to participate in the research.

A non-experimental descriptive design will be used for the study. Perceived usefulness (PU) and perceived ease of use (PEOU) along with relative advantage, compatibility, complexity, trialability, and observability from Roger's innovation diffusion theory will be taken as the independent variables while the willingness to adopt mobile phones for instructor-student and student-student interaction will be the dependent variable.

The main instrument for data collection is the measurement scale of perceived usefulness and perceived ease of use by Davis (1989). The scale consists of six items for assessing perceived usefulness and six for perceived ease of use. The responses will be measured on a seven-point Likert-type scale ranging from likely to unlikely (extremely, quite, slightly, neither, slightly, quite, extremely). According to Davis (1989), reliability of the scale is well established (α=.98 for PU and α=.94 for PEOU) and has been used in multiple studies to assess technology acceptance especially in the field of information technology/system (IT/IS). The other scale that will be used is based on Innovation Diffusion Theory (Rogers, 1983). The scale is adopted from the one used by Pankratz, Halfors, and Cho (2002) with modifications for this study. The scale has a well-established reliability ranging of $\alpha = 0.98$ for relative advantage/compatibility and $\alpha =$

0.71for observability (Pankratz, Halfors, Cho, 2002). Thirteen out of 17 items related most to the present study will be used. Reliability for the instruments used for the present study separately for the faculty members and the students will be noted through a pilot study.

Procedure

Most of the programs of higher education offered through distance education in Pakistan have developed a system through which the students are required to come to the university campus and attend mandatory classes (workshops) for at least one week per course. The researcher will collect data during those days. The instructors will be contacted personally in their offices while the students will be contacted in the classrooms collectively. The researcher will describe the purpose of the research and will distribute the questionnaires. The researcher will also read the questionnaire and explain it to the students (those in masters of education) in the classroom. This is mainly because English is not the national language of the country and the researcher considers that the students might feel problems understanding the questions. On the contrary, the M. Phil and Ph.D. level students will not be provided any explanation because at this level the medium of instruction is English in Pakistan. Both the instructors and the students will be requested to respond to the questionnaire and return it to the researcher as soon as possible. The questionnaire will have a cover letter with the introduction of the researcher and the purpose of the research. Both participants who return and those who do not, will be sent another letter to thank them and to participate in the research and return the questionnaire and send it back. If the questionnaire is still not sent they will be contacted by phone and requested to fill and send the questionnaire. The purpose of multiple and personal contacts is to increase the response rate.

Data Analysis

Data analysis will be done using SPSS 20.0 as a statistical tool. A linear regression will be calculated to estimate the predictability of the willingness of the instructors and students to use mobile technology for interaction. Item wise mean scores of the three scales for both the students and the instructors will be calculated to determine whether the participants are in favor of innovation or not.

Conclusions and Discussion

This session will conclude with a discussion of the proposed work-in-progress with an emphasis on feedback related to context of research on mobile learning in developing countries and the proposed study design, instruments, and analysis to foster improvement and interpretation of the study.

References

Adeyemi, M. (2011). The development of distance education in Nigeria: challenges and prospects. *Turkish Online Journal of Distance Education, 12*(1), 13-20.

Akyol, Z., Arbaugh, B. J., Cleveland-Innes, M., Garrison, D. R., Ice, P., Richardson, J. C., & Swan, K. (2009). A response to the review of community of inquiry framework. *Journal of Distance Education, 23*(2), 123-136.

Annad, D. (2011). Social presence within the community of inquiry framework. The International Review of Research in Open and Distance Learning (IRRODL), 12(5).

Baloch, A. F. (2013, Jan.25). Cellular subscribers cross 123 million mark. The Express Tribune. www.tribune.com.pk Retrieved on 04/20/2013

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A meta-analysis of three types of interaction treatments in distance, *Review of international research, 79.*

Davis, F. D. (1989). Perceived Usefulness, perceived ease of use, and user acceptance on information technology. MIS Quarterly, 319-340.

Dzakiria, H., Kasim, A., Mohamed. A. H., Christopher, A. A. (2013). Effective learning interaction as a pre requisite to successful open distance learning: a case study of learners in the northern state of Kedah and Perlis, Malaysia. *Turkish Online Journal of Distance Education-TOJDE, 14*(1), 111-125.

Fulford, C. P. & Zhang, S. (1993). Perceptions of interaction: The critical predictor in open distance learning. *Amer. J. Distance Education, 7*(3), 8-21.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical thinking, cognitive presence and computer conferencing in higher education. *American journal of distance education, 15*(1).

Garrison, D. R., Anderson, T., & Archer, W. (2003). A theory of critical inquiry in online distance education. In M.G. Moore & W.G. Anderson (Ed.), *Handbook of Distance Education* (113-128). London: Lawrence Erlbaum.

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: review, issues, and future directions. *Internet and Higher Education, 10*(2007), 157-172.

Gunawardena, C. N., & Mc Isaac, M. S. (2004). Distance education. In D. J. Jonassen (Ed). *Handbook of research on educational communication and technology*, 2ⁿᵈ Ed., (pp. 355-394). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Holmberg, B. (1978). 'Practice in distance education – a conceptual framework', *Canadian Journal of University Continuing Education 6*(1), 18-30.

Holmberg, B. (1983). Guided didactic conversation in distance education, pp. 114-22 in D. Stewart, D. Keegan, and B. Holmberg (eds). *Distance Education: International Perspectives,* London: Routledge.

Holotescu, C. & Grosseck, G. (2011). M³ –learning exploring mobile multimedia micro blogging learning. *World Journal of Educational Technology, 3*(3), 168- 176.

Kaymak, Z. D., Horzum, M. B. (2013). Relationship between online learning readiness and structure and interaction of online learning students. *Educational Sciences: theory and practice, 13*(3), 1792-1797.

Keegan, D. (1996). *Foundations of distance education* (3rd ed.). Routledge London and New York NY, p. 95-96.

Olusola, A.J. & Alaba, S.O. (2011). Globalization, information and communication technologies (ICTs) and open/ distance learning in Nigeria: trends, issues and solutions. *Turkish Online Journal of Distance Education, 12*(3), 1-13.

Pankratz, M., Halfors, D., & Cho, H. (2002). Measuring perceptions of innovation adoption: the diffusion of federal drug prevention policy. *Health Education Research, 17*(3), 315-326.

Rogers, E. M. (1983). *Diffusion of innovations (3rd Ed)*. New York. NY: A Division of Macmillan Publishing Co, Inc.

Rourke, L., & Kanuka, W. (2009). Learning in communities of inquiry: a review of literature. *Journal of Distance Education, 23*(1), 19-48.

Ustati, R., & Hassan, S. S. S. (2013). Distance learning students' need: evaluating interactions from Moore's theory of transactional distance. *Turkish Online Journal of Distance Education, 14*(2), 292-304.