anzMLearn
Australian & New Zealand Mobile Learning Group

Student-Generated Mobile Learning: A Shift in the Educational Paradigm for the 21st Century

Laurel Evelyn Dyson
University of Technology, Sydney
PO Box 123 Broadway NSW 2007 Australia
Laurel.E.Dyson@uts.edu.au

ABSTRACT

User-generated content represents a major shift in the way that people are engaging with technology in the twenty-first century and this change has its educational parallel in student-generated mobile learning (mLearning). There are a number of characteristics of mobile devices that have facilitated this change, namely convergence, portability, the digital and networked nature of devices, and their affordability. By exploiting these characteristics mLearning can support a paradigm shift in learning to suit the needs of our students, moving away from more passive learning approaches, as exemplified by the traditional lecture, to active, learner-centred modes in which students produce their own knowledge. Three examples of student-generated mLearning are presented and their advantages discussed. Affordances of this approach which contribute to a good learning experience and outcome include the high levels of engagement and motivation, the contextualization of learning, and the support that multimedia presentations provide for learning conversations, peer learning and multiple meaning-making.

Keywords

Student-generated learning, user-generated content, learner-centred education, mobile-supported fieldwork, podcasts, slowmations, learning conversations

INTRODUCTION: FROM USER-GENERATED CONTENT TO STUDENT-GENERATED MLEARNING

From the Information Superhighway of the 1990s to Web 2.0 in the 21st Century, there has been a major shift in the way the Internet is now conceived and used. The Internet has moved from a medium largely for information access, where passive consumers of content download information provided by others, to a platform where users upload content they have developed themselves, view content created by fellow users, in addition to selectively choosing information from the traditional information providers. The term 'prosumer' has been coined to describe this new type of Internet user who is both producer and consumer of content (Mundy, Stephens & Dykes 2010). Many of the world's most visited websites, such as YouTube, Facebook, Wikipedia, Flikr and MySpace, are now hosts for user-generated content.

Convergence of technologies has been attributed as the main enabler of this phenomenon. This refers to the union of multiple functions within the one device, usually a mobile device. The 3G (third generation) mobile phone and tablet PC or iPad exemplify the converged device, combining as they do computing, Internet connectivity, note-taking, photography, sound and video recording functionality. Table 1 summarizes the characteristics of the new mobile technologies which have fuelled the rise of user-generated content. It can be seen that convergence alone is insufficient, but is supported by other common characteristics of mobile devices, such as their portability, the fact that they are digital and networked, as well as cheap enough for most people in our community to buy so that everyone can become part of this user-generated revolution if they choose.

Table 1. Characteristics of Mobile Technologies Supporting User-Generated Content

Characteristic	Contribution to User-Generated Content
Convergence of multiple functions into one device	Creation of multimedia content
Portable	Capture of content anywhere and at any time
Digital	Storage of user-generated content
Networked (by Internet, Bluetooth, telephony or cable)	Sharing of content with other people
Affordable	Most people own one

The paradigm shift from expert-generated content to user-generated content has its parallel in the educational sphere in student-generated content. Student-generated mobile learning (mLearning) involves learners actively creating their own content using a range of digital portable devices, usually while they are away from the classroom environment. Devices include those mentioned above – mobile phones and tablet PCs – but also PDAs, digital cameras, video cameras, digital sound recorders and laptops. Usually the mobile device captures the content while a desktop or laptop computer is used for editing purposes: a computer provides greater processing power, larger storage for multimedia files, more sophisticated editing software and a larger screen on which to undertake the sometimes complicated task of editing which is often required to meet the requirements of the learning task, for example, by adding titles and captions for explanation purposes, or removing material which does not meet the learning objectives. Once created, the content can be uploaded to a website or more often to the learning management system employed by the educational institution, particularly if there are issues of privacy which need to be maintained. Content can then be accessed by other students and by the teacher on either a computer or a mobile device.

Student-generated mLearning offers the possibility of reforming our education system from an often teacher-centric model to one in which students take centre stage. If we compare it with the lecture format, which continues to dominate in disciplines which attract large numbers of students for reasons of economy, we can see a major transformation in the dynamics of the learning experience offered. Changes that characterize this mode of learning are summarized in Table 2.

