Learning Anywhere, Anytime:
Student Motivators for M-learning

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Executive Summary

This paper documents the outcomes of a study that focused on identifying what motivates students to use mobile devices for learning and to engage in m-learning. An outcome of this study was to provide a better understanding of what educators should consider when adapting their course for mobile learners. The research included seven classes from three Australian universities. The students in this study used laptops or tablet PCs, and in three of the classes, these were provided by the university as part of a laptop/tablet program. The findings indicated that mobility was the key motivator for the use of laptops, and the learning tasks that students found to be most motivating involved accessing information, authoring (e.g., writing, blogging, note taking) and communication. .

Keywords: Motivation, motivators, m-learning, mobile learning, engagement.

Introduction

M-learning transcends the barriers between in-class and out-of-class experiences with opportunities for anywhere anytime learning and the potential for students to participate in educational activities beyond the limitations of traditional study environments. Hence there exists an expectation that, with access to mobile technologies and the presence of adequate wireless infrastructure, students can become effectively engaged in m-learning and that this will be of benefit to their overall learning experience (Cobcroft, Towers, Smith, & Bruns, 2006; Corbeil, Pan, Sullivan, & Butler, 2007; Gulek & Demirtas, 2005; Kim, Mims, & Holmes, 2006; Traxler 2009).

In order for students to become engaged in m-learning, some self-direction in learning is required whereby students are motivated to participate in learning related activities that extend beyond the boundaries of teacher direction and formal classes. For instance, Sha, Looi, Chen, and Zhang (2012) suggest that the characteristics of mobile learning (i.e., enabling student-centered, personal, and ubiquitous learning) provide conditions for learning anywhere and anytime, but also require learners to be motivated and to self-regulate their learning. To foster self-directed and self-regulated learning, a shift is required from teacher- and content-centered learning towards more student-centered learning environments

where, consequently, learners become responsible for their learning and the involvement and participation necessary for their learning (Ingleton, Kiley, Cannon, & Rogers, 2000).

Literature Review

For educators it is increasingly important to understand the motivators that encourage student learning and use of mobile devices for learning purposes. According to Garrison (1997), motivation is a key factor in self-directed learning as students are required to assume personal responsibility for both managing and monitoring their learning processes and construction of learning. However, Seifert and O'Keefe (2001) stressed that students need to feel confident, have a sense control over their learning, and consider the learning activities to be meaningful and relevant, for the effects of motivation to be maximised. Additionally, Martin (2006, p. 73) suggested that motivation and engagement both have a significant role in students' study, providing the energy and drive to work effectively, learn, and achieve to their potential.

Often it is assumed that students will be naturally motivated to use mobile devices for learning. For instance, Laurillard (2007, p.156) stated that "m-learning is an activity that is intrinsically motivating for students by providing: control over learning goals, ownership, fun, communication, learning in contexts, and continuity between contexts". Furthermore, Roblyer and Doering (2010) suggest that integrating new technologies in ways that are meaningful for students and align with their motivations and goals is likely to generate further motivation to learn. However, without an investigation of what students believe motivates them to use mobile devices for m-learning, there can be little certainty as to whether this occurs spontaneously or whether there are specific motivators that prompt students to engage in m-learning.

According to Keller (2008) and MacCallum (2009), m-learning students need to be motivated not only to learn, but also motivated to use mobile devices to support their learning. This was evident in earlier studies in which high levels of student (and teacher) motivation were linked with successful implementation of laptops in learning (e.g. Hall & Elliott, 2003; McMillan & Honey, 1993; Newhouse, 2001; Oloruntoba, 2006).

