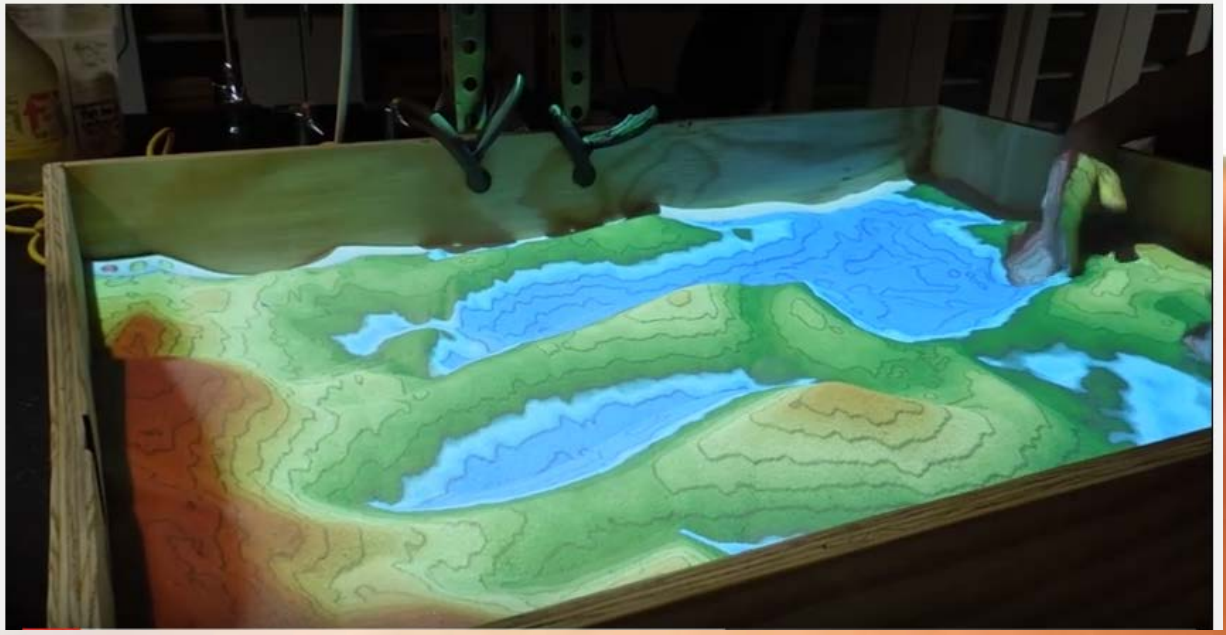
NARARA VALLEY HIGH SCHOOL

Augmented Reality Sandbox

Diane.Twomey@det.nsw.edu.au
Ph: 0428247478

The Development Process

It just took ..... a Facebook post,



persistence (that's me) ... and Lonnie

Phase 1: Design & Build

Priority

Build to be low cost due to a limited HSIE budget

Benefits

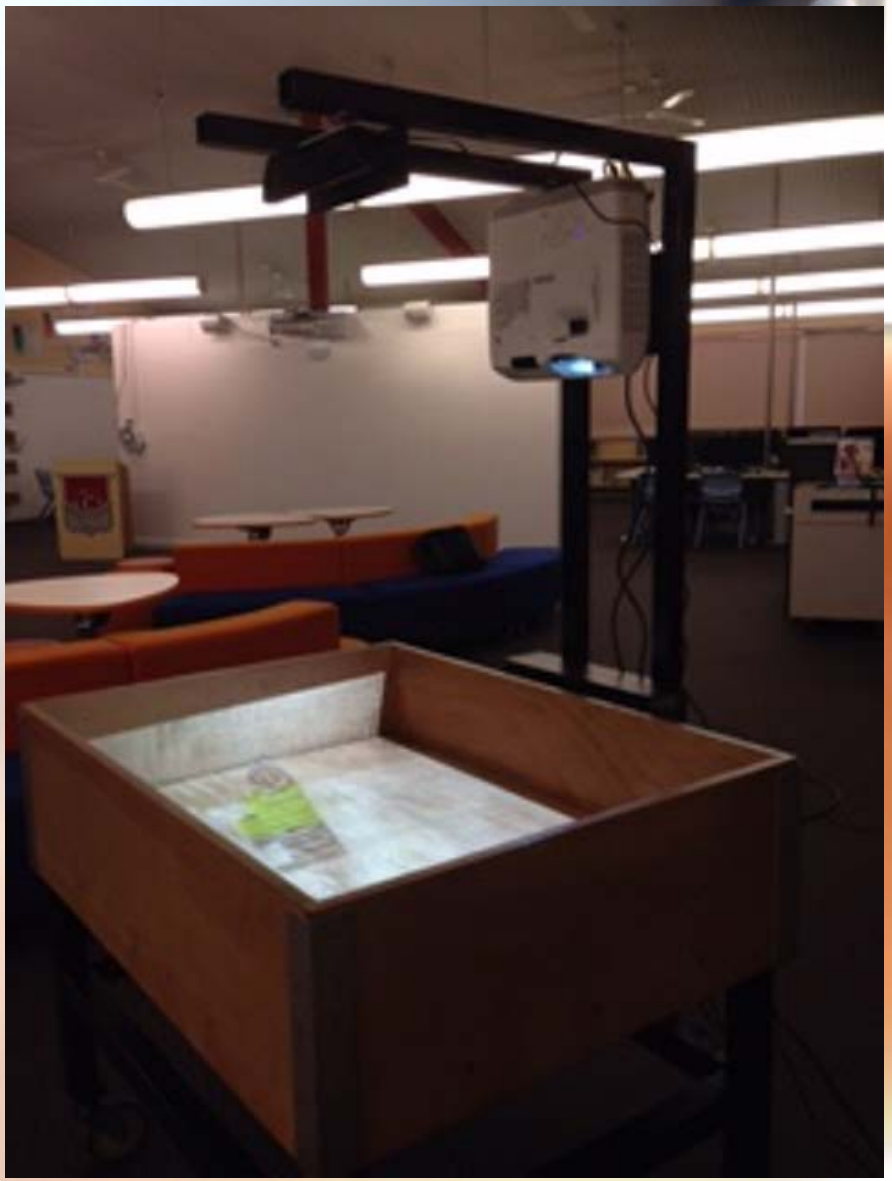
HT HSIE

HT VET

Technology Team Leader

Skilled Tradesman / Handyman access

