

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



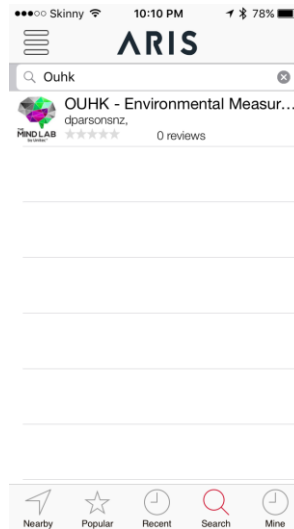
ARIS App

<http://tinyurl.com/arisapp>



The ARIS Activity

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



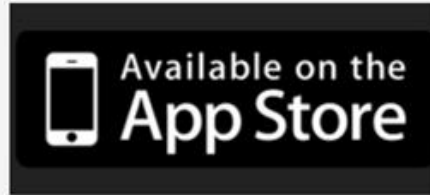
ARIS - arisgames.org

→ 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



Play

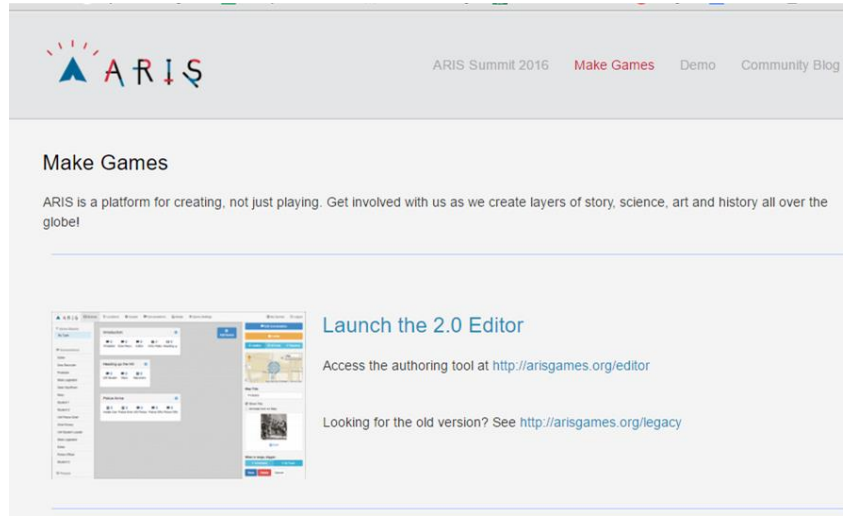


Remix ARIS



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.

