The pedagogy of mobile learning in supporting distance learners

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One of the main barriers of learning in distance education is the absence of interaction in a learning environment. The distance education character of individual forms of learning and the absence of interaction is a challenge for both students who need help and lecturers who want to assist students in their cognitive development. The key to the successful enactment of interaction in distance education, according to Evans and Nation (1989, p.154), does not rest with the way the course is designed, delivered and assessed or on the media used, "but it rests on the philosophy of distance education which informs the decisions about techniques and technology". The nature of distance education compels providers to use mediated forms of interaction to support their students. This enables students to communicate with their lectures and talk to each other in an effort to understand the course content.

Throughout the history of distance education, theorists and researchers have been concerned with explaining the functioning of the concept of interaction in enhancing and supporting learning in distance education. The idea is to find an accessible and available technological tool that can be used to support distance education students. Students studying through distance education are not only geographically isolated from their teachers as sources of information, they are also separated from their peers as sources of support. The effects of this isolation can prevent any possibility for students to engage meaningfully in their learning environment. Studies have shown that students' development is determined by social interaction through problem-solving under the guidance of a teacher or in collaboration with capable peers (Brindley & Paul, 2004; Garrison & Shale, 1990; Lave & Wenger, 1991). Mobile technologies, such as cell phones, hold a lot of promise for distance education as a cognitive delivery tool to enhance interactive collaborative learning, while addressing the challenge of student isolation.

More than 98 per cent of University of South Africa (Unisa) students already use cell phones for social purposes and a majority of those cell phones have software features such as pictures, video, music, games, instant messaging and the internet. Even the low-end cell phones have some of these features that enable them to be used in education for collaboration, tutoring, research, reading and writing purposes. The idea is to use technological devices that

are already accessible to students in order to develop ways in which they could be supported. The use of cell phones for education is premised on the idea of building on informal learning, which most students are familiar with, to develop formal learning opportunities for distance education students. Most people in developing countries are more likely to own a cell phone than any other technology. In South Africa alone, the cell phone penetration is estimated at 98 per cent. A recent survey found that 39 per cent of urban South Africans and 27 per cent of rural residents are now browsing the internet from their cell phones (Rao, 2011). Cell phones are more accessible to most rural communities in terms of cost, geographic coverage and ease of use. Despite evidence that show that cell phones have occupied every facet of our lives, the pedagogical affordances of cell phones have not yet been fully explored in most developing countries. Keegan (2005, p.3) believes that "it is not technologies with inherent pedagogical qualities that are successful in distance education, but technologies that are generally available to citizens".

To understand the pedagogical suitability of using cell phones, it is important to look at different theories that impact on teaching and learning. Each theory of learning leads to the adoption of a specific teaching and learning process. In distance education, the process is usually reduced from a dialogue to a monologue, where a lecturer sends out pre-packaged study material to students. The assumption is that distance learners do not need mediation or support as they go through their study material. However, many studies have reported on the students' need for mediated conversation, between themselves and the teacher, through integrated and structured dialogue, both in the study material and in other interventions aimed at formative development of a student. New technologies, such as cell phones, provide unique technological attributes that could be harnessed to enhance interaction in distance education. Interaction, according to Anderson (2010), is the core of the educational experience and the nature of distance education compels providers to use mediated forms of this interaction to support their students. Without interaction, teaching becomes simply "passing on content as if it were dogmatic truth" (Garrison & Shale 1990, p.29).

Although many technologies have been used in the past to enhance interaction in different types of learning contexts, Simonson et al (1999) argued that learning through distance education is fundamentally different from learning in a classroom setting, even when the technologies are used. "Just as a triangle and a square may have the same area shapes, the experiences of the local (classroom) learner and the distant learner should have equivalent value even though these experiences might be very different" (Simonson, 1999, p.71). It is, therefore, important that the pedagogy that is used to support distance learners should be tailored to the distance education

context. The aim is to investigate the pedagogical approach that best supports effective use of cell phones in a distance education.

This will be done through highlighting some of the distance education theories and analysing how they can be used to argue for the principles that guide pedagogy and practice when it comes to using cell phones for the purpose of supporting distance education students. The role of theory is "to create conceptual order and provide simplicity in describing complex phenomena" (Garrison, 2000, p.4). The focus will be on distance education theorists who deal specifically with communication or interaction. These theories will be used to map out the role of interaction in the distance education transaction with the aim of facilitating and devising pedagogical strategies and techniques that can be used to assist distance education students and lecturers to use mobile technologies in the education environment. Anderson (2011, p.2) argues that technologies have a major impact on the pedagogy in that "the technology sets the beat and creates the music, while the pedagogy defines the moves". Both technology and pedagogy are intertwined and, therefore, it is important to look at how they work together to support different models of learning.