Motivation has also been linked with goal orientation and a focus on learning achievements (Klein, Noe & Wang, 2006; Pintrich & Schunk, 2002; Schunk, Pintrich & Meece, 2008; Wolters, 2004). Wolters, Yu, & Pintrich (1996) described goal orientation as an integrated pattern of beliefs that leads to different ways of approaching, engaging in, and responding to achievement situations, and, according to Pintrich (2003), both motivation and goal orientation are the reasons for students engaging in achievement behaviours. Students' learning goal orientation, as found by MacCallum (2009), is closely linked with intrinsic motivation. Students who have a learning goal orientation and are intrinsically motivated are more likely to adopt new technologies, enjoy learning about the technologies and, consequently, develop more confidence in using technologies. MacCallum (2009) identified that students who were experienced with using computers were also likely to be goal oriented and independent learners, characteristics that resulted in students adopting new technologies. Goal orientation may encompass intrinsically motivated learning goals (e.g., mastering new knowledge) and extrinsically motivated performance goals (e.g., grades). Therefore, students' motivation to use laptops and mobile devices is likely to have an impact on their engagement in m-learning and on students achieving their learning goals.

Additionally, Boekaerts (2001) stressed that students' motivation is context sensitive and highlighted the importance of considering situated motivation in the learning environment, that is, what students consider motivating or demotivating in their specific context. Furthermore, Breen and Lindsay (2002) found that students may require different motivators that are not necessarily linked to achievement goals, and this may vary depending on their discipline area. In their study,

students in the disciplines of computing, history, biology, and geology were motivated more by the enjoyment of learning experiences than by the pursuit of learning goals.

Some studies have indicated that technological innovations are likely to be embraced by students more so than by lecturers (Conole, de Laat, Dillon & Darby, 2008; Lane & Yamashiro, 2005; MacCallum & Jeffrey, 2010; Roberts, 2005) and that the motivation of lecturers to embrace technologies can also influence students' perceptions of using the technologies to support their learning (Kuo, 2005). Likewise, Demb, Erickson & Hawkins-Wilding (2004) and MacCallum and Jeffrey (2009) identified that one of the major factors affecting student perceptions of the value of laptops to their academic success was their lecturer's motivation to use mobile devices and the quality of their lecturer's use of the technology for teaching.

In an early laptop study, McMillan and Honey (1993, p. 2) identified that positive experiences of using laptops were supported by "a high level of student and teacher motivation, the role of the teacher in facilitating and encouraging students' active appropriation of the technology and a steady increase in the technological competencies among the teachers". Other researchers (e.g., Hall & Elliott, 2003; Herrington, Herrington, Mantei, Olney, & Ferry, 2009; MacCallum & Jeffrey, 2010; Newhouse, 2001; Oloruntoba, 2006), due to similar findings, recommended professional development to support teaching in m-learning environments as a necessary prerequisite for successful m-learning.

The literature revealed a complex interplay of factors that may affect students' motivation to use mobile devices for learning and highlights the need for further understanding of what motivates students to engage in m-learning. Hence the research described in this paper aimed to identify the motivators that lead to students' use of m-learning devices. The research question addressed was: What motivates students to use their laptops for m-learning?

Awareness of the motivators that encourage students' use of m-learning devices will inform educators on aspects of mobile learning that are significant to students and should assist educators in designing learning experiences that meet students' needs.

Methodology

As part of a larger study on m-learning, and based on the literature on m-learning and guidelines for survey design (de Vaus, 2002), survey questions were developed to explore students' motivators to use laptops and engage in m-learning. In this study, which commenced in 2008, m-learning was defined as learning that takes place in a variety of contexts, within and beyond traditional learning environments, utilising any type of mobile device.

Although some aspects of motivation, or possible motivators, were embedded in several items throughout the survey, two specific items were included to establish specific motivators. The first question asked the students *what motivated them to use their laptops*. The second question asked the students *whether the learning activities in their current subject engaged and motivated them to study*. For each of these questions an optional field was included for text-based input.

Classes from three different universities – Edith Cowan University (ECU), Charles Darwin University (CDU), and Murdoch University (MU) – were selected based on predefined criteria:

1. subject offered as part of an undergraduate course at university;
2. students in the subjects were either participants in a laptop or tablet program or the subject was identified as involving above average formal or informal student use of laptops or tablet computers;
3. subject offered students access to a LMS providing online learning resources or activities; and

4. reliable availability for participation in the study in the first teaching period of the year.

