Technology to understand and change the world

Can digital experiences based on real world exploration give children positive feelings of astonishment, awe and wonder?

…technology transforming learning

Educational technology trends

Themes from my recent work:

- Pedagogical approaches:
  Computational thinking
  Design thinking

- Technologies across the curriculum:
  Outdoor learning
 STEAM

Primary Computing

- Children will 'use computational thinking and creativity to understand and change the world' (National Curriculum)

- Begin by building metacognition using the key concepts and approaches so that thinking strategies are explicit and transferable

- Combine unplugged, plugged and real world applications

...where to start with primary computing?

Computational thinking

Digital makers: creators, collaborators, digitally critical, responsible and active learners who use computational thinking across the curriculum
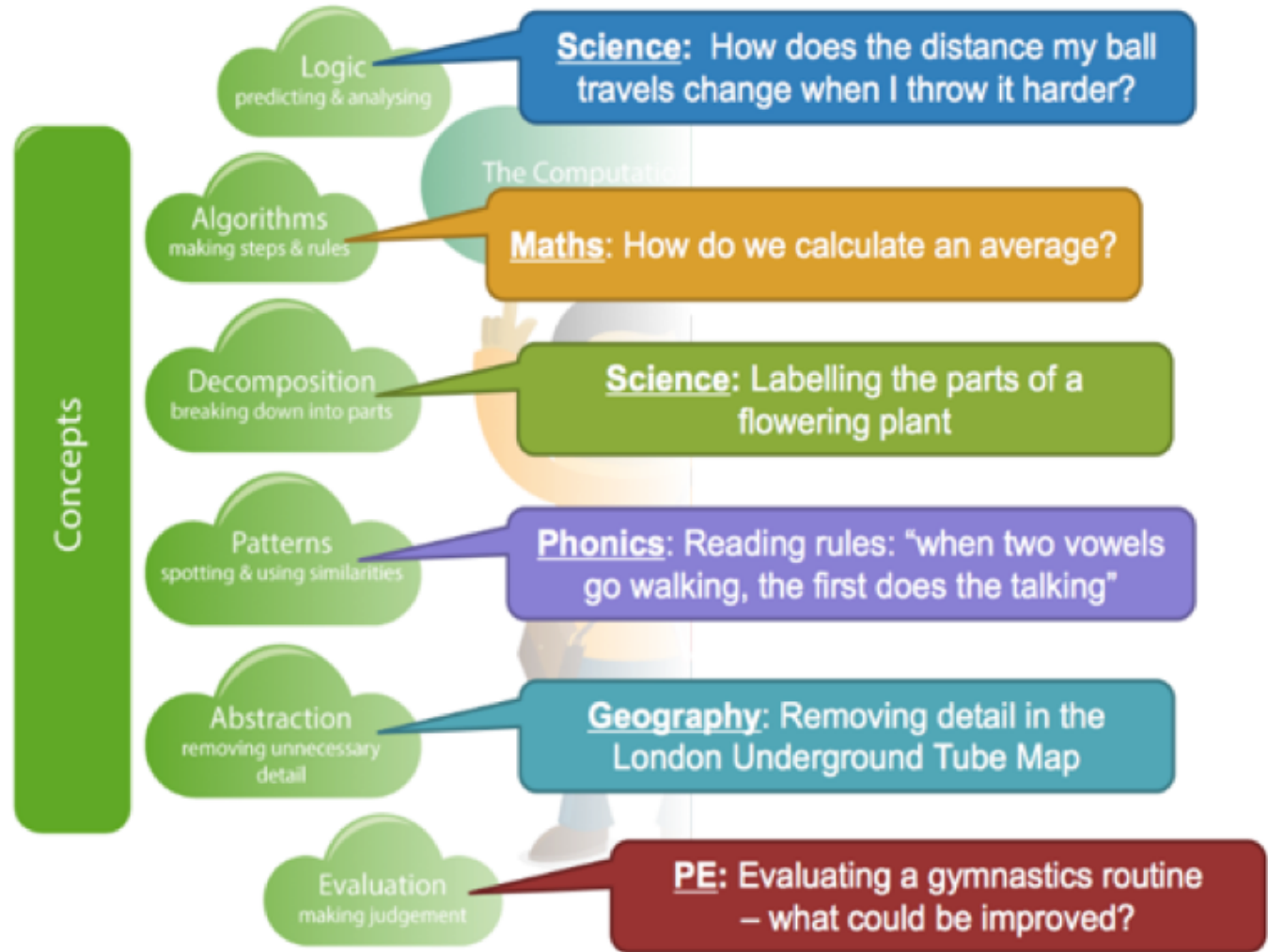
...demystifying and reinforcing

