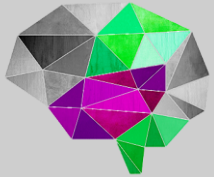


THE MIND LAB by Unitec®

Illustration of Applying Theories in Mobile Learning Research

Workshop - The Open University of Hong Kong
27th April 2016

Dr David Parsons, The Mind Lab by Unitec, New Zealand

Workshop Agenda

- ❑ Theories of Interest
- ❑ Tools
- ❑ Mobile Learning Activities
- ❑ Conclusion

- Theories of interest

Learning Theories

- The following learning theories are particularly relevant for mobile learning

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

- Tools

Affordance -> Tools

Affordance	Example	Tools
Portability	Moving between contexts	Tablet / Smartphone
Immediacy	Quizzes, Language learning	Browser, SMS, Twitter, Plugins, Mobile response systems like Polleverywhere, Kahoot, voice translators
Data gathering	Photos, Videos, Notes, Sound, Environment recorders	Camera, sound recorder, Show Me, ExplainEverything, Vine, Vyclone, iMovie, Google Docs, Evernote, Gyro and environmental recordings, ebooks
Communication	Messaging, Social media	SMS, Facebook Messaging, FaceTime, Twitter, WhatsApp, Google Communities, Google Hangouts and other conferencing systems, podcasts and vodcasts
Rich toolkit	QR codes, AR, VR, Apps, browsers	QR readers, Google Cardboard, Aurasma, mobile games and apps

❑ Mobile Learning Activities

Mobile Contextual Learning

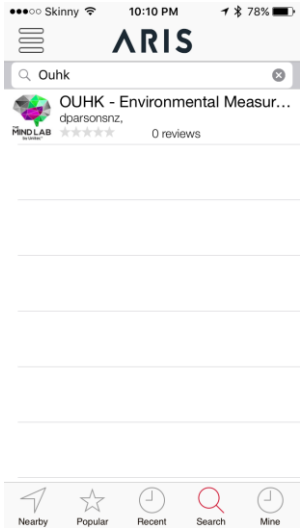
- ★ Important concepts in mobile learning are moving through contexts and situated cognition
- ★ Outdoor activities are ideal for this
- ★ There are a number of tools that support scavenger hunt type activities using real world locations
- ★ e.g.
  - ARIS
  - GooseChase

Mobile Activity 1: ARIS

ARIS App
http://tinyurl.com/arisapp

The ARIS Activity

➔ Some of you may have tried out the ARIS activity over the lunch break



ARIS - arisgames.org

➔ ARIS allows you to create games in a browser and deploy them to iOS devices

ARIS is a user-friendly, open-source platform for creating and playing mobile games, tours and interactive stories. Using GPS and QR Codes, ARIS players experience a hybrid world of virtual interactive characters, items, and media placed in physical space.

Make Games

Available on the App Store

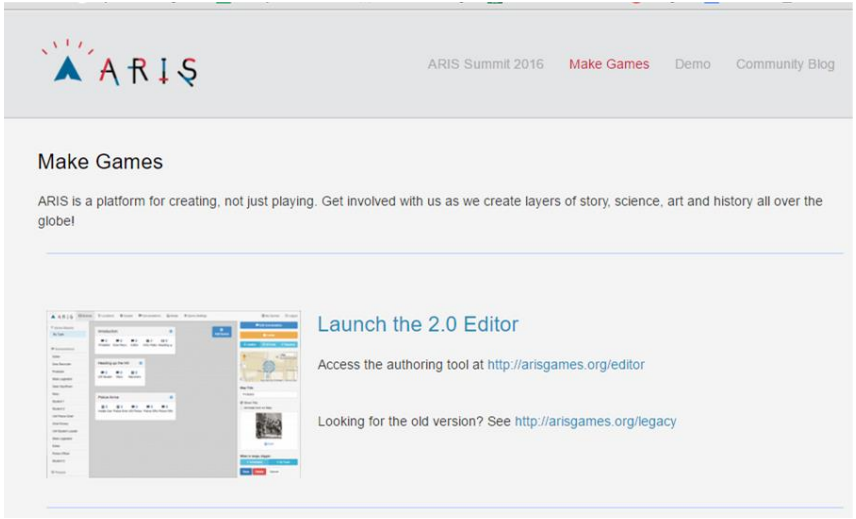
Play

open source™

Remix ARIS

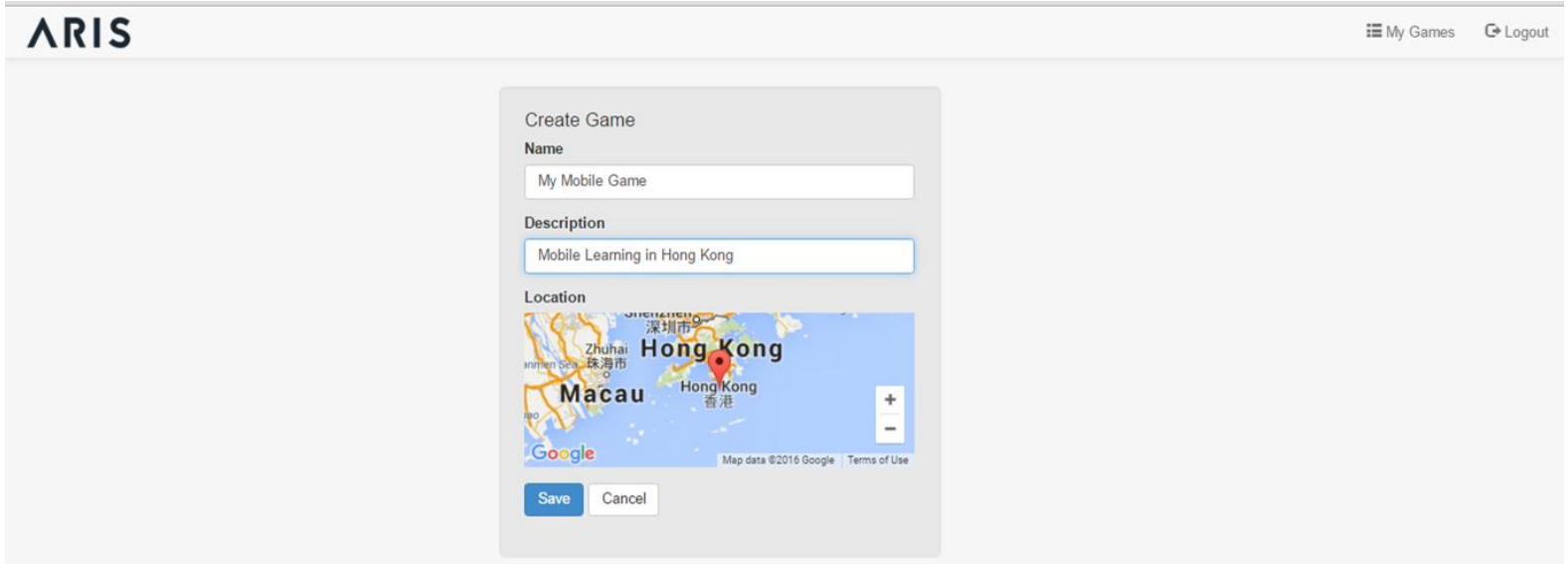
Making a Game

➔ Choose ‘Make Games’ and then launch the editor
➔ You will be asked to register to create an account



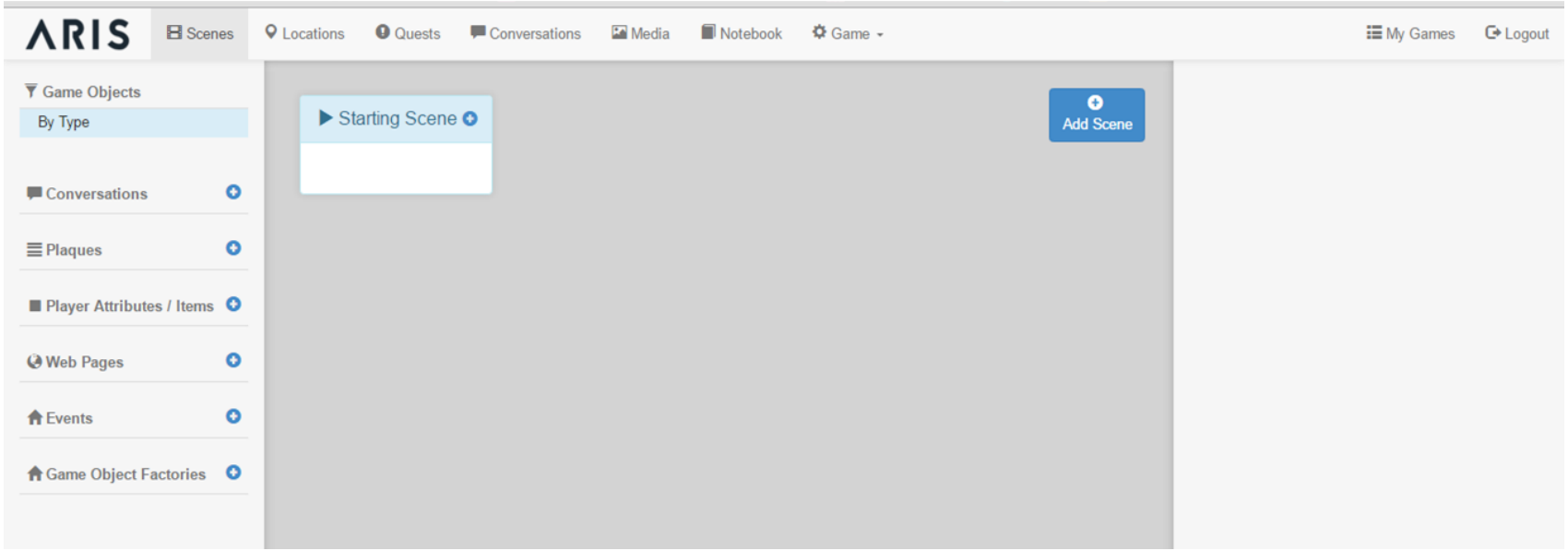
Creating an ARIS Activity

Once registered, click on ‘Your Games’ -> ‘New Game. If you enable your location it will show your current location.