Surplus resources: school and home



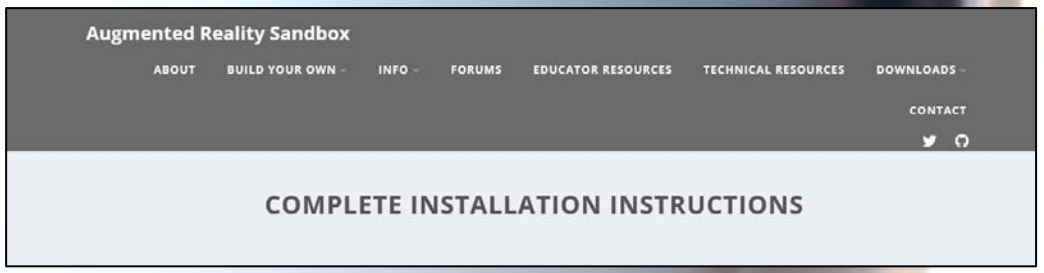
Phase 1: Design & Build

Specifications downloaded

http://idav.ucdavis.edu/~okreylos/ResDev/SARndbox/

Engaged NVHS TAS / VET staff

VET Construction
VET Metals & Engineering



The Augmented Reality Sandbox is free software, distributed under the GNU General Public License.

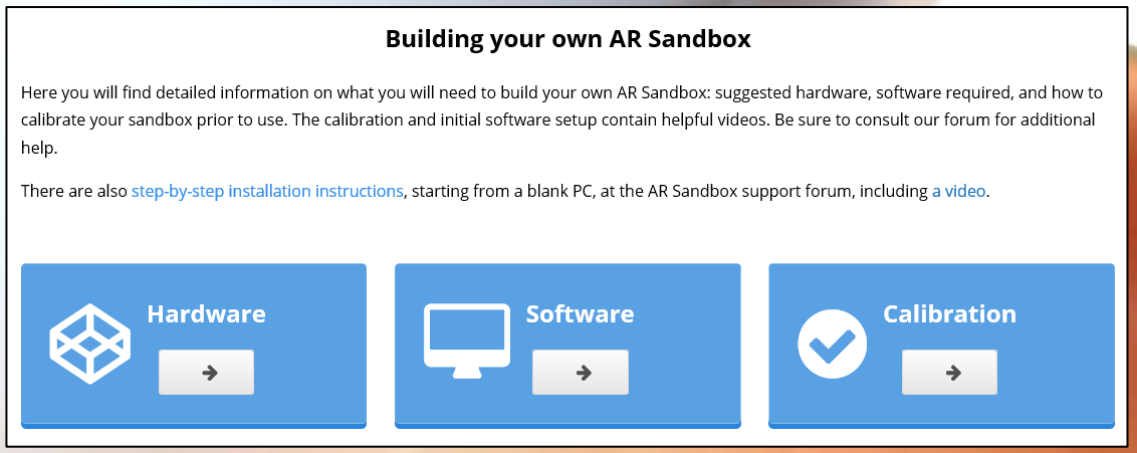
To build and install the software, refer to the included README file.

