

Large-scale semi-formal learning activities for Singapore schools – Learn@ programme

Alexis Lee-Hin PANG and Jean Yin-Chiun PHUA

Ministry of Education, Singapore

Alexis_PANG@moe.gov.sg

Abstract: This paper describes the design, implementation and evaluation of the annual Learn@ programme conducted by the Educational Technology Division, Ministry of Education in Singapore for Primary and Secondary school students aged 10 to 15 years. The Learn@ event is organized in partnership with different public and private sector organizations to promote the use of technology to facilitate students' learning in various authentic, informal settings. The overall design for the 3 representative activities is shown. Some key learning points from the experiences of implementing such large-scale activities are also discussed and will benefit those wishing to design similar large-scale technology-enhanced learning activities which present rich settings for the study of learning processes and interactions in semi-formal learning environments.

1. Introduction

The Learn@ series capitalized on mobile technologies to provide students an opportunity to learn in an informal learning environment, for example, at the museum, library or science centre etc. The informal learning environment has often been defined to be in contrast to the formal learning environment, as learning that happens away from the institutionalized formal settings such as the classrooms, the schools. It has been suggested that informal learning could be described as "a process of learning that occurs autonomously and casually without being tied to highly directive curricula or instruction" [1]. It has been proposed that the attributes of informal and formal learning is innate in all learning situations and it would be useful to group the attributes into four aspects of learning [2]: (i) location/setting, (ii) process, (iii) purposes and (iv) content. It has also been suggested that informal, or non-formal learning environments provide for rich learning not emphasized in formal learning environments [3] [4].

Learn@ was conceived as a semi-formal learning experience which involved participants from a broad spectrum of school children (age between 10 to 15 years old), to be engaged in innovative, authentic, situated, immersive activities with certain themes of interest (e.g. social studies or national education), facilitated by the innovative use of technology including mobile devices such as PDAs, mobile phones, laptops, UMPCs, linked to a central communications network and server, in interaction with numerous groups of student-participants. The onsite activities were complemented with post-activity web-based blogging platforms to promote reflection and enable the display of artifacts of students' learning and experiences of Learn@, which also target to create authentic and meaningful learning [5] and develop their literacies for the 21st Century [6]. This web-based post-activity portion was also factored into the competitive element.

Learn@ also established the collaborative partnership approach with industry players and a focused location/theme for synergistic benefits. Facilitated by ubiquitous mobile technologies, participants engaged in competitive semi-structured activities located

in informal learning settings outside of the traditional classroom and school institution environment. While there was a set of overall learning directions, the learning outcomes achieved by the students which drove most of the learning were probably both intended (by the organizing team) and unintended.

Table 1 presents further information on Learn@ events for the years 2005 to 2007, which were situated in different locations and involving different partners.

Table 1. Learn@ events from 2005 to 2007 with links to formal and informal learning (refer to [7])

Event Title	Learn@Singapore RiverTrail 2005	Learn@S'pore Discovery Centre 2006	Learn@TheLibrary 2007
Partners	<ul style="list-style-type: none"> • National Heritage Board • Microsoft Corp. • Singapore Telecommunications 	<ul style="list-style-type: none"> • S'pore Discovery Centre • Campus Moblog • Singapore Telecommunications 	<ul style="list-style-type: none"> • National Library Board • iCell Network
Place(s)	Along the Singapore River, a historical feature in Singapore's growth as a port city	Singapore Discovery Centre, a large indoor Exploratorium with numerous interactive, informative and immersive exhibits	Jurong Regional Library and Woodlands Regional Library
Theme(s)	Change and Continuity	Different Faces, One Heartbeat	Ties that Bind
Post-Event Competition Entry	eLearning Resource	Mobile/Weblogging	Bloggng & Book review
Formal Learning	<p><u>Process</u> Participants are assessed on their artifact of web-based learning resource created with images for the e-trail carried out on the event date.</p> <p><u>Location/Setting</u> e-trail treasure hunt competition at Singapore River</p>	<p><u>Process</u> Participants are assessed on their artifact the reflective blog of their learning journey.</p> <p><u>Location/Setting</u> 3G Phone-enabled trail at the Singapore Discovery Centre.</p>	<p><u>Process</u> Participants are assessed on their artifact, the reflective blog of their learning journey and a collaborative book review posted on their blog.</p> <p><u>Location/Setting</u> Wireless enabled game play amongst team participants located at 2 library venues.</p>
Informal Learning	<p><u>Process</u> The participants decide on the tasks they wished to partake in the e-trail. For the e-trail component, assessment is based on the time factor and the total number of completed tasks.</p> <p><u>Purpose</u> The purpose of the event is to enrich participants with</p>	<p><u>Process</u> The participants decide on the tasks they wished to partake in the e-trail/scramble. . For the e-trail component, assessment is based on the time factor and the total number of completed tasks.</p> <p><u>Purpose</u> The aims of the event is to develop in the student participants a deeper understanding of how</p>	<p><u>Process</u> The participants decide on the tasks they wished to partake in the e-trail/scramble. . For the e-trail component, assessment is based on the time factor and the total number of completed tasks.</p> <p><u>Purpose</u> The aim of the event is to enthuse students the</p>