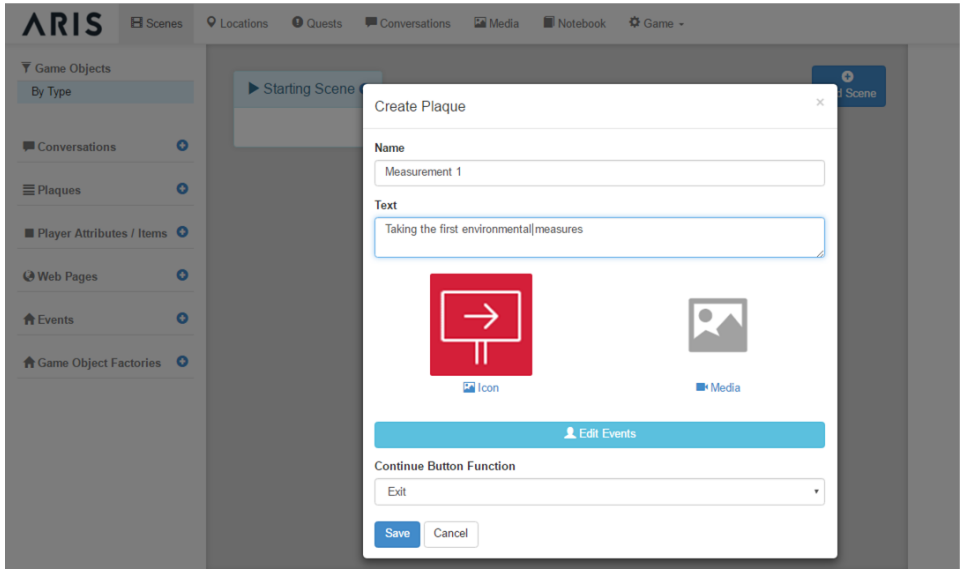
The ARIS Starting Scene

➔ The ARIS editor provides a starting scene



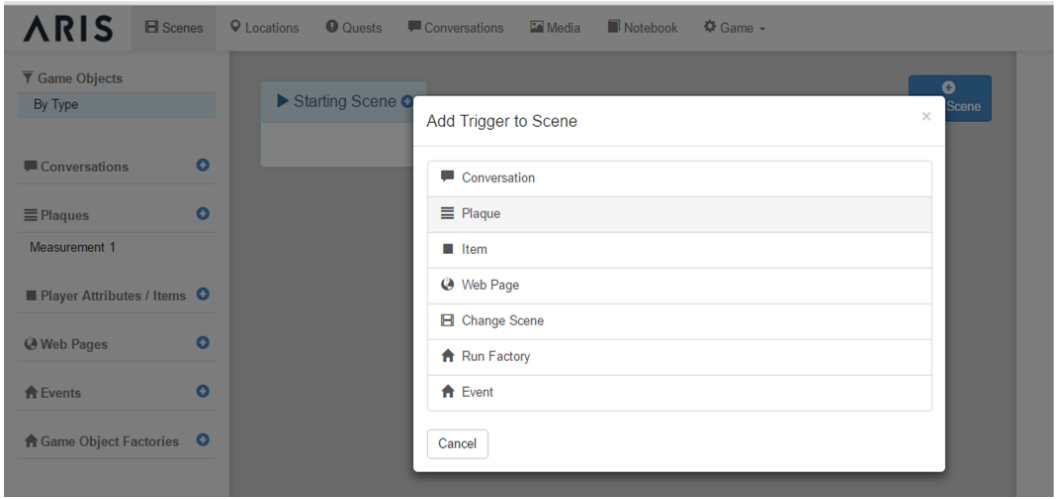
Adding a Plaque

➔ A “plaque” provides information that can be placed at a location



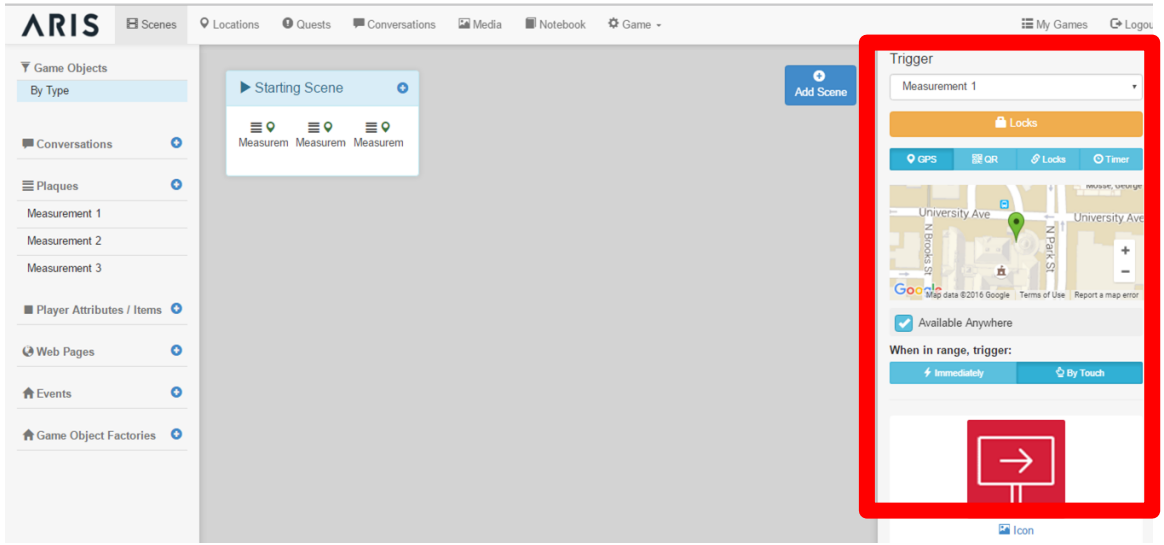
Adding a Plaque to a Scene

➔ A plaque is one of the items that can be added as a trigger to a scene or starting a scene



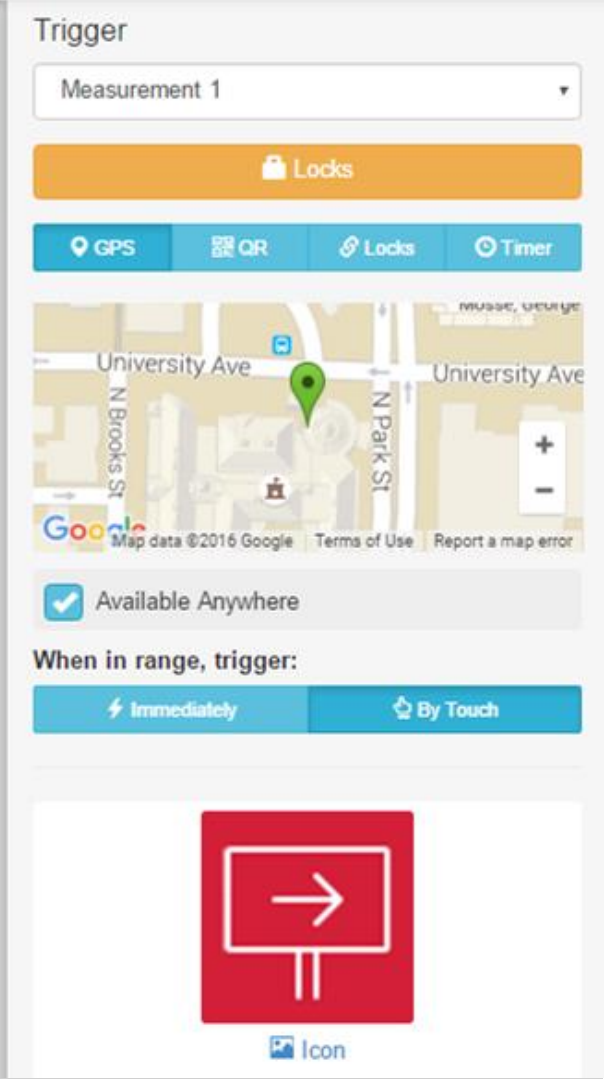
Working with Triggers

➔ Here, three plaques have been added
➔ Selecting one of them on the scene shows the trigger