ARIS

My Games Logout

Create Game

Name

My Mobile Game

Description

Mobile Learning in Hong Kong

Location

Hong Kong

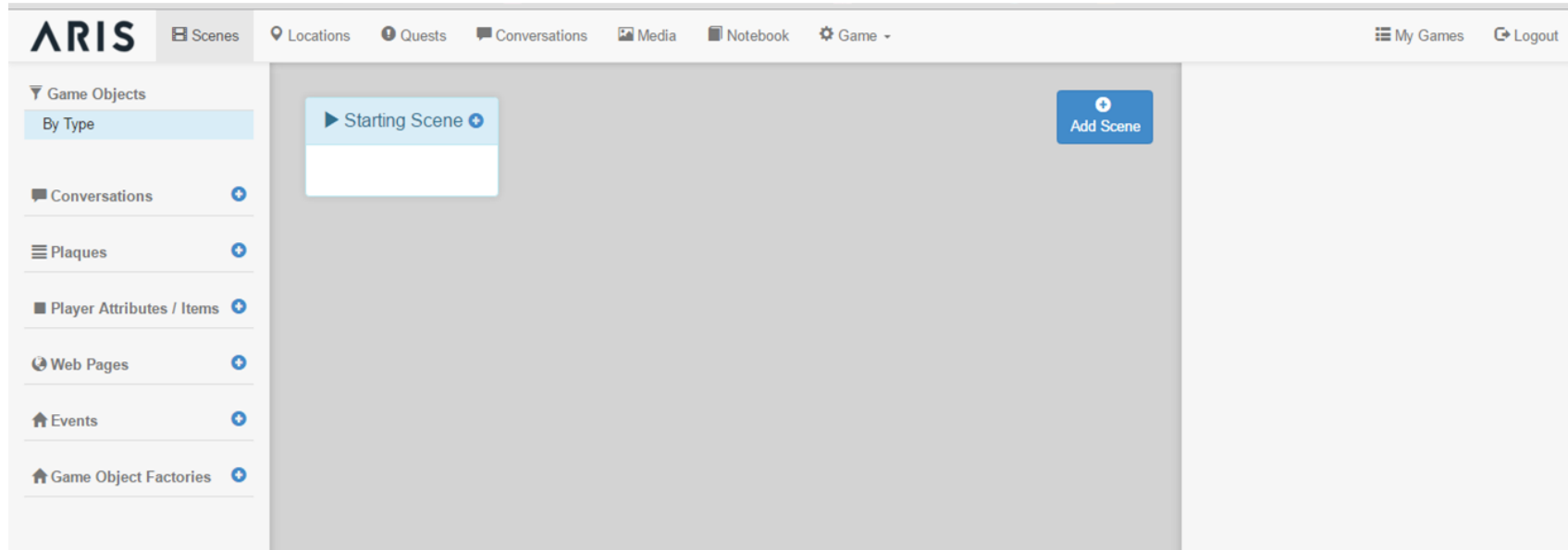
Macau

Save Cancel



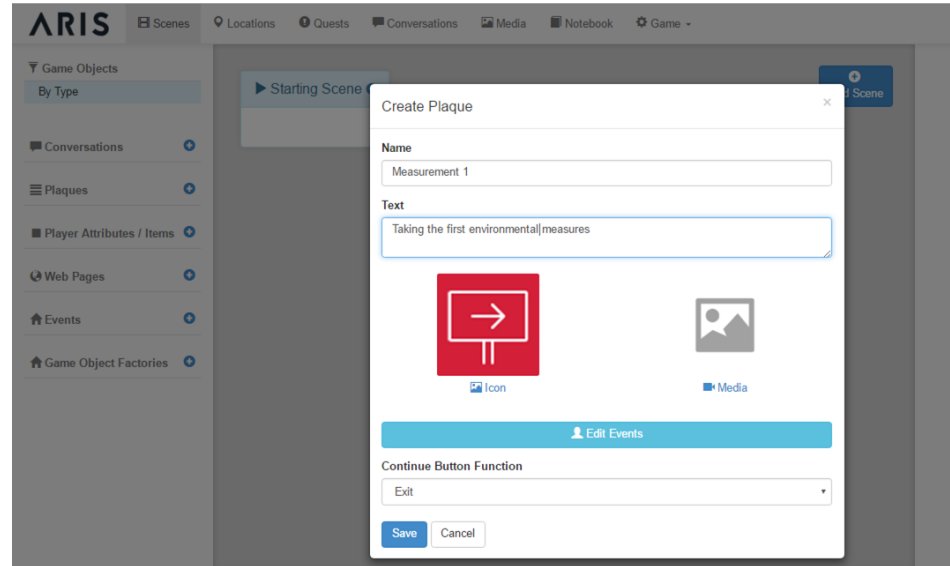
The ARIS Starting Scene

→ The ARIS editor provides a starting scene



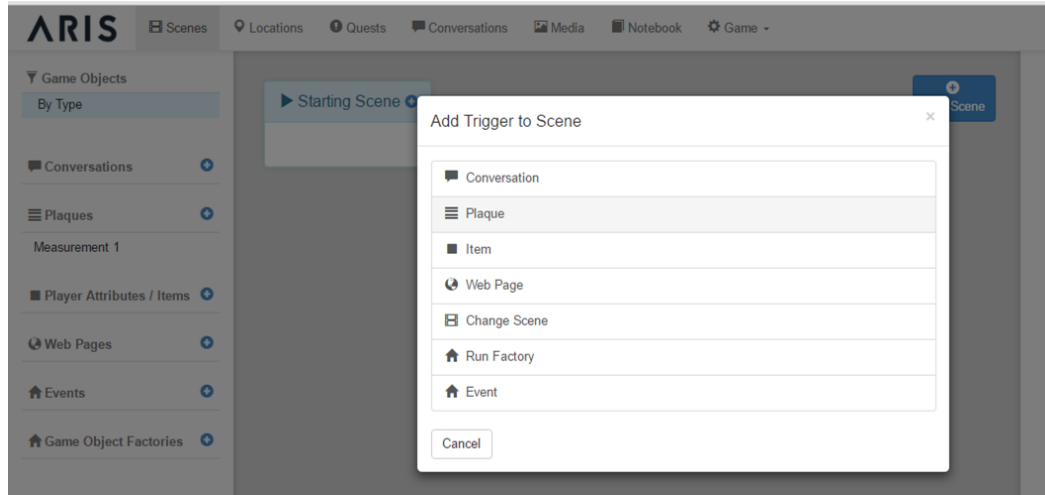
Adding a Plaque

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



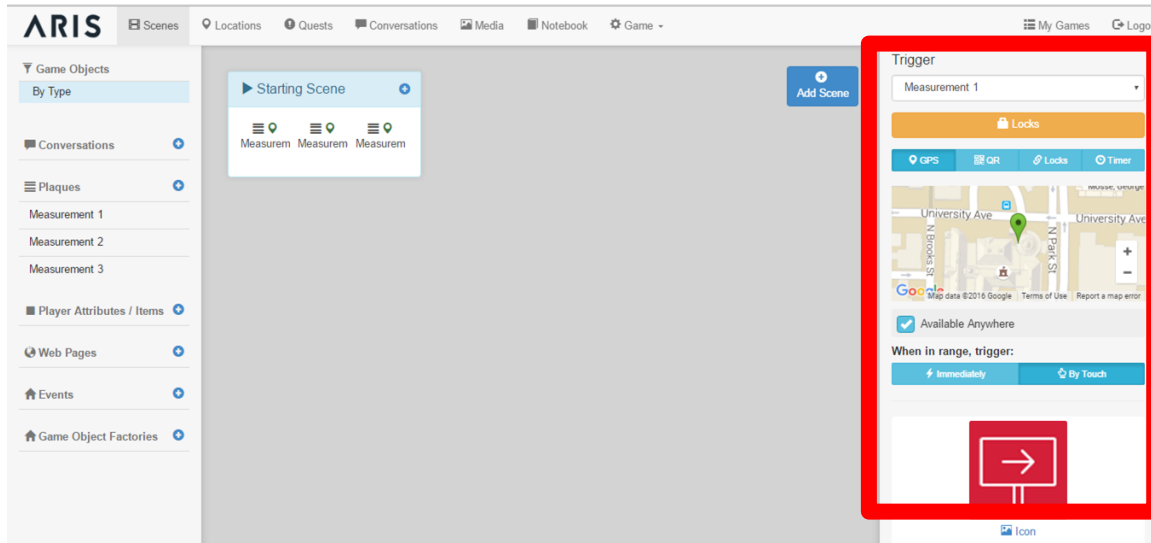
Adding a Plaque to a Scene

→ 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

Trigger

Measurement 1

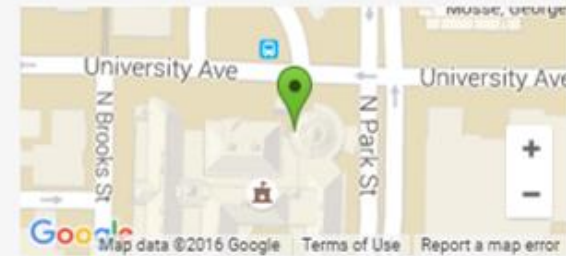
Locks

GPS

QR

Locks

Timer



Available Anywhere

When in range, trigger:

