Teaching digital natives: Identifying competencies for mobile learning facilitators in distance education

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Abstract
The use of mobile technologies in education has had a major impact on the pedagogy as known and understood by many academics in distance education institutions. Teaching using new technologies requires a variety of skills that are different from what most teachers are familiar with. Therefore, teachers need to be trained on how to use these new devices and how to integrate them into their own practice. The aim is to ensure that technology is not perceived as an add-on but as an integral part of the curriculum. The purpose of this article therefore is to identify knowledge and skills that are needed to perform the role of a mobile learning facilitator with the aim of developing a professional development programme that is responsive to the competencies required.

INTRODUCTION
With the changes brought on by new technologies, distance education institutions find themselves in a position where they need to train and develop their staff in new ways of teaching. Although most teachers are competent in teacher-controlled learning environments, they may find it challenging to teach technologically savvy students. The old ways of teaching in distance education is gradually been taken over by new pedagogical paradigms which places emphasis on students ability to control their own learning. In distance education, knowledge that is passed on to students is generally done through printed study material. It is only in recent years where other technologies such as radio, television, computers, video and audiotapes have been used to deliver study material to distance education students. For many years, distance education researchers have been looking at ways to improve communication between students and their teachers. Numerous studies found that distance education students need some form of interaction with their teachers and their peers (Lentell and O’Rourke 2004, 2; Moore 1993, 25; Tait 2003, 3; Thorpe 2001, 4). Mobile technologies, such as cell phones, have the potential to address this need because they can enable conversation between a student and a teacher; a student and peers; and student and the institution. Many young people are already inventing ways to use cellphones for different
purposes; therefore they can use it to learn as well. Prensky (2001) refers to the young generation as digital natives, that is, the native speakers of the digital language of computers, cell phones and videogames. Digital natives ‘have hypertext minds – they leap around ... they function best when they are networked. They thrive on instant gratification and frequent rewards. They prefer games to “serious” work’ (Prensky 2001, 2). All these are foreign to digital immigrants, the older generation that was socialised differently. Most of the digital immigrants are teachers while digital natives are students. While the latter tend to focus on the tools they use, the former tend to engage more with content. It is therefore necessary for the digital immigrants to recognize and acknowledge the digital native skills in order to improve their practice. He believes that instead of removing cell phones as tools of distraction and delivery devices of illicit information, educators need to figure out how to teach ‘in the way that fits into our students’ digital lives – and their cellphones’ (Prensky 2004). Today’s high-end cellphones, according to Prensky (2004), have the computing power of the mid-1990s computers while consuming one-hundredth of the energy. The usage of mobile technologies for teaching and learning are most suitable in African countries because they are available, affordable and accessible.

Cellphones are the most used device besides radio in Africa (Rao 2011). The majority of people, even those that live in remote rural areas, are more likely to own a cellphone than any other type of technology such as computers or television sets. The idea is to use technologies that most people are familiar with to develop formal learning opportunities for distance education students. Keegan (2005, 14) argues that ‘It is not technologies with inherent pedagogical qualities that are successful in distance education, but technologies that are generally available to citizens’. More than 90 per cent of University of South Africa (UNISA) students own a cell phone and a great majority of those cell phones have software features such as pictures, video, music, games, instant messaging and the internet. Subscribers of cell phone users in South Africa were 45 million out of the population of 48 million in 2008, according to the World Factbook (2010).

The use of cellphones for teaching and learning cannot be sustained if distance education academics and practitioners are not trained on how to use these devices and how to integrate them into their own practice. The training should give distance education practitioners opportunities to become critical thinkers, problem solvers, information literate, technologically literate and skilled in using mobile technologies. The aim is to ensure that technology is not perceived as an add-on but as an integral part of the curriculum. The purpose of this article therefore is to identify knowledge and skills that are needed to perform the role of a mobile learning facilitator with the aim of developing a professional development programme that is responsive to the competencies required.