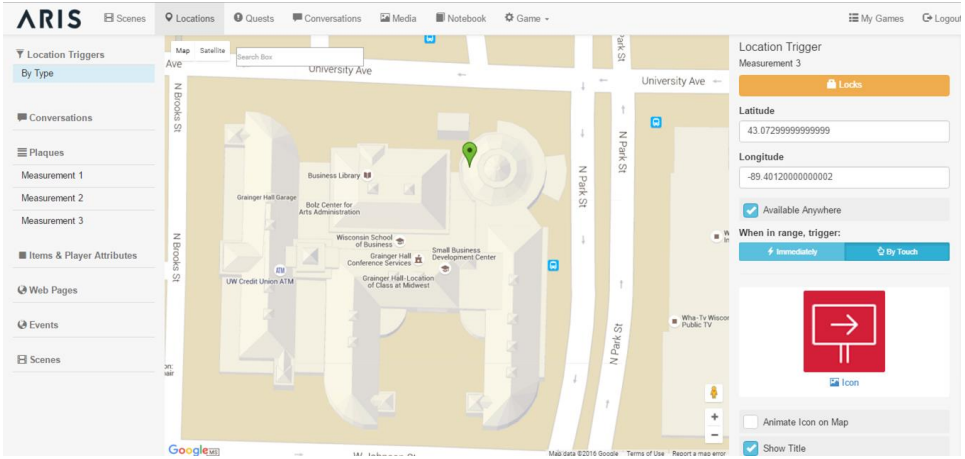
Default Triggers

- ➔ By default, a trigger is located in Wisconsin and is available in the activity from the beginning
- ➔ This can be changed so that triggers are geolocated where you wish, and can be triggered in a chosen sequence



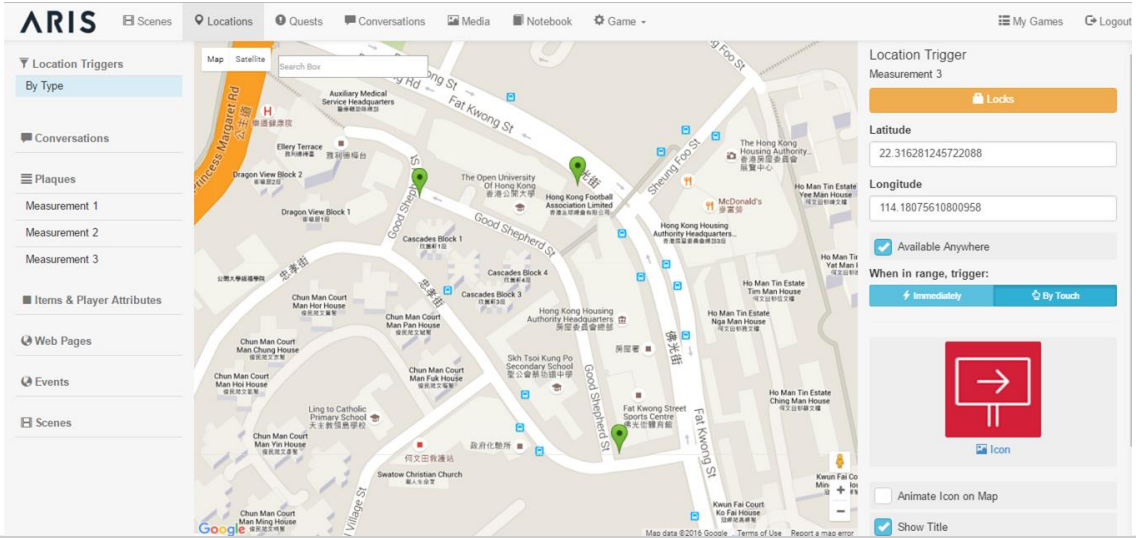
Changing Locations

- ➔ All initial trigger locations will be at the University of Wisconsin
- ➔ Zoom out and drag them all to your chosen locations



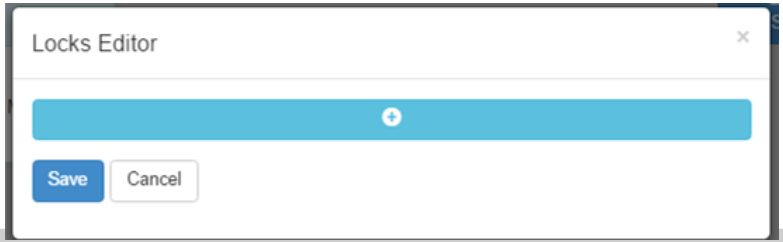
New Locations

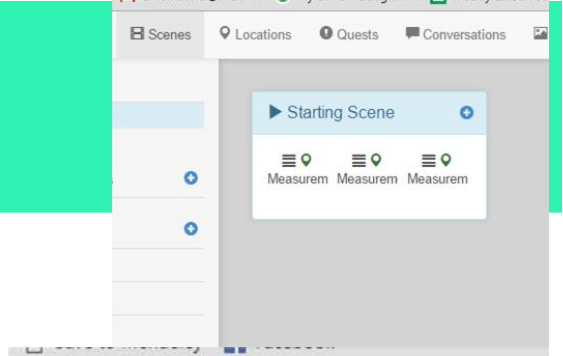
➔ All three trigger locations have been moved to the Open University of Hong Kong

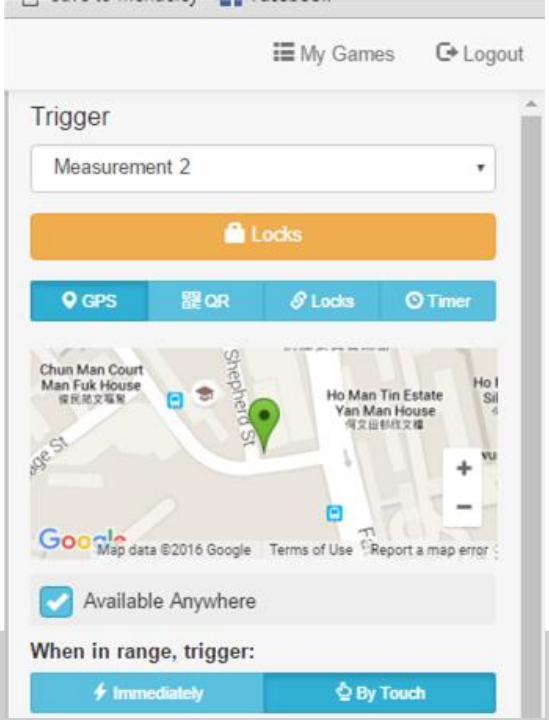


Changing Triggers

- ➔ We want the second location to appear after the first has been visited
- ➔ In the ‘scenes’ view, we select the second plaque in the starting scene
- ➔ Then we press the ‘Locks’ button
- ➔ Press + to add a lock

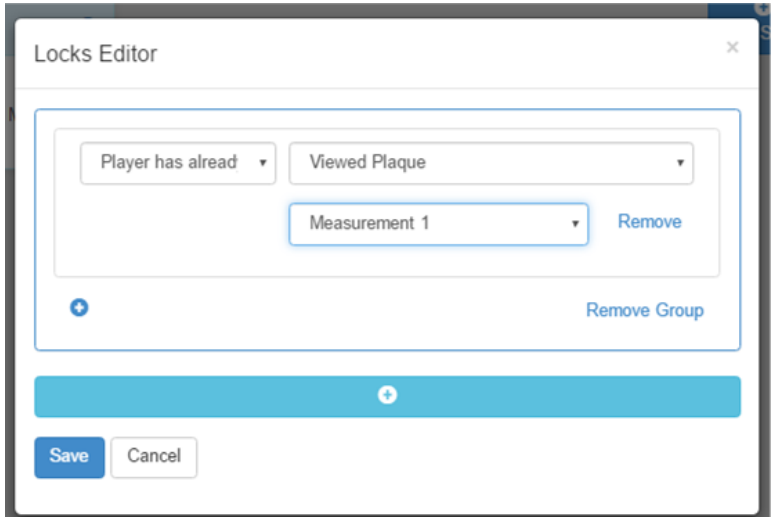






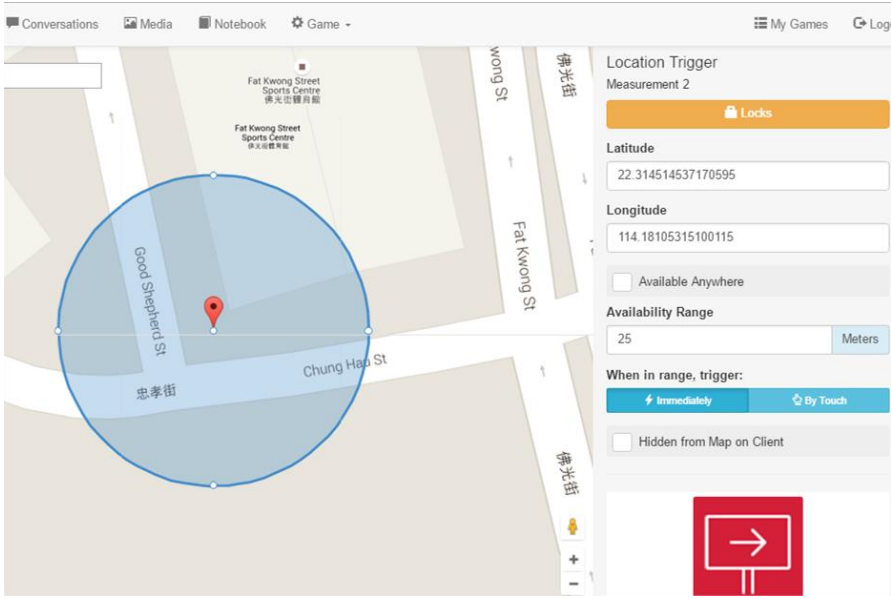
The Locks Dialog

➔ In the Locks dialog we can make this plaque dependent on the previous one being visited