On the basis of the above criteria approximately ten possible classes were identified; however, the selection method was both purposeful and convenience sampling as the study was limited to the range of classes available at the time of the study and the willingness of Program Directors, Course Coordinators to support the study. Only seven classes sourced from three Australian universities met the required criteria (Table 1).

Table 1: Summary of classes included in the study

Class	Subject	Discipline Area	m-learning program	University
1	Becoming Multi Literate	Education	Laptop program 24/7 access	ECU
2	The Mobile Web	IT	Tablet PC program with in-class access	CDU
3	Human Computer Interaction Design	IT	Tablet PC program with in-class access	CDU
4	Introduction to Information Technology	IT	Ad hoc use of laptops/tablets	MU
5	Introduction to Multimedia and the Internet	IT	Ad hoc use of laptops/tablets	MU
6	Systems Analysis and Design	IT	Ad hoc use of laptops/tablets	MU
7	Business Associations Law	Law	Ad hoc use of laptops/tablets	MU

These classes were selected as the expected use or ownership of laptop or tablet computers was likely to be higher than average. Class 1 from ECU and Classes 2 and 3 from CDU were classes in which laptop loan programs (m-learning programs) were in place and therefore all of the students had access to laptops or tablet computers. The laptop program at ECU provided all first-year Bachelor of Education students with a free loan of a wireless laptop for use throughout their first year of study. Students participating in this program were provided with an initial orientation to using the laptops and wireless network, access to support services for hardware and software issues, and were encouraged to use the laptops 24/7 for both learning and recreational purposes. In contrast, the tablet program at CDU was classroom-based and students were required to copy their work to other devices for use out of class. Classes 4 to 7 from MU did not have a laptop program. In these units, students were invited to participate in the study only if they used laptop or tablet computers for study purposes. Table 2 shows the total enrolment numbers in each of the classes and the percentage of students in the unit who participated based on enrolment numbers. The laptop users were known in Classes 1, 2 and 3; however, the number of laptop users could not be established in Classes 4 to 7 as information about ownership was not available. In Classes 4 to 7, student laptop owners and users self-selected by volunteering to participate in the survey. Overall, 199 students consented to participate in the study and completed the student survey.

Across all groups there were 108 (54.3%) students in the IT discipline group and 91 (45.7%) students were enrolled in non-IT disciplines. Participation and non participation in m-learning pro-

grams was almost equally balanced with 100 (50.3%) of students participating in m-learning programs and 99 (49.7%) of students not participating in an m-learning program.

The survey was developed and administered through a commercial online survey tool, SurveyMonkey (www.surveymonkey.com) and initially pilot tested by six students.

The students in each class were invited via email or a message via their learning management system (LMS) site to participate in the survey.

Table 2: Percentage participating in case studies

Class	Subject	Enrolments Total	Participants	Percentage participated
1	Becoming Multi Literate	203	81	39.9%
2	The Mobile Web	55	14	25.5%
3	Human Computer Interaction Design	27	5	18.5%
4	Introduction to Information Technology	248	32	12.9%
5	Introduction to Multimedia and the Internet	108	21	19.4%
6	Systems Analysis and Design	112	36	32.1%
7	Business Associations Law	197	10	5.1%
	Total	950	199	20.9%

Completion of the survey was voluntary and anonymous, and took approximately 15 minutes. As an incentive, students were offered the chance to win a prize of an Apple iPod®. The research questions were explored by analysing the data qualitatively using QSR NVivo™ 8.0.

Results

Demographics

Participants ranged in age from 18 to 57 years (with an average age of 23.8). The majority of participants were in the <20 and 20-24 age groups (71.3%). Students in this age range are often described in the literature as the Net Generation (Oblinger & Oblinger, 2005) or Digital Natives (Prensky, 2001). The 40 and over age group represented less than 5% of the sample and only a quarter of the participants were in the 25 to 39 age groups. 64% of the participants were female and the gender distribution varied in classes, with female participants predominantly in the education discipline.