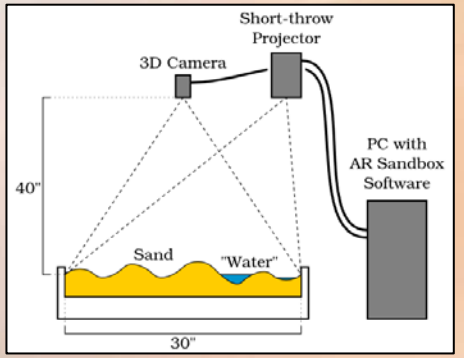
The process is usually as simple as "make," but some minor changes might have to be made according to the target operating system.

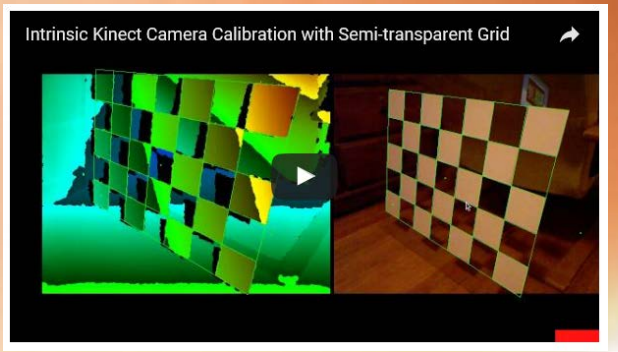
The tarballs contain README files with rudimentary build and use instructions; please read them.