Using the GPS trigger

- ➔ Uncheck the ‘Available Anywhere’ box
- ➔ Set to ‘When in range, trigger immediately’
- ➔ Adjust the range to suit



ARIS summary

➔ There is a lot more to ARIS than this simple example
➔ You can set up quests and conversations
➔ ARIS activities can exercise many learning theories

Sensors

- Why use sensors?
- One of the most important changes to mobile device capability in recent years
  - Motion, Environment, Position
- Allows students to explore and measure their environment, e.g.
  - Weather
  - Noise pollution, light and shade
  - Geography (orientation, elevation)

nQuire-it and Sense-it app

Sense-it Google Play
http://tinyurl.com/senseitapp

nQuire-it platform
http://www.nquire-it.org/

Example Sense-it Missions

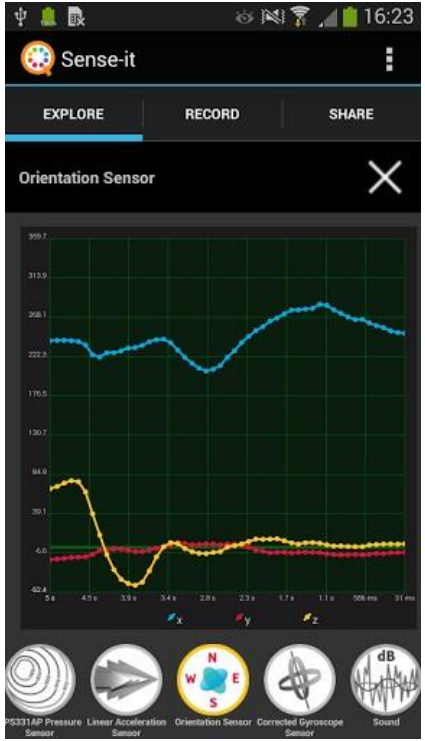
- ★ Measure the height of a tree
- ★ Create a noise map of your city or school
- ★ Find whether birds are scared by city noise
- ★ Discover whether it rains more when the atmospheric pressure is low
- ★ Find which is the fastest lift (elevator) in your country

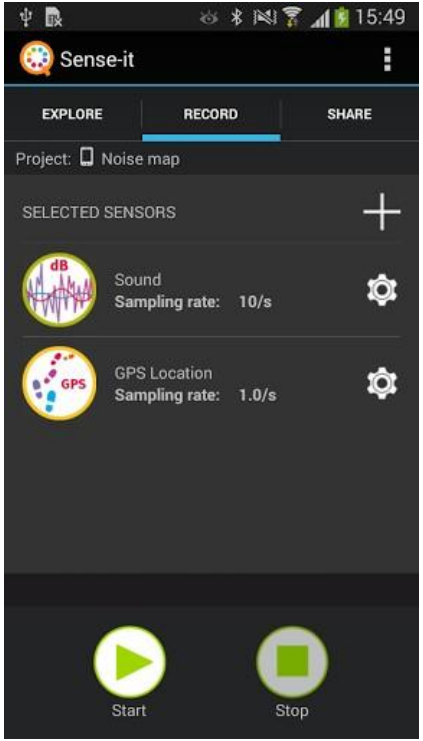
Example Activities: N-Quire

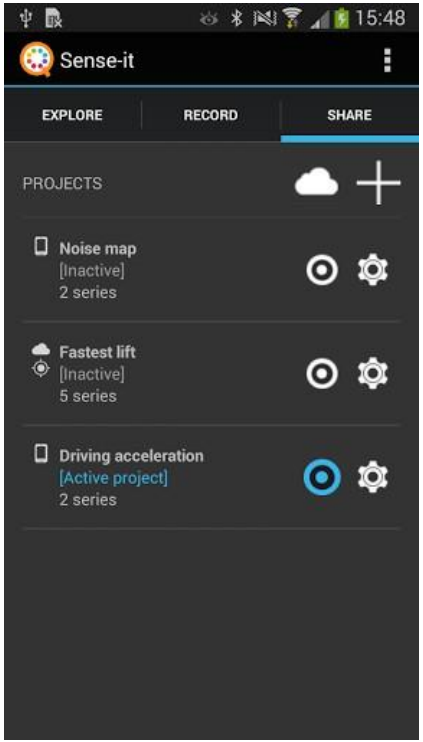
- ★ Environmental enquiries using mobile devices
- ★ nQuire-it platform http://www.nquire-it.org/
- ★ Communities of Practice:
- ★ Citizen science + inquiry learning + shared creativity = citizen inquiry
- ★ Connectivism: Sense-it app
- ★ Experiential Learning and Situated Cognition

Sense-it App


Sense-it
EXPLORE
RECORD
SHARE
GPS
GSM

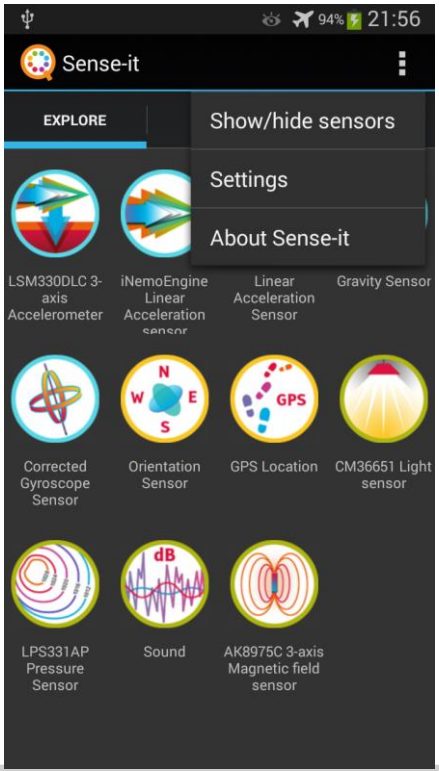

16:23
Sense-it
EXPLORE
RECORD
SHARE
Orientation Sensor

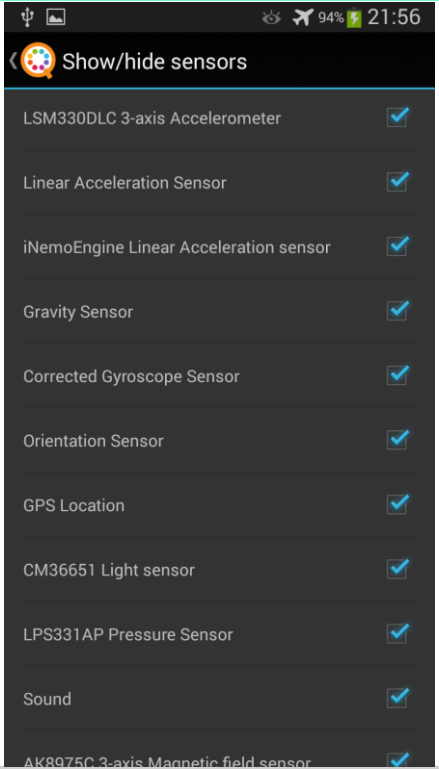

15:49
Sense-it
EXPLORE
RECORD
SHARE
Project: Noise map
SELECTED SENSORS
Sound
Sampling rate: 10/s
GPS Location
Sampling rate: 1.0/s
Start
Stop


15:48
Sense-it
EXPLORE
RECORD
SHARE
PROJECTS
Noise map
[Inactive]
2 series
Fastest lift
[Inactive]
5 series
Driving acceleration
[Active project]
2 series

Checking your Phone Sensors

- ➔ Sense-it can list all the sensors available on your Android device
- ➔ Click on the three dots on the screen
- ➔ Select ‘show/hide sensors’
- ➔ A list of sensors will be shown and you can select the ones you wish to use

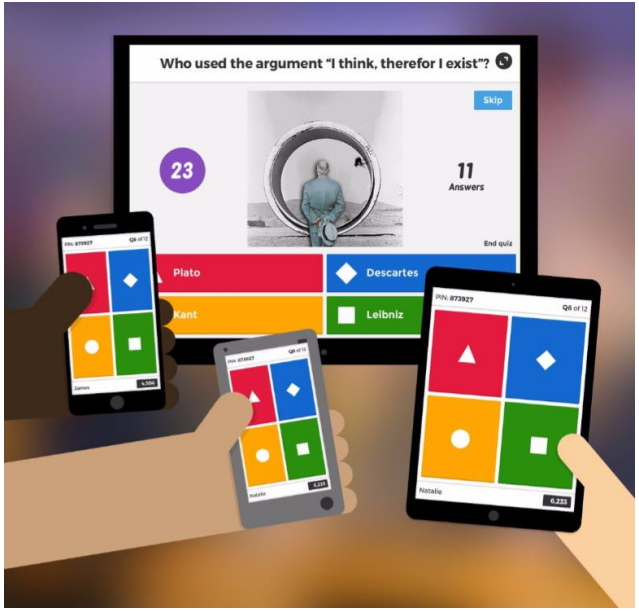




Mobile Behavioural Learning

- ★ Learning occurs when learners evidence the appropriate reinforcement of an association between a particular response and stimulus (Smith and Ragan, 2005)
- ★ Drill and feed back: Mobile Response System
- ★ e.g.
  - ○ Kahoot
  - ○ Polleverywhere

Mobile Activity 2: Kahoot



Create a fun learning game in minutes or choose from millions ready to play or adapt.