Almost all of the students (96%) considered themselves to be experienced or very experienced computer users, and 91.4% indicated that they owned their laptop or tablet computer. When asked about in-class use of their laptops, 20.4% of participants indicated that they always used a laptop/tablet computer in lectures or tutorials, 38.8% only sometimes, whereas 41.3% of the students reported that they have never used their laptops in class. The Education students reported the lowest level of in class use of their laptops, which was explained by the fact that many of their classes were scheduled in computer laboratories, and they therefore used laboratory PCs instead of their laptops.

Results - Motivators

The first question asked the students about their motivation for using laptops. Table 3 shows the responses based on the options provided.

Table 3: Motivators for use of laptops for m-learning across all classes

Motivators	*Frequency (N=199)*	*%*
Access to information on the web	138	69.3%
Access to learning resources	134	67.3%
Communication with friends	107	53.8%
Better grades	64	32.2%
Other	25	12.6%

The main motivators for using laptops for m-learning were: access to information on the web, access to learning resources, and communication with friends. Only a third of the students were motivated by better grades.

Motivators varied by cases and a comparison of classes is summarised in Table 4. For example, in Classes 4 and 5 (IT) and Class 7 (Education), students were motivated by achieving better grades (>40%) more so than other groups. The students least motivated by achieving better grades were in an IT subject, Class 3, with none of the students selecting this option, yet this group was highly motivated by accessing learning resources (80%) and information on the web (100%). Class 2 (IT) and Class 7 (Law) had the least focus on communication with friends as a motivator for using their laptops.

Table 4: Motivators for use of laptops for m-learning by class

Classes	*Motivator*				
	Better grades	*Access to learning resources*	*Communication with friends*	*Access to information on the web*	*Other*
Class 1 – Law (N=81)	35.8%	66.7%	45.7%	63.0%	11.1%
Class 2 – IT (N=14)	14.3%	28.6%	28.6%	28.6%	0.0%
Class 3 – IT (N=5)	0.0%	80.0%	40.0%	100.0%	20.0%
Class 4 – IT (N=32)	40.6%	87.5%	84.4%	96.9%	12.5%
Class 5 – IT (N=21)	42.9%	76.2%	71.4%	81.0%	9.5%
Class 6 – IT (N=36)	19.4%	58.3%	58.3%	69.4%	19.4%
Class 7 - Education (N=10)	40.0%	70.0%	10.0%	50.0%	20.0%

Note: Each instance is calculated as a % of the total pool of students in that class study. This was a multi-response question and therefore percentages do not add up to 100.

In addition to the five specified response options, there was the opportunity for students to provide further text-based information. The text responses were content analysed yielding more than one theme per response. Analyses of the qualitative data related to this question resulted in the identification of the themes shown in Table 5. There was some overlap with the motivators in the multi-answer question (e.g., access to learning resources, using the Internet, and researching) reinforcing the importance of laptops providing access to sources of information to support learning.

The major themes that emerged from these other motivators were mobility, study anytime, and access to learning resources. The most frequently mentioned of these was mobility. Students clearly valued the mobility and freedom that their laptops provided, which enabled them to study and communicate with others anywhere. Having their personal laptop with them at any time also eliminated the need to continually transfer data between computers in different locations.

Table 5: Students' motivators for using laptops

Motivator Themes	Frequency (N=33)	%
Mobility	11	33.3
Study anytime	8	24.2
Access to learning resources	4	12.1
Entertainment	3	9.1
Note taking	3	9.1
Working on assignments	2	6.1
Being organised	2	6.1
Communication with lecturers	2	6.1
Multiple uses	2	6.1
Connecting with friends	1	3.0
Using the Internet	1	3.0
Online discussion	1	3.0
Researching	1	3.0
Using software	1	3.0
Writing	1	3.0

The mobility theme is supported by the participants' comments. [The comments are coded to identify discipline type (IT, non-IT), m-learning program (P=laptop program, NP=no program), gender (M=male, F=female), and identity number (1-199). All participant comments are presented verbatim.]