Table 2. Comparison of Traditional Lecturing and Student-Generated mLearning

Traditional Lecture	Student-Generated mLearning
Passive learning	Active learning
Teacher talks, students listen	Students do and create
Teacher-centred	Learner-centred
Students as consumers of expert information	Students as producers of knowledge
De-contextualized in the classroom	Contextualized in real-life settings or by complex tasks

EXAMPLES OF STUDENT-GENERATED MOBILE LEARNING

There are many examples of student-generated mLearning. One can think of student-designed and programmed games for use on mobile devices, vodcasts (video podcasts), digital stories created using mobile devices, and screencasts for viewing on either mobile or desktop devices. Here, three

examples will be presented briefly in order to demonstrate the nature and advantages of this type of learning.

Student Photographs in a Field Study of Information Systems in Business

Fieldwork has long been identified as a powerful method of learning, providing highly contextualized and motivating learning experiences as students study phenomena in the field (Manning, Harris, Maher & McQueen 1998). Discussions between students and teacher both in the field and back in the classroom can be supported by students' use of digital cameras, mobile phones or iPads to take photos of the phenomena being studied. In addition, students can record interviews in the field with video cameras, digital sound recorders, mobile phones or PDAs to consult later when preparing reports or class presentations of their work. This multimedia content is far more powerful in supporting the sharing of ideas and the development of learning conversations than traditional field notes. The use of modern technology and student-generated content further enhances the motivational aspect of the learning activity for students who, for the most part, participate in such technological practices. In an Information Systems subject, the author had teams of students use their own devices to take photos of technology being used in a small business such as a video store, bookshop or gym (Dyson, Lawrence, Litchfield & Zmijewska 2008). The learning objectives focused on students gaining a complex understanding of how technology supports the work that people do and the challenges of deploying systems in a real-life context. The photographs were used to increase the interest level of students' class presentations and to illustrate a discussion in their business reports about the context of use of the technology.

Student-Produced Podcasts for Language Learning

Podcasts are being deployed widely in education but some of the most interesting uses involve podcasts created by students. Switalla (2009) asked her New Zealand primary school Maori language learners to create a traditional speech of greeting (*mihi*) and then record a podcast of this on their MP3 players. The children then played the podcasts back to listen to themselves and improve their pronunciation and also benefitted from peer feedback from a critical friend in their class. Important learning objectives which were supported by the podcasts included encouraging the students to respond to and reflect on their own and others' feedback and to take control of their own learning. The podcasts were also shared with the students' families and contextualized in a cultural program, which further invited student creativity through, for example, the making of a cloak (*korowai*).

Student-Generated Slowmations of Science Concepts

In order to deepen trainee primary school teachers' knowledge of science, Hoban and Nielsen (2010) invited them to create 'slowmations' (slow animations) of science concepts, working either individually or in teams. To do this trainees researched their topic, drew up a storyboard of their proposed slowmation, modelled objects and backgrounds in preparation, moved the models slowly through the background as they took successive photographs with a digital camera, and then linked the photos together to create a simple stop-go animation, supported by an audio explanation and titles. Analyzing students' learning, they discovered that students' engagement with diverse representations of the subject matter had supported a process of multiple meaning-making and deepened their learning. Further they proposed that learners moved through a 'semiotic progression' as they engaged with the subject matter in diverse representational forms.

WHY IS STUDENT-GENERATED MLEARNING SO POWERFUL?

Factors that contribute to the effectiveness of this approach in supporting engagement and learning, as demonstrated by the three examples above, are summarized in Table 3.

1. All of the examples represent student-centred activities and comprise students actively involved in creating their own knowledge, rather than passively following the direction of their teacher. Traditionally, this type of learning is viewed as highly motivating and engaging.

