

M-learning: Interactivity and the humanitarian context

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The humanitarian aid sector is just one example of a profession where the use of mobile devices for training and professional development is in its infancy – and on the rise (UNESCO, 2013). The increased use of mobile devices for education can be documented over recent years also in academic and private sector fields. Peters (2009) reports that the capacity of mobile technology to deliver synchronous communication and knowledge sharing can provide benefits to human systems. Evidence of these benefits has been reported by Ragus (2008), who found that m-learning encouraged simultaneous personal development, such as networking and socialisation, outside of normal working groups – an unexpected and positive result of the m-learning trials.

However, a review of literature related to mobile learning reveals a lack of investigation pertaining to the learning processes required to these ends. Much of the research discusses approaches to mobile learning in terms of methodological approaches; whereas m-learning could be more closely linked to conventional learning theories. This gap presents an opportunity for further investigation, specifically into transformative learning and self-motivation as methodologies that can enhance the learning experience of the user in a mobile environment.

Learning design

As a broad definition, Traxler (2007) summarises m-learning as activities that depend on hand-held technology (smartphones, tablets, etc) to deliver the content, but suggests that the use of mobile devices in the education sector is still new, and that pedagogical approaches and evaluation of learning still require definition.

Discourses related to interactive learning all point to the prominence of a constructivist learning methodology that stems from the instructional design for learning (for example, Dickey, 2006). The foundation of a constructivist approach – namely collaborative and co-operative learning – can underpin the way that students interact with knowledge. Interactive learning, therefore, provides a vehicle for knowledge construction and transactions between the learner, teacher and learning design. Advancements in technology and portable devices themselves are changing the way that elements such as video, audio and other content can be accessed by the learner.

User interaction and levels of cognitive knowledge are normally associated with online learning instructional design. However,

these concepts need to be adapted to mobile delivery and therefore require a model with which to develop the learning plan.

Humanitarian aid context

A 2011 study by Enhancing Learning and Research for Humanitarian Assistance (ELRHA) revealed that although there has been improvement in learning and professional development in this sector, a gap in training opportunities remains for workers in this area (www.elrha.org).

As the world experiences larger, more frequent conflicts – as a result of changing demographics, growing urbanisation, civil war and other political unrest, and natural disasters – the demand for humanitarian action is expected to increase, and so too the need for trained and experienced humanitarian relief workers. However, attrition (turnover) levels in this sector are as high as 25–45 per cent, and training resources are only one per cent of overall budgets per year (possibly partly accounting for the high attrition rates).¹ The local personnel in humanitarian organisations are looking to enhance their own training and professional standing.

The use of mobile technology for training and education addresses many of the issues. Quinn (2000) views m-learning as an extension of e-learning using portable computer devices, thus allowing for these devices to be used in an environment whereby collaboration spanning time and space can be achieved. O’Malley (2003) believes that m-learning transcends the traditional boundaries or fixed locations associated with traditional learning and that, therefore, mobile technologies can solve issues related to humanitarian aid environments that dictate the necessity for flexible learning environments.

Research points out that in corporate training a hand-held device is well suited to a blended learning environment where the user can review material in small sections, then refer to a more detailed version in the online course. This portable technology can influence the learning environment and thereby create an inclusive educational experience. Given current models and methods of instructional design, the mobile devices could easily be integrated into a programme that delivers curricula that humanitarian workers can access in the field. Isaacs (2011) supports the use of mobile devices as a means for learning by people located in remote areas, because it increases the opportunities for access to training. A by-product of these advantages is the creation of more opportunities for social equality by giving more people access to learning materials through mobile devices.

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An example of m-learning methodology is an open-source mixed-reality application framework called ARLearn, which supports mobile applications for Android smartphones (Ternier et al., 2012). The concept behind this pilot project involves a game-based approach to security training in the humanitarian aid sector. The logistics of engaging learners in a real-life security simulation can often involve expense, security issues, and the use of weapons or equipment that can prove to be a challenge. The use of the ARLearn application is an attempt to simulate portions of the learning exercise on security training by using a mobile phone. As an alternative to the original simulation, a version was developed that applies concepts of mobile educational games and blended instructional design principles, which affects interaction between the learners and the devices themselves (Gruber et al., 2010).

The applications on mobile phones are designed with content that is presented with audio and visual information based on trigger events. Interaction in the game is determined by location and the responses and questions the learners engage in. Additionally, the content is designed to present material in a way that provides learners with opportunities to explore their environment and collect data – all of which is common practice in humanitarian fieldwork.

Game simulations

In the example discussed by Ternier et al. (2012), the game simulation offers an alternative training solution that could replace aspects of role-playing in the more traditional face-to-face workshops dealing with security training. The learners, using the mobile devices, were placed in teams that represented different roles in a hostage situation. There was a limited time in which to carry out the procedures, which created a highly immersive experience for the learners. This approach, using active learning, helped simulate stressful situations that demand collaboration by the participants.