> Portable, can work anytime because you can take it anywhere. (non-IT, P, F, 39)

> I can do and access my work directly, instead of carrying information around on a thumbdrive or other mobile storage devices which are easier to lose. (IT, NP, M, 158)

> The freedom of using it anywhere. (IT, NP, M, 182)

The second theme, being able to study anytime, revealed that students appreciated that having a laptop enables convenient access to their university work and information whenever needed.

> Being able to use my lap top for all purposes and study when i need to. (non-IT, P, F, 2)

> We have one computer at home that has to be shared between three people in high school, myself and two upper primary school students so I use my laptop to actually be able to use a computer whenever I need to. (non-IT, P, F, 61)

The third most frequently mentioned theme, being able to access to learning resources, showed that students valued that their laptop supports access to both formal study resources and the Internet for study purposes.

> Online journal articles from my university, discussion board, lecturer information and other resources posted by lecturers. (non-IT, P, F, 19)

> The ability to have the worlds information at my fingure tips. (IT, NP, M, 157)

The less frequently mentioned themes included study-oriented motivators such as note taking, working on assignments, being organised, communicating with lecturers, using the Internet, online discussion, researching, using software, and writing. However, other motivators were oriented more towards social and leisure uses (e.g., entertainment, connecting with friends) and some responses were very general in nature (e.g., being motivated by multiple uses of laptops).

The second multiple choice question with optional text based responses asked students whether the learning activities in their course engaged and motivated them to study. The results showed that almost 65% of the students agreed that they were motivated by learning activities, 27.3% provided a neutral response, and 7.5% of the students disagreed. The text-based responses to this question provided further insights into the motivators and demotivators of engagement in learning, as perceived by the students. The results of the content analysis were the themes shown in Table 6 for aspects that were motivating and Table 7 for the demotivators.

Table 6: Motivators for engagement in m-learning

Motivator Themes	Frequency (N=40)	%
Practical tasks	6	15.0
Interesting and relevant content	5	12.5
Assignment tasks	3	7.5
Real-world tasks	3	7.5
Excitement about learning	2	5.0
Interacting with other students	2	5.0
Teaching styles	2	5.0
Study guidance	2	5.0
Understanding new concepts	2	5.0
Learning essential skills	1	2.5
Lectures and tutorials	1	2.5

The major themes for motivators that emerged from this question were: practical tasks, interesting and relevant content, assignment tasks, and real-world tasks. Example comments on practical tasks include:

> Practical work motivates me rather than listening all the time. (IT, NP, M, 182)

> Practical ones are the best because i find myself really "doing" the work and if i get stuck, i can go online and look for the information. (IT, NP, M, 164)

Students appreciated their lecturer's efforts to motivate them in their learning with interesting and relevant content. For instance, a student from EDF1103 commented on a podcast on motivation that he found to be particularly helpful:

> Podcast on motivation, it was fully inspiring and I can listen to to it, over and over again at my leasure. (non-IT, P, M, 20)

Several students commented on the value of real-world tasks, for example:

> This depends on the activity, but I find doing assignments rather than theory is much better as you are doing things as you would in the real world with real world tools. (IT, NP, M, 166)

Lessons and tasks that generate an excitement about learning were also considered to be motivating, for example:

> After a fun lesson, i do find myself waiting to get home to study. A lot of the time however, motivation does play a major part towards whether study does actually happen. (non-IT, P, M, 50)

Even though only a small number of students provided text-based answers to this question, the majority of responses showed students' preferences for meaningful and authentic learning tasks that are practical, relevant, and relate to the real world.

Demotivators, as shown in Table 7, were fewer, though some of the items overlapped with the motivators, e.g., teaching styles.

