

Assignment 3:
The critical discussion of three articles
taken from
The Journal of Computer Assisted Learning
Volume 23 Issue 4 (special issue) [2007]



The Purple Group
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Ali Mohammed Alraai
Ian Boothe
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What happened?

- Eliana, Ali and Ian each chose an article from the special issue of JCAL.
- They were then each assigned to one of the other groups, and they led an online discussion with that group over four days.
- In this presentation, they will each, in turn, present and discuss the points raised from their respective discussions.

What are these papers about?

“ The papers in this special issue address different aspects of the transformation of education for a mobile society. ”

M. Sharples [editorial, 2005]

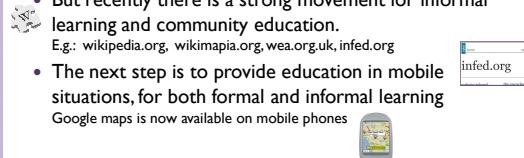
A little background...

“ The papers in this special issue address different aspects of the transformation of education for a mobile society. ”

M. Sharples [editorial, 2005]

Points taken from Dr Sharples' introduction to the JCAL special issue:

- Historically, education has evolved extremely slowly Classroom-based formal learning, isolated from the world it is supposed to apply to – hardly changed since the 19th century.
- But recently there is a strong movement for informal learning and community education.
E.g.: wikipedia.org, wikimapia.org, wea.org.uk, infed.org
- The next step is to provide education in mobile situations, for both formal and informal learning
Google maps is now available on mobile phones



A little background (2)...

“ The papers in this special issue address different aspects of the transformation of education for a mobile society. ”

M. Sharples [editorial, 2005]

Points, continued:

- Dr. Sharples asks whether the next decade could see a revolution similar to that in the entertainment industry.
- To do this, education will have to face several issues: Problems similar to transformation in the entertainment business:
 - Maintaining quality
 - Maintaining copywrite
 And new issues:
 - Assessing mobile learning
 - Bridging the gap between formal and informal education
- The papers in this issue therefore address different aspects of how this transformation of education can be achieved

The articles themselves

“ Affordances of mobile technologies for experiential learning: the interplay of technology and pedagogical practices ”

Lai, Yang, Chen, Ho, Chan [2007]

Eliana Mitsinga led a discussion with the Blue group

“ Do handheld devices facilitate face-to-face collaboration? Handheld devices with large shared display groupware to facilitate group interactions ”

Liu & Kao [2007]

Ali Mohammed Alraai led a discussion with the Yellow group

“ Innovative socio-technical environments in support of distributed intelligence and lifelong learning ”

Fischer & Konomi [2007]

Ian Boothe led a discussion with the Green group

Over to you, Eliana....

“ Affordances of mobile technologies for experiential learning:
the interplay of technology and pedagogical practices ”

Lai,Yang,Chen, Ho, Chan [2007]

Affordances of mobile technologies for experiential learning: the interplay of technology and pedagogical practices

Journal of Computer Assisted Learning

Volume 23

2007

Issue: 4 (special issue on mobile learning)

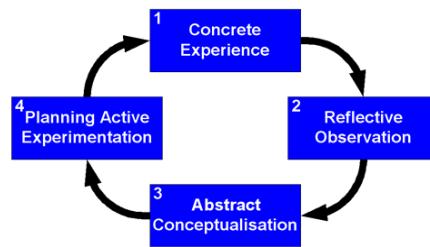
Pages: 326-337

Introduction

- ‘Personal digital assistants (PDAs) together with attendant embedded functionality are incorporated into an outdoor learning flow activity in order to examine **in what ways and to what extent** experiential learning of elementary school students can be facilitated’. (Lai et al., 2007)

Experiential Learning

- Kolb 1984: **four-stage cycle**



<http://www.learningandteaching.info/learning/experience.htm>

Experiential Learning

- **Weaknesses** of experiential learning:
 - ‘it lacks a mechanism for focusing awareness in the learning context’ (Miettinen, 2000)
 - ‘students pay insufficient attention to abstracting from experience’ (Vince, 1998)
- **Aim:** to eliminate weaknesses by utilizing mobile technologies and to investigate the affordances of such technologies in experiential learning.

Educational Affordances of Mobile Technologies

- ‘...the relationships between the properties of an educational intervention and the characteristics of the learner that enable particular kinds of learning by him or her’ (Kirschner, 2002)
- Mobile technologies ‘afford’ real-time information **whenever** and **wherever** learners need it
- Mobile technologies ‘afford’ a **rapid access interface** for note taking, such as photo taking, sound and video recording

In this study...