Phase 2: Technology

Know your limitations







Phase 3: Fine Tuning

Move Xbox camera

Mount computer, keyboard, mouse

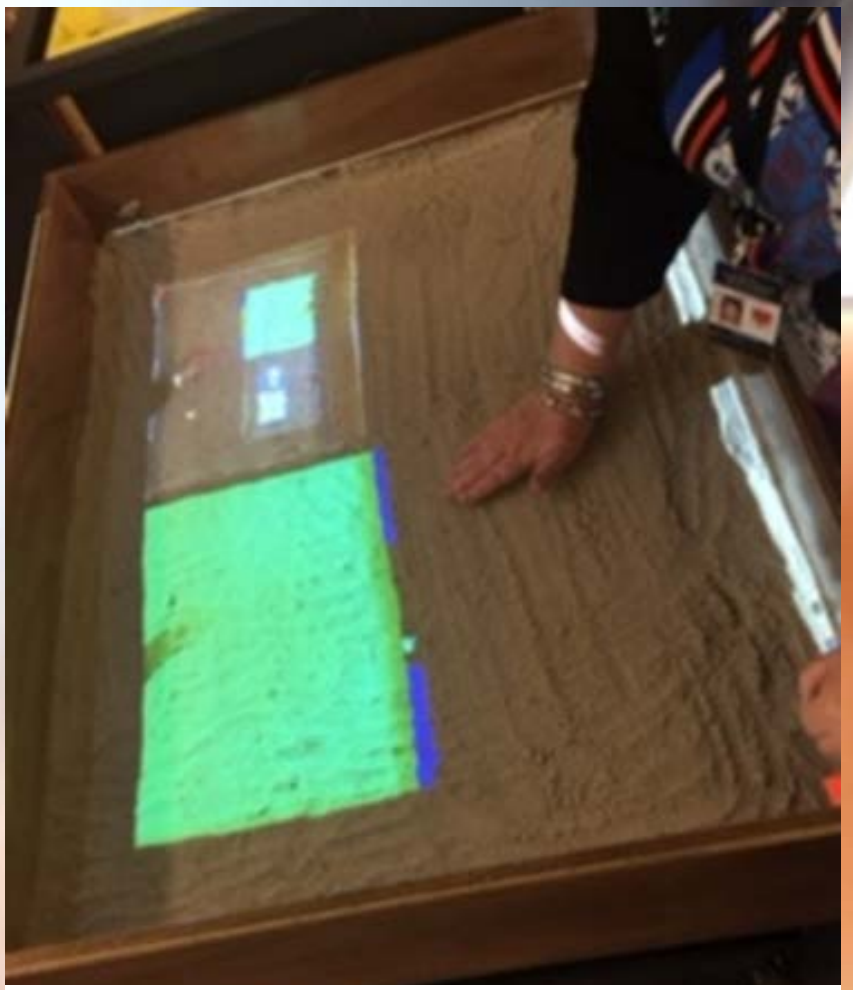
Replace video card

Phase 4: Costing

Overall approx. $1200

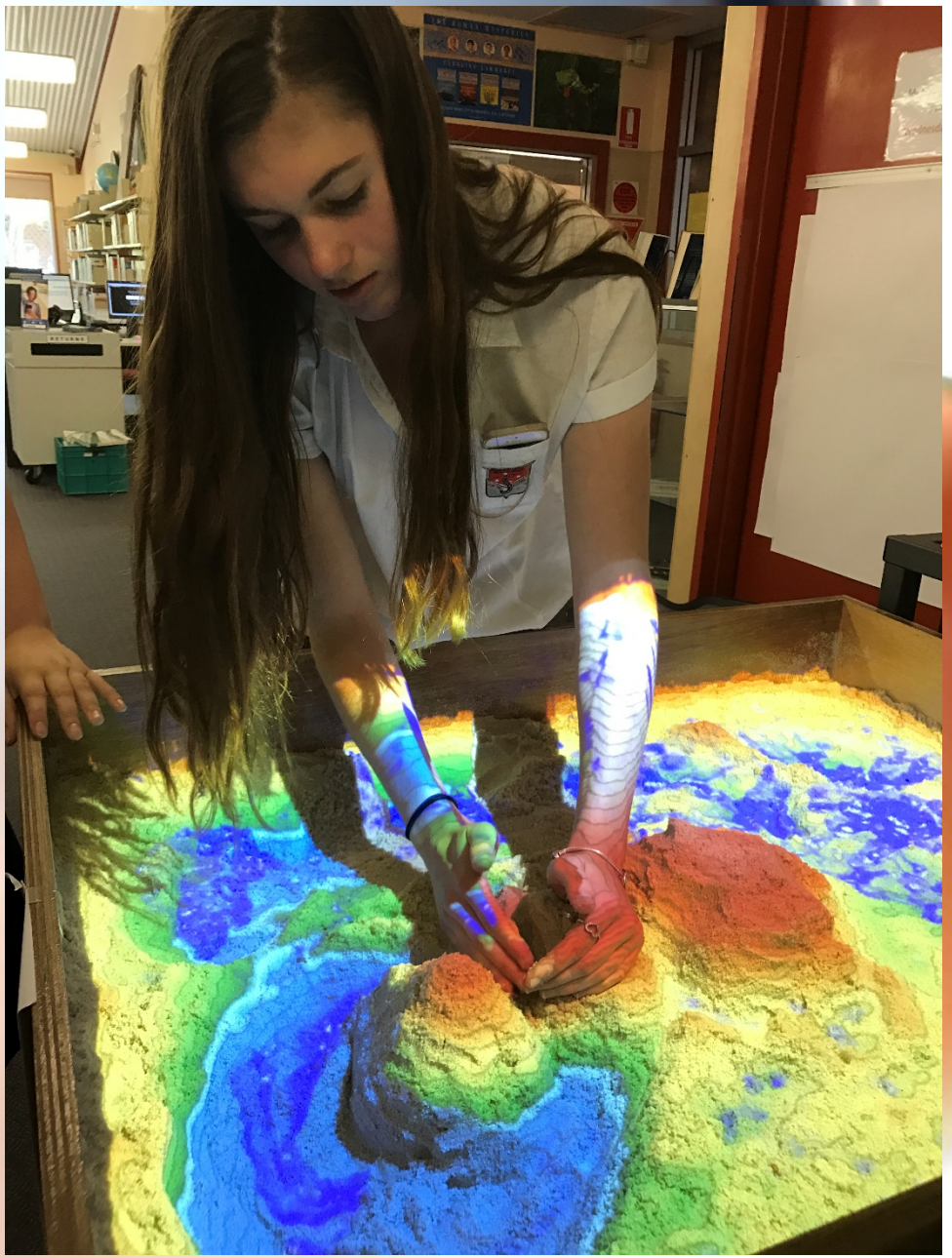
Hours of fun – priceless

Challenge - Time



Teacher-Librarian, Annette Walsh, taking possession – temporarily.

