Student Mobile Learning: A concept and a proof of concept

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Concept

Students have a great affinity for their cell phones. Combine this with over 14 million students in the US attending the 4000+ colleges and universities and there is a big opportunity for mobile learning in higher education. The same idea extends to high school and perhaps junior high. The objective is to put mobile learning in the hands of students so they can access it anytime, anywhere and share it with their friends.

One of the human challenges to implementation is that most faculty members typically lack the time or the inclination to design mobile learning. One solution is for students to design their own mobile modules under the guidance of a faculty member. The faculty member would serve as a resource and as the final quality control. The students would rate each other's projects and share them with friends.

The modules would be brief "nuggets" or mini-modules that other students would be interested in using. This means they have to be pithy, informative, useful and "catchy" so that other students would find value in them.

Proof of Concept

Questions. The initial proof of concept regards the following questions:

1. Can students design their own mobile modules with minimal assistance from a faculty member?
2. Will other students access them?
3. What was the student's experience with creating mobile learning?

Setting. The setting for testing the proof of concept was on-line psychology classes taught at Middle Tennessee State University (MTSU) during the 2009-2010 academic year. These classes were: Basic Statistics, Organizational Change, and Organizational Psychology.

The students were offered extra credit for creating modules on topics they struggled with during the exams, or for summarizing their class projects. The modules were all created using OutStart Hot Lava Mobile and placed on a Hot Lava Mobile WAP server for delivery and tracking purposes. OHE Associates, who is overseeing the pilot on behalf of OutStart, provided on-line tutorials, and created a software simulation that taught students how to use software for creating their mobile learning modules.

An acceptable module had to meet the following criteria:

1. Multimedia – the module had to contain more than text. Graphics, sound and links to videos were most often used by students.

2. Shared with friends. A module had to be shared with three friends, who had to access the module on the Hot Lava Mobile WAP server either via cell phone or computer. This visits or "hits" to the module were tracked using the Hot Lava Mobile Activity Report.

Example projects. Three example student mobile modules are suggested for review by the interested reader. These are:

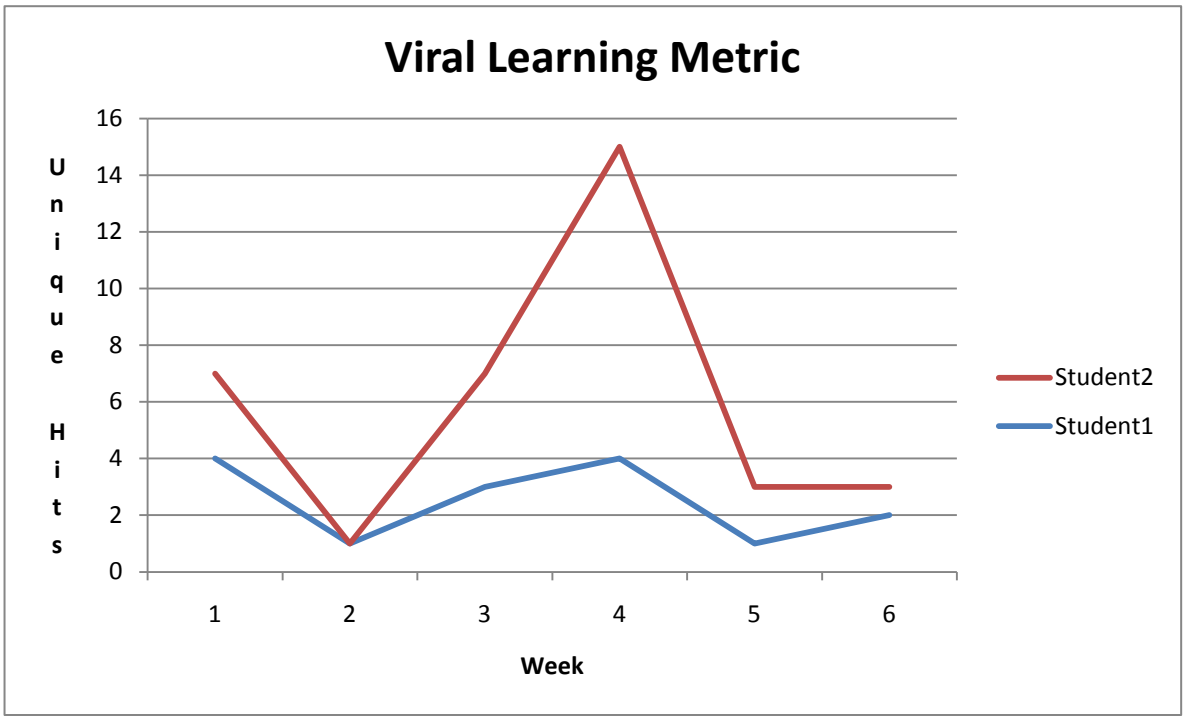
- One and two-tailed tests (on page 2 of the MTSU site in the link given below)
- Patricia Hunt (on page 3)
- Stubblefield 3020 D01_1 (on page 3)