Competencies are important because they serve as tools that identify skills and knowledge that are needed to effectively perform a role. Spector and La Teja (2001) draws a distinction between a competence and competency referring to the former as a state of being well qualified to perform an activity, task or job function and the latter
deals with the individual’s capability to perform well in their job. Competencies are actions that focus on personal resources such as knowledge, experience, skill and these have an impact on the person’s actual performance in a given job (Spector and La Teja, 2001). Van Koller (2003) further states that competencies are different from Key Performance Areas (KPAs) which focuses mainly on intended outcomes and outputs to be achieved. The literature review revealed that there is very little, if any, information on competencies for mobile learning facilitators. In the absence of relevant competencies required for facilitating mobile learning, the roles of distance education professionals and e-learning practitioners were explored. The aim was to find competencies that are closest to, and that may be relevant to the role and functions of the mobile learning facilitator.

CHALLENGES OF MOBILE LEARNING

Although using mobile devices such as cellphones, Personal Digital Assistants (PDAs), MP3 players, smartphones, e-books, in teaching and learning is relatively new, some researchers have explored the possibility of using them in education. Mobile technologies have been used to provide both synchronous and asynchronous support to learning. Synchronous communication was utilised for the facilitation of discussion. Cellphones social network platforms, such as MXit, were utilised to encourage students to help each other with their study work (Anderson 2007; Butgereit 2007; Makoe 2009). Other studies have explored the cellphones’ asynchronous communication systems to provide administrative and motivational messages to students (Hendrikz 2006; Nonyongo, Mabusela and Monene 2005; Traxler and Dearden 2005). SMS texting was also used to support and encourage learners in a variety of ways such as reminding students about assignments, assessments, meetings as well as to deliver content such as hints, tips, revision etc. (Traxler and Dearden 2005). Through the development of the concept of mobile audio Wikipedia, Ford and Leinonen (2009) used SMS and text-to-speech technologies to enable students to access information using voice. Through the mobile audio Wikipedia, the user would search for a term using SMS message to the server and then the server will call the user and the speech synthesiser will read the article found in the Wikipedia. This enabled students to disseminate ideas and lesson plans to their peers by creating slide shows of lessons with audio narrations in all 11 of South Africa’s languages (Ford and Leinonen 2009).

Despite studies showing the benefits of using mobile technologies, the use of these devices as educational tools have not gained momentum as it should. The reasons given for the slowness to the adoption to new technologies is based on variety of issues including lack of awareness of the affordances that mobile learning have to offer. Aubusson, Schuck and Burden (2009) found that teachers are not convinced about the potential of using mobile devices to develop new ways of teaching and learning. Part of the reason may be that most teachers are digitally incompetent even though they are not admitting to it. ‘The shift towards the sophisticated usage of mobile devices for purposes other than personal communication may be a generation
of teachers away’ (Aubusson et al. 2009, 238). Most distance education academics are comfortable with their old ways of teaching which are based on print-based courses with little or no integration of technology.

The lack of expertise in the instructional design of mobile learning is another reason why these technologies have not been used in distance education. Most teachers do not have the skill or knowledge on how to use these tools and how to integrate them in their own practice. Traditionally, teaching is usually structured by a classroom teacher using the curriculum and the examination system. In distance education, the educational process is usually reduced from a dialogue to a monologue where a teacher sends out study material to the students. The assumption is that distance learners do not need mediation or support as they go through their study material. ‘Course materials prepared in advance of study, however learner-centred and interactive they may be, cannot respond to a known learner’ (Thorpe 2001, 4). She believes that all aspects of learner support in distance education should respond to individual student social and psychological needs, not only cognitive needs. Most distance education programmes had not gone beyond the production and delivery of printed course material. As a result, academics in these institutions tend to be transmitters of information through pre-packaged course material with very little interaction with students.

The mediating role of mobile technology to support active and collaborative learning is based on Vygotsky’s, 1930/1978 socio-cultural theory. In this perspective, he argues that students’ development is determined by social interaction through problem-solving under the guidance of a teacher or in collaboration with capable peers. The most significant attribute of mobile technologies, according to Kukulsa-Hulme and Traxler (2005) is their ability to support situated learning. Social interaction is a critical component of situated learning – learners become involved in a community of practice which embodies certain beliefs and behaviours to be acquired (Lave and Wenger 1991). Effective learning depends on the teachers’ ability to create ways that are situated and encourage collaborative learning. Teachers may do well by exploring the possibility of using cellphones to provide support for collaborative learning.