Event Title	Learn@Singapore RiverTrail 2005	Learn@S'pore Discovery Centre 2006	Learn@TheLibrary 2007
	knowledge of Singapore's heritage anchored on Social Sciences (including Geography, History, Social Studies, Economics, etc).	Singapore's past is instrumental in determining Singapore's present and future.	desire to read through exposure to a wide variety of print and non-print resources through research activities.
	<u>Location/Setting</u> Although the e-trail component is fixed, the learning outcomes are open-ended with loosely defined requirements for the artifact. Participants are free to exercise their creativity and to collaboratively decide on the outcome.		

2. Structure of onsite learning activities

Schools were represented by teams of 3 to 4 students which embarked on either the Primary or Secondary level trails. The teams shared the use of one pre-assigned mobile device and would 'play' different game questions sent from the central server to their mobile devices. Approximately 50 teams (150 to 200 students) participated in the mobile learning activities simultaneously during each Primary or Secondary trail.

From the competition flag-off, students received from a central server, on their mobile devices (phone, PDA, laptop or UMPC), questions and clues designed around a particular monument or display in the activity location. The teams would discuss and attempt to find the answers to these questions, either in multiple-choice or single word answer format back to the server via the mobile phone or wireless network. The answers were usually found on or around the particular monument or landmark of interest (e.g. the Sir Stamford Raffles statue along the Singapore River). At selected locations and for selected questions, students would use the image and/or video capture functions of the mobile phones and send them as responses to the central server as multimedia messages. If the students answered correctly or after a number of incorrect tries, the server would provide another clue and question for another location. Points were awarded for correct answers returned to the server. Each team would encounter 8 to 10 questions and locations on their trails. This process is illustrated in Figure 1 below.

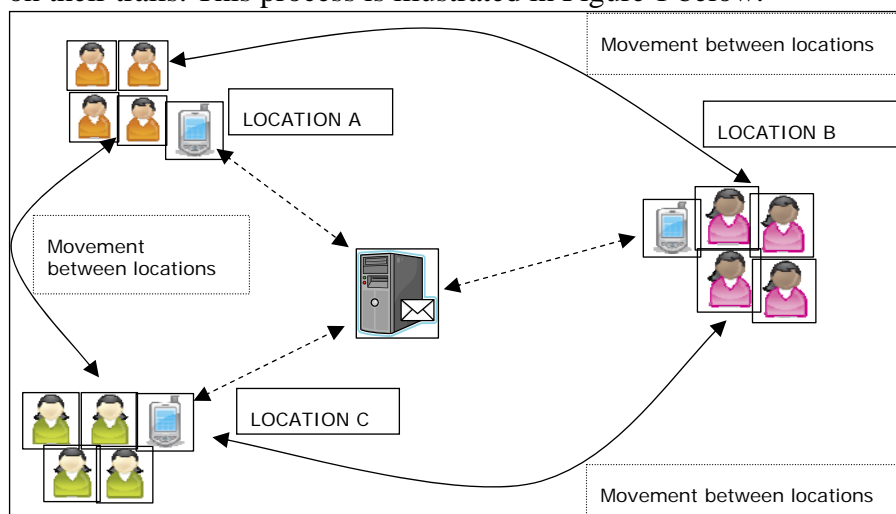
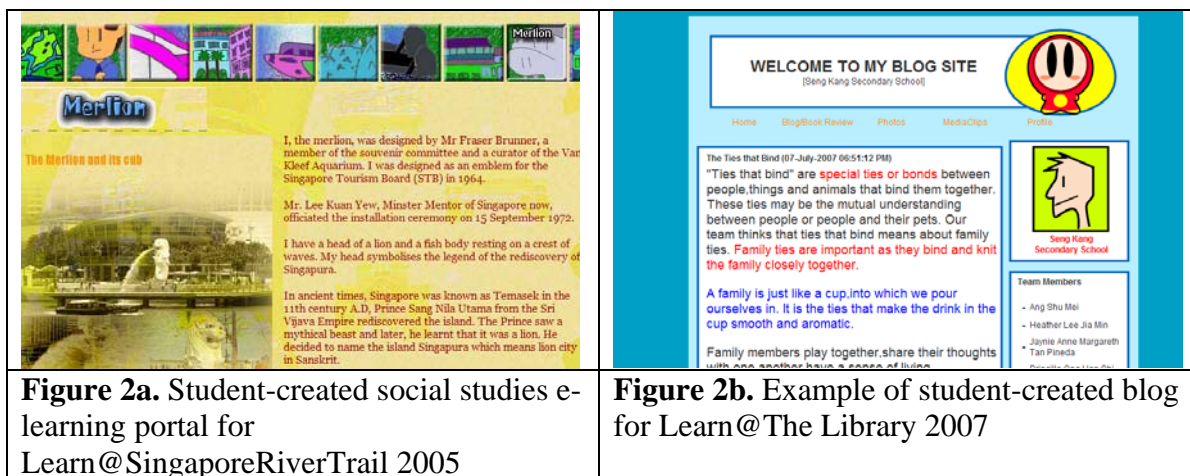