- A mobile technology embedded learning flow was developed to support **field-trip learning** based on the experiential learning procedures in the following six stages:
 1. Photo taking
 2. Sensory experience
 3. Further observation
 4. Comparison
 5. Question proposing
 6. Final report

Method

- **Hypothesis:** Mobile technologies can increase the level of knowledge creation through experiential learning beyond that which is achieved with traditional methods (paper and pencil).
- **Participants:** 34 students, 16 boys and 18 girls, in one class **using personal PDAs** with plug-in cameras, and 32 students, 16 boys and 16 girls, in another class **using paper and pencil**.
- **Procedure:**
 - Pre-test
 - Main activity
 - Post-test
 - Questionnaire
 - 90-min course on the use of the PDAs
 - One-tailed *t*-tests

Procedure

- **Stage One:** Photo taking
- **Stages 2, 3 and 4:** Notes on PDAs
- **Stage 5:** Record spoken questions
- **Stage 6:** Final Report (refer to photographs, spoken questions, notes on PDAs)
- **Stage One:** Draw Pictures
- **Stages 2, 3 and 4:** Notes on paper
- **Stage 5:** Write questions
- **Stage 6:** Final Report (refer to sketches, written questions and notes on paper)

Results

- **Knowledge Gains:**
 - The group with PDA **retained and created** more knowledge than the group without PDAs
- **Mobile Technology:**
 - Photo taking and sound recording interfaces impressed the students
 - Students agree strongly that the taking of photos made learning more efficient
 - Students preferred taking **photographs** to drawing pictures
 - Sound recording was easy and quick compared with writing by hand

Results

- **Support System:**
 - Students with PDA scored significantly higher than the group without PDA in most items
 - Students with PDA were more **motivated** than were students without PDA
 - **Note-taking** approach of the PDA saved time
 - Students with PDA were no better supported than students without PDA in handling trap-setting statements or figuring out questions

Learning flow

- When the photo-taking stage was followed by the sensory experience stage, none of the students **with PDA** showed any interest in the second stage
- Students **without PDA** for whom the sketching stage came first, found the sensory experience stage to be quite interesting
- 42.9% of students **without PDA** felt frustrated at the 'sketching stage'
- Students **with PDA** found question proposing to be their most frustrating stage

Discussion

- It was not the technology itself but the interplay between technology and pedagogical practice that affords possibilities for better experiential learning
- Students with mobile technology:
 - increased level of new knowledge creation
 - enhanced awareness of learning in context
 - enriched conceptualisation of knowledge through experience

The article discusses the technological support for experiential learning. Why the authors choose this kind of learning? Can you describe some possible reasons?

- '...this kind of learning is more beneficial'
- 'The children are able to construct their own knowledge... While acting, they learn!'
- 'The children in the report worked at their own pace and decided what information they should collect'
- '...a wonderful way to demonstrate the potential value of mobile learning'

Why Experiential Learning?

- children are involved in their own learning actively and directly
- appropriate and relevant to student's real world
- a method that provides obvious outcomes

Do you find any part of the article appealing? What makes it appealing? Support your opinion. If you believe that there isn't something appealing or convincing explain why.

Two opinions:

- ✓ 'Learning has to be interesting and I think the children in the study did find it interesting. I am talking about the topic as well as using the PDA's'
- ✓ '...on a qualitative level it was a very convincing description of a learning experience'
- ✓ 'The material about the extra "knowledge created" by PDA learners was convincing'
- ✗ '...I would have liked to have seen more detail'
- ✗ 2 tailed t-test & specific t values and p values for the two comparisons
- ✗ 'Perhaps all students should have been trained in PDA use'

Which part of the article is appealing?

- Students engaged in a variety of activities (e.g. took photographs, recorded sounds, developed questions, received feedback etc.)
- Technology expands the range of choices that children have in school and attracts their interest

Do you think that the authors used the appropriate method for their experiment? You can support your answer with evidence from the article.

Two opinions:

- ✓ 'Their experiment was reliable and valid'
- ✓ 'The experiment consisted of several sections: pre-test, main activity, post-test and questionnaire'
- ✗ 'Maybe they should have used more than one lesson'
- ✗ '...maybe the "students' interests" factor influenced the results'
- ✗ 'I'd have liked to have seen a more rigorous experimental design and statistical analysis'

Methodology

- ✓ Well structured and good organised
- ✓ The method is described in a way someone can replicate it
- ✓ The procedure is specific and it contains different stages
- ✓ The method is relevant with the hypothesis
- ✓ Variety in the sections of the experiment

- If there were more examples and tables it would be helpful

In what extend do the results have impact for the future of mobile learning in both the theoretical and the practical level?