Another hampering factor is that there is very little investigation on the theoretical underpinnings of mobile learning. The main focus of the learning process should be based on a particular theory that helps to explain the functioning of people and institutions. Each theory of learning leads to an adoption of specific teaching and learning process. Learning is understood as the process of changing our frames of reference or mind sets to generate a new or revised interpretation of our beliefs and experience as a guide to future action (Kolb 1984; Mezirow 2000). When looking at what is expected of teachers in responding to the new knowledge systems, ‘it becomes obvious that they have to gradually bring about change in the relationship to knowledge’ (Bélisle 2007, 13). It therefore, becomes necessary that change in the teaching practice should be guided by one or many learning theories. The understanding of the learning theories that are relevant to mobile learning may convince some sceptics about the full scope of mobile learning. Therefore the
competencies that are needed to facilitate teaching and learning must be grounded on a particular or a number of theoretical frameworks.

**COMPETENCIES OF DISTANCE EDUCATION PRACTITIONERS**

In the absence of roles that are deemed necessary for effective facilitation of mobile learning, distance education will serve as a construct for mobile learning competencies. Since this study is taking place in the distance education context, it is important to look at the role of distance education practitioners. The character of good distance education, according to Holmberg (1981), resembles guided didactic conversation study material which simulates a face-to-face conversation between tutor and student. The structure of the educational program and the quality of the interaction between the teacher and the learner determines academic performance, according to Moore (1993). In his transactional theory, he argued for the relationship between dialogue, structure (teaching strategies and evaluation methods), and learner autonomy. However, it is important that dialogue in distance education does not rest with course design and delivery or even with the media technology selection, but it should recognise that students are key agents in their learning experience.

Distance education, by nature is different from other forms of education in that students are physically and socially separated from their lecturers, their peers and the institution. As a result the traditional teaching technique which emphasises the delivery of content in a lecture-based format is not as effective if the delivery has to be mediated through technology (Evan and Nation 1989). In fact, different types of technologies have been a defining factor of the generations of distance education. The primary characteristic of the teaching and learning in distance education is mediated through technology. This shows that competencies that are relevant in distance education context are critical in identifying competencies that are relevant for mobile technologies.

The review of literature on competencies revealed a list of skills and knowledge that are pertinent to distance education practitioners. The following competencies were identified by Dooley and Linder (2003); Egan and Akdere (2005); Thach and Murphy (1995) and Van Koller (2003). These include:

- courseware design and development
- communication and facilitation skills
- technology-based instruction
- management and administration
- skills in development of student-focused learning
- learner support
- knowledge of distance education field
- technology access knowledge
collaborative and teamwork skills

Egan and Akdere (2005) clustered all the competencies identified by distance education practitioners in their study under four broad themes, that is: communication; management and administration; technology and learning and instruction. Earlier studies emphasised communication as the most important competency in distance education (Thach and Murphy, 1995). Ten years later, Egan and Akdere (2005) found that participants in their study prioritised technology as a major competency in distance education. This shows that the use of technology in teaching and learning is gaining recognition as a result distance education practitioners would like to be trained on how to use technology to enhance teaching and learning.

COMPETENCIES OF DISTANCE EDUCATION PRACTITIONERS AT UNISA

In trying to find out about the competencies of distance education practitioners at UNISA, a questionnaire was distributed to members of staff. UNISA is the oldest and the largest distance education institution in Africa. It has a students’ population of over 300 000 and its enrolment constitutes about 36 per cent of all higher education students in the country. In March 2009, UNISA had a total number of 4 417 staff members and this does not include the number of part-time or contract workers. Of the 4 417 staff members, 2 296 (52%) are Professional staff that are made up of 62 per cent of academics, 31 per cent of specialist/support professional and 7 per cent of UNISA staff are in executive and management positions. The non-professional staff are 2 121 (48%) out of 4 417 and the great majority of them (78%) are administrative employees (UNISA 2009). In distance education academic and administrative systems are heavily integrated whereas academic and administrative systems are separate in face-to-face institutions. UNISA recognised this difference when they re-looked at the competencies that are needed in distance education in order to develop a job evaluation system with the aim of devising an effective performance management system for staff members.