These example modules can be viewed by going to: http://hdwap.com/mtsu/s.html?p=pass&n=y

Results and student experiences.

Students successfully created mobile modules. Over the course of a semester, after deleting the lowest quality modules, 28 modules were created across all classes. The largest percent of students who created modules were in the Basic Statistics class. In that class (42 students), 12 modules were created. Students reported that it took about 4 hrs to create one module. A few students created two modules, with the 2nd module taking less time. It should be noted that these modules were created by the students with minimal help from the professor. They relied on the OHE Associates tutorials and their own computer skills.

Students did share their modules with friends. This sharing and spread of access was tracked via the Hot Lava Mobile Activity Report. Below is a graph of the spread of access for two student-created modules. Notice that more than the 3 required friends looked at these modules and for student 2, there seemed to be some limited spread of the module access over time.



Following are unsolicited quotes from students about the proof-of-concept project:

"Cool! Sounds like it could be interesting."

"Oh, I am totally going to do this! Thanks!"

"I love the idea and that my high school students would love it too, since they love anything to do with their cell phones."

OHE Associates created a survey to help understand student experiences with the mobile learning project. The overall finding was that students had a very good overall experience, that most students would participate again in authoring mobile learning modules and that they would recommend it to their friends. They felt that the mobile modules helped to improve classroom performance of others. Students found that the authoring tool was somewhat time consuming and many reported that it was difficult to work with (Note: since this Proof of Concept, the vendor, OutStart, has released a new authoring environment leveraging PowerPoint which supports intuitive authoring).

Although the students struggled with the software and in the future a more user friendly interface will need to be addressed, students were still enthusiastic enough and saw benefit in their work to continue and complete mobile learning modules.

Next Questions

1) Will other professors adopt mobile learning in their classrooms?
2) Can mobile modules enhance learning and performance of those students designing the modules?
3) Can other students access and benefit from the modules?
4) Is it feasible to create mobile learning library of student-designed modules and will students use it?

Next Pilots

There seem to be two logical next pilot studies at MTSU.

1. Encouraging the adoption of Hot Lava Mobile by one or more professors in their classes is currently being pursued. Following a workshop on mobile learning at MTSU (see the appendix for a description of this workshop), three or four professors expressed an interest in using mobile learning in their classes.

2. In order to answer questions 2 and 3 as stated above, a follow-up study is in the planning stage for the Basic Statistics and Organizational Behavior on-line classes. This study would drill down into the learning experiences of the students designing the mobile modules and their friends that would access the modules. Students would have access to the modules in a pilot version of the mobile learning library that can be accessed via mobile or computer. The modules in the library would be those created by previous students, as well as new modules as they come on-line. They could use these modules as they are studying or taking exams. The students would be surveyed with questions revealing their learning experiences with the mobile learning library. The mobile learning library requires creation of logical categories that make the modules easy for the users to find. A couple of survey questions would answer if this was accomplished or if a more extensive and or different category system is needed.

Anticipated results. The expectation is that one other faculty member would use Hot Lava Mobile in their class this semester or, at the latest, Fall, 2010 semester. Anticipated results from the follow-up study are that the knowledge of students who design mobile modules would increase on topics for which they designed modules. This would be consistent with the "See one, do one, teach one" learning model used by medical schools. In addition the learning experience of students accessing the mobile learning library would likely indicate that these students also increased their knowledge of specific topics. This is likely because students learn well from their peers.

