

# Introduction to Maker Centred Learning



Roxanne Summer



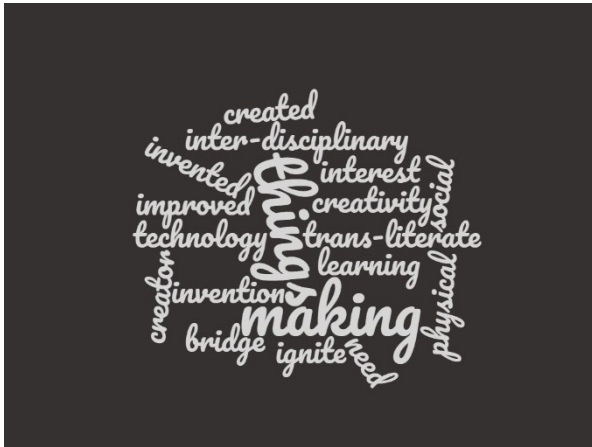
Andreas Kammel



Raffaella Grasso

# What is makerspace? What is maker centred learning?

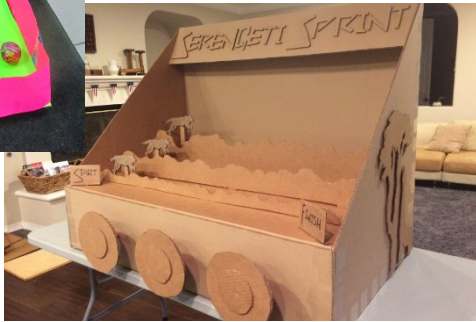
# Definitions



(from 1:24-2:06)

a space for shared **social learning** that is **inter-disciplinary** and **trans-literate**

# Outline of the day

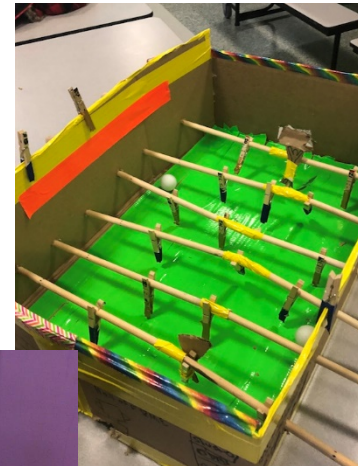


Make something

Challenge your thinking

Participate in thinking routines

Document the idea development



# Biography of an idea

**SPOILER  
ALERT!**

# New definition of STEM

**S**ystems Thinking

**T**echnical skills & knowledge

**E**mpathy

**M**athematical thinking

# Cardboard arcade: Biography entry #1

Take a minute to consider what you will make for the cardboard arcade challenge.

Record your thinking in any way you like.

## Thinking Routine: PPC

Consider the object in front of you. Record your thinking on the butcher's paper.

- Describe the purpose/s of the object
- Draw the object (consider the object from different perspectives/angles)
- Outline the parts of the object – pull apart if desired
- Look at the interactions between the parts: what is the relationship between the parts and the object's purpose?



# Systems Thinking

## Systems Thinking

A way to approach, or think about, complex problems. A system is a set of interacting parts that form a whole.



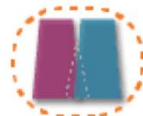
**ZOOMING IN**  
see the moving parts



**ZOOMING OUT**  
see connections & flows



Looking for  
**PATTERNS**



Looking at spaces  
**IN-BETWEEN**

## Design Thinking

Creating delightful & quality products, services, experiences, or systems that work for those who use them.



**EMPATHY** with  
those the design is for



**TESTING**  
ideas early & often



**GENERATING**  
lots of ideas



**PROGRESS**  
over perfection

# Systems Thinking: Big Questions

What is the purpose of systems thinking?

- A process for problem finding
- Provide or change perspective
- Problem finding then leads to problem solving, and design thinking



## Cardboard arcade: Biography entry #2

Take a minute to consider what you will make for the cardboard arcade challenge.

> How has the Purpose, Parts, Complexities routine influenced your thinking?

# Time to Make!



# Empathy: UI, UX

Designing  
The Product



UI

VS



UX

Designing  
The Experience

<https://www.slideshare.net/aveef/play-learn-in-global-uiux-design-competition-118773350>

# Empathy: UI, UX

**USER EXPERIENCE**



**USER INTERFACE**



Ace 

## Empathy: UI, UX

# Start with the why



Motivation,  
Values, Views

Why

Functionality,  
Features

What

Accessibility,  
Aesthetics

How

## Cardboard arcade: Biography entry #3

Take a minute to consider what you are making for the cardboard arcade challenge.

> How has an understanding of UX and UI influenced your thinking?



# Time to Make!



# Empathy: Inclusive design

- **Look for points of exclusion**
  - E.g. deaf users couldn't rely of audio-based prompts
- **Identify situational challenges**
  - E.g. a user in a wheelchair can't get close enough to the game to play it, despite being physically able
- **Recognise personal bias**
  - E.g. All instructions in English assume that all users have English as a language (or can read)
- **Provide equivalent user experiences**
  - E.g. Providing an easier target for a user in a wheelchair does not provide the same experience as able users

## Cardboard arcade: Biography entry #4

Take a minute to consider what you are making for the cardboard arcade challenge.

> How has an understanding of UX and UI influenced your idea?

# Time to Make!



## Thinking Routine: PPI

Swap your make with another person.

Consider the unfamiliar object in front of you

- Describe the purpose/s of the object
- Draw the object (consider the object from different perspectives/angles)
- Outline the parts of the object – pull apart if desired
- Look at the interactions between the parts: what is the relationship between the parts and the object's purpose?

Give the object back and discuss.