Implementation



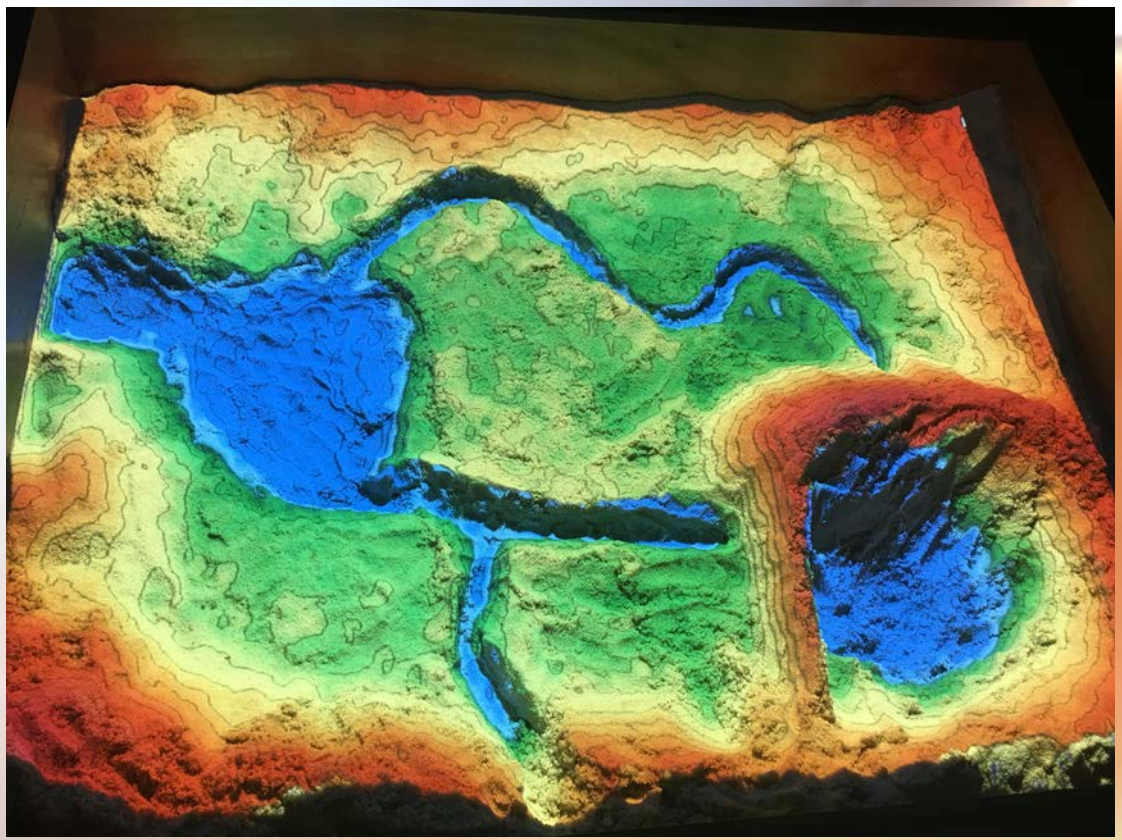
Learning through Play

Topographic maps are so old school

Our Teacher-Librarian demonstrated the inundation / flooding of the Nile

Students mesmerised

Love of teaching History restored



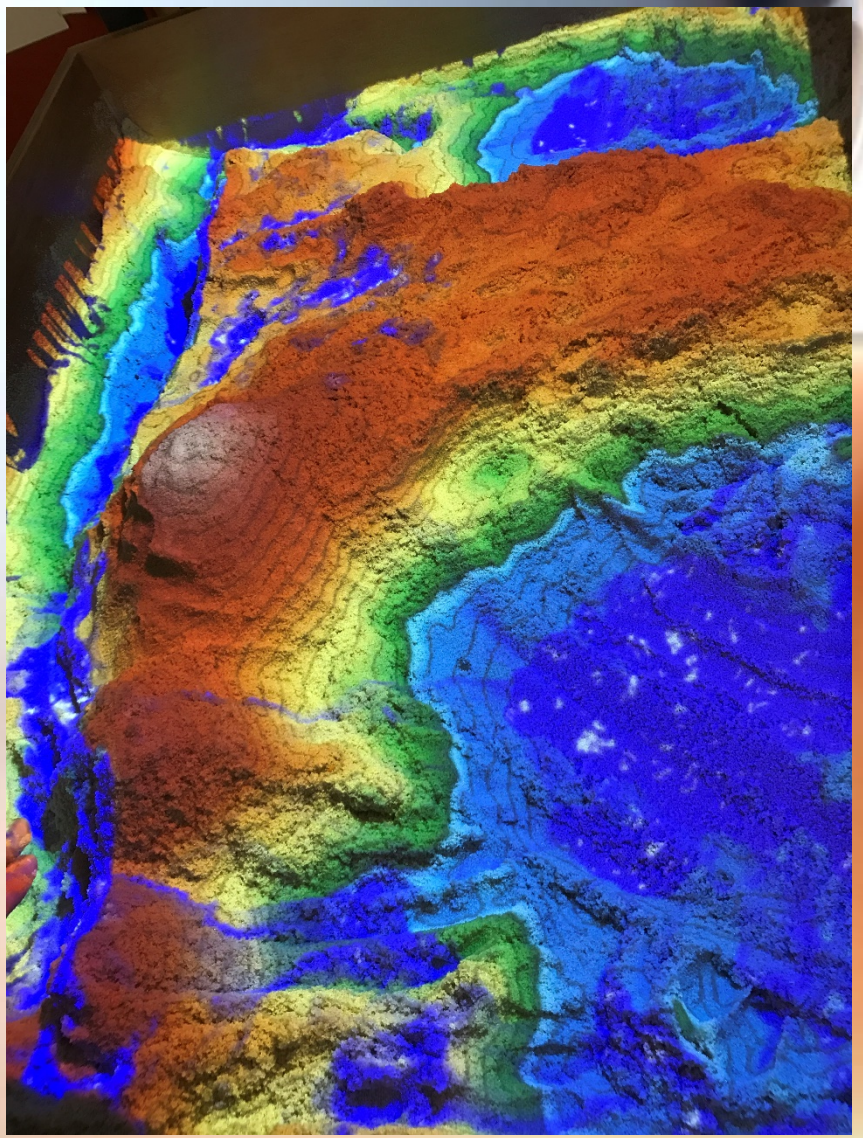
Learning through Play