Immediately

By Touch

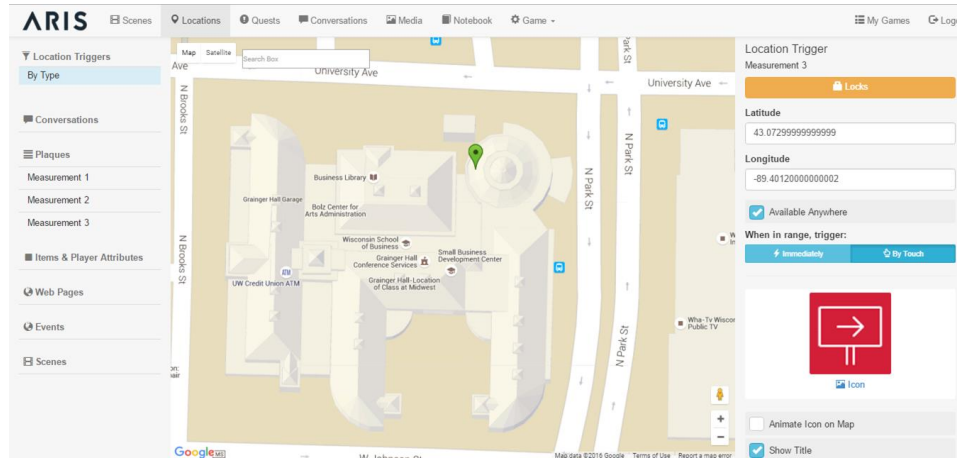


Icon



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

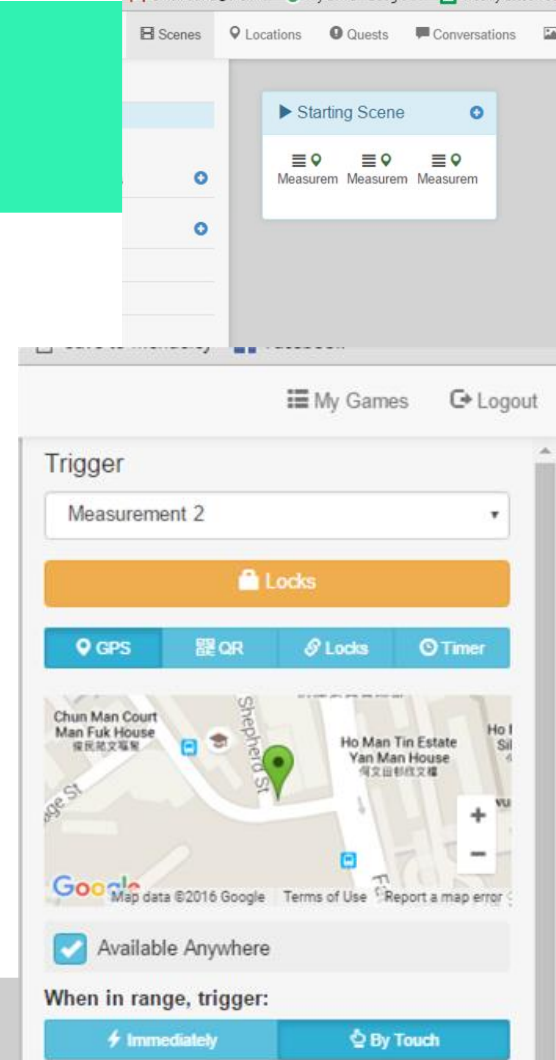
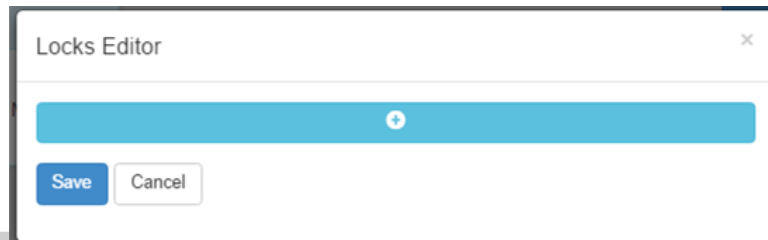
→ All three trigger locations have been moved to the Open University of Hong Kong

The screenshot displays the ARIS application interface. On the left, a sidebar lists navigation options: Location Triggers, Conversations, Plaques, Measurements (1, 2, 3), Items & Player Attributes, Web Pages, Events, and Scenes. The main area shows a map of the Open University of Hong Kong campus with three green location trigger markers. The right-hand panel provides details for a selected 'Location Trigger' (Measurement 3), including its latitude (22.316281245722088) and longitude (114.18075610800958). It also features a 'When in range, trigger:' section with 'Immediately' and 'By Touch' options, a red icon with a white arrow, and checkboxes for 'Animate Icon on Map' and 'Show Title'.



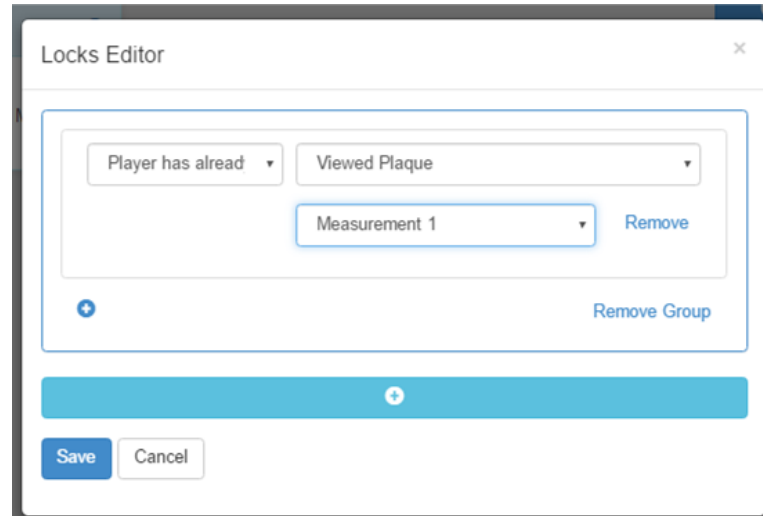
Changing Triggers

- 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

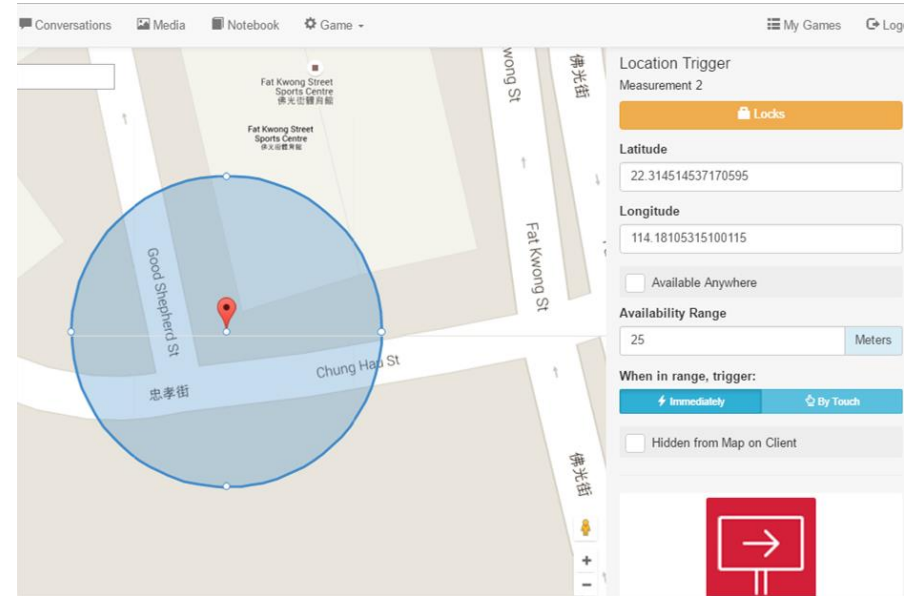


The screenshot shows a window titled "Locks Editor" with a close button (X) in the top right corner. The main content area contains a form with two dropdown menus at the top: "Player has already" and "Viewed Plaque". Below these is a list of items, currently containing "Measurement 1" with a "Remove" button to its right. At the bottom left of the list area is a blue plus sign (+) and at the bottom right is a "Remove Group" button. Below the list area is a large blue bar with a white plus sign (+) in the center. At the bottom of the window are two buttons: "Save" (in blue) and "Cancel" (in white).



