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# Designing Mobile Learning

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## Abstract

Interest in delivering training, especially via innovative methods (m-learning), has received increasing attention over the past decade [12]. While many believe that there is a global market for m-learning programmes (especially using English), very few have much experience outside of their home market. Although there is considerable work on cross cultural aspects [9], there are few studies that consider how different cultural groups perceive training

## 1. Introduction

For some time there has been an emphasis in many higher education institutions, particularly in the 'west', to use m-learning (used as a generic term) as a means to transfer knowledge from teacher to student [12]. This is now becoming a global trend, due to a variety of perceived advantages such as enhanced accessibility to educational resources, increased interactivity, flexibility of learning at convenient times and places, and promotion of international links for research and teaching purposes and the development of mobile devices [1]. Flexible learning for education and training has presented a multitude of potential uses of the technology to educators, and is believed to offer unique educational advantages [6]. Moreover, many higher education managers have seen m-learning as a way of extending the reach and hence income of western universities as their programmes become

requirements. The current work is an exploratory study designed to investigate what Eastern participants feel are important aspects of training: communication; student support; design issues; and working with learning environments. The discussion centers on essential elements to be considered during, and for the development of, an m-learning or blended training programmes, across cultures.

more desirable in an increasingly globalized economy, and people are willing to pay a premium price for their offering.

Within this emphasis there has been a growing realization that m-learning is often expensive to establish and maintain but also offers the potential to increase income through the creation of virtual universities. Many managers in higher education have therefore sought to establish a virtual presence away from their home base, often in countries at a significant distance, with fundamentally different cultures. Programmes developed in this way seek to move away from the 'hand made' approach of an individual lecturer building their module/course for a specific group of students, to a mass market approach of 'one size fits all' in order to utilize the economies of scale that can make the often significant investment associated with m-learning worthwhile from a management perspective, in an effort to globalize, predominantly, western led learning pedagogies.

With this development, there has been pressure on staff in many parts of the world, to learn how to teach using an m-learning environment often based on a culture that is not their own and for all students to use a 'western based pedagogy'.

The Global Campus (GC) project was (initially) based at the School of Computing Science at Middlesex University, London, UK, and uses mostly web technologies to offer learning at a distance to students in the UK, North Africa, the Middle East, South East and East Asia. Initially GC ran only postgraduate computing science programmes, but following a significant investment by the UK government (c£2 million) via the UK E University, undergraduate and business programmes were also developed.

The project aims to utilize the advantages of flexible learning technologies for the local students, as well as the provision of efficiently delivered, high-quality courses for the students abroad. The analysis of the differences in the way the learning materials are used and pedagogies perceived, by distance students and staff, can provide valuable information for all academics and m-learning developers, identify potential problems and help to improve the learning environment in an increasingly globalized educational setting.

Further, in 2004, four universities received a grant from the European Commission to engage in a project titled Asian Distance Education Professional Training (ADEPT). The goal of the project is to foster excellence in m-learning in higher education institutions in Southeast Asian nations. ADEPT aims to accomplish this by providing for the exchange of m-learning expertise through a focus on the skills of tutors. Middlesex University took the lead for the ADEPT project and was joined by the University of Twente in the Netherlands, Singapore Polytechnic and Kasetsart University in Thailand.

Initially a training needs survey was developed with the aim of determining the need for m-learning professional training in higher education. The survey evaluated the needs of participants from Eastern and Western cultures. Countless researchers have investigated cultural differences [9]. However, there are few studies that consider how different cultural groups perceive training or what they consider to be important. An additional issue of concern is that there is disagreement between the

insider and outsider view of society [12]. It might be reasoned therefore that Western society developing m-learning training designed for an Eastern audience in isolation from local societal factors would be less effective and vice-versa. Thus, this initial training survey assessed two cultural groups.

Although there are some shortcomings to this methodology, people are unique individuals, as opposed to a homogeneous societal group, [4], it was necessary to strike a balance between understanding cultural differences and people as individuals.

Following this initial survey a face to face pilot training programmes were developed and delivered to staff in Thailand and then Singapore. Further virtual training sessions were established and had on line participation from a wide range of staff from the South East Asian region.