Works on any device with an internet connection.

Zero setup time, no player accounts required and one-click gameplay.

Connect and play in realtime with others in 180+ countries.

Fosters social learning and deepens pedagogical impact.

It's free to create and play and always will be!

Student Response Systems

➔ Tools, like Kahoot, enable educators to:

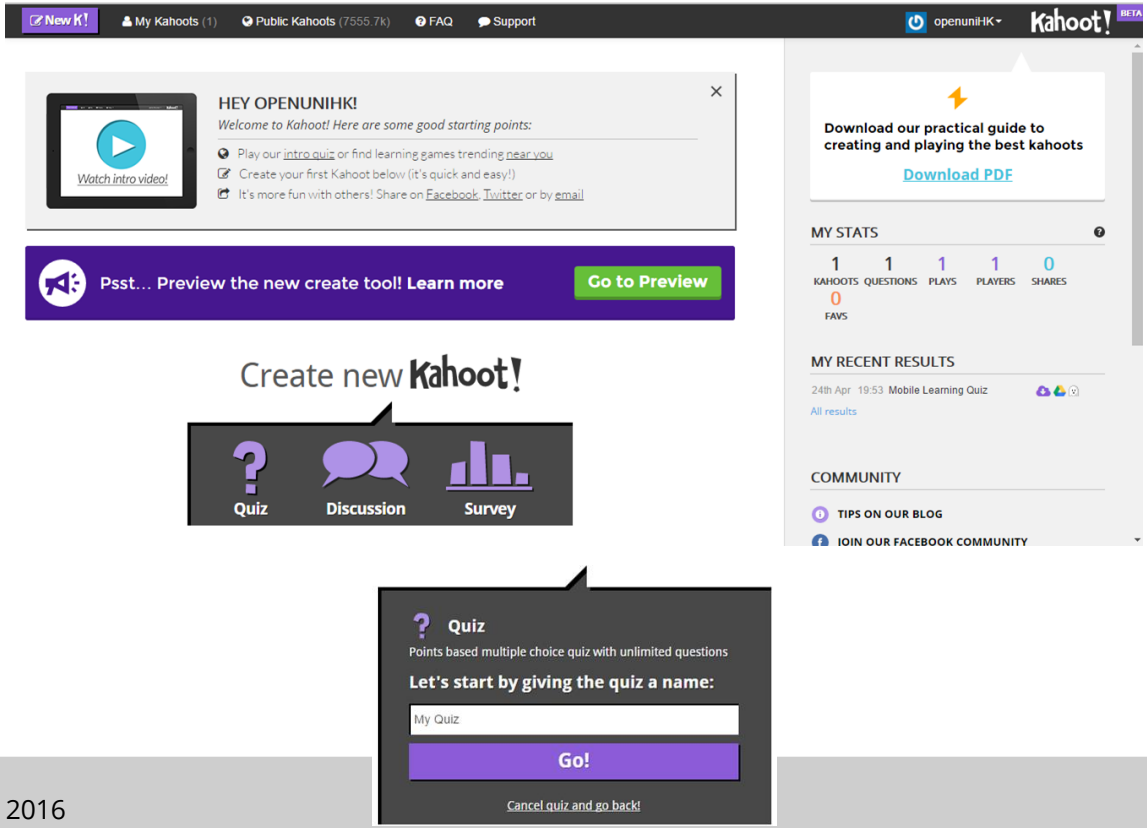
- Actively engage students
- Gauge students level of understanding of the material being presented
- Provide prompt feedback to student questions
- Provide a mechanism for students to participate anonymously
- Integrate a "game approach" that may engage students more than traditional class discussion

Kahoot!

- ➔ Kahoot! Lets you create gamified quizzes that can be played on mobile devices
- ➔ See https://getkahoot.com/

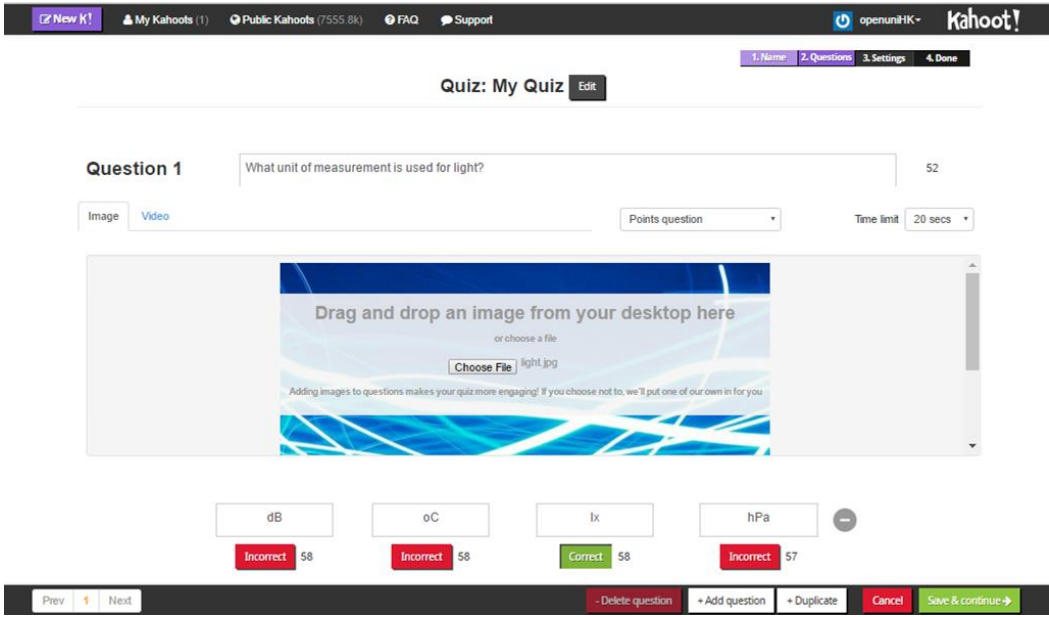
Kahoot! Options

- ➔ Once you have created an account and logged in, you can create a quiz, a discussion or a survey
- ➔ We will look at a quiz



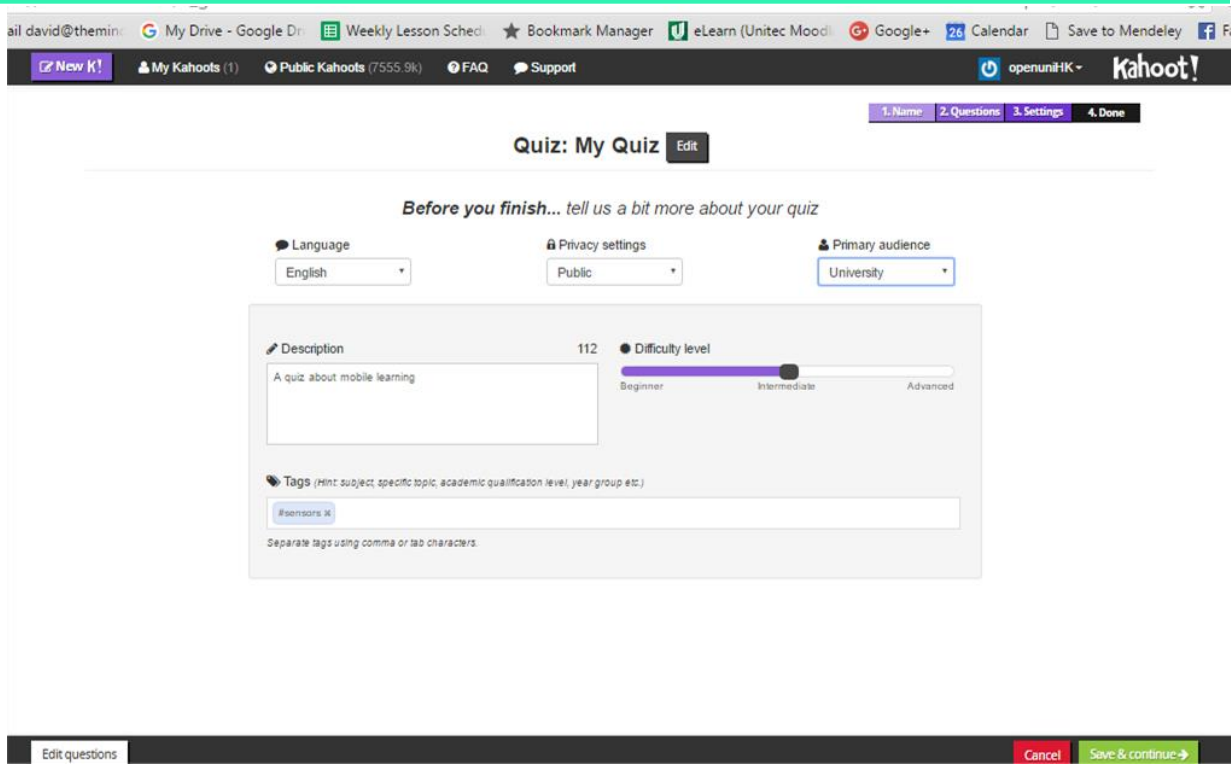
Creating Questions

- ➔ Questions can be configured in various ways
- ➔ Make sure you indicate which is the correct answer