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

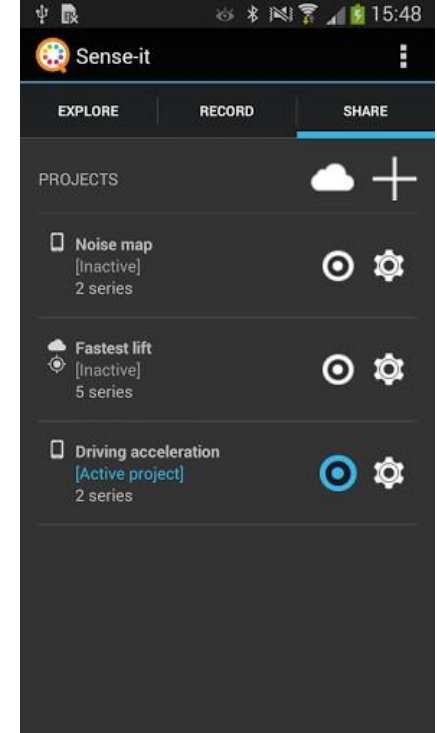
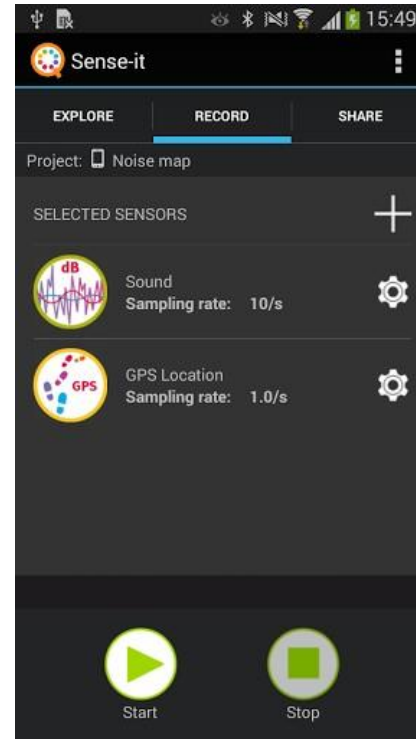
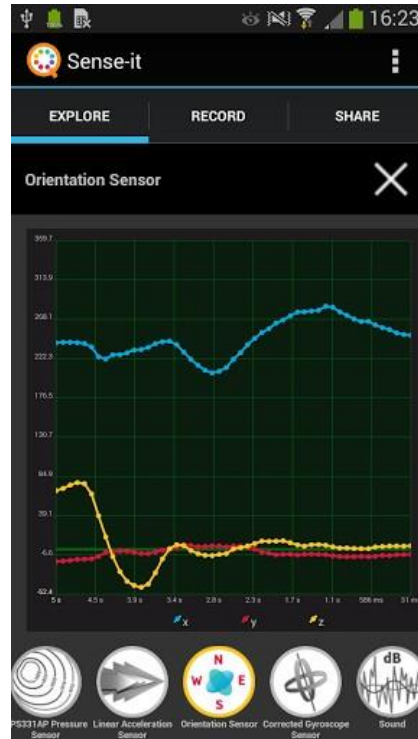


Example Activities: N-Quire

- ★ 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

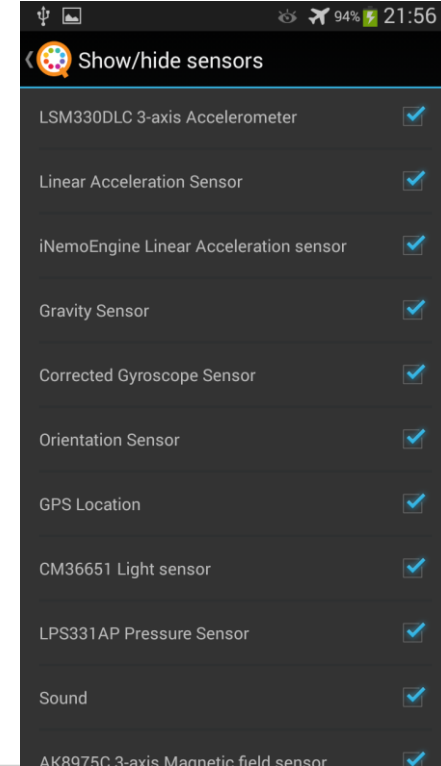
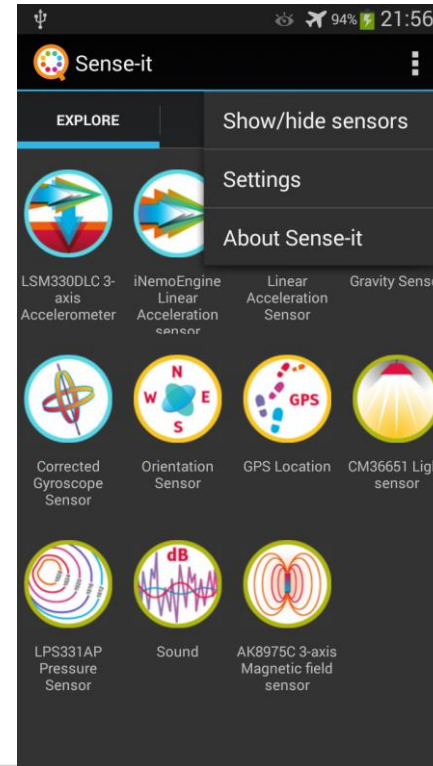


Sense-it App



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

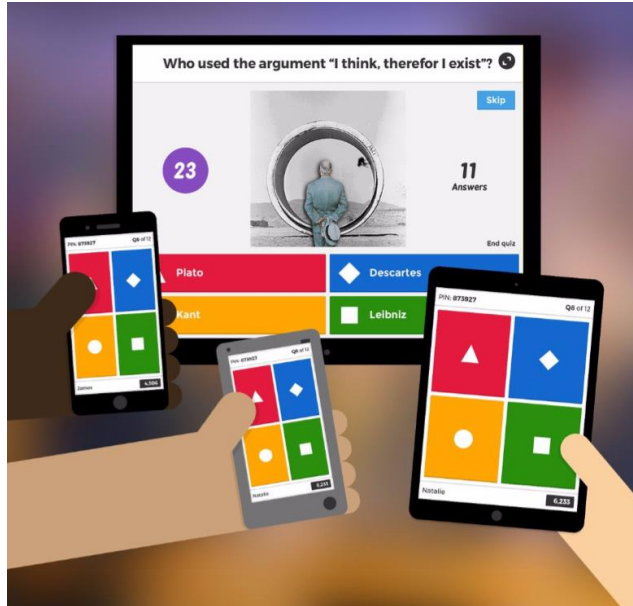


Mobile Behavioural Learning

- ★ 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

The screenshot displays the Kahoot! user interface. At the top, there is a navigation bar with links for 'New K!', 'My Kahoots (1)', 'Public Kahoots (7555.7k)', 'FAQ', and 'Support'. A 'HEY OPENUNIHK!' welcome message is shown, along with a 'Watch intro video!' button and a list of tips: 'Play our [intro quiz](#) or find learning games trending [near you](#)', 'Create your first Kahoot below (it's quick and easy!)', and 'It's more fun with others! Share on [Facebook](#), [Twitter](#) or by [email](#)'. Below this is a purple banner for a 'Psst... Preview the new create tool!' with a 'Go to Preview' button.

