Theories of Mobile Learning and their Applications

Seminar - The Open University of Hong Kong
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Dr David Parsons, The Mind Lab by Unitec, New Zealand
Dr David Parsons

★ National Postgraduate Director - The Mind Lab by Unitec, Auckland, New Zealand
★ Founding Editor in Chief - International Journal of Mobile and Blended Learning (since 2009)
★ Guest editor of 3 other journals
★ Member of the International Association for Mobile Learning, and committee member of Australia and New Zealand Mobile Learning (ANZMLearn)
Dr David Parsons

★ Established and ran the first mobile learning conference in New Zealand, Mobile Learning Technologies and Applications (MoLTA) in 2007

★ Authored 6 books and edited 5 including:
  ○ Innovative Mobile Learning: Techniques and Technologies (2009, with Hokyoung Ryu)
  ○ Mobile and Blended Learning Innovations for Improved Learning Outcomes (2016)
Video - The Mind Lab by Unitec
Some Related Publications


Seminar Agenda

- Affordances and features of mobile educational experiences
- Characteristics of different theories and affordances
- Learning theories for mobile learning
- Examples of past mobile learning projects
- Objectives of future innovative mobile learning research projects
Affordances and features of mobile educational experiences
Mobile Poll (Poll Everywhere)

Have you used mobile device (tablet / smartphone) for teaching or learning?

- **Yes**: 67%
- **No**: 33%
- **I do not own any mobile devices**: 0%

Respond at [PollEv.com/davidparsons352](http://PollEv.com/davidparsons352)
Tweet @dave_parsons with A, B, or C

Answers to this poll are anonymous
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

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or
Open poll in your web browser
Mobile Learning Affordances

- Affordances are the opportunities for action that we see in something (Gibson, 1977)
- Usage is more important than the qualities of the object itself
- e.g. text messaging
Some Implemented Affordances
Scenario

★ You are visiting an interactive museum with a group of friends

★ The museum has both indoor and outdoor exhibits

★ In what ways could you use a mobile device (affordances) to enhance your learning experience?

★ Please make your suggestions in the following poll
Mobile Poll (PollEverywhere)

How might you use a mobile device for learning in a museum?

- Respond at PollEv.com/davidparsons352

Tweet @dave_parsons with your message

“Scan a QR code attached to an exhibit”
2 days ago

“Read about an exhibit on the museum’s website”
2 days ago
Your poll will show here

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Characteristics of different theories and affordances
Theories are important for mobile learning if they relate to the affordances of mobile tools

Key affordances:
- Portability
- Data gathering
- Communication
- Rich toolkit
- Contextual, active learning
- Immediacy
# Affordance -> Theory

<table>
<thead>
<tr>
<th>Affordance</th>
<th>Example</th>
<th>Theory</th>
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</thead>
<tbody>
<tr>
<td>Portability</td>
<td>Moving between contexts</td>
<td>Spaced learning, transfer of learning</td>
</tr>
<tr>
<td>Immediacy</td>
<td>Quizzes</td>
<td>Behaviourism</td>
</tr>
<tr>
<td>Evidence, data gathering</td>
<td>Photos, videos, notes, sound</td>
<td>Constructivism</td>
</tr>
<tr>
<td>Communication</td>
<td>Messaging, social media</td>
<td>Connectivism</td>
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<td></td>
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<td>Communities of practice</td>
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<tr>
<td>Rich toolkit</td>
<td>QR codes, AR, VR, apps, browser</td>
<td>Experiential learning</td>
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<tr>
<td>Contextual learning</td>
<td>Sensors, GPS</td>
<td>Situated cognition</td>
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</tbody>
</table>
Which of these learning theories are you aware of?

- Connectivism
- Communities of Practice
- Experiential Learning
- Connectivism
- Situated Cognition
- Behaviourism

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Learning theories for mobile learning
Spaced Learning, Transfer

- Spacing some or many repetitions of learning over time. Spaced repetitions need not be exactly the same.
- Theorists include: Ebbinghaus.

- Low-road transfer means high level of automaticity. High-road transfer involves conscious and deliberate application.
- Theorists include: Perkins, Salomon.
“The spacing effect is one of the oldest and best documented phenomena in the history of learning and memory research.”

Bahrick & Hall

“Transfer of Training — That almost magical link between classroom performance and something which is supposed to happen in the real world”

Swinney
Behaviourism operates on a principle of "stimulus-response."