Figure 1. Illustration of onsite mobile learning activities and competition structure

3. Post-event learning activities

As a continuation of the event activities and competition, participants had to construct web-based artifacts in the form of web-page e-learning resources and blogs, in response to the event themes and stimulus questions. Participating groups were given an average of 2 weeks to develop their artifacts.

The online artifacts were assessed according to rubrics which were designed in line with the particular theme. Assessment dimensions included (i) depth and breadth of research displayed, (ii) creativity and innovativeness, and (iii) depth of reflection (especially for weblogging). Awards were given to outstanding entries for these identified criteria to allow for different teams' strengths and efforts to be rewarded. Figures 2a and 2b illustrate examples of the artifacts created by the students.



4. Conclusion

The large-scale mobile-learning activities situated in authentic, informal settings, was designed to engage a large number of participants simultaneously, and anchor their reflections and provide momentum for the participants' further self-directed learning over a longer period of time, in a competitive framework. We see Learn@ as a small step in creating new types of learning environments for the future, in which "[m]useums and public libraries might play an increasingly larger role in education" [8]. From post-event surveys of the various Learn@ events, we found that the participants mostly gave positive responses. Many schools also participated in Learn@ every year.

The competitive element was designed to drive students to engage in more in-depth discourse and discovery of information and knowledge related to the topics of focus. The environment has also provided substantial latitude and space for students to construct their own knowledge and express themselves creatively and comfortably, as seen from the learning artifacts. However at present, this event-based engagement seems to fade away quickly after the competition and little of the rich learning and artifacts are linked back to, or integrated into the formal curriculum to enrich it. These links between semi-formal and formal learning content and situations can be developed more explicitly to enable mutual enrichment of learning experiences.

Large-scale mobile-learning events such as Learn@ generate rich environments for the examination of the learning in such contexts for in-depth study of learning and interactions within technology-enhanced mobile learning settings. For the most recent Learn@ event in 2008, further in-depth work is currently under way to examine the

process and impacts of learning in such semi-formal, mobile learning settings. We also hope to be able to uncover patterns, processes and structures of learning through qualitative analysis using observations of, and interviews with students and detailed study of their learning artifacts, i.e. blogs and multimedia products.

References

- [1] Vavoula G., Sharples M., Scanlon E., Lonsdale P., Jones A. (2005). Report on literature on mobile learning, science and collaborative activity. *EU Sixth Framework programme priority 2, Information society technology, Network of Excellence Kaleidoscope, (contract NoE IST-507838)*, project "Mobile learning in informal science settings" (2005). Accessed 10 May 2008 from <http://telearn.noekaleidoscope.org>.
- [2] Colley, H., Hodkinson, P. and Malcom, J. (2003). *Informality and formality in learning: A report for the Learning and Skills Research Centre*. Learning and Skills Research Centre. London, United Kingdom.
- [3] Coffield, F. (2000) *The Necessity of Informal Learning*, Bristol: The Policy Press.
- [4] Rogers, A. (2006). Informal learning in lifelong learning. Paper presented at *Informal Learning and Digital Media: Constructions, Contexts and Consequences*. University of Southern Denmark, Odense. Danish Research Centre on Education and Advanced Media Materials (Dream). Accessed July 12, 2008 from: <http://www.dream.sdu.dk/uploads/files/Alan%20Rogers.pdf>
- [5] Williams, J. B., & Jacobs, J. (2004). Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology*, 20(2), 232-247.
- [6] North Central Regional Educational Laboratory. (2003). *enGauge 21st century skills: literacy in the digital age*. Accessed 10 May 2008, from <http://www.ncrel.org/engage/skills/skills.htm>.
- [7] Ministry of Education (2008). Learn@ Series. Accessed 10 May 2008 from <http://www.learnat.info>
- [8] Sawyer, R. K. (2006). The Schools of the Future. Chapter 34 in *The Cambridge Handbook of the Learning Sciences*. Cambridge University Press. New York, USA.