Stage 5 Learning Difficulties class

Created coastal landforms

Communicated the effects of rain on landforms

Began 3D printing houses for use



Ideas For Implementation

K-10 Geography Syllabus

Geographical Concepts

An Overview

Place

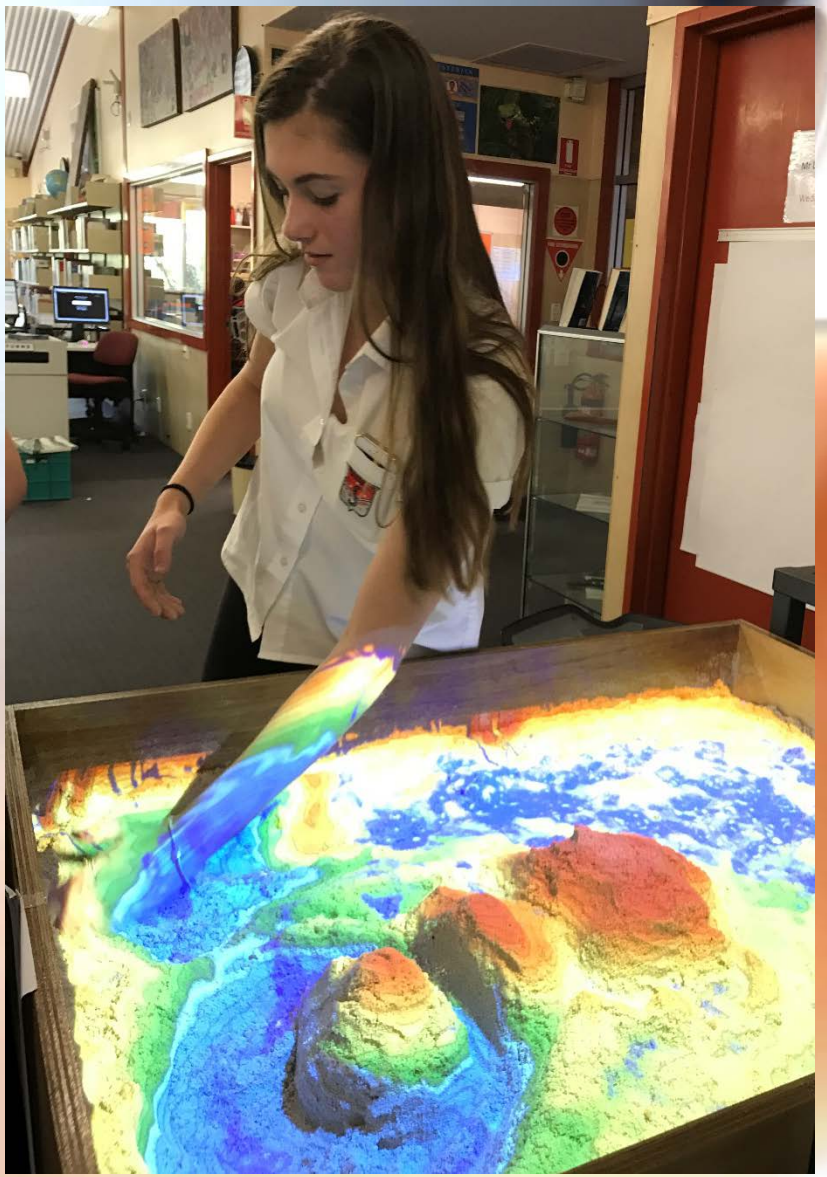
Places can be identified by their shape – Landform creation