The main content area features a 'Create new Kahoot!' section with three options: 'Quiz', 'Discussion', and 'Survey'. The 'Quiz' option is highlighted, showing a preview of the quiz creation screen. The preview includes a question icon, the text 'Points based multiple choice quiz with unlimited questions', and a prompt 'Let's start by giving the quiz a name:' followed by a text input field containing 'My Quiz' and a 'Go!' button. A 'Cancel quiz and go back!' link is visible at the bottom of the preview.

On the right side, there is a sidebar with a 'Download our practical guide to creating and playing the best kahoots' button, a 'MY STATS' section showing '1 KAHOTS', '1 QUESTIONS', '1 PLAYS', '1 PLAYERS', and '0 SHARES', and a 'MY RECENT RESULTS' section for a '24th Apr 19:53 Mobile Learning Quiz'.



Creating Questions

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

The screenshot shows the Kahoot! quiz creation interface. At the top, there is a navigation bar with 'New K!', 'My Kahoots (1)', 'Public Kahoots (7555.8k)', 'FAQ', and 'Support'. On the right, it says 'openuniHK' and 'Kahoot!'. Below this is a progress indicator with '1. Name', '2. Questions', '3. Settings', and '4. Done'. The main title is 'Quiz: My Quiz' with an 'Edit' button. The question is 'Question 1' with the text 'What unit of measurement is used for light?' and a score of '52'. There are tabs for 'Image' and 'Video'. A dropdown menu is set to 'Points question' and the 'Time limit' is '20 secs'. A large image placeholder is shown with the text 'Drag and drop an image from your desktop here' and 'or choose a file'. A 'Choose File' button is visible, and a file named 'light.jpg' is selected. Below the image, there are four answer options: 'dB', 'oC', 'lx', and 'hPa'. The 'lx' option is marked as 'Correct' with a score of '58', while 'dB', 'oC', and 'hPa' are marked as 'Incorrect' with scores of '58', '58', and '57' respectively. At the bottom, there is a navigation bar with 'Prev', 'Next', '- Delete question', '+ Add question', '+ Duplicate', 'Cancel', and 'Save & continue'.



Saving the Quiz

→ When you save there is some other information to add

The screenshot shows the Kahoot! interface for editing a quiz titled "My Quiz". At the top, there are navigation tabs: "1. Name", "2. Questions", "3. Settings", and "4. Done". The "Settings" tab is active. Below the title, there is a section titled "Before you finish... tell us a bit more about your quiz". This section contains several settings: "Language" is set to "English", "Privacy settings" is set to "Public", and "Primary audience" is set to "University". There is a "Description" field containing the text "A quiz about mobile learning" and a "Difficulty level" slider set to "Intermediate". Below these are "Tags" with a hint: "(Hint: subject, specific topic, academic qualification level, year group etc.)". The tags field contains "#sensors:K". At the bottom of the form, there are buttons for "Edit questions", "Cancel", and "Save & continue".



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>



The Art of Kahoot!ing: General Knowledge Kahoot

Created by: janiskcurry
Language: English Audience: Social

START NOW ▶

PLAY LATER?
[Email yourself the link](#)

SHARE THIS QUIZ

 Like  Tweet  Pin it

285



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

3 steps

1

Download
Aurasma Lite
and
Subscribe to



daveparsonsnz's channel

2

Point your device at
the trigger image



3

Watch the image
come to life as
video content



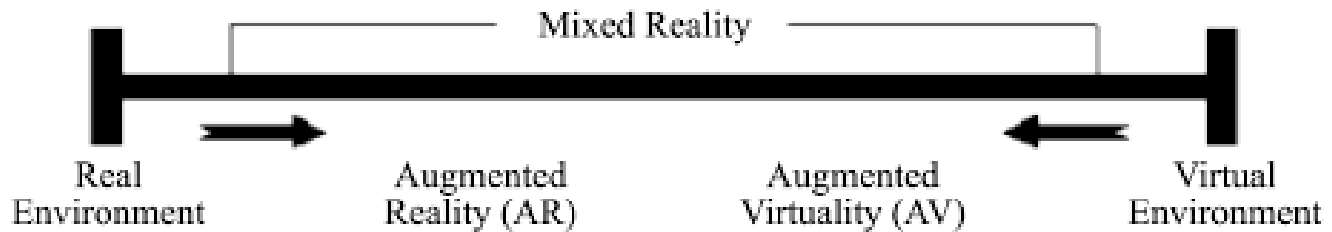
4

Double tap
to view full
screen, or
single tap to
find out
more



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

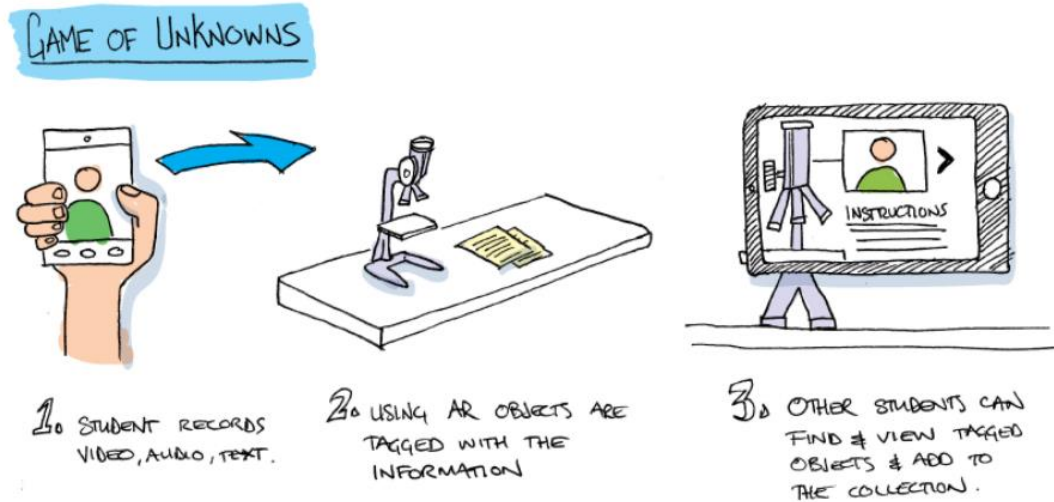


Source: After Milgram *et al.* (1994)