Build repertoire rather than recipes
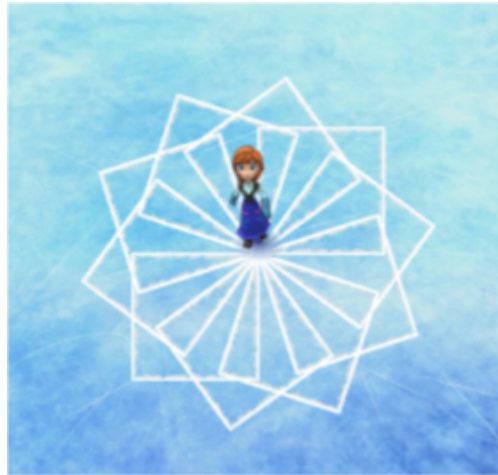

UPTIME
Use
Play
Tinker
Improve
Make
Evaluate
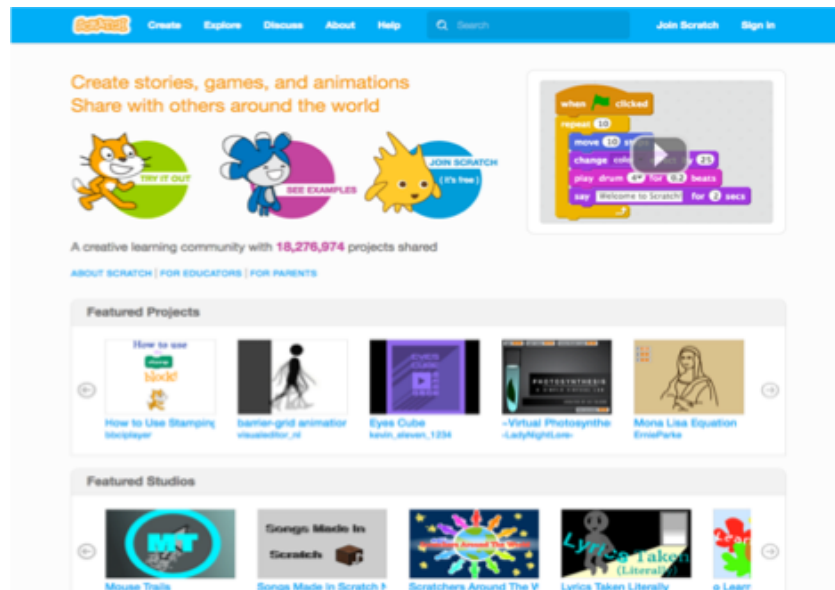
https://challengingcomputing.wordpress.com/uptime/
Chris Shelton University of Chichester

Coding recipes are not purposeful and challenging. Rather than easy wins, we should do projects that build a coding repertoire not recipes.

Moving from computational thinking to computational participation (Kafai and Burke 2014). Coding as a social activity.

...UPTIME scaffolding learning-driven planning

Computing unplugged

Teaching computing? Try switching off your screens

From robot hamsters to beatboxing, there are plenty of activities to help students develop thinking skills associated with programming. No computers needed
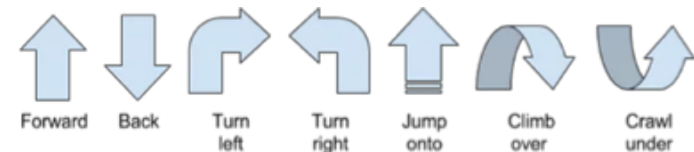
ℹ️ Moving away from computers can often help students understand ideas behind programming without being distracted by the technology. Photograph: Alamy