## 2. Method

On line surveys (via Web CT) and interviews were held with participants. Questions were of both a quantitative and qualitative nature.

A survey initiated responses from an additional 47 participants. Some questions were only viewed by participants after the appropriate (yes/no) response was given for the previous question. Other questions were presented to all participants but some chose not to answer particular questions.

## 3. Results

The results presented here are mostly defined by culturally-specific outcomes. Eastern culture was defined as individual's primarily working, living and born in the East.

Key barriers to providing m-learning in a cross-cultural setting and the most important issues to be addressed in training for the new m-learning professional are listed in Table 1. It is worth noting that language problems were rated as the key barrier inhibiting m-learning in cross-cultural settings (around 60%) while communication (non-language) problems were rated as the second largest barrier (36%). The size of mobile device screens was an issue that was raised under a number of headings but it was considered to be crucial for students whose first language was not English to have clear

and unambiguous communication. What is also interesting from the survey that despite nearly 30% of the participants having had a 'western education' (defined as at least one year post or undergraduate study in Europe/North America in English) they still considered that language to be the key barrier to m-learning for themselves when using western developed material. However, between countries significant variation did occur, with most Singaporean staff, for example, considering these not to be a particular problem.

**Table 1**

Aspects of training	Skills for professionals	Barriers to m-learning
<b>Staff</b>	Design for learning (66)	<b>Staff</b>
Communication skills (80)	Pedagogy (64)	Communication Language (60)
Module design (60)	Communication skills (62)	Communication none Language (45)
	Creativity (46)	Technical (25)
Role of instructor (54)	Media selection (40)	<b>Students</b>
Working with environment (52)	Mediating skills (34)	Communication-Language (70)
Assessment criteria (51)	Technical aspects of course (30)	Pedagogic (59)
<b>Students</b>	Writing (28)	<b>Most important issues in training</b>
Training for environment and pedagogy (85)	Graphic design for m-learning (24)	Language/especially in relation to screen size/layout (56)
Using on line discussions (70)	Audio-visual development (22)	Communication (non-language) (52)
Student support (54)	Project management (18)	Technical (24)

all figures in percentages

When asked about their students, again a similar pattern emerged: the number one problem was seen as language competence of the students in terms of them understanding the subtleties of English in particular and how to track information sources. In discussions however, nearly all staff felt that because students could 'self pace' themselves, and ask others for help, the lack of English proficiency could be ameliorated significantly on a m-learning

programme compared to traditional taught programmes.

When questioned about the so called western Socratic pedagogic model and its affect on a broadly Confusion style learning system, it was felt that students often struggled with the concept of discussion, arguing or presenting their own view point. Also, this could be a significant factor affecting students' overall achievement on a western-based programme. Although the sample was too small to enable differentiation between countries, it was interesting to note that staff from Singapore and Hong Kong, where the educational model can be seen as closely associated with the western approach, considered this to be less important. Western participants identified communication (non-language) problems as the most important factor (70%) and language problems were identified as the most important by only 45% of the participants despite the fact that nearly all their students were from overseas countries although studying in the UK.

#### 4. Discussion

When looking at this data, it is important to consider both the general as well as the culturally-based findings. A discussion of the general results, for specific topics, will be followed in each instance which it is relevant, by a culture-specific discussion.

##### 4.1 Communication

Communication surfaced as one of the most important aspects in the needs survey. This is true in terms of being a necessary facet of training for m-learning professionals as well as a barrier to providing m-learning in a cross-cultural setting. The participants expressed interest in better understanding the cultural differences in communication style and non-linguistic aspects of communication.

Specific cultural differences were found with respect to communication as well. In general, the group felt that such things as on line discussion, threaded discussion group etc was a less valuable tool than many in the west would consider. What was not clear from the survey was why the Eastern staff felt this way. Goby [4] believes that

communication is essentially context sensitive, situational, and idiosyncratic. With this in mind, developing any programme that relies upon this sort of discussion needs to take into account these cultural sensitivities, the context and situation in which the knowledge will be used (e.g., for use in a Confucian or Socratic style environment, etc.), and the limitations imposed by mobile devices. It was interesting to note that in general participants responded between the “average” and “very much” on the Likert scale. This may well corroborates other research indicating that individuals from Eastern cultures tend to adhere to the beliefs of someone in a position of authority [11].