## Cardboard arcade: Biography entry #5

Take a minute to consider what you are making for the cardboard arcade challenge.

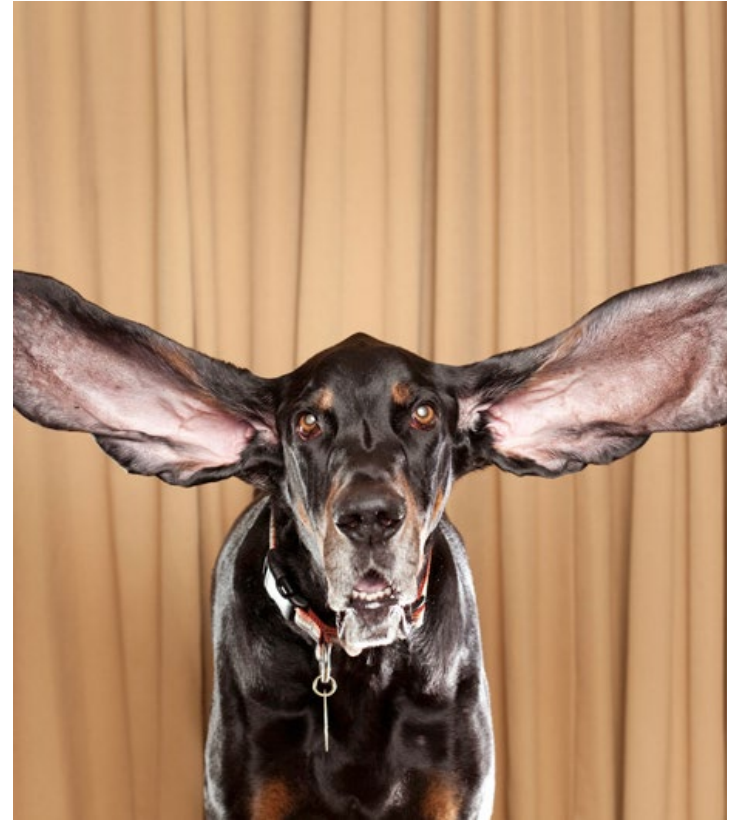
> How has the feedback from your partner's PPI influenced your thinking?

# Time to Make!



# From co-curricular to curricular

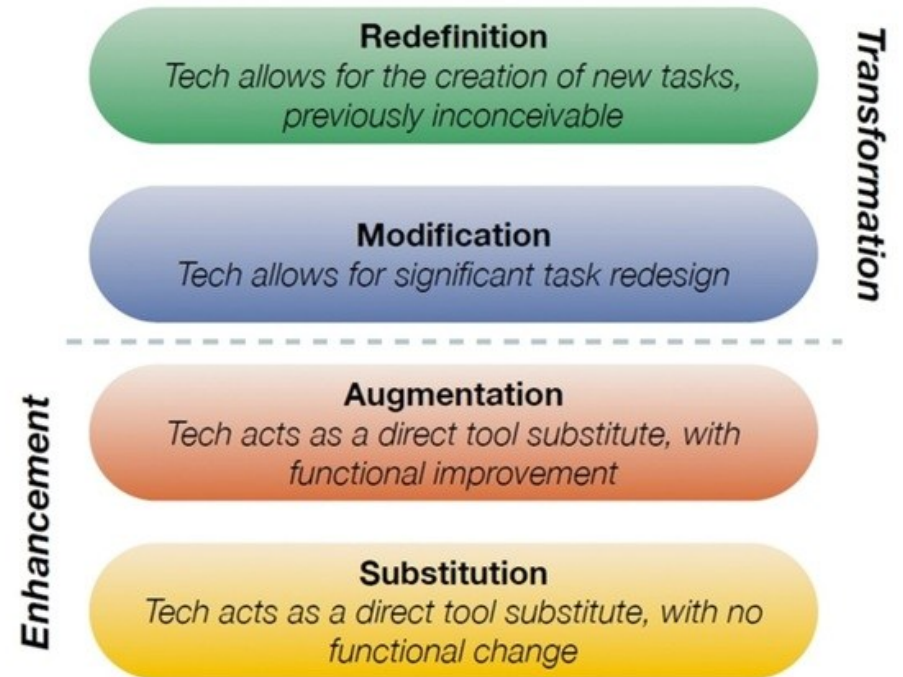
Be an opportunist





# From co-curricular to curricular

Transformation not change



**SAMR Model**

# From co-curricular to curricular

Makerspace as a concept



# Generating buy-in

Repetition,  
repetition,  
repetition



# Generating buy-in

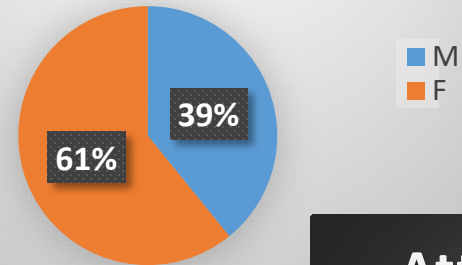
Multiple points of entry



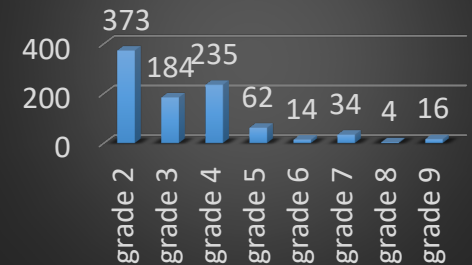
# Generating buy-in

Power of information

### Attendance by Gender



### Attendance by Year Level



# Generating buy-in

Makerspace is a mindset





Maker Educators (Australia)

Lists of resources and links:

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Raff: [grassr@Bialik.vic.edu.au](mailto:grassr@Bialik.vic.edu.au)