Human beatbox
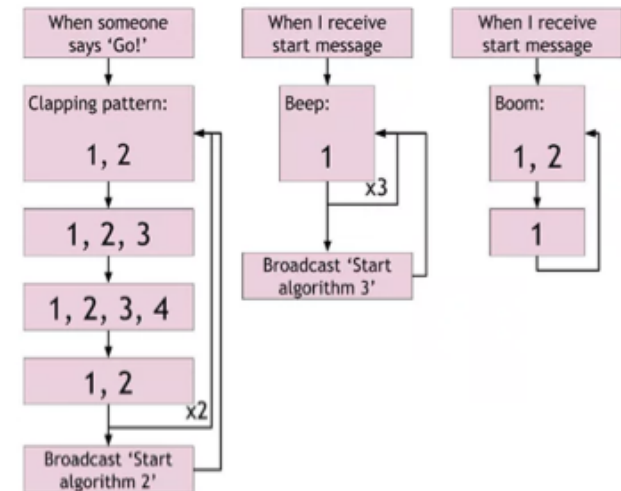
Robot hamster playground

…kinaesthetic active learning

Everyday algorithms

Chair stacking

Repeat 32 times:
If previous chair is stacked:
Then stand behind chair
Pick up chair
Walk to the aisle
Walk to front of the first set of tables
If there are no chairs there:
Then place chair nearest the door
        Else
                If there are less than 5 chairs in the stack:
                Add chair to stack
        Else
                Make new stack next to previous
Else
Wait

…computational thinking in everyday tasks

Thanks to @swaygrantham

Makey Makey Playdate

…time for tinkering and experimenting

Rescue Robots

Erasmus+ and eTwinning

http://dlaberasmus.eu/
https://plus.google.com/communities/117458443566280105364
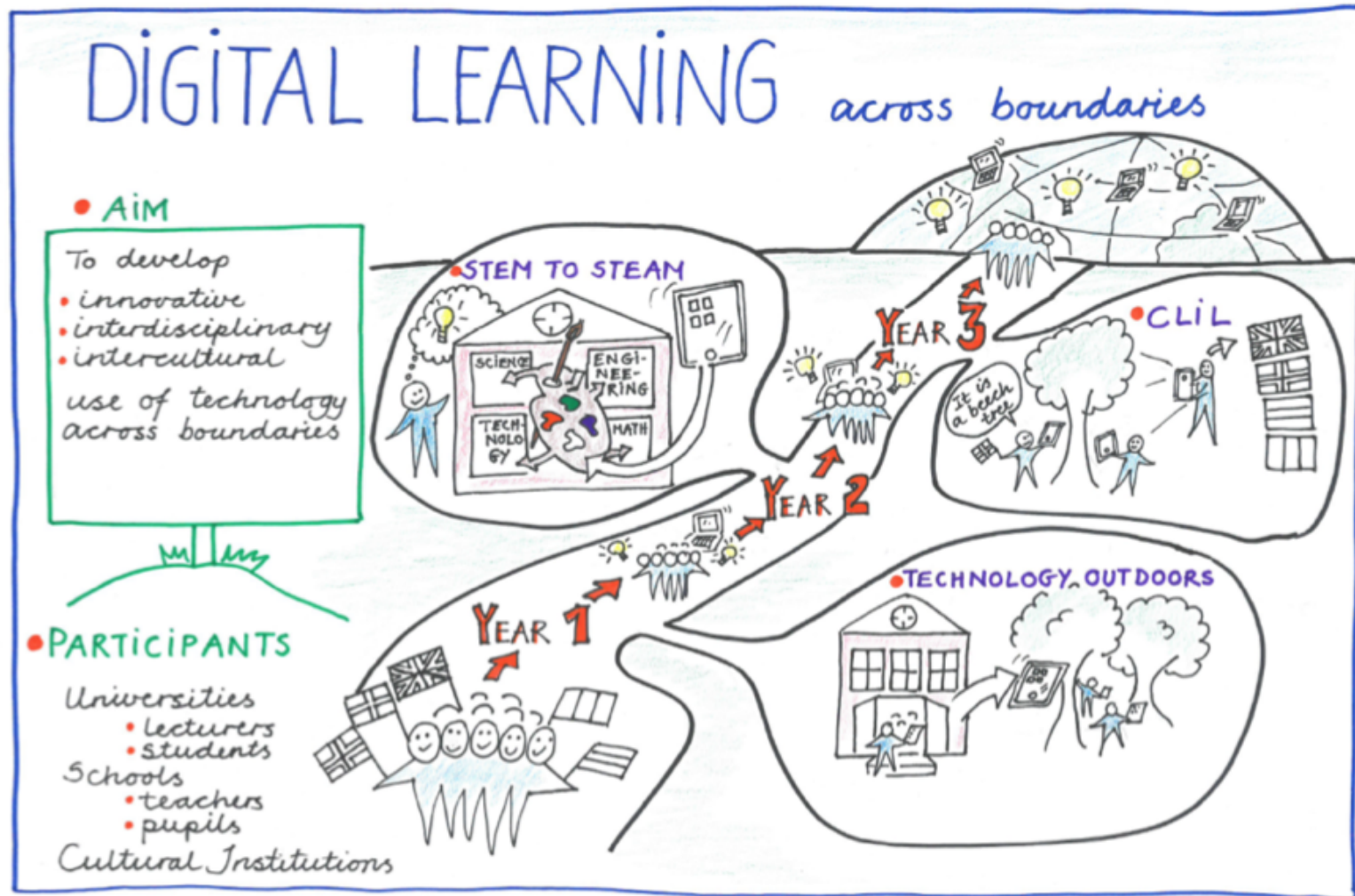
…crossing boundaries of space, subjects and languages
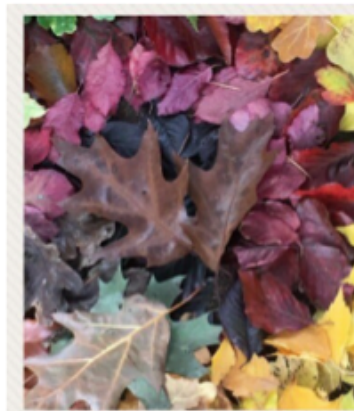
Ephemeral art