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

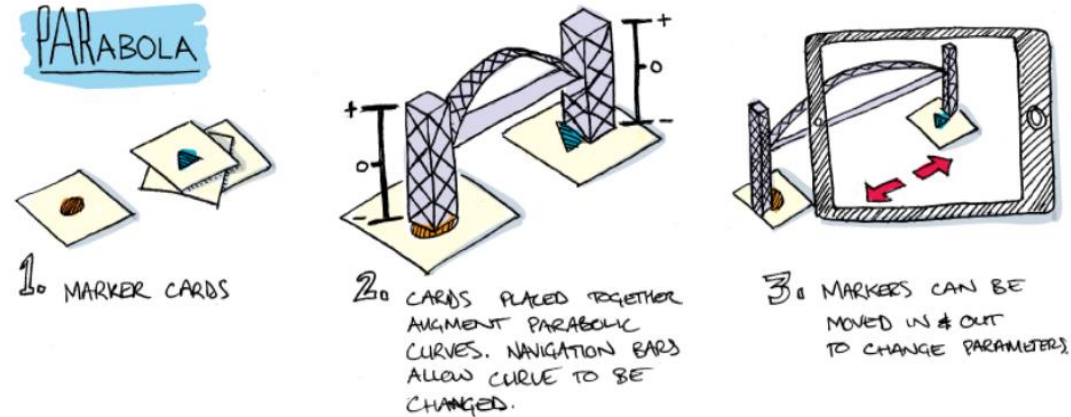


Munnerley, D., Bacon, M., Fitzgerald, R., Wilson, A., Hedberg, J., & Steele, J. (2014). Augmented Reality: Application in Higher Education. *Office for Learning and Teaching (Australia)*. DOI, 10(2.1), 3121-7445.



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

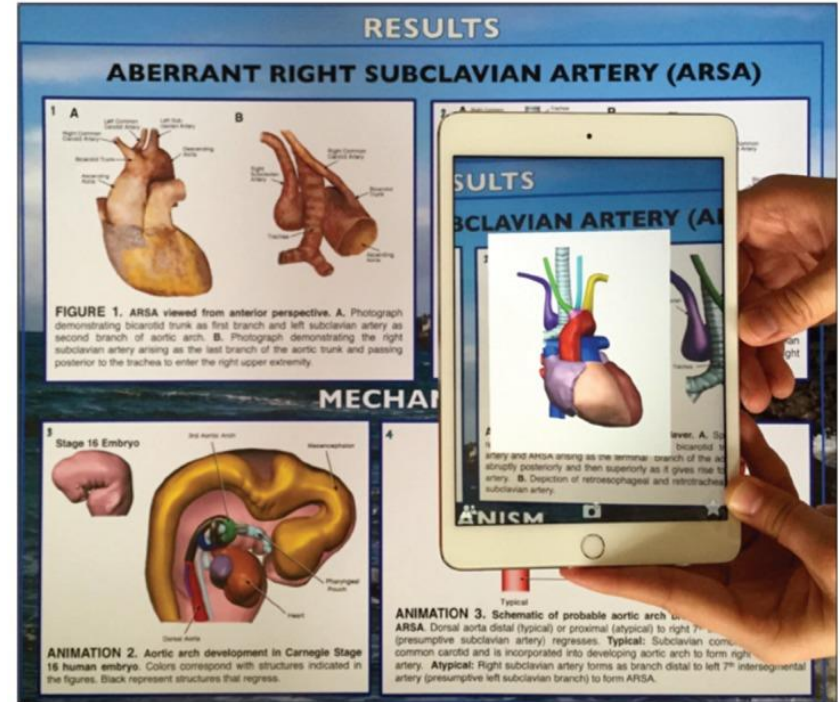


Munnerley, D., Bacon, M., Fitzgerald, R., Wilson, A., Hedberg, J., & Steele, J. (2014). Augmented Reality: Application in Higher Education. *Office for Learning and Teaching (Australia)*. DOI, 10(2.1), 3121-7445.



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. *Hawaii Journal of Medicine & Public Health*. 2015;74(9 Suppl 2):16-21.



Example from ECCEL 2015

<http://davidparsons.ac.nz/images/ECCELPoster2015.jpg>

TRANSFORMING IN-SERVICE TEACHER EDUCATION WITH DIGITAL AND COLLABORATIVE LEARNING

TRANSFORMING IN-SERVICE TEACHER EDUCATION


Over the last century conceptions of learning have shifted from a largely instructor-centred approach to an approach which emphasises a mixture of different methods. ...

ABOUT THE CERTIFICATE IN APPLIED PRACTICE (DIGITAL AND COLLABORATIVE LEARNING)

Teachers cannot be expected to forge the necessary links between technology, pedagogy and subject matter independently ...

ABOUT OUR EDUCATIONAL PHILOSOPHY EMBODIED THEORIES

Our educational philosophy is based on a number of different concepts from learning theory ...



THE MIND LAB
by Unitec

ABOUT OUR STUDENTS

While others have emphasised the need to train New Zealand teachers in digital technology ...


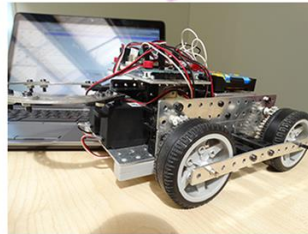
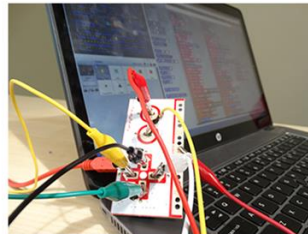
ABOUT THE COURSE STRUCTURE/CONTENT/TOOLS

The course is designed to transform from a face to face delivery to a mostly online, blended model ...

OUTCOMES


Survey data reveals the shift during the course, teachers are questioning their practice in the classroom ...

EXAMPLES OF WHAT WE DO IN THE CLASSROOM

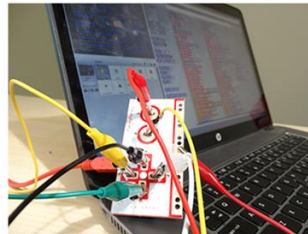
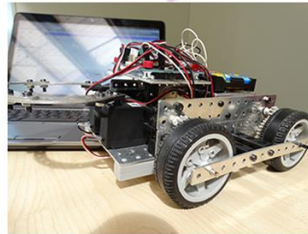




To see these photographs come to life, please download the free app Aurasma on your mobile device & follow daveparsonsnz.