Saving the Quiz

➔ When you save there is some other information to add



Playing the Quiz

➔ Players go to kahoot.it and log in with your pin

Kahoot Demo

- ➔ This is a good demo kahoot https://play.kahoot.it/#/k/d2b8b484-6ae6-4563-ab56-b4d97749f2ee

Kahoot Activity

➔ See the handout for this activity
➔ We will add questions to the same Kahoot! Quiz
➔ We will play the quiz at the end of the session

Kahoot Activity:
http://tinyurl.com/z3qmj7u

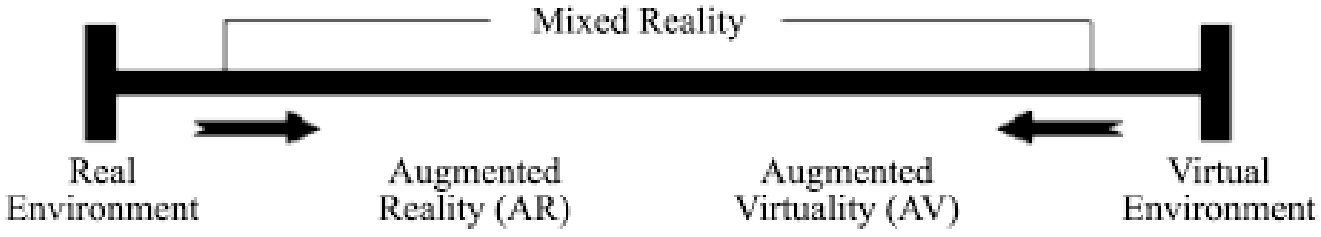
Mobile Connectivist Learning

- ★ Augmented reality can connect trigger in the learner's context with connected materials from the web or co-created by peers
- ★ e.g.
  - Aurasma
- ★ Where learners create their own Auras, learning is constructivist

Mobile Activity 3: Aurasma

Augmented Reality

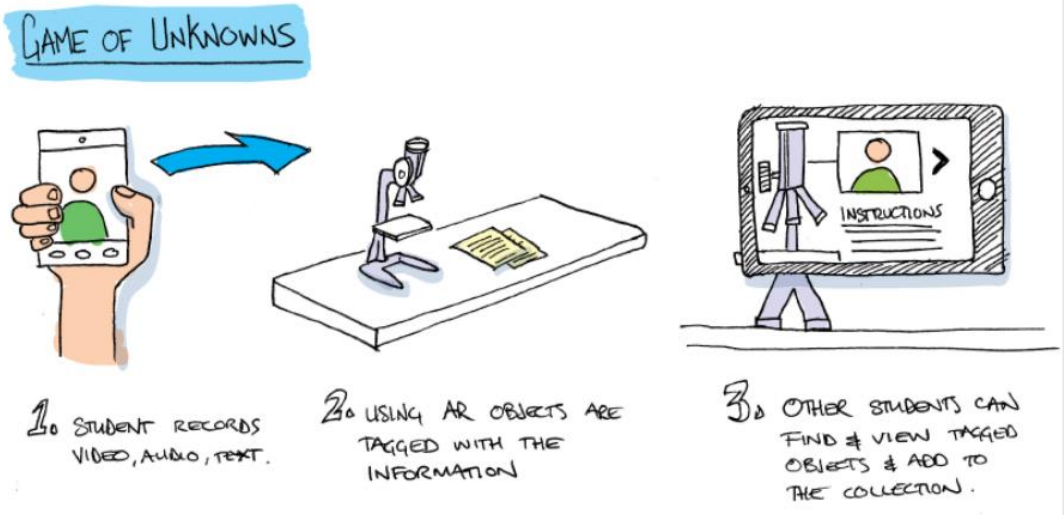
- ➔ A combination of a real scene viewed by a user and a virtual scene generated by a computer that augments the scene with additional information
- ➔ Augmented Reality (AR) allows us to unlock or create layers of digital information on top of the physical world



Source: After Milgram *et al.* (1994)

Examples AR in Education

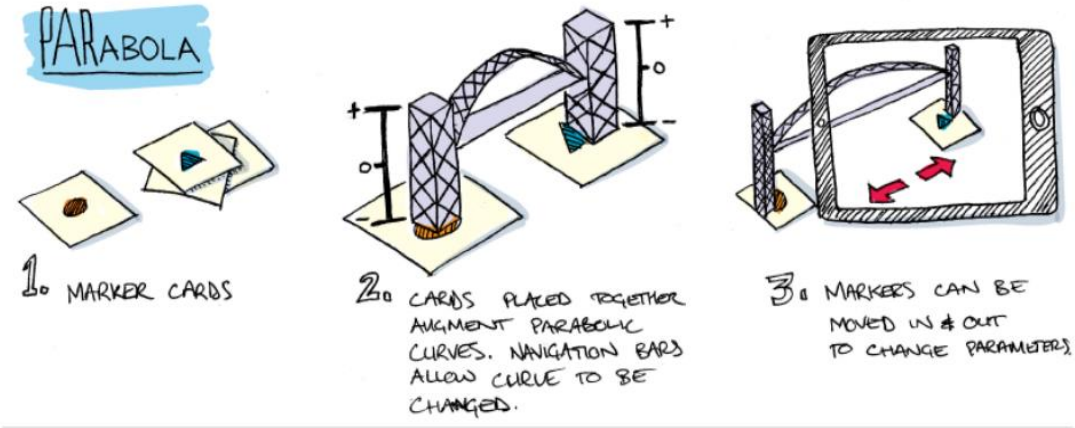
- ➔ Game of [Un]Knowns is an open platform to enable a variety of different learning experiences.
- ➔ It allows students to share their knowledge with other students



Munnerley, D., Bacon, M., Fitzgerald, R., Wilson, A., Hedberg, J., & Steele, J. (2014). Augmented Reality: Application in Higher Education. *Office for Learning and Teaching (Australia). DOI*, *10*(2.1), 3121-7445.

Examples AR in Education

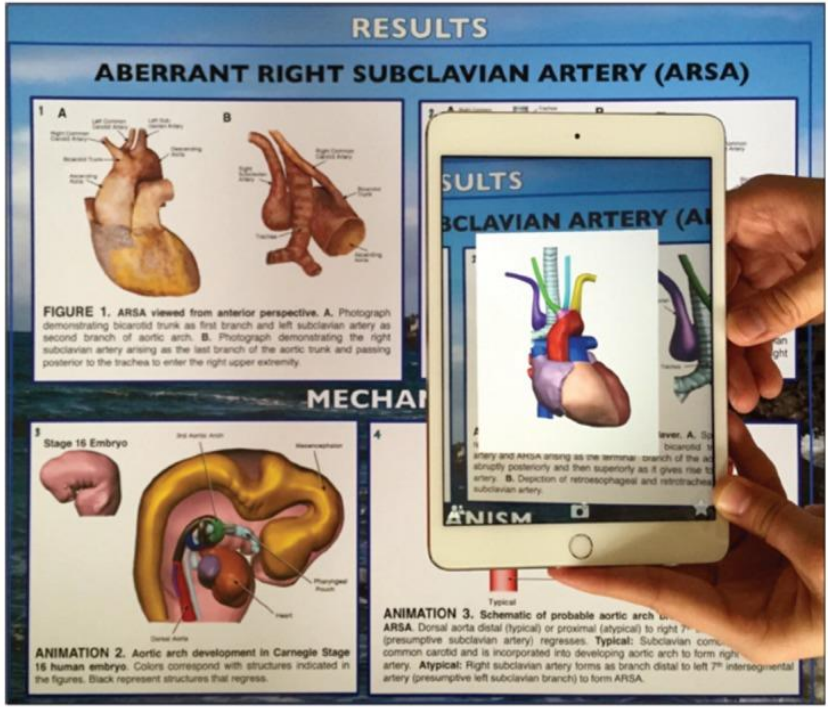
- ➔ PARabola is an application for algebra
- ➔ The app incorporates 3D images of bridges
- ➔ The equation triggers a 3D image of a bridge, with sliders for a, h and k axes of a parabola



Munnerley, D., Bacon, M., Fitzgerald, R., Wilson, A., Hedberg, J., & Steele, J. (2014). Augmented Reality: Application in Higher Education. *Office for Learning and Teaching (Australia). DOI*, *10*(2.1), 3121-7445.