Science links:

Freezing and melting

Decay

Evaporation

Condensation

Light

...transient art in the environment

Art swaps

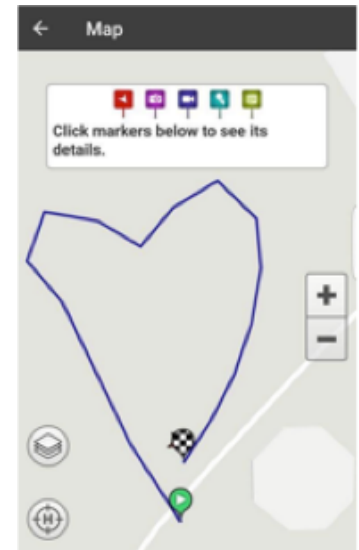*...technology as a lens for looking at the world*

Virtual sculptures

Creating trails

SHAPES & ANGLES ON CAMPUS

WHAT ARE THE SHAPES/ANGLES? FIND NEW EXAMPLES OF THEM

Map

Click markers below to see its details.

Drawing with GPS

…combining digital and physical exploration

I am the pencil

Walking a line

Look up
Sleeping rain
Red kite
Gliding
Swooping
Wing full of wishes
Beak full of menace
Hide
Coming for you
Stay alert
Survive

Walking a line, Wyboston Lakes,
winter
A frozen puddle
A spiral in a frozen puddle
Bicycle tracks in mud
Cold pale blue sky
Frost on branches like crystals
Ice on every blade of grass
Molehills pepper the field
Ice melting
A pigeon feather dropps from the
sky
Irregular paving strewn around
Leaves outlined by frost

Walking a line in the park
Stopping after 15 steps
Looking down 15 times

Green grass
White daisy
Lost leaf
Broken twigs
Flight feather
Plastic litter
New leaves
Young dandelion
Gnarled roots
Fluffy feather
Small stone
Pink petals
Pink petals
Pink petals

Who's in this photo?
http://www.richardlong.org

...photo-journeys inspiring writing

Wild writing

The secret
life of the
outdoors

Wild writing

My Books   Pages   Undo   Page 2 (of 3)