2. The use of mobile devices lends itself to students' undertaking activities in or out of the classroom, often moving between the two. This is most pronounced in the Information Systems fieldwork example given above, but is also present in the student-generated language podcasts where students take the podcasts they created in class to their family at home. The mobility of the learner has obviously been a focus of discussions of mLearning since its inception because of the inherent affordance of mobile devices for learning across locations (Sharples, Taylor & Vavoula 2007). Learning becomes situated in a context appropriate to the knowledge being acquired (Lave & Wenger 1991).
3. The capture or creation of multimedia content in all three examples provides the basis for learning conversations. Sharples (2003) points out how the creation of externalized, shared representations of students' understandings facilitates these conversations. Externalized representations of great immediacy and descriptive power are exemplified by the photographs, podcasts and slowmations created by the students.
4. The semiotic progression and multiple meaning-making that Hoban and Nielsen (2010) have argued so persuasively for explaining the deep learning they observed when students create slowmations can also be argued in other cases of student-generated learning. For example, the Information Systems students took photographs and then re-used these, firstly by embedding them in slides to support a class presentation and finally for centring a discussion of context of use in their written reports. The children learning Maori transformed their written speech of greeting into an oral form, which was recorded for critique and reflection, and then re-recorded if necessary until the children were satisfied with their pronunciation. These multiple attempts at the task and the changing forms that the created content takes must contribute to more effective learning.

Table 3. Factors Contributing to the Impact of Student-Generated mLearning on Students' Learning Experience and Learning Outcomes

Characteristics of Student-Generated mLearning	Effect on Learning and the Learning Experience
1. Active, student-centred	High levels of engagement and motivation
2. Mobile – moving in and out of the classroom	Contextualized learning outside the classroom
3. Capture and sharing of multimedia content	Learning conversations and peer learning to build shared understandings through externalized representations
4. Affordance for multiple and diverse representations of the subject under study	Multiple meaning-making supporting a semiotic progression to deep learning

CONCLUSION

Student-generated mLearning represents a marked change from the traditional, teacher-centred delivery of information that typifies much of our current educational provision. The presentation of three examples of student-generated mLearning has attempted to demonstrate that this type of learning can be highly engaging and motivational, offers the possibility of contextualization in real-life settings, provides common externalized representations to support learning conversations and peer learning, and has an affordance for multiple meaning-making and deep learning.

Though student-generated content is an extension of the user-generated content hosted on so many file-sharing websites, there are several important differences. It should be emphasized that for student-generated mLearning to be successful it should focus on one or more key learning objectives, and not be activity for the sake of activity. In addition, student-generated content may not be able to

be hosted on an open website for privacy reasons, and it nearly always requires the editing of multimedia in order to fulfil the learning objectives and for students to make explicit how they have attempted to meet these. Teachers must think carefully about how they design student-generated activities for their students and not assume that good learning will automatically come when students are presented with the task of content capture. However, with thoughtful educational design, excellent learning outcomes and improved learning experiences can be achieved.

REFERENCES

Dyson, L. E., Lawrence, E., Litchfield, A. J. & Zmijewska, A. (2008), 'M-Fieldwork for Information Systems Students', *Proceedings of the Forty-First Annual Hawaii International Conference on System Sciences (HICSS)*, Waikoloa, Hawaii, January 7-10, 2008, pp. 1-10.

Hoban, G. & Nielsen, W. (2010), 'The 5Rs: A New Teaching Approach to Encourage Slowmations of Science Concepts', *Teaching Science*, Sept.

Lave, J. & Wenger, E. (1991), *Situated Learning: Legitimate Perpheral Participation*. Cambridge U.P., Cambridge, UK.

Manning, M. Harris, J.A., Maher, W.A. & McQueen, K.G. (1998), *Learning in the Field: A Manual for Conducting Field Classes*, HERDSA, Canberra, ACT.

Mundy, D., Stephens, D. & Dykes, K. (2010), 'Facilitating Low Cost Interaction in the Classroom through Standard Mobile Devices', *Proceedings of Ed-MEDIA*, 29 June – 1st July, Toronto, Canada, pp. 1819-1825.

Sharples, M. (2003), 'Disruptive Devices: Mobile Technology for Conversational Learning', *International Journal of Continuing Engineering Education and Lifelong Learning*, Vol. 12, No. 5/6, pp. 504-520.

Sharples, M., Taylor, J. & Vavoula, G. (2007), 'A Theory of Learning for the Mobile Age', in R. Andrews & C. Haythornwaite (eds.), *The SAGE Handbook of E-learning Research*, Sage, London, pp. 221-247.

Switalla, L. (2009), 'Does the Use of a Podcast Facilitate Feedback/Re?ection to Improve the Pronouciation [sic] of Maori Language', available at www.scribd.com/doc/22622018/Maori-Language-Podcasting.