Examples AR in Education

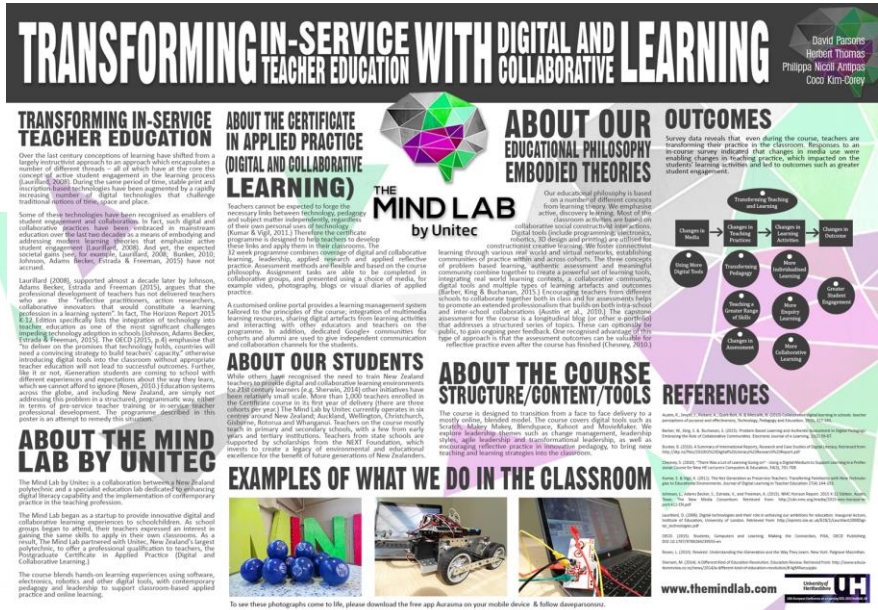
- Physical images can be scanned and activated using personal electronic devices during poster presentations at conferences to display 3D models without interrupting the flow of the presentation



Hong T, Bézard G, Lozanoff BK, Labrash S, Lozanoff S. Presentation of Anatomical Variations Using the Aurasma Mobile App. *Hawai'i Journal of Medicine & Public Health*. 2015;74(9 Suppl 2):16-21.

Example from ECEL 2015

http://davidparsons.ac.nz/images/ECELPoster2015.jpg

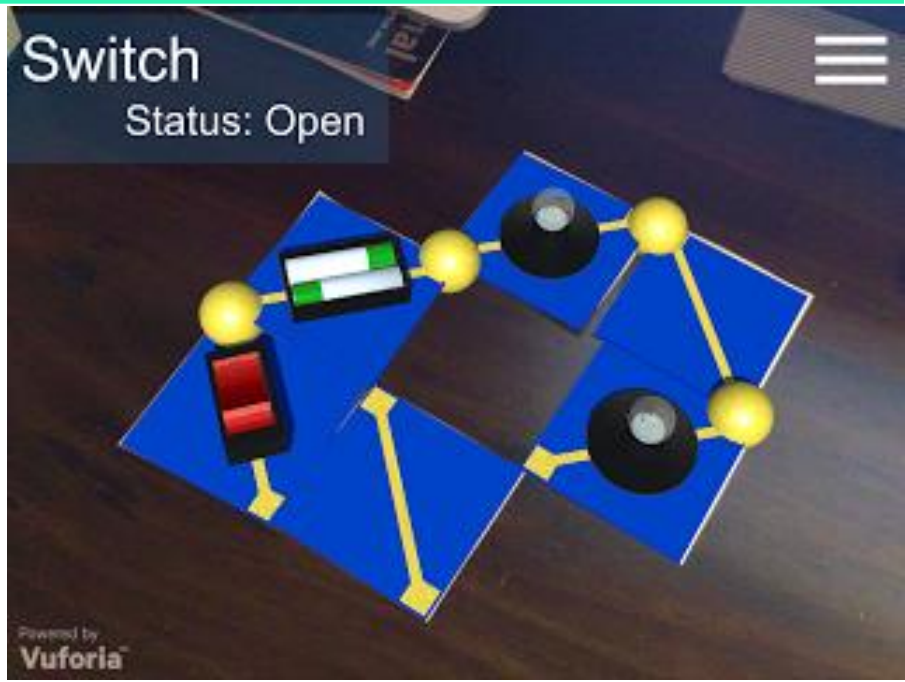


Examples AR in Education

➔ Elements 4D allows students to view the chemical reactions of elements by scanning easily printed 3D cubes and combining elements together

Examples AR in Education

- With the AR Circuits app students can build and test simple circuits
- The app allows you to build circuits without physical electronic components.
- The circuits are designed by arranging printed paper component cards



Source: http://www.twoguysandsomeipads.com/p/augmented-reality.html

Lets try it...

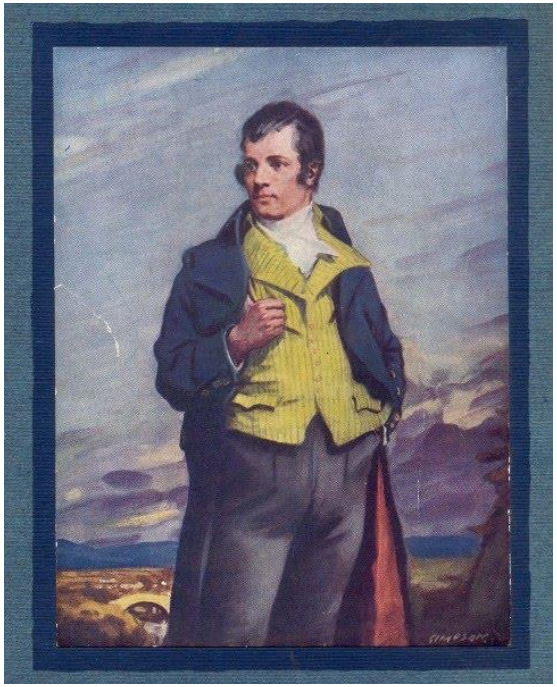
Download the Aurasma App

http://tinyurl.com/aurasmaa
Aurasma Google Play

http://tinyurl.com/aurasmaios
Aurasma Apple (iOS)

A Simple Example

- ➔ To scan an aura, press the purple button at the bottom of the main Aurasma screen.
- ➔ While the app is searching for an aura you will see some small circles moving in and out
- ➔ Once the app has locked on to the aura, a large circle will appear and the video should play once it has loaded

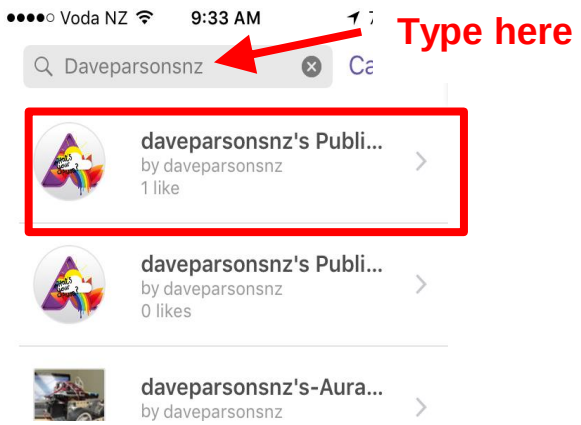


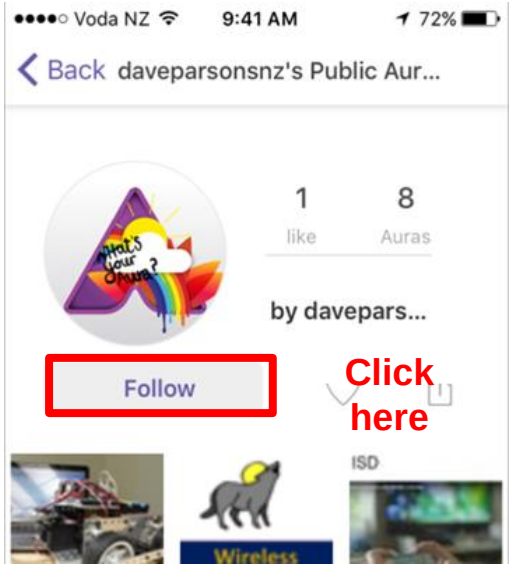
Creating an Aura

- Open your **Aurasma app**
  - Create an account
  - Click + (On Android, choose the Aurasma logo button)
  - Take a photo of your trigger image and adjust your overlay (size/ position)
  - Create your own overlay video
    - Choose **Device** and choose **Upload (on Android use the '+' button)**
    - Choose **Camera** and **Video**
      - Make a short video
        - Select 'Use Video'
        - Give Video a name, select 'Done'
        - Adjust your overlay (size and position)
        - Select Next
  - Give your Aura a name and click '**Submit' / 'Finish**'

Another example

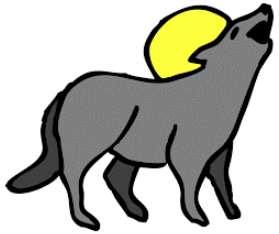
➔Open up your aurasma app and on the main screen, search for the account called ‘daveparsonsnz’ and follow it.





Another example

➔Watch the following mobile learning case study.