The tree fuels the air
The tree fills our body and mind
with the soul of the earth
the soil where we live from
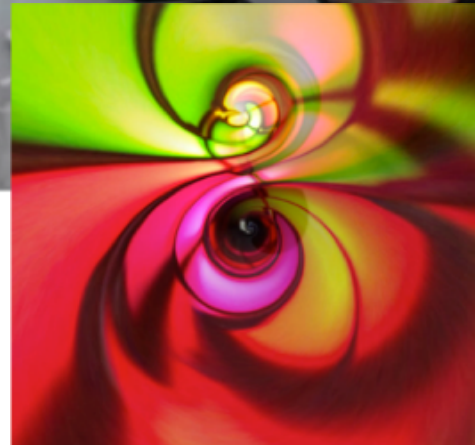
Swirling pine
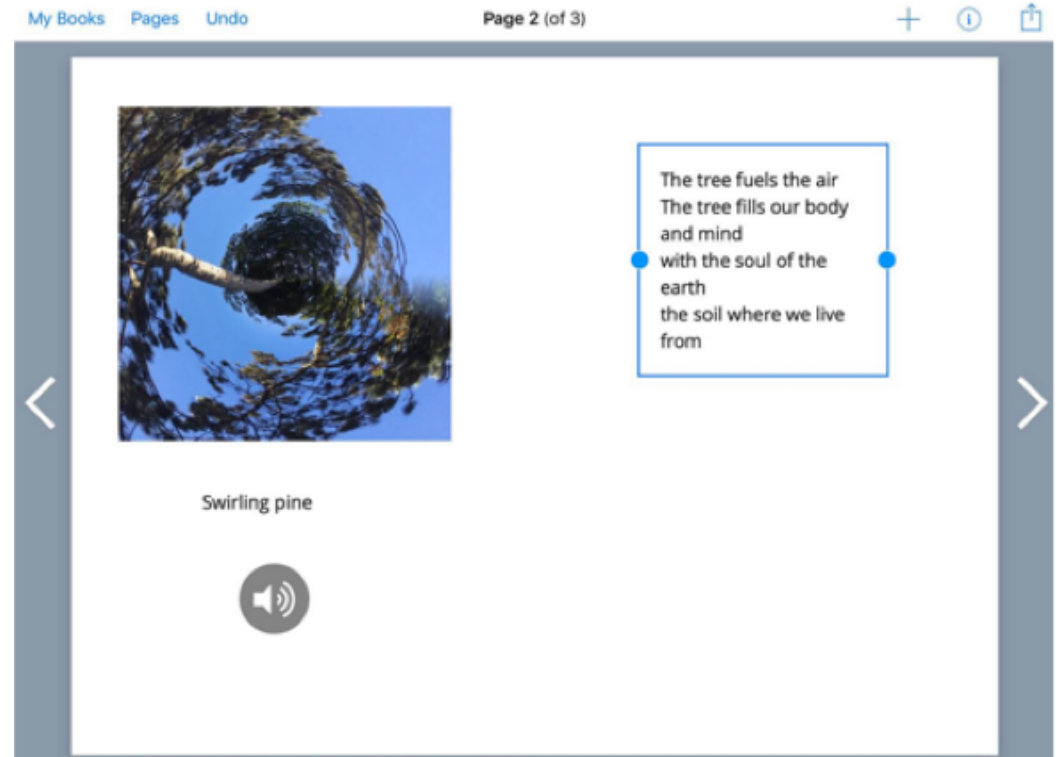
Bringing the outside in
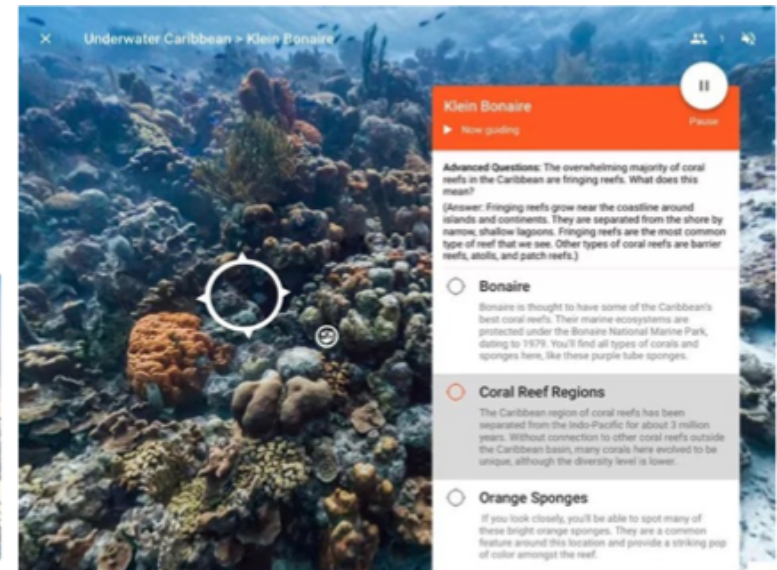
Manipulating media
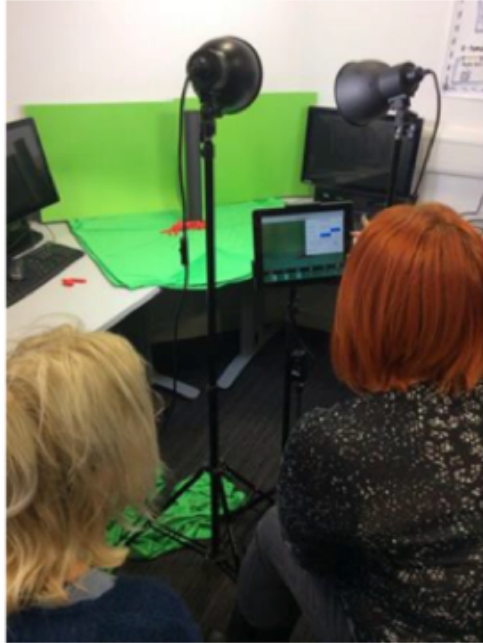
…from green screening to VR 360 as a creative medium