- '...the study gave a good demo of the potential for gaining huge benefits from mobile learning for this specific type of learning'
- '...mobile learning can be more developed in the future in order to include and other kinds of learning (not only experiential learning)'
- '...new learning experiences or environments that can be developed for a broad range of both informal and formal learning contexts'
- '...the use of mobile technology can be used to attract attention at appropriate points in the learning task'
- 'Mobile technologies will offer one more strategy with a wide range of activities'

But..

'...further researches must be done in order to indicate more significant results which can strongly prove that mobile devices can improve learning'

Contribution...

- Contribution to the theory:
 - The results of the study added more evidence to support the contribution of mobile technologies in the learning process.
 - Contains ideas for further researches

- Contribution to the practice:
 - Practices not only for the technology sector but also for the pedagogical sector
 - Elements that can improve the method which was used

Over to you, Ali....

“ Do handheld devices facilitate face-to-face collaboration?
Handheld devices with large shared display groupware to facilitate group interactions ”

Liu & Kao [2007]

Do handheld devices facilitate face-to-face collaboration? Handheld devices with large shared display groupware to facilitate group interactions

C.-C. Liu & L.-C. Kao

Journal of Computer Assisted Learning
Volume 23 Issue 4, Pages 285 - 299
Published Online: 22 May 2007

Summary of the Paper

The development of handheld devices and wireless network has made possible new approaches to individual work and learning.

The purpose of this research study is to:

- Explore whether handheld devices, wireless network and shared displays in classrooms sufficiently facilitate face-to-face collaboration
- Explore whether the display equipment in classrooms fitted with shared display groupware can augment handheld devices in promoting communication

Methodology

- 8 weeks experiment
- 13 graduates
- 3 groups
- 3 learning environments

Activities with Tablet-PC only



Network-file-sharing



Sharing displays

Table 1. Participation ratios among different experiment setting.

	Group 1	Group 2	Group 3	Average
TPS activity with Tablet-PC-Only	0.57	0.76	0.93	0.76
TPS activity with Network-File-Sharing	0.59	0.51	0.75	0.61
Section 1 of TPS activity with Shared-Display	0.61	0.91	0.88	0.8
Section 2 of TPS activity with Shared-Display	0.65	0.83	0.98	0.82

The findings of the experiment confirm that the shared display groupware promote increased group collaboration

Overall Findings

Findings relating to the study as a whole

- Students with only handheld devices**
 - ✗ did not demonstrate human interaction and face-to-face collaboration.
 - ✓ "personal working space" for students to prepare group work
- Display Screen**
 - ✓ encourages and enables group members to participate in shared activities which lead to effective communication.
 - ✓ encourage student groups to cooperate and work on complex tasks.
- The groupware**
 - ✓ promotes a shared a group work space and peer reviewing.

Discussion group

- Whether the design of handheld devices encourage student to collaborate during their learning?
- Which possible techniques can improve students communication by using handheld devices?
- Could using shared display increase students communication?

Discussion group

"there is way to know what the other kids are doing using wireless access or a large share screen"

"technology should create a space that every child has the opportunity to give his/her opinion and their opinion would be considered"

"It is through the talk that learning occurs."

"Handheld devices restricts *talking among themselves*"

"technology is a tool rather than goal. We use technology to facilitate and enhance teaching and learning"

Over to you, Ian....

“ Innovative socio-technical environments in support of distributed intelligence and lifelong learning ”

Fischer & Konomi [2007]

Innovative socio-technical environments in support of distributed intelligence and lifelong learning

Fischer, G. and Konomi, S.
Journal of Computer Assisted Learning, 2007,
Vol 23, Issue 4, pp338-50

A critical discussion

Summary of Article

- WMT (Wireless and Mobile Technologies) provide opportunities to create socio-technical environments that empower humans
- Lifelong learning perspective
- Distributed intelligence
- ‘Intelligence augmentation’
- ‘Exploiting the power of social creativity’
- ‘Universe of one’
- ‘Co-evolution of new media and new theories about working, learning and collaborating’

Projects

- ‘Going small: Mobility-for-all’

Mobile architecture:

‘Going Large: Environment and Discovery Collaboratory’

‘Going Everywhere: QueryLens’

‘QueryLens allows users to share and obtain useful information using mobile handheld devices. Users can simply look at a physical object through a “digital lens” in order to retrieve (and attach) queries (and information) that are relevant to the object.’