Each place is unique in its characteristics – Create local area using Monopoly houses / units

Sustainability of places may be threatened by:

Natural Hazards – Monopoly houses, hair dryer/fan, flooding, drought

Climate Change – Demonstrate Pacific Island (Kiribati) situation



Space

The individual characteristics of places form spatial distribution

Model what is where and why

Spaces are managed by people and can be designed and redesigned to achieve particular purposes

Modelling communities, civilisations

Environment

The environment is the product of geological, atmospheric, hydrological, geomorphic, edaphic (soil), biotic and human processes

Water cycle Wind

Monsoons Development

Each type of environment has its specific hazards

Natural Hazards – Monopoly houses, fan, flooding, drought, devising management strategies

Interconnection

Interconnections between environmental and human processes

Water cycle and communities

Droughts / el nino / la nina

Scale

Scale may be developed through generalisations made and relationships found at one level of which may be different at a higher or lower level.

Cause and effect relationships cross scales from local to the global and from the global to the local

Vegetation removal – example with fan, consequences of water levels

Climate change to Kiribati: Environmental refugees

Geographical Concepts

A Stage Approach

Early Stage 1

Tools

VR – Multimedia

Key Inquiry Questions

What are places like?

Recreate local landforms

What is it like around us?

Around the school?

Where do people live? Why?

Communicating location

Landforms

- People must adapt to landforms.
- Most people settle in flat, fertile valleys and plains so they can build homes and grow crops.
- Where would you live?

http://slideplayer.com/slide/5285603/

Stage 1

Tools

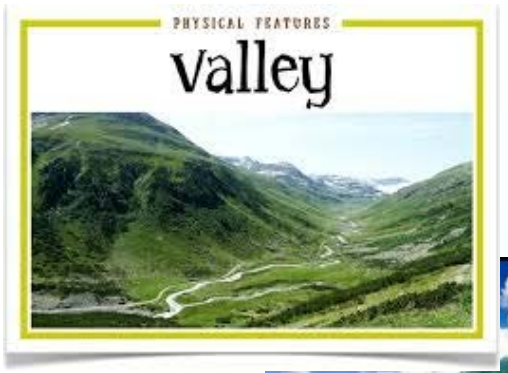
VR – Multimedia

Key Inquiry Questions

What are the features of, and activities in, places?

Recreate natural and human features

Weather and Seasons affecting places and activities e.g. Farming



Stage 2

Tools

VR – Multimedia

M – Maps

Key Inquiry Questions

How and why are places similar and different?