Various types of conditioning

Positive/negative reinforcement

Theorists include: Watson, Pavlov, Skinner, Thorndike
“The ideal of behaviorism is to eliminate coercion: to apply controls by changing the environment in such a way as to reinforce the kind of behavior that benefits everyone.”

Skinner
Connectivism

➢ Internet technologies have created new opportunities for people to learn and share
➢ Learners develop knowledge through peer networks and online
➢ Theorists include: Siemens, Downes
“We always seem to think about how does technology influence learning. Sometimes these roles actually have to be reversed. We have to think about how learning influences technology because there are greater changes occurring in our society and not just within technology.”

Siemens
Constructivism

- Learning is an active, constructive process
- Learners actively construct or create their own subjective representations of objective reality
- New information is linked to prior knowledge
- Theorists include: Vygotsky, Piaget, Dewey, Bruner
“The principle goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done.”

Piaget
Communities of Practice

➢ A process of social learning that occurs when people who have a common interest in a subject or area collaborate over an extended period of time, sharing ideas and strategies, determine solutions, and build innovations.

➢ Learning can be, and often is, an incidental outcome that accompanies these social processes.

➢ Theorists include: C.S.Pierce, Jean Lave, Etienne Wenger
“Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavour...who share a concern or a passion for something they do and learn how to do it better as they interact regularly.”

Wenger
Experiential Learning

➢ Learning through a cycle of concrete experience ("DO"), reflective observation ("OBSERVE"), abstract conceptualization ("THINK") active experimentation ("PLAN")

➢ Knowledge is created through the transformation of experience

➢ Theorists include: Dewey, Kolb, Levin
“We do not learn from experience. We learn from reflecting on experience”

Dewey
Situated Cognition

➢ People’s knowledge is embedded in the activity, context, and culture in which it was learned.
➢ Learning is social and not isolated
➢ People learn while interacting with each other through shared activities and through language, as they discuss, share knowledge, and problem-solve during these tasks (a form of socio-cultural learning)
➢ Related to "situated learning" (Lave & Wenger)
➢ Theorists include: John Seely Brown, Allan Collins, Paul Duguid
“Instead of pouring knowledge into people's heads, you need to help them grind anew a set of eyeglasses so they can see the world in a new way.”

John-Seely Brown
Examples of past mobile learning projects
Example: Kiwi Mobile

Game-based mixed reality collaborative mobile learning
Science Inquiry using abductive reasoning based on ontologies and inference
Maori Language Game

Game based learning in a virtual world
Objectives of future innovative mobile learning research projects
Seamless Learning

“Seamless learning is when a person experiences a continuity of learning across a combination of locations, times, technologies or social settings.”

Innovating Pedagogy 2012
Maker Culture

“Maker culture emphasises the production of tangible artefacts that solve a need in their makers’ everyday lives – and this explicitly includes playful or aesthetic ‘needs’. It emphasises experimentation, innovation, and the testing of theory through practical, self-directed tasks.“

Innovating Pedagogy 2013
Event-Based Learning

“Technology-enhanced event-based learning offers opportunities for participation, collaboration and distributed expertise. These events not only have the potential to engage millions of people in memorable learning experiences, but can also make significant additions to the body of knowledge available to us as a society.”

Innovating Pedagogy 2014
“Computational thinking can be taught as part of mathematics, science and art or in other settings. The aim is not just to encourage children to be computer coders, but also to master an art of thinking that will enable them to tackle complex challenges in all aspects of their lives.”

Innovating Pedagogy 2015
Mobile learning activities vary considerably

Many theories have been applied to mobile learning

Future learning tools and pedagogies may lead to new theories

Sharples, Taylor & Vavoula (2010) suggest that a theory of mobile learning must be tested against the following criteria:
- does it account for the mobility of learners?
- does it cover both formal and informal learning?
- does it theorise learning as a constructive and social process?
- does it analyse learning as a personal and situated activity mediated by technology?
Optional Lunchtime Activity

→ See the handout ‘Mobile Learning Activity with ARIS and Sense-it’

→ This is a group activity. At least one member of the group needs to have an iPhone with ARIS installed

→ If you are staying for the workshop, please install Aurasma on your iOS or Android device

ARIS/Sense-it Activity
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My Contact Details

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