Table 7: Demotivators for engaging in m-learning

Demotivator Themes	Frequency (N=40)	%
Boring activities or assessment	7	17.5
Lack of interest	3	7.5
Teaching styles	3	7.5
Discussion activities	1	2.5
Group work	1	2.5

The major themes for demotivators showed that students were concerned about boring tasks that were not meaningful or relevant to their learning. The results also highlighted that students' lack of interest, and some teaching styles or methods may also lead to demotivation. Below are several examples of students' negative comments about whether learning activities engaged and motivated them to study. For instance, comments about boring activities:

> I find them very boring and monotonous, but I will agree that they help me study. They are a good way to maintain some level of study. (IT, NP, M, 180)

> Group work (discussion etc) tends to lead off target and bores me.
> I prefer focussing on my own work and getting it sorted out in my mind.
> I don't care what Joe Bloggs thinks..he's probably wrong.
> (IT, NP, M, 165)

One student commented about the 'sameness' in assessment activities in her course:

> Law assessment is the same for every unit and after a while becomes
> very boring. (non-IT, NP, F, 193)

Several students also referred to their personal lack of interest or lack of motivation, for example:

> ... i feel as though i do enough in the activites, (very lazy of me) but i do
> feel the need to (do more) but i don't. (IT, NP, M, 146)

> I have very little motivation when it comes to uni work.
> (IT, NP, F, 119)

One student commented on the potential of lectures to both motivate and demotivate depending on the teaching styles and methods used to engage learners:

> Applicable to some lectures. others are completely boring and a waste of
> time; using poor methods of engaging students. We are doing a teaching
> course; surely they should practise what they preach? Make learning
> ENGAGING! (non-IT, P, F, 41)

These results support the findings relating to motivators for engagement in m-learning (Table 6), highlighting the need for learning tasks to be practical, relevant to the learners and applicable to real-life.

Discussion

Understanding what motivates students to use mobile technologies is an important consideration for educators wanting to introduce new technologies into learning. The success of such initiatives could be prejudiced by attempts to use technologies in ways that are not meaningful for students and do not align with students' motivations and goals (Roblyer & Doering, 2010). Hence, for educators the challenge is in identifying applications of mobile technologies that will contribute to achieving desirable results for students who are oriented towards performance outcomes and that will also provide a rewarding learning experience for those students who are primarily motivated by an improved learning experience or by the social aspects of learning.

From the results of this study, therefore, the main motivators for m-learning were found to be mobility, student productivity, performance outcomes, the learning experience, information access, the lecturer, authoring, entertainment and social interaction (Figure 1).
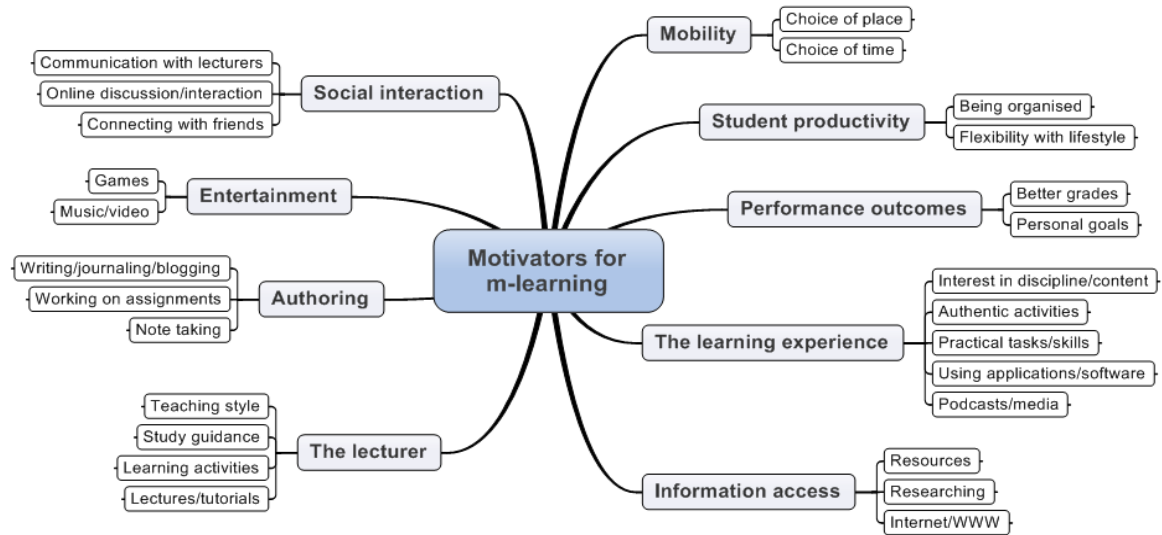
Figure 1: Motivators for m-learning

