EXPLORING MOBILE AFFORDANCES IN THE DIGITAL CLASSROOM

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What’s the Mobile Affordance?

★ Affordances are potential actions and interactions that the environment offers
★ What does this mean in the age of the ubiquitous tablet and smartphone, the GoPro, the drone?
★ What are the unique affordances (learning interactions) of mobile learning today?
Affordances (1)

Portability (Naismith et al, 2004)

For movement during learning activities

Data Gathering (Orr, 2010)

To gather, manage or store information
Affordances (2)

Communication
(Liang et al. 2005)

For collaboration

Interaction
(Lai et al., 2007)

To visualise digital content
Affordances (3)

Contextual Learning
(So, Kim & Looi, 2008)

Outdoor Environment
(Tan and So, 2015)

Active learning interactions in a context

Learning outside the classroom
Some Implemented Affordances
Research Context

➔ 32 week part time Postgraduate Certificate programme in Digital and Collaborative Learning
➔ Qualified teachers with at least three years of teaching experience.
➔ Courses cover multiple aspects of pedagogy, leadership and innovation
➔ Supports applied practice in the use of digital tools for teaching and learning
➔ BUT limited mobile learning content
Research Questions

1. To what extent do teachers currently utilize mobile affordances?

2. To what extent do their students currently utilize mobile affordances?

1. How can mobile affordances be better integrated into the postgraduate programme?
Methodology

➢ Identify mobile affordances from the literature
➢ Develop an anonymous online survey, administered to current students and alumni
➢ Distribute via the Learning Management System and Google+ communities (one per cohort)
➢ Use outcomes to design a mobile learning activity appropriate to the programme
Results - Responses

- 110 valid responses to the survey
- 95 currently enrolled on the course
- 15 alumni

- Hard to reach the alumni
- Current enrolments about 460
Results - Device Types

- All being regularly used in the classroom
- Devices that more easily support mobile affordances used slightly less often
Results - Use of Affordances

➢ Only sound recording was used more by students than teachers

➢ Still (too) teacher driven?
Teacher Mobile App Usage

- Google Docs, Earth and Classroom
- Twitter, Facebook and Pinterest
- Niche applications (Maori language, guitar and sketching)
Student Mobile App Usage

★ Some overlap with teachers (Google apps and movie editing)
★ Creating work for sharing or assessments
★ Specialist mobile apps included:
  ○ Hopscotch (coding), Gamefroot (game creation), Mathletics, Chatterpix

➔ Affordances of mobile learning beyond portability?
Additional Affordances?

➔ Some respondents mentioned the use of mobile devices for control
   - Robotics
   - 3D printing

➔ Multimedia creativity also highlighted
   - Artefact construction
   - Does this fit into our set of affordances?
Results - Future Activities

➢ Outdoor preferred to indoor
➢ Sensors popular
➢ Preferred QR codes to GPS
Design Context

- Outdoor, sensor based activity (user choice)
- BYOD (programme practice)
- 30 minute ‘station rotation’ (class context)
- Limited setup time (easy install and use)
- Collaborative group activity (multiple roles)
- No cost (teachers could use in their schools)
- Multiple sites (no setup time, 6 locations)
  - Hence GPS, not QR codes
Outdoor Navigation App - ARIS

- Location Triggers
  - By Type
- Conversations
- Plaques
- Measurement 1
- Measurement 2
- Measurement 3
- Mobile Activity Introduction
- Data Gathering Complete
- Items & Player Attributes
- Web Pages
- Events
- Scenes

iOS
Example Sensor Tool - Sense-it

Sense-it was developed as part of the nQuire project
http://www.nquire.org.uk
ARIS Mobile App

Take as many environmental measures as you are able to with the devices/sensors apps that you have in your group. Add the results to the shared Google sheet.
Collaborative, Contextual, Outdoor, Gathering and Visualising Data
Sensor Readings Taken

★ Light (lx)
★ Sound (dB)
★ Temperature (oC)
★ Pressure (hPa)
★ Humidity (%)  
★ Compass (relative orientation)
★ Elevation (meters above sea level)
★ Wind speed (kph)
## Shared Google Sheet for Data

**Collaborative data gathering and analysis**

<table>
<thead>
<tr>
<th>Location</th>
<th>Measurement No.</th>
<th>Team Name</th>
<th>Device</th>
<th>Light (lux)</th>
<th>Sound (dB)</th>
<th>Temperature (°C)</th>
<th>Pressure (hPa)</th>
<th>Humidity (%)</th>
<th>Compass</th>
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</table>
Outcomes

● Practical
  ○ 42 teams participated across six sites
  ○ Able to compare across three locations and across sites
  ○ Increased awareness of sensors and potential for mobile learning activities

● Theoretical
  ○ Deeper understanding of the role of affordances in contemporary mobile learning