The Job Evaluation and Performance Appraisal (JEPA) project was meant to identify the Key Performance Areas (KPAs) and competencies needed for UNISA academic staff members. The JEPA project identified the following competencies:
1. Communication; 2. Interpersonal skills; 3. Leadership; 4. Development of self and others; 5. Commitment to transformation; 6. Student and stakeholder orientation; 7. Quality commitment; 8. Decision-making, judgment, critical thinking; 9. Innovation and creativity (UNISA 2007). These identified competencies were judged as relevant to the three academic performance areas: Teaching and Learning, Research and Academic Citizenship. These competencies are generic and they can apply to any academic working in any higher education institution. Although this project was done in 1998, the KPAs that were identified then for distance education academics are still in use as part of the performance management system. In the
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process technology has evolved drastically in the past 10 years and many more devices that have the potential to be used in teaching and learning have been introduced.

To get a better picture of the type of knowledge and skills that the current UNISA staff require to perform effectively in distance education environment, a Training Needs Analysis questionnaire was distributed to 87 training representatives (academic, professional and administrative staff), 23 academics, and 41 learner support personnel. In addition to the questionnaire, staff members were also given an opportunity to engage in focus groups discussions about their training needs. The Training Needs Analysis was used to find out about the skills and knowledge that UNISA staff requires to effectively carry out their job functions in their respective areas.

Both academics and professional/administrative staff participated in the study. Table 1 shows the training needs as identified by both academics and administrative and professional staff.

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<thead>
<tr>
<th>Academics</th>
<th>Administrative/professional staff</th>
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<tr>
<td>1. Skills in course design and development</td>
<td>1. Knowledge on ODL systems and processes</td>
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<tr>
<td>2. Knowledge on systems and processes in ODL</td>
<td>2. Systems and technology skills for administration staff</td>
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<td>3. Teaching strategies in ODL</td>
<td>3. Customer service skills</td>
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<td>4. Skills in developing or enhancing student centred learning environment</td>
<td>4. Communication and interpersonal skills</td>
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<td>5. Understanding different learner support services</td>
<td>5. Study material tracking systems</td>
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<tr>
<td>7. ODL facilitation skills</td>
<td>7. Skills on the use of technology</td>
</tr>
<tr>
<td>8. Writing and editing skills</td>
<td>8. Planning skills in ODL</td>
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<tr>
<td>9. Skills on the use of technology for teaching and learning</td>
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<tr>
<td>10. Collaborative and teamwork skills</td>
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The findings revealed that academics in general expressed the need to be trained in using new technologies for teaching and learning. Although they are aware of the impact of technologies in their practice, they do not know how to use these devices to support distance education students who are isolated from their teachers and peers. The administrative and the professional staff also pointed out that the digitization of information resources has forced them to change how they have been functioning. As a result, there is a need for skills on how to use technology for administrative purposes. Although mobile learning was not mentioned per se in the findings, it was clear that there is need for training using technology for teaching and learning as well as supporting distance education systems.

**COMPETENCIES OF ONLINE FACILITATORS/TEACHERS**

In the absence of competencies required for facilitating mobile learning, we explored online learning competencies since it is the predecessor of mobile learning. The
difference between mobile learning and online learning is on the technology used. While the former uses small size portable devices, the latter uses computers that may be limited by their mobility. The definition of technology enhanced learning that focuses on devices leaves out ‘half the story’ (Laouris and Eteokleous 2005). They argue that the definition must shift from the device to a student using the device thereby looking at the ‘broader view that accounts for a learner moving in his physical (and virtual environment)’ (Laouris and Eteokleous 2005). The focus should be on learning not on the device used to facilitate learning.