Overall, the most frequent category of motivators identified from the qualitative data was mobility, which includes having the choice of place and time for m-learning. The number of students who were motivated by performance outcomes (e.g., better grades) was small and, as expected, there were some differences between classes. For example, the law students in Class 7, who in this study were the most goal oriented and voluntarily used their laptops in class, noted that their use of laptops for learning was mainly motivated by achieving better grades and having access to learning resources. This outcome supports the findings of Breen and Lindsay (2002) that there can be subject or discipline variations in study related motivators and that not all students will be motivated by performance outcomes such as grades.

The outcomes suggest that, when planning to integrate m-learning technologies into the curriculum, it could be helpful to introduce the types of m-learning activities that students are most likely to consider motivating. For instance, lecturers could exploit the mobility and flexibility of m-learning by encouraging students to work in informal locations (e.g., courtyards, cafes) and support m-learning by initially including students' preferred learning activities, such as sourcing information and researching, social interaction, basic authoring, or tasks with an entertainment component (e.g., video clips or educational game), thus focusing on tasks that students find to be motivating. These tasks could be followed by more challenging learning activities and assignments.

The motivators displayed in Figure 1 are a useful resource for lecturers as they show an indication of areas to focus on when developing learning designs for m-learning that will generate enthusiasm in students whilst integrating mobile technologies into learning. For example, students in this study noted that authentic learning activities that related to the real-world and practical tasks motivated them, which supports the outcomes of past studies on authentic learning tasks (Cochrane, 2008; Lee & Lee, 2008; Olney, Herrington, & Verenikina, 2009; Pfeiffer, Gemballa, Jarodzka, Scheiter, & Gerjets, 2009). Aspects of the discipline or content that generate excitement about learning and prompt the understanding of new concepts were also considered by students to be motivating. This implies that students are likely to be motivated by interesting and relevant content integrated in a variety of learning designs, with some requiring interaction and group work and others requiring independent work. Ideally, educators could embed into their learning designs a range of learning activities including practical and authentic tasks and include opportunities for researching and learning about new concepts, with interactive elements where

appropriate. Students were also motivated by productivity aspects, such as being organised, with a few commenting on being dependent on their laptop for managing their study responsibilities.

Findings from this study also indicated that lecturers' teaching styles could both motivate and demotivate students, whilst several other aspects relating to lecturers were also considered by students to be motivating (e.g., guiding, inspiring). The education students in Class 1 commented specifically on the impact of good lessons and their lecturers on their motivation to learn and, particularly, on the value of receiving clear direction as to what they need to be studying to succeed. Students in this class were also supported by podcasts on motivation designed to build an awareness of motivation in learning through metacognition, that is, becoming aware of their learning processes through reflecting on their learning. Students found these podcasts to be a helpful resource. The usefulness of podcasts for the encouragement of metacognitive thinking has been previously documented by McLoughlin, Lee, and Chan (2006).

Whilst commenting on the motivators for m-learning, students also commented on what they found to be demotivating. An encouraging finding in this study was the presence of a much greater number of motivators than demotivators for m-learning. Feedback showed that variations existed in student experiences and perceptions; therefore, the responses were not homogeneous in terms of preferences. The demotivators were mostly tasks and assessments that students found to be boring, but some students also commented that they found discussion and group work activities, in some instances, to be particularly demotivating. For several individuals, who were less keen on group work and discussion activities, this was probably due to their preference for working independently and concerns about reliance on other students for progress, as found by Waite, Jackson, Diwan, and Leonardi (2004). However, despite some negativity, most responses highlighted the motivational value of interacting with other students and communicating with lecturers. A number of students also admitted that their personal lack of interest was a major demotivator, and some also suggested that a variety in the types of learning activities should be provided to avoid boredom.