PEDAGOGY OF MOBILE LEARNING

In trying to understand how mobile technology can be appropriated for teaching and learning at a distance, we should start by looking at how different mobile learning is from other technologies that are used in teaching and learning (Laurillard, 2007). The strength of using mobile technologies is that they offer learning that is intimate, spontaneous, pervasive and versatile. Mobile learning "provides an enhanced cognitive environment in which distance learners can interact with their instructors, their course materials, their physical and the virtual environment" (Koole, 2009, p.38). Sharples et al (2005) argues that mobile learning is more strongly mediated by its context than the content of the study material. The most significant attribute of mobile technologies, according to Kukulsa-Hulme and Traxler (2005), is their ability to support situated learning. In this context, students are able to explore, share and interact with each other as they try to learn together.

Mobile learning, by nature tends to ascribe to the student-centred approach because of its ability to connect people wherever they are. This pedagogical approach assumes that students come into the learning environment with their own perceptual framework and, therefore, they need to be encouraged to construct their own meaning by talking and listening to each other, through writing and reading as well as reflecting on content. When students are in control of their learning, they are able to link up with other students in

collaborative learning networks. Through peer collaboration, according to Laurillard (2007), students are more likely to be motivated to share their work with each other as well as to augment their conceptual understanding with others. In the distance education context, social interaction relates to the socio-emotional aspect of group forming and group dynamics (Kreijens et al, 2003). Mobile learning facilitates this process through building communities of learners who are committed to working together to achieve a goal. "Collaborative learning leads to deeper level learning, critical thinking, shared understanding and long term retention of the learned material" (Kreijins et al, 2003, p.336) as well as developing communication and social skills. The question is: How do we harness mobile technological features to support learning?

Studying through printed media will remain one of the main mediums of instruction in most developing countries such as South Africa. The pre-produced, self-contained study material are developed with an explicit understanding that they facilitate access to learning, especially to those people who live in marginalised, remote communities. However, several studies have reported that cell phones can be used in conjunction with printed material to support interactive pacing; just-in-time instruction; network databases; interactive prompting; self-check assessment; facilitating summative and formative assessment; problem-solving; and, collaborative learning. The challenge is: How can distance education providers integrate these activities to enhance the learning experience for distance education students?

Table 1: The pedagogical suitability of using cell phones in the context of distance education.

Theoretical framework	Pedagogical focus	Uses of cell phones
Guided didactic conversation (Holmberg, 1983)	Study material should be written in a personal style; easily accessible; offer explicit advice and suggestions; and invite exchange of views. Mediated conversation should facilitate the development of a learning relationship between the lecturer and	Cell phones can be used, in conjunction with printed materials, to give and get feedback from lecturers and students; access learning games; simulations; self-assessment quizzes; podcasts and videocasts. Content can be broken into small chunks to make access easier and to avoid scrolling.

	the student.	
Transaction al distance (Moore, 1989; Moore & Kearsley, 1996) (Hillman, Willis & Gunawarde na, 1994)	Learner–lecturer: The lecturer provides an organised curriculum to ensure that the student masters the content Learner–learner: Students form peer support groups Learner-content: Student reads a book, views or listens to DVDs and CDs and interacts with inanimate learning resources. Learner-interface: Interaction between the student and the technologies used to deliver the instruction.	A lecturer can send an SMS that is meant to trigger discussion on a particular topic and then encourage students to engage in a discussion. Students can form peer support study groups through cell phone social networks such as MXit, WhatsUp and BBM. They can support each other synchronously or asynchronously Students can interact or get clarity on a difficult concept by checking it on the internet using cell phones. Podcasts and videocasts can be created to record, store and deliver content (Anderson, 2010). Lecturers and students can acquire different technological skills and competencies they need to understand and know how to use different mobile features and applications for teaching and learning.
Theory of integration of the teaching and learning acts (Keegan, 1990)	The course is designed and developed using networks of diverse applications such as Open Educational Resources (OERs), wikis, blogs, discussion boards, conference sessions, social networks such as Twitter, Skype and podcasts.	There are many learning activities that can be supported by cell phones. Students can be asked to access certain OER material on the internet; and be asked to offer their own ideas and post them in their discussion forums or in conference sessions where they share them with their peers and lecturers. Students can take pictures, share it with others and hold discussions on how to solve a particular problem using different cell phone applications.

CONCLUSION

All these theories that have been mentioned in this study were trying to provide direction and new approaches that can be used to bridge the distance associated with the correspondence nature of distance education. Distance learning, unlike classroom-based learning, has always been challenged by the problem of lack of communication in the education transaction. It was, therefore, important to draw from distance education theories in order to understand the pedagogical suitability of using cell phones in enhancing interaction. In this paper, we reveal that cell phones may be used specifically to address the problem of isolation associated with the correspondence nature of distance education. Many theorists who looked at the challenge of interaction in distance education agreed that students need to be supported both cognitively and affectively through mediated technologies and face- to- face intervention. Despite reported successes of using cell phones, lecturers in developing countries are not convinced about the mobile learning potential to develop new ways of teaching and learning. The success of using cell phones in education depends on the lecturers' attitudes and how they integrate it into the learning process. It is only when the teachers understand the pedagogy that supports its use; and they are empowered with the necessary skills; that they will utilise the affordances of mobile technologies to engage and support students in the learning processes.

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