www.themindlab.com



EXAMPLES OF WHAT WE DO IN THE CLASSROOM

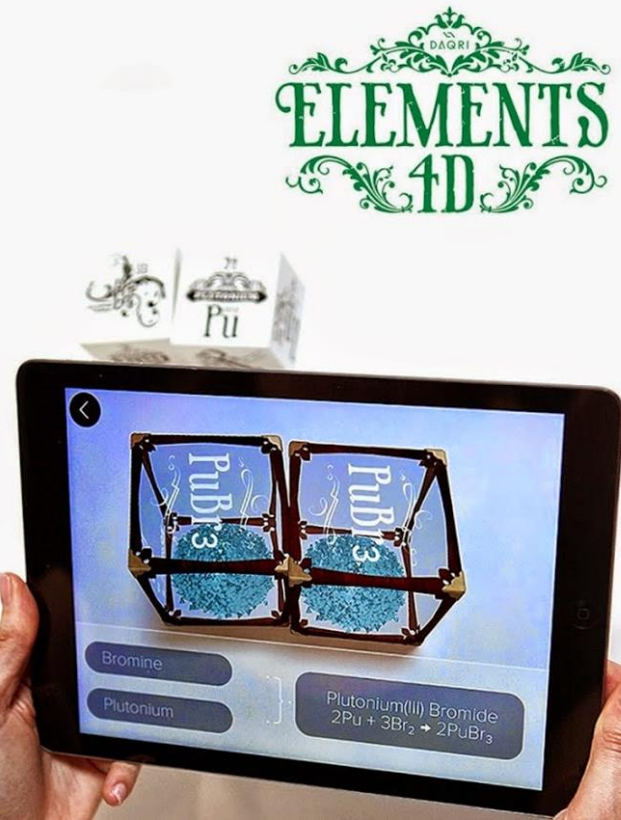


To see these photographs come to life, please download the free app Aurasma on your mobile device & follow daveparsonsnz.



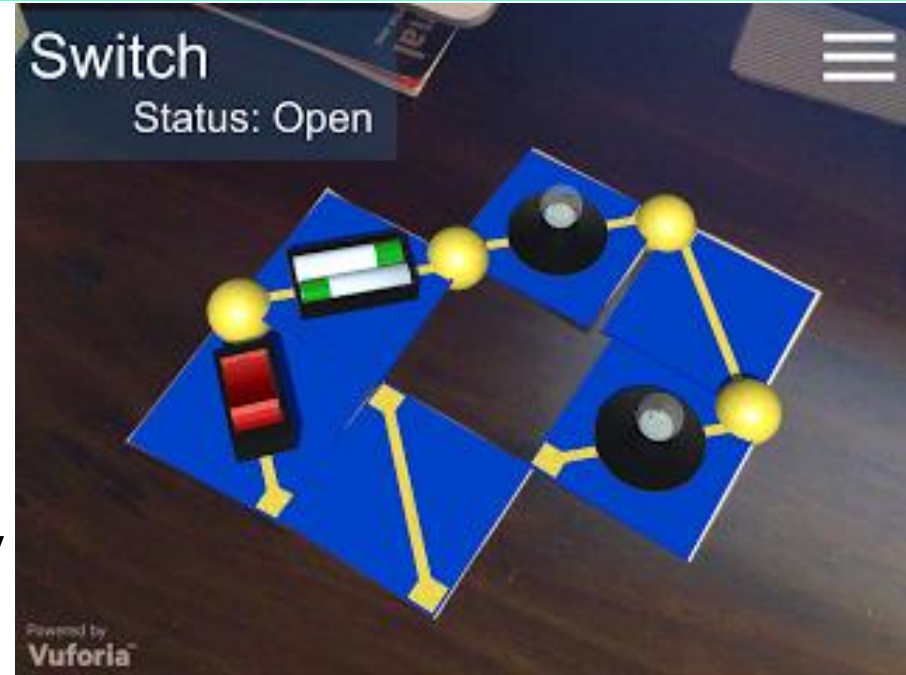
Examples AR in Education

→ 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

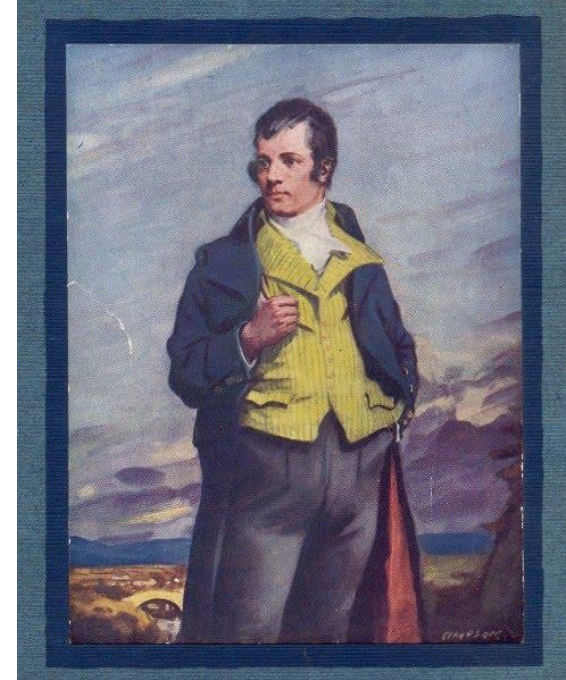


<http://tinyurl.com/aurasmaios>
Aurasma Apple (iOS)



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



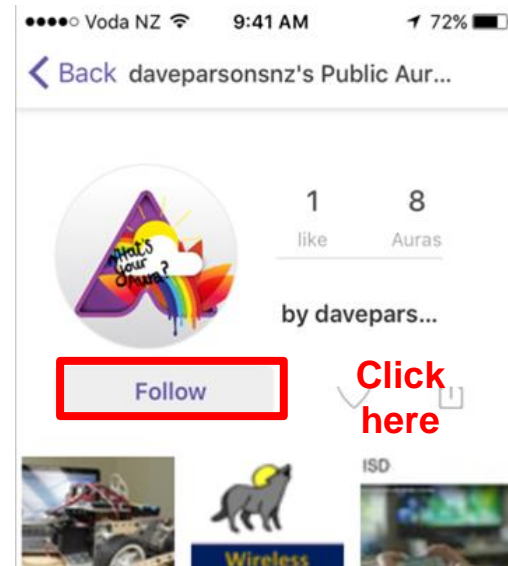
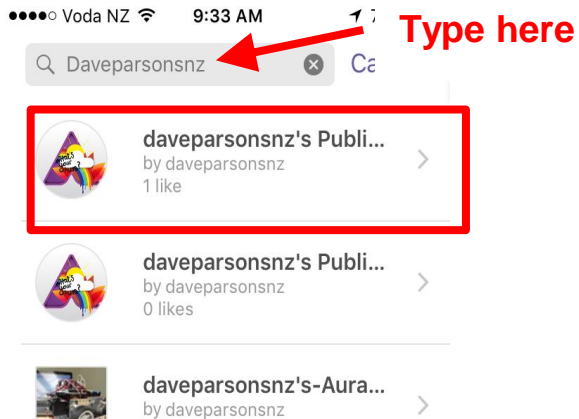
Creating an Aura

- 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**'