#### 4.2 Provide student support

It may be argued that student support should be the primary focus for all teaching. It is therefore, important to develop a training that provides a systematic approach to student support in teaching given the cultural context.

Among the general sample, participants rated “providing student support” as the third most important aspect to be discussed in an e-teaching training. While it is encouraging to know that participants feel it is a central factor, it may be significant that it was not rated more highly. Thus, while student support did not surface as the most important factor, it was always considered to be important and manifested itself in different ways (i.e., communication, designing the module, specific training needs).

It was also felt by staff that students would require specific training on how to use the m-learning material and facilities in order to maximize their utility given the western development ethos. This contrast markedly with their Western counter parts who felt that students would require very little training.

The participants in the survey during individual discussions, made some interesting observations about eastern students use of western m-learning. All agreed that eastern students following a western programme should use the western pedagogic model, however, around 80% of them thought that the Eastern students would not do as well as they could within these systems given their cultural differences, especially in the early part of a course, it was felt that students would adapt to the system over time, but it was not clear how long this would take, and this would be worthy of future research.

This added to the need to make sure that ample training and support should be developed as part of any cross cultural m-learning system. Interestingly there was a significant majority who considered that local (i.e. Eastern) involvement, through local tutorials, on line discussion etc could help students bridge the gap more quickly- perhaps a design globally, teach locally scenario would be appropriate in many cases.

#### 4.3 Design Issues

Module design was considered to be a necessary aspect of training for m-learning professionals. In the area of skills of importance for m-learning professionals, design for learning surfaced as the most important variable. Creativity was also considered to be relevant as an m-learning professional skill. This seems a natural combination as oftentimes module material may be seen as dry, standard and following a set format. It was felt by many participants who had seen a number of m-learning programmes developed for the mass/global market, that a risk averse approach had been taken and that much could be done to enhance the presentation by making better use of the technology. Enlisting a more creative approach in module design may be worthwhile as it has been shown to encourage participation and interest on the part of the students [2]. It was also felt that while self testing was frequently found in m-learning programmes problem based or experimental learning was less evident. What was also clear was that in the Eastern model it was assumed that students would gravitate naturally towards collaborative learning and that perhaps Western education could learn some lessons in this respect.

Pedagogy surfaced as a critical factor amongst the Western sample. With the advent of web-based technologies in education, pedagogy has been given renewed attention, especially as a means of addressing issues of quality and effectiveness in the provision of learning [10]. In addition to curriculum and assessment, pedagogy is one of the components of the academic environment which is most closely related to learning [5]. It is assumed that the shift towards student-centered models of delivery, which has been greatly enhanced by electronic technology, has increased the pedagogical awareness of educators, and will continue to do so as it evolves [7]. Perhaps this is also reflected in prioritizing pedagogical issues. It may be that a similar shift is occurring in learning contexts of what has been

broadly defined here as Eastern culture; in that case, it is worth investigating further to what extent this is reflected in the priorities of Eastern educators.

It was clear that for student communication the use of adaptive hypermedia systems would be important in personalizing m-learning.

#### 4.4 Working with the learning environment

Many of the more developed countries in South East and East Asia have established an e-learning base and are establishing an m-learning presence, often exporting the programmes to neighboring countries. There is a growing need for teachers to become familiar with both the usability and pedagogical aspects of m-learning. When asked what type of training would be most useful, participant's emphasized m-learning. Welsh, et al [13] corroborates these findings from the current study by reporting information technology infrastructure has to be in place prior to the training implementation to enable the participants to feel comfortable with the environment as well as understand the pedagogy.

The data revealed that frequency of communication while using the learning environment is a skill that remains critical. Other studies have also shown the frequency, as well as the tone of online communications is important factors, and that cultural awareness training should always be employed. This may provide support for why there are a large number of online communication skills enhancement courses available [8]. These findings provide a stronger impetus to focus the training on developing the same standard teaching skills in the *new* learning environment.