Conclusion

Student mobile learning is a potentially big opportunity that seems to make sense. It appears that the concept of student mobile learning is feasible and enjoyable for students. Students created their own mobile learning modules and shared them with friends. Furthermore, they did this on their own, with support from on-line tutorials. Further tests of the concept have been described in this paper. Certainly, there are other ideas that could help open the door to student mobile learning. National academic e-learning conferences are logical venues for presentation and discussion of ideas. The potential of a mobile learning library could also be discussed at national conferences. The author has a paper accepted to a national conference sponsored by Merlot and the Sloan Foundation which offers an opportunity for these discussions (http://sloanconsortium.org/et4online). The time seems ripe for mobile learning in the higher education space. See this link on a recent on-line event in higher education - http://net.educause.edu/content.asp?SECTION_ID=484&bhcp=1

Prime opportunities in higher education may be applied programs where students use the knowledge gained from the classroom in their field placements. Examples of such programs are Nursing Education, Aerospace, Engineering, Concrete Management, Social Work, Management, etc.

Sources of Information on Mobile Learning in Higher Education

Mobile Learning: Transforming the Delivery of Education and Training (eBook of studies from AU Press) – Editor: Mohamed Ally

Mobile Learning: on-line journal

University Leaders in the US: ACU (Abeline Christian University), Purdue University

University Leaders, Globally:

- Australia - Queensland University (http://eprints.qut.edu.au/4805/1/4805.pdf), Flinders University
- United Kingdom – University of Wolverhampton, The Open University, London Metropolitan University, University of Birmingham, University of Bristol
- Canada - Athabasca University, North Island College
- Finland - Helsinki University of Art and Design
- Norway - Norwegian School of Information Technology & NKI Distance Education
- Italy - University of Milano-Bicocca

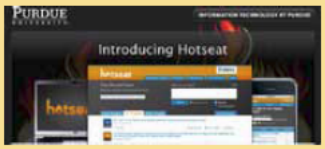
- South Africa - University of Pretoria, Meraka Institute

Appendix – MTSU Workshop on Mobile Learning

2010 Notable Instructional Technologies Tag Cloud

2010 Horizon Report
E-Books
Mobile Computing
Open Content, or the OER Movement
Simple Augmented Reality
Touch and Gesture Computing
Visual Data Analysis

Mobile Learning Applications



Hotseat at Purdue University

OutStart Hot Lava Mobile

Mobile Learning

Steve Jones demonstrates modules created with mobile technology.

In February, the center offered an e-learning workshop on mobile learning, which, according to Educause and the 2010 Horizon Report, is "one of six areas of emerging technology likely to have a significant impact on teaching, learning, or creative expression in higher education within three adoption horizons, or two to three years." Why has this instructional technology become so popular? For one, mobile technology allows students to make their learning portable and accessible at any time. Two, it also makes possible a new array of learning tasks and interactions that would have been impossible to do without the technological device. And, three—it's engaging. Students, as we all know, love their cell phones and will happily use them for work as well as play.

The workshop, led by Steve Jones (Psychology), featured demonstrations of actual learning modules Jones uses in his statistics course. Faculty members attending the workshop brought their cell phones to participate in the demonstrations. Jones also introduced the group to Hot Lava, a Web site that provides tools to create small learning modules, and to Abilene Christian University, a school that's been leading the mobile technology movement. Curious about what led Steve to choose the cell phone as a teaching and learning tool, SourceLink asked him some questions.

Q. Steve, how did you get involved with mobile learning?
A. I was inspired by a presentation given by Judy Brown (University of Central Florida) at an eLearning Guild conference. She uses mobile learning for public health projects in low-resource areas like Africa. The idea was to use the most available technology to engage learners. Cell phones seem like the most available technology for students—just watch what they are doing as they walk in-between classes.

Q. What are the advantages of using this kind of instructional technology?
A. Mobile learning is anywhere, anytime learning, which I suppose is the nature of learning. With over 3 billion cell phones on the planet, processors that will be 100 times faster in 10 years, and students that say "text me" rather than "call me," the potential is interesting. It can extend and reinforce learning outside the classroom. For instance, imagine a nursing student, in a field setting, using her cell phone to refer to methods she learned in class. Also, students can create mobile learning modules themselves and share them with friends via cell phone. If a particular module catches on and spreads through a social network, we might think of it as viral learning.

Q. How do your students respond?
A. Pretty well, but mobile learning technology is in its early stages, like online learning was 15 years ago. One student, a teacher, wants to use it with her high school students. Students show their mobile learning projects to their friends.

Q. Do you use other instructional technologies from time to time?