Lifelong learning

- ➲ Enhance abilities to learn
- ➲ Engage in meaningful activities
- ➲ Exploit the power of media
- ➲ Differs from school-based learning
 - self-directed, informal, tool-rich, collaborative
- ➲ WMT support these dimensions
(Sharples, 2000)

Distributed intelligence

- ➲ Framework for understanding possible achievements of humans
- ➲ How artefacts, tools and socio-technical environments can empower humans
- ➲ 'Marry raw intellectual power of humans with appropriate technologies'

Discussion

How engaging did you find the article? Was it well-structured? How much impact will it have on education and learning? Were the projects mentioned worthwhile, and sufficiently well explained? Please describe your general reaction to the paper.

Positives

- ➲ 'quite interesting and very thought provoking'
- ➲ 'really important for the whole learning process'
- ➲ 'applicable to modern style of education and learning'
- ➲ 'glad they took the lifelong learning perspective'
- ➲ 'main points that are in the paper are worth researching'

Negatives

- ➲ 'rather technical in places'
- ➲ 'Structure not particularly clear'
- ➲ 'Concepts rather far-fetched'

To what extent do you agree with the authors when they say that mobile learning activities are too driven by technology or 'add-ons to existing practices' rather than genuine opportunities to transform educational experiences?

- ➲ 'technology drives change and from this change new educational practices will emerge which take advantage of new technologies'
- ➲ 'a large number of these new technologies are designed from a perspective of seeing and treating humans primarily as consumers'
- ➲ 'can be used to create powerful environments in which stating the possibilities of WMT, learners can access information in a context-aware perspective'

How do you think wireless and mobile technologies will impact on everyone's lives in 2020? Or even further into the 21st Century?

Positives

- ➲ 'Go anywhere, do anything technology will have come to pass as a result of universal access, improved broadband facilities and open access wireless nodes'
- ➲ 'WMTE would change the goals of education'
- ➲ 'Make classroom's life much easier, enjoyable, fun and more productive'
- ➲ 'It will change the 'tech face' of the earth significantly'

Negatives

- ➲ Hacking, viruses, invasion of privacy and data protection issues will become even more paramount'
- ➲ 'Apocalyptic style world a la Terminator'
- ➲ 'Have to be careful and not to overuse the possibilities that WMTE offers'

Personal response

- ➲ Innovative use of technology
- ➲ Positive emphasis on learning rather than technology
- ➲ Learner-centric
- ➲ Inclusion seen as priority
- ➲ Valuable and worthwhile field of research
- ➲ Situated learning in authentic settings
- ➲ Potentially big impact on future of mobile learning
- ➲ 'Personally meaningful'

but...

- ➲ Occasionally unclear and jargonistic
- ➲ Some concepts may be unrealistic
- ➲ Lack of data from projects means evaluating mobile learning difficult

Contribution to mobile learning design

- Two design perspectives in a 'tool-rich' world:
- ➲ 'Tools for living' (distributed intelligence)
 - ➲ 'Tools for learning' ('scaffolding with fading')

Contribution to mobile learning theory

- Developing understanding of how WMT can:
- ➲ Augment human intelligence
 - ➲ Personalise learning
 - ➲ Facilitate collaborative activities
 - ➲ Improve lives of people with cognitive difficulties
 - ➲ 'Change the context and goals of education'

Contribution to mobile learning practices

Opportunities:

- Supporting intelligence augmentation
 - Social creativity
 - Informed participation
 - Unique needs of user
- Pitfalls:
- Destruction of notion of place
 - 'Gift-wrapping' and 'techno-determinism'
 - Violations of privacy
 - Understanding distinction between role of tools
 - Capturing context

Back to you, Robin....

Overall summary

Conclusions

Common themes:

- All the articles discussed mobile technologies being applied to collaborative learning of some type.
- There was a strong theme of enhancing learner involvement
- There was a strong focus on communication

Conclusions

Implications for Mobile Learning theory:

- Applications of mobile technology have been too technology driven
 - Need more focus on changing pedagogical theory to properly incorporate mobile technologies
- Mobile technology seems to apply best to learner-driven methods
- Mobile technology has particular strengths in:
 - Enhancing communication
 - Engaging the learner – it's very inclusive
 - As a tool to augment normal human intellectual or physical behaviour, and therefore give more control to the learner

Conclusions

The future of mobile learning:

- New ideas and practices emerging for the pedagogical sector
 - Learning theory is likely to evolve to better incorporate mobile technologies
- Technology will inevitably drive change
- More learner driven education practices
- "Go anywhere, do anything technology"

Thanks!

Dr. Sharples, **thank you** for setting the assignment and setting up our discussion area.

To everyone in the three other groups, **thank you** for enthusiastically taking part in the discussions.

You can download this presentation from:
<http://robinwinslow.co.uk/xxd582.html>

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