In summary, the key motivator for using laptops for m-learning was mobility. The learning tasks that were key motivators were those centred on accessing information, authoring, and communication.

Conclusion

Over the past decade, a wide range of technologies have been adopted by universities to support e-learning and blended learning, and this has resulted in more flexible learning options becoming available to students. It is not unusual for today's university students to be studying full-time, or part-time while working full-time, at the same time as having other commitments (e.g., family) and, for many, their on-campus time is limited (Conole et al., 2008; Eriksson, Vuojärvi, & Ruokamo, 2009). Hence they need access to information, administrative systems, and learning resources 'on the run', making m-learning an attractive and practical way of conducting their studies.

This paper documents an analysis of students' motivators for m-learning and a summary of students' perceptions about m-learning. The major motivator themes that emerged from the qualitative analysis of data were mobility, study anytime, and access to learning resources. However, some aspects relating to lecturers and their teaching also had an influence in motivating or demotivating students' participation in m-learning mostly through their lecturing and teaching styles, the learning activities, and how they guided students in their studies.

According to Garrison (1997), motivation is a key dimension of self-directed learning and, in this study, students were forthcoming about what they found to be motivating, but also demotivating. Some students felt very strongly about the demotivating effect of having to undertake boring or

monotonous tasks or having to participate in activities that do not seem to lead towards their performance outcomes or provide an enjoyable learning experience. Motivators should therefore be considered and included in the development of learning designs. Ideally, when designing an activity, lecturers could consider which aspects of the tasks are most likely to motivate their students. For example, students may be motivated by tasks with a real-life focus that they can relate to or by the use of networking tools or media that they find to be appealing. Depending on the emphasis of the activity, the learning tasks may encourage involvement in social media or a range of authentic individual or group based learning tasks.

Limitations

In this study, in some classes students' computing needs were catered for by laptop programs, and in other classes students used their own laptops or tablets. Students also used other mobile devices (e.g., iPods and smartphones) and most had access to computer laboratories on campus. However, the focus of this study was on classes where laptops or tablets were provided and classes where laptops were owned by students. Nevertheless, the study found that many students who were in laptop programs also had their own laptops, highlighting that laptop programs may be required only by some students who do not have the means to acquire a laptop.

As the research was limited to laptop/tablet users, there was no control group of non-laptop users. Therefore, when establishing the motivators and demotivators for m-learning, the findings are limited to laptop/tablet users only, which could possibly result in selection bias. The demotivators for m-learning may not all be applicable to students who do not use laptops or tablets. The demotivators for these students may be quite different (e.g., do not have access to a laptop; do not have computer skills).

Practical Implications

The findings indicated that a number of different motivators encouraged students' participation in m-learning. Some motivators centred on academic outcomes, but many motivators were related to students' learning experiences, social interaction, and the entertainment aspects of learning with technologies.

Mobility was one of the main motivators for students' use of laptops for m-learning, allowing them to study with others or alone depending on their needs at the time. Other categories of motivators identified by the students were productivity, access to information, authoring, and lecturer related motivators. Understanding what motivates students to utilise mobile technologies is an important consideration for educators wanting to introduce and meaningfully integrate new technologies into learning (Roblyer & Doering, 2010).

Overall students did not comment any major demotivating issues with infrastructure and access to wireless networks. This result indicates that mobile learning contexts (e.g., wireless networks, computer support services) may have reached a level of maturity in Australia and economically developed countries that allows educators to move beyond focusing on establishing the facilitating conditions for mobile learning, towards a focus on learning designs, embedding m-learning in the curriculum, and creating a motivating learning environment.

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