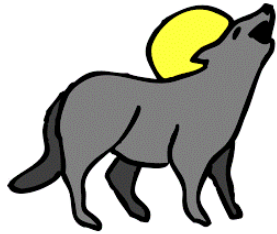
Another example

→ 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**

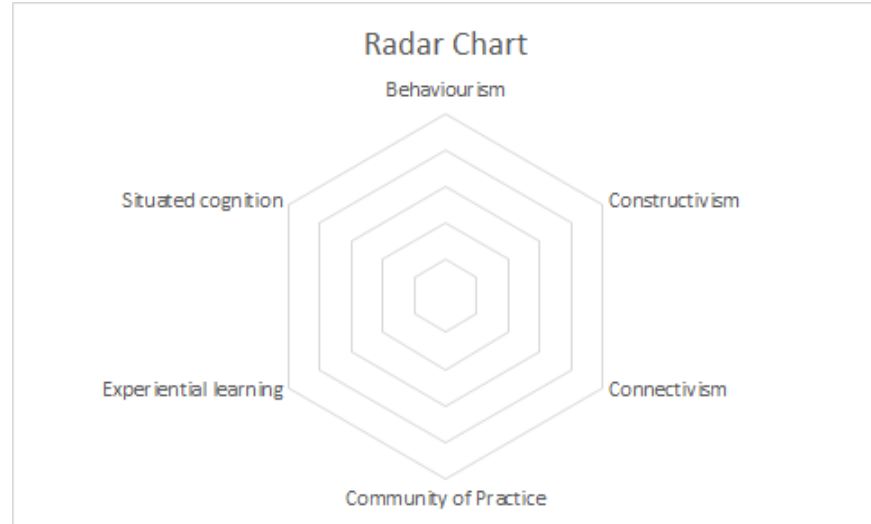
This was the first mobile learning outdoor project and dates from the early 1990s. If you have a problem with the aura, you can use the URL at

<https://www.youtube.com/watch?v=coo6Cu23cbo>

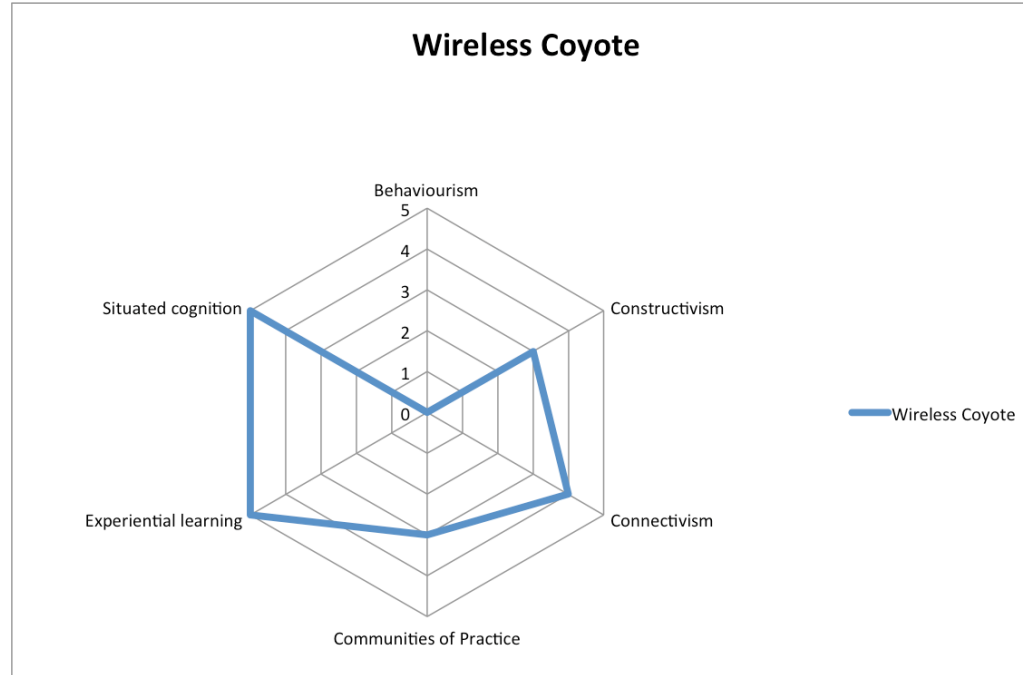


Another example

→ 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...

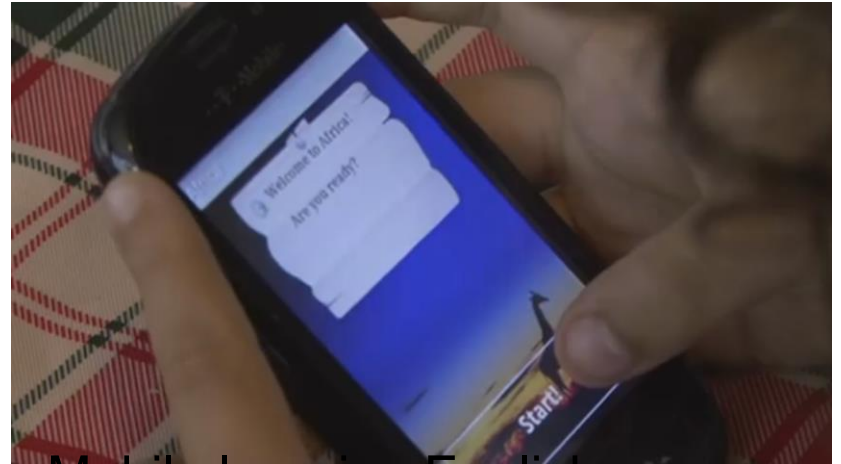


Katy ISD

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_Q3gZO44



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=fxID1ViTPKA>



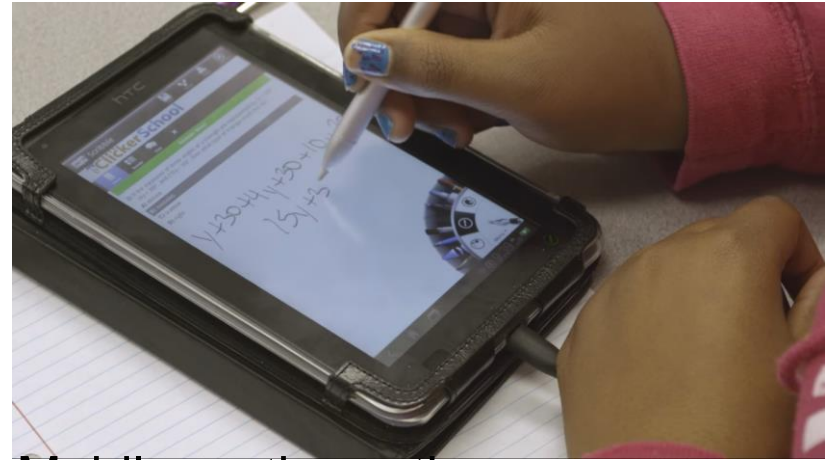
Your turn...



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/hcnqdcu>



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



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