Technology supporting SEND

Apps:
  Rollworld
  Fragment
  Be Funky

Digital meets physical

…moving between digital and physical spaces

Exploring STEAM

Digital Learning across Boundaries through adding the Arts to STEM

A DLaB STEAM activity uses digital technologies to cross boundaries by adding the arts into STEM and providing opportunities to build intercultural connections.

…STEM to STEAM

STEAM weeks

Thomas's Clapham STEAM week
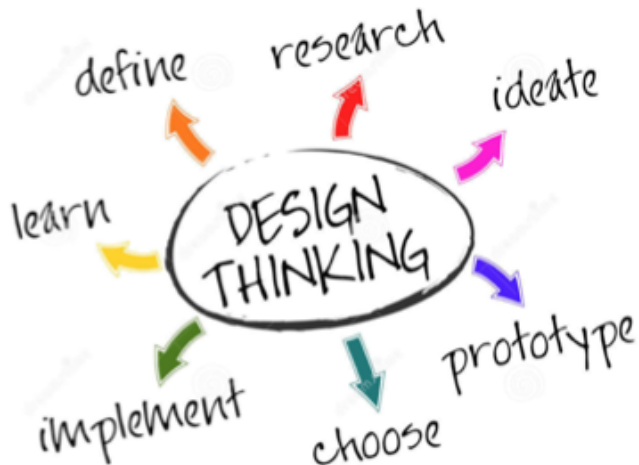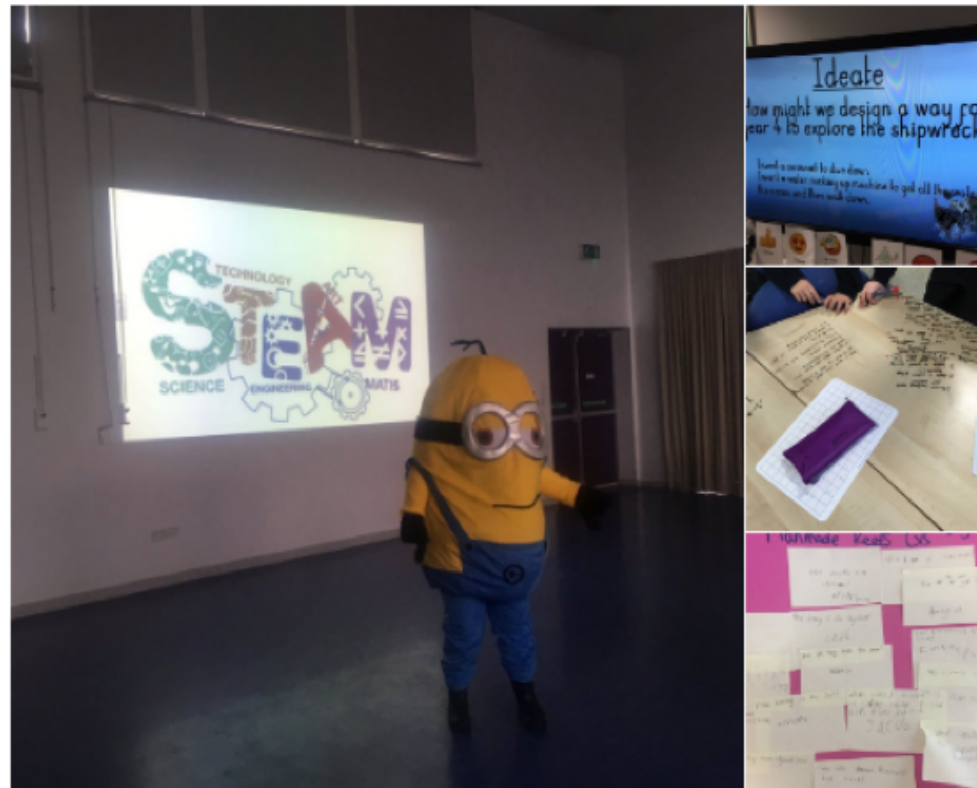
...building awe and wonder