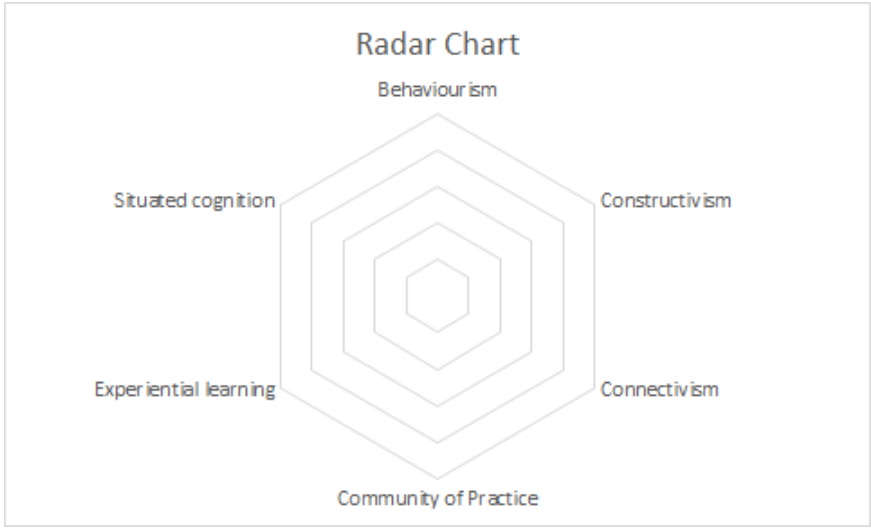


Wireless Coyote

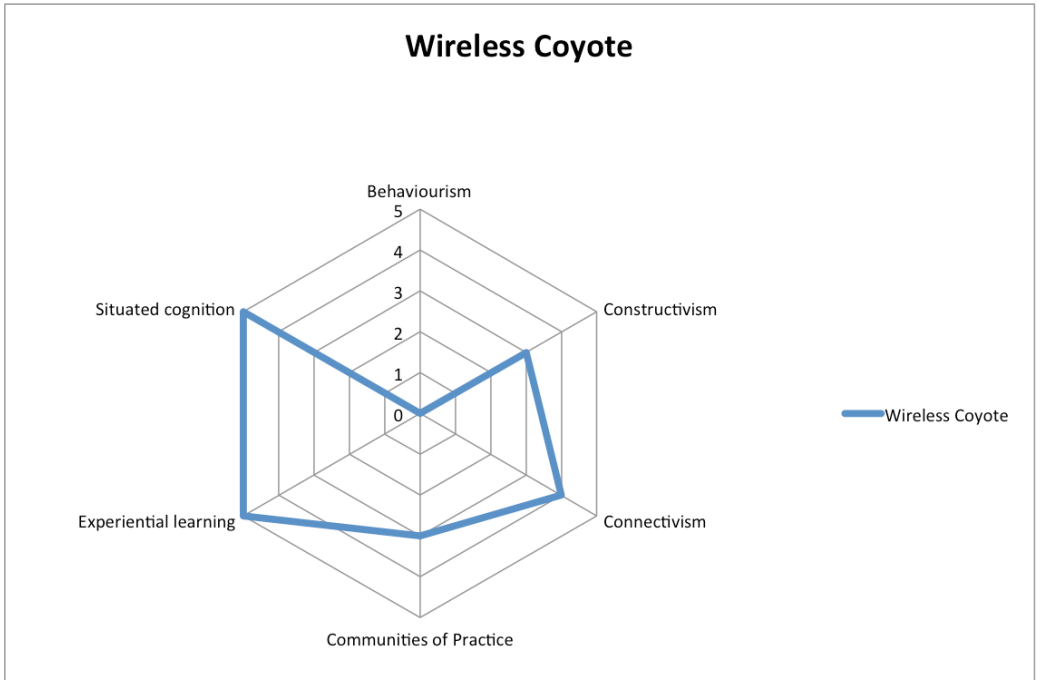
This was the first mobile learning outdoor project and dates from the early 1990s
If you have a problem with the aura, you can use the URL at https://www.youtube.com/watch?v=coo6Cu23cbo

Another example

➔Use the Mobile Learning Workshop Radar Chart to plot where YOU believe the project fits within the context of the six learning theories discussed in this seminar.



Suggested Answer

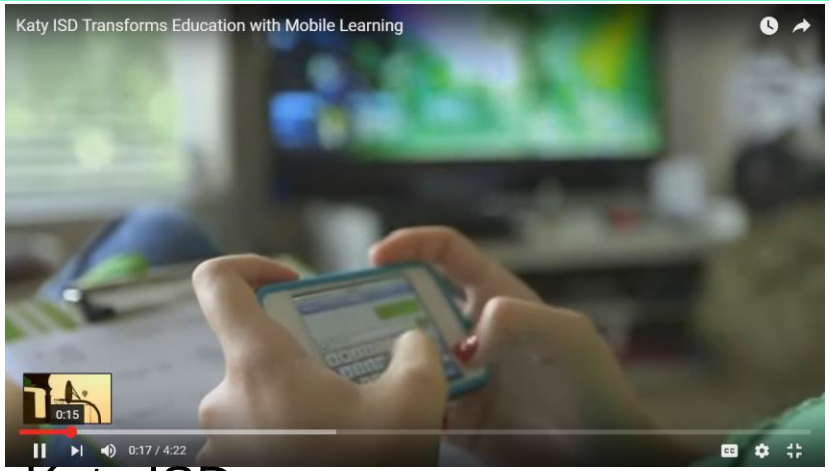


Aurasma Activity

- ➔ Choose any of the case studies on the handout and plot your own Radar Chart
- ➔When you have analysed your video and created your own radar chart, take a picture of it and upload it to the Google+ community

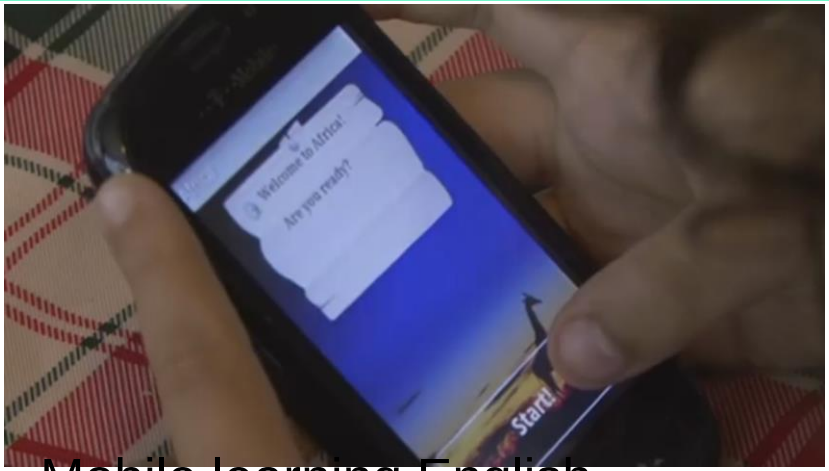
Aurasma Activity
http://tinyurl.com/jfxjzou

Your turn...



Katy ISD

This video talks about teaching and learning in Bring Your Own Device (BYOD) schools
If you have a problem with the aura, you can use the URL at
https://www.youtube.com/watch?v=JCB_Q3gZOf4



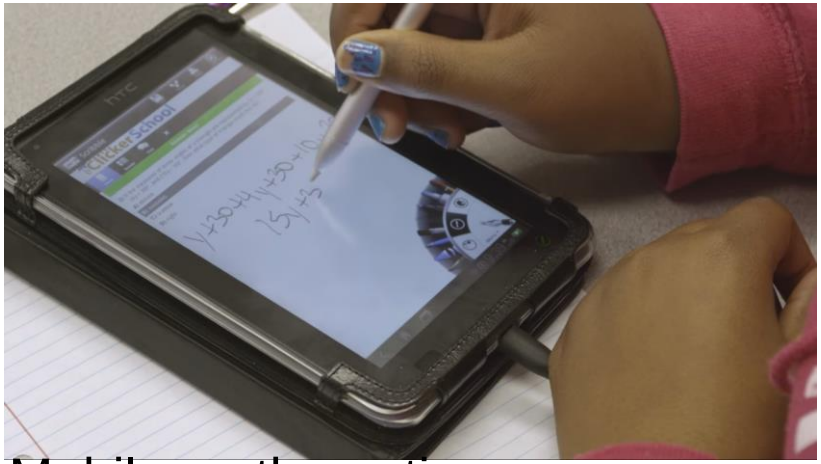
Mobile learning English

This video comes from Holland and has English subtitles. It describes an experiment in teaching English with mobile devices, including an experiment with a control group.
If you have a problem with the aura, you can use the URL at
https://www.youtube.com/watch?v=fxlD1ViTPKA

Your turn...

Danish art museums

The video explains how some Danish museums have used the Twitter API to give visitors the opportunity to interact with their exhibits using mobile devices.
If you have a problem with the aura, you can use the URL at https://www.youtube.com/watch?v=Sle3uQEdeNA



Mobile mathematics

This video shows how interactive communication tools have been used to help students learn mathematics.
If you have a problem with the aura, you can use the URL at https://www.youtube.com/watch?v=Re8_H3fzYg4

QR codes to instructions

ARIS Activity
http://tinyurl.com/hcnqdcm

Kahoot Activity
http://tinyurl.com/z3qmj7u

Aurasma Activity
http://tinyurl.com/jfxjzou

- Theories, learning outcomes, future research

Group Discussion

- What were your own learning outcomes?
- How do you think these might relate to the learning theories that we discussed?
- What would you like to research in future mobile learning projects?

Summary

- ➔ Learning theories and mobile affordances
- ➔ Mobile learning applications employ different combinations of theory
- ➔ Not all theories have been well-explored by mobile learning
  - ◆ e.g. constructionism
- ➔ Future mobile learning activities might include seamless learning, maker culture, event based learning or computational thinking

My Contact Details

http://davidparsons.ac.nz/

david@themindlab.com