The majority of the participants in the survey also suggested the preference for an m-learning or blended learning training format. These sorts of delivery media are able to provide consistent training, reduce delivery cycle time, increase conveniences, reduce information overload, allow for improved tracking, and lower expenses of delivery [13]. In addition, it gives those being trained first hand experience of the learning environment they hope to use when teaching.

#### 5. Conclusions

Taken together, the survey data provides a framework for an m-learning training programme and some considerations for the development of m-learning that is intended for cross cultural use. The

training should consider and focus on two main aspects. First, the social factors, communication and student support need to be addressed in the cultural context of its delivery. When different cultures interact, the opportunity for misunderstanding in communication is increased [5]. Similarly, the instructor of the training programme needs to be able to modify the course to fit with the needs of various cultural groups. In particular training of the students in western patterns of learning should also be included to enable the students to negotiate the different expectations between cultures.

The second aspect of training should address the more technological factors. Design issues and learning to work with the environment are very important when migrating from face to face to online teaching learning how to use the environment to transfer knowledge and encourage students to learn should be a central focus of the training. The training will need to be flexible to adapt to the cultural background of the participants and should pay attention to both the needs of the participants and how they will interact with their students. As with the social factors training, attention will naturally need to be given to the cultural implications of the training. Both providing the training to various cultural groups as well as expecting the Eastern and Western participants to use the information effectively will depend on how the training is created and taught. The training itself will also need to be dynamic and designed to cope with the emerging m-pedagogy.

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#### References

- [1] Bates, T. 2001. *National strategies for m-learning in post-secondary education and training*,

International Institute for Educational Planning, UNESCO.

[2] Craft, A. 2001. *An analysis of research and literature on creativity in education*. Report prepared for the qualification and curriculum authority.

[3] Higher Education Research and Development Society of Australasia. 1992. *Challenging conceptions of teaching: Some prompts for good practice*

[4] Goby, V. P. 1999. All business students need to know the same things! The non-culture specific nature of communication needs. *Journal of Business and Technical Communications*, 13, 179-189.

[5] From Conventional to Distance Education: Adopting a Pedagogy and Managing the Transformation  
M.Woodman, Murphy A., M.Atkinson, C.Sadler. In J. Stephenson (Ed) *Teaching and Learning Online: Pedagogies for adopting new technologies*. London: Kogan Page Limited 2001.

[6] Goodison, T.A. (2001). The Implementation of M-learning in UK Higher Education. In *Proceedings of ED-MEDIA 2001*, AACE Press, 25-30 June 2001, Tampere, Finland, pp 613-618

[7] Nelson, G. L. 1997. How cultural differences affect written and oral communication: The case of peer response groups. *New Directions for Teaching and Learning*, 70, 77-84.

[8] Okamoto.T (2005) The Future Direction on M-learning Technologies and E-Pedagogy. *Advanced Technology for Learning Vol 2, No 3* p115-122 Acta Press Calgary Canada

[9] Pagewise. 2002. *Teaching good communication skills in the classroom*. Available at [http://md.essortment.com/communicationte\\_rqmd.htm](http://md.essortment.com/communicationte_rqmd.htm).

[10] Shiraev, E. & Levy, D. 2004. *Cross-cultural psychology: Critical thinking and contemporary applications*. Boston: Pearson.

[11] Stiles, M. J. 2000. Effective Learning and the Virtual Learning Environment. *Proceedings of European Universities Information Systems*

*Congress 2000 - Towards Virtual Universities*, Instytut Informatyki Politechniki Poznanskiej, Poznan, Poland.

[12] Triandis, H. 1994. *Cultural and Social Behavior*, New York: McGraw Hill.

[13] Tripathi, R. C. & Leviatan, U. 2003. Individualism and collectivism: In search of a product or process? *Culture and Psychology*, 9, 79-88.

[14] Welsh, E.T., Wanberg, C.R. Brown, K.G. & Simmering, M.J. 2003. M-learning: emerging uses, empirical results and future directions. *International Journal of Training and Development*, Vol.7, No 4.