STEAM with Design Thinking

Think about a three part plan:
1. A trigger 2. A vision and plan 3. A creative solution

...digital makers discovering solutions

Seeing, hearing and experiencing STEAM

Overlapping arts:

1.Visual art, drawing, painting, printmaking, collage, photography, textiles, sculpture, installation, digital arts, graffiti
2.Music and sounds, sound art, spoken word
3.Drama, performance, dance, spoken word
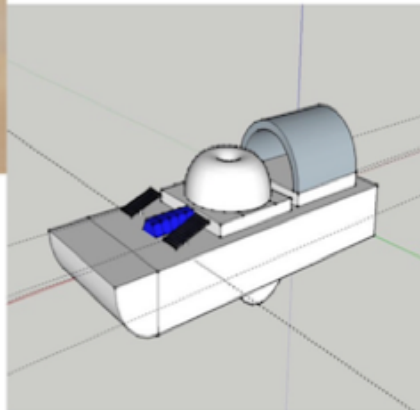4.Literature, poetry, written text, sci fi, comics

The Solar Sea Sweeper

A solar-powered water vehicle that collects and compacts waste

The Sea Dog

A robotic dog that swims and collects rubbish from the ocean

...tinkering, making and inventing

Makerspaces and breakerspaces

All the parts of an iPhone 3GS

…deconstructing technology

Wearables and the Internet of Things
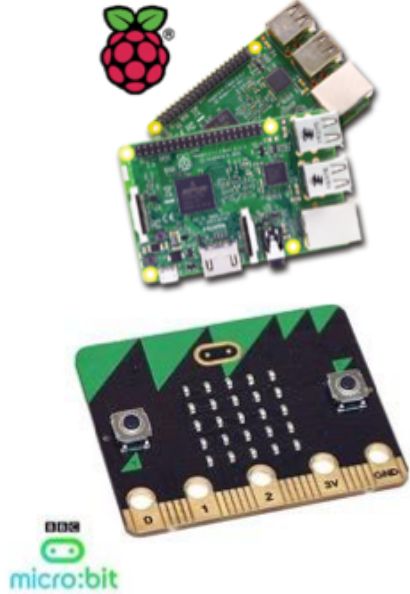
...inspired by computing and performance

Technology transforming learning

creative,
self-directed
learners
collaborating
and sharing
content

…bridging formal and informal learning and multiplying learning opportunities

Helen Caldwell

Apple Distinguished Educator
Raspberry Pi Certified Educator

Books

- Caldwell H. & Cullingford-Agnew, S. (2017). *Technology for SEND in Primary Schools: A good practice guide.* London: Sage.

- Caldwell, H. & Smith, N (2016). *Computing Unplugged: Exploring primary computing through practical activities away from the computer.* London: Sage.

- Wise, N. & Caldwell, H. (2016). *Help with Homework: Coding Essentials.* Chichester: Igloo Books.

- Caldwell, H. & Bird, J. (2015). *Teaching with Tablets*. London: Sage.

- Caldwell, H., Heaton, R., Whewell, E. & Grantham, S. (2015) *Switched on iPads Science*. London: Rising Stars.

- Bird, J., Caldwell, H. & Mayne, P. (2014). *Lessons in Teaching Computing in Primary Schools*. London: Sage.

MOOCs

- Let's Teach Computing 2015

- Teaching with Tablets 2016

- Technology Outdoors 2017

Current Project

- **Digital Learning Across Boundaries** International Erasmus project

…recent background

Contact
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Links

DLaB community
http://bit.ly/DLaBErasmus
DLaB website
http://dlaberasmus.eu/