Five factors in knowledge construction

The design of learning delivered by mobile devices must take into account the construction of knowledge. According to one theory this is a staged developmental process, relating to:

- 1. Simple knowledge:** Whether people perceive knowledge as discrete and unrelated facts, or interrelated elements
- 2. Certain knowledge:** The extent to which people believe that knowledge is certain or absolute (and will eventually be known), or tentative and constantly changing
- 3. 'Omniscient' authority:** Authorities have access to knowledge that is inaccessible to others
- 4. Innate ability:** The extent to which ability to learn is seen as genetically determined rather than the product of effort/achievement
- 5. Quick learning:** Where learning is seen as occurring quickly or not at all

Source: Jacobson et al., 2006

As a result of this application, the participants reported that the elements of co-ordination, collaboration and reaction to stress were an important part in the design of the mobile curriculum. Of the 17 participants in this first experiment, 14 reported a positive reaction to the use of the mobile phones in this simulation. Although this is a small sample of respondents, this event was a pilot to test the methodology and the integrity of the technology and mobile devices used in this way. The ARLearn toolkit could make a positive contribution to variations in game design through its software, its ability to present real-time assessment of activities (enabling participants to experience role-playing and to change positions within the game), and its ability to create a log of events (responses and interactions) through the software that can be reviewed and assessed.

The Dick and Carey model described by Botturi (2003) is a recognised approach to classroom and eLearning design. It is a comprehensive, inter-related ten-step process. In the case of the ARLearn pilot project, a modified model of instructional design was used that required modifications at each step in order to accommodate the mobile platform. The pilot is an example of how an expanded approach to design – as dictated by the technology and the integration of learning theories – has an influence on the resulting curriculum design and delivery. At the same time, the project did raise questions about user acceptance of the mobile technology, the need to improve the way that learning is measured through assessments, and the technical infrastructure restrictions that must be accounted for in the instructional design and delivery phases.

Transformative learning

On its own, transformative learning is seen as a valued process whereby the learner can come to new knowledge or analytical connections between concepts. Combining this process with m-learning can be especially beneficial to a learner.

Transformative learning, as seen by Brock (2009), involves the realisation of a new concept and then using it to make a change in a person's life. As the literature shows, this process of transformation is currently lacking in m-learning and how rapidly it can occur is debated. In the m-learning context, little has been done to fully replicate the ten stages of transformation described by Mezirow (2002) who also strongly defends the role of reflection in the transformative process. For a student to achieve self-reflection and change, challenge from the instructor plays an important role in helping the student gain a greater awareness of the world around them and to form interpretations of it.

Boyer et al. (2006) reported that, when one is teaching in a mobile environment, using self-directed techniques associated with transformative learning enables students to increase their ability to delve deeper into the subjects at hand. The transformative environment, when supported by an instructor in the online environment, can have positive effects on student beliefs, preconceived ideas and ability to act on new ideas.

Transformative learning can lead a person to make fundamental changes to his or her view of the world through self-reflection. These changes can, in turn, change a person's life and lead to increased self-awareness and awareness of how one's previous assumptions have constrained his or her world view. The reported outcomes of transformative learning include a new sense of



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There is a gap in training opportunities for humanitarian aid workers

empowerment, increased self-confidence, greater compassion and greater connections to others.

Self-motivational learning

As such, the concept of self-motivational learning is integral to arguments based on transformational learning. The evidence suggests that there is greater potential when m-learning is coupled with motivational learning. One could agree with authors who define motivation as that which brings about greater awareness on the part of the learner; there are also intrinsic and extrinsic dimensions of motivation to be considered.

A study by Roeser and Peck (2006) based its inquiry on the question, 'What is self and what relation does self have with

Supporting self-assessment

Self-assessment as it relates to self-motivation entails being able to review personal performance and use internal criteria to determine what we need to know and what we don't need to know. This aspect of meta-cognition and awareness is necessary for someone to carry out meaningful self-assessment. The role of the teacher is integral to shaping the abilities of the students to become self-reliant and helping the students become aware of what they know and how to make adjustments for themselves. These dynamics are equally important for self-assessment in the m-learning environment.

motivation and self-regulated learning? They used the Basic Levels of Self (BLoS) model, as it is a more comprehensive theoretical framework that looks at persons, contexts and their dynamic interactions.

The authors also point to other literature that often frames self-regulated learning as an active participation of learning through the organisation of 'emotional, cognitive and environmental resources' (Roeser and Peck, 2006: p. 121). The authors remind us that there are still questions as to the meaning of self.

Conclusion

We see a gap in the current training methodologies and the unrealised potential for the use of mobile technologies in humanitarian and other sectors. Although several humanitarian agencies are exploring the opportunities that mobile devices can offer, these investigations into m-learning all point to the need for a sound methodology integrated into the design of the content (UNESCO, 2012). The importance of core competencies with respect to humanitarian aid training (adaptability, team-effectiveness, self-awareness, problem-solving – to name but a few) is a sign that attention to training design through interactivity and learning theories could arguably form a methodology for the design of learning through mobile devices. The two learning theories – transformative and self-motivational – included in this article as examples of learning theories that can co-exist with technology, indicate possible solutions to the design of learning during the instructional design process.

Endnote

- 1 Record numbers of humanitarian worker casualties were recorded for the year 2013.

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