Online learning is often associated with the learning activities that are delivered via a computer and interactive networks. However, ‘the computer does not need to be the central element of the activity or provide learning content ... but they must hold a significant involvement in the learning activity’ (Tsai and Machado 2002, 2). Although computers do not and should not replace teachers, they have an impact on teachers’ roles. In the online learning environment, teachers become designers and facilitators of learning. As a result, they require specific knowledge and skills to use these tools effectively. Queroz and Mustaro (2003, 1) point out that teachers need to be trained to work online ‘so that they can achieve their pedagogical goals in a more effective, creative and innovative way when using a Virtual Learning Environment (VLE)’.

Denis, Watland, Pirotte and Verday (2004) categorises online instruction into four broad areas: pedagogical, social, managerial, and technical. They argue that each one of these categories require specific skills and knowledge. In addressing the pedagogical approach, the e-learning facilitators’ should take up roles of being a course designer, a content facilitator, and an assessor and metacognition facilitator. By focusing on the social domain, the e-learning facilitator acts as a counsellor, a co-learner and a team worker. In the managerial domain, the e-learning-facilitator is expected to be a resource provider, a project manager and a researcher. In looking at the technical aspect, the e-learner facilitator is a technologist, a webmaster, an education technologist. All these different roles can be performed by one or many people (Aragon and Johnson 2002; Dooley and Lindner 2002). To perform these roles, online facilitators need to be competent in the following areas:
1. Student-centred instruction (Queiroz and Mustaro 2003; McQuiggan 2007).
2. Collaborative and team work skills (Aragon and Johnson 2002; Smith 2005)
3. Feedback skills (McQuiggan 2007; Smith 2005; Dooley and Lindner 2002).
5. Content development for online delivery (Denis et al. 2004; McQuiggan 2007; Smith 2005).
6. Online facilitation skills (Aragon and Johnson 2002).
7. Education technological skills (Denis et al. 2004; Aragon and Johnson 2002; Smith 2005).

Does this mean that mobile learning facilitators require different skills and knowledge from those identified above?
COMPETENCIES FOR MOBILE LEARNING FACILITATORS

Although there may be a need for specific competencies that are relevant to mobile learning facilitators, it is important to build on existing knowledge and skill base, while maintaining a focus on transferability of these e-learning facilitation skills to mobile learning facilitation skills (Aragon and Johnson 2004). Mobile learning is different from online or e-learning in that the latter may or may not incorporate mobile devices (Caudill 2007). Keegan (2005) argues that ‘mobile learning should be restricted to learning on devices which a lady can carry in her handbag or a gentleman can carry in his pocket’. However, Traxler (2007) says that this type of definition is ‘constraining, techno-centric, and tied to current technological issues’. The definition of mobile learning according to Laouris and Eteokleous (2005) should be comprehensive and include terms like spontaneous, intimate, situated, connected, informal, lightweight, private and personal. It should also consider the educational, social and philosophical dimensions of learning. From these definitions, one can deduce that competencies that are needed for mobile learning should not only focus on the technical skills that are needed to facilitate learning using this device, they should also address other dimensions that impacts on learning.

The mobility of mobile learning allows learning that can take place anywhere, anywhere and anytime. Therefore the role of the mobile learning facilitator should take this in cognisance when designing and developing courses for mobile learning. The screen size is also smaller and can make reading of huge text difficult. The difference between mobile learning and other forms of learning may be so significant that they require a completely different approach to instructional design, graphic and user experience design and information presentation (Caudill 2007). It therefore follows that instructional design for cellphones cannot be the same as content design for books or for desktop computers. Due to the small size of the screen, content should be presented in chunks. Although desktop computers have the processing power to handle huge files that mobile devices cannot handle, these tools can be used efficiently in helping students to communicate with their teachers and peers.