Investigate Australia's natural features, deserts, rivers, mountains

Examination of the natural features of neighbouring countries

Investigate the natural characteristics of Australia and a country in Asia

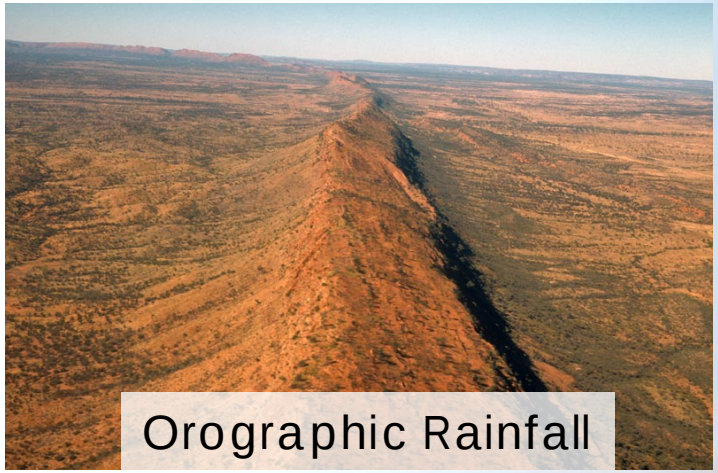


Image from Geoscience Australia

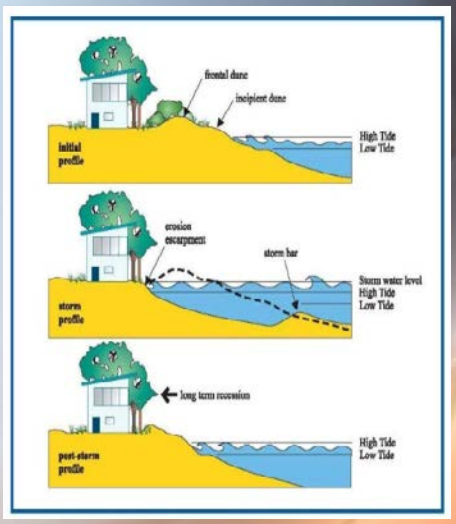


Image from Newcastle.gov.au

Image from Asian Society for International Law

Stage 3

Tools

M - Maps

VR – Multimedia

Key Inquiry Questions

How do people and environments influence one another?

Investigate ways people change the natural environment

Investigate how the natural environment influences people

Images from State Library NSW

Stage 4

Landscapes and landforms
- Identification
- Distinctive forms

Spatial distribution of water

The water cycle
- Water flows within a catchment
- Spatial variations of water
- Water management

Natural hazards

Stage 5

Sustainable Biomes

Water scarcity – food production

Environmental change and management

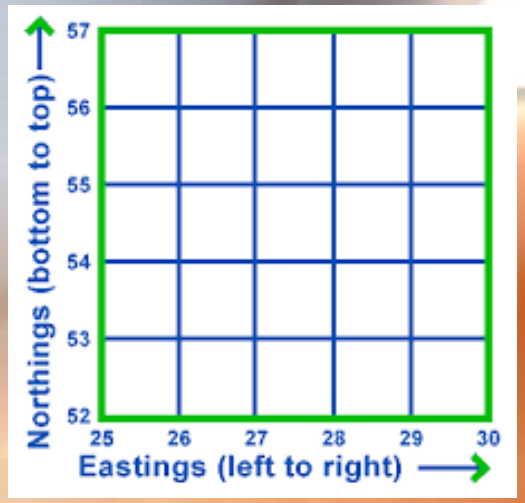
Where to from here?

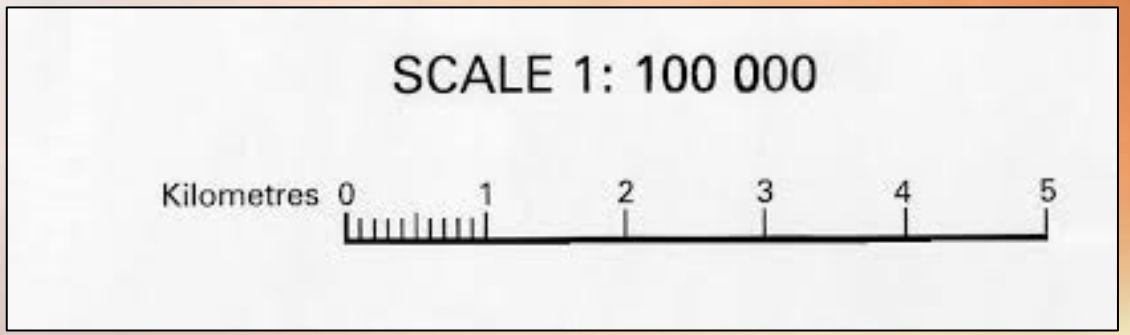
Future additions to Sandbox

Area and Grid Referencing points

Interchangeable Scale

Direction: Compass points





Wetland Simulator

Why?

Simulate the effects of waves, tectonic movement and vegetation in protecting coastal regions.

How?

Greater Sydney Local Land Services Mini Grant

Value? $1500