Ford and Leinonen (2009) reported that South African students who participated in their study were able to capture information; take photos; compile slide presentation; record and store information using mobile devices. In addition to these affordances, students were able to use cell phone social networks such as MXit to engage with their peers on educational issues. Hendrikz (2006) have successfully utilised cell phones to support distance education students through sending and communicating administrative information. Several studies have shown that cell phones can be very helpful in distance education because they can be used for registration of courses; reminding students about their assignment; giving and getting feedback from lecturers and students; checking assessment deadlines; browsing course material; and for facilitating summative and formative assessment (Ford and Leinonnen 2009; Hendrikz 2006; Nonyongo et al. 2005; Traxler and Dearden 2005). The challenge is to how academics integrate these activities to enhance the learning experience for distance education students.
Cellphones can also be used to promote active and collaborative learning through social networks such as MXit. Through MXit, UNISA students were able to motivate each other while learning (Makoe 2009). That way, they felt that they are in control of their activity of learning through collaborative engagement (Sharples 2002). Therefore, it is important that cellphones are perceived as delivery tools used to enhance collaborative learning where students are encouraged to work together on group projects (Makoe 2009). It is through collaborative activities that students adopt a communal approach to learning by sharing responsibility for reading and explaining course material (Lentell and O’Rourke 2004). It becomes necessary that distance education providers need to explore and use cellphone social networks such as MXit to support social interaction amongst their digital native students. The role of interaction in the process of teaching and learning cannot be underestimated. Vygotsky (1930/1978) argues that social interactions are methodologies that turn experience into knowledge, with language as a medium for negotiation of teaching and learning. Cellphones can be used to enhance collaboration amongst students thereby addressing the old-age challenge of student isolation in distance education.

Distance education practitioners will do well by taking full advantage of the power of mobile technologies to enhance the learning experiences of isolated students. Due to the nature of cellphones ability to connect people wherever they are, mobile learning is better suited to support student-centred approach which recognises that learning is a highly social enterprise that requires development of human relationships and communication (Di Napoli 2004). 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, writing and reading as well as reflecting on content. The problem is that the teacher-centred approach is incongruent with the student-centred approach that mobile learning demands. The incorporation of mobile technologies in education can afford new opportunities for teaching and supporting students in distance education especially in developing countries such as South Africa. The biggest challenge of distance education institutions is to come up with ways in which teachers can be empowered with the necessary skills in order to fully utilise the affordances of mobile technologies to engage students in the learning processes.

The competencies that may be relevant in mobile learning facilitation may include:

- Skills for instructional design for mobile learning
- Facilitating skills for authentic context-specific learning
- Situated learning instruction
- Student-centred instruction
- Management of data on small screen
- Assessment design for mobile learning
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- Educational technology skills
- Knowledge of learning theories.

**IMPLICATION FOR PRACTICE**

The nature of the mobile technology is such that the role of the lecturer shifts from being primarily a content expert to being a learning process design expert. The latter includes the management of learning technology; course design and development of instructional material; facilitation of mobile learning; skills with internet tools for instruction; and media attributes knowledge (Aragon and Johnson 2002). However, it is important to note that these competencies should be built on the knowledge and skills base of other competencies that academics already have. ‘The overwhelming belief in the transformative power of technology is nowhere as important as it is in the curriculum content of training for digital competency and literacy’ (Bélisle 2007, 10). ‘The justification of what we know and believe, our values and our feelings, depends on the context of biographical, historical, cultural in which they are embedded’ (Mezirow 2000, 3). It is therefore important to consider these contexts when developing professional development programmes aimed at facilitating the process of change.

The training should focus on changing the mind-set of academics. This could be done through marketing the training not only as how to use the technology rather it should show academic staff how technology can be used to aid teaching and learning processes (Salmon, 2000). ‘Introducing changes with technology can only succeed if the concerned actors have reflective understanding of their actions, their goals and their underlying processes’ (Bélisle 2007, 6). It is therefore important to acknowledge the existing teachers’ beliefs and their assumptions about the processes of learning; their established expectation and norms; notions about good teaching practices; competencies, and their understanding and commitment to practice. ‘Any training of teachers needs to be truly professional development, that involves, beyond skills training, changes in teachers approaches to learning, in their attitudes, values, beliefs and meta-cognitive understanding’ (Bélisle 2007, 6). Sustainable change in teaching practice can only occur if professional development programmes require practitioners to engage in dialogue about practical theories of teaching and learning in order to subject them to review and revision. It is only when academics are familiar with the pedagogical affordances of mobile devices that they would be convinced of their potential and educational value.

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