UTS Library

Lesson Plan: Digital Capabilities and the Growth Mindset

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# Digital Capabilities and the Growth Mindset

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This lesson was adapted from the following materials:

Brooklyntonia 2016, *Interactive Art with Scratch and Makey Makey*, Instructables, viewed 17 August 2018, <<https://www.instructables.com/id/Interactive-Art-With-Scratch-and-Makey-Makey/>> [opens in external site].

Graves, C. 2016, ‘Resource: [Hacking Poetry with Makey Makey](https://colleengraves.org/2016/12/01/resource-hacking-poetry-with-makey-makey/)’, *Create, Collaborate, Innovate*, weblog, viewed 17 August 2018, <<https://colleengraves.org/2016/12/01/resource-hacking-poetry-with-makey-makey/>> [opens in external site].

## Class Description

This class will introduce learners to the growth mindset. This is followed by an engaging activity combining craft, circuitry and basic coding where participants will create an interactive artwork that produces sound effects using a [Makey Makey](http://www.lib.uts.edu.au/guides/tinker-kits/makey-makey).

## Duration

90 minutes

## Learning Objectives

By the end of this lesson, students will be able to:

* Articulate basic elements of a growth mindset,
* Access MIT Scratch,
* Create basic if:then code using MIT Scratch,
* Develop a circuit using Makey Makey and other materials,
* Demonstrate relationship between software and embodied computer use.

## Room requirements

* Internet connection
* Tables arranged in groups
* AV set up (Projector)

## Resources

* Makey Makey (enough for at least 1 between 3)
* Laptop with USB port (a tablet or mobile device will not work)
* Craft materials: paper or coloured board, textas, scissors, glue, sticky tape
* Circuitry materials: Aluminium foil, play doh, copper tape (optional)

## Activities

* An introduction to the growth mindset and how it works
* Creative activity – craft a monster and get it to make noises using Makey Makey
* Discussion of our own mindsets and approaches to the activity

## Attachments

* Video: *Mindsets: Fixed Versus Growth,* <<https://youtu.be/M1CHPnZfFmU>>.
* Handout: Digital capabilities growth mindset

## Preparation Checklist

* Set up room for group work
* Assign craft materials to each table
* Create and prepare the demonstration monster
* Print out enough handouts for all students

## Lesson Plan

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| --- | --- | --- |
| Timing | Topic | Notes |
| 5 mins | **Introduction** | Introduce the session and how it will run.   * Understanding a growth mindset * Craft time! - The purpose of this lesson is to do the task in as creative a way as you want. * Show a demonstration Makey Makey monster. * The monster will be combined with Scratch to make sounds. |
| 10 mins | **Framing exercise** | What is the Growth Mindset:  Show the Mindset: Growth vs Fixed video: <https://youtu.be/M1CHPnZfFmU>.  Guide a class discussion to provide a framework for students to understand the different between fixed and growth mindset.  Key points:   * **Growth mindset and fixed mindset are like two voices** talking to us in our heads. A fixed mindset might say “I can’t do this!” or “I’m just not good at maths/writing”. A growth mindset voice might say things like “I don’t know how to do this yet but I can try and learn” or “Don’t give up!” * **Struggling and making mistakes is part of learning.** A growth mindset believes that knowledge is not innate, and you can learn a new skill through effort. * It's important to remember that **we do not always have a growth or a fixed mindset** (Gross-Loh, 2016). It will change depending on time, the task and our workplace. Growth mindset is just like everything else we learn, though. It needs to be practiced before we will be good at it.   Potential activities:   * [Mindset Kit](https://www.mindsetkit.org/) [opens in external site] by The Project for Education Research That Scales (PERTS) at Stanford University. Features a range of research-based videos and activities for all levels.   Potential questions for class discussion:   * Think of a time you had a fixed mindset while learning a new skill. How successful were you? * Think of a time when you had a growth mindset when learning a new skill. How successful were you? * How were the experiences different? * What impact did your mindset have on your learning? * Think of a project where you collaborated with someone who had a fixed mindset. What were they like to work with? * What impact did their mindset have on the project? * What kinds of environments do you think foster a growth mindset? |
| 45 mins | **Monster Challenge** | Give students the handout and materials and students follow along to create their monster, complete a circuit with Makey Makey, and use Scratch to connect sounds to the monster.  Focus for students: Students should concentrate on their self-talk. i.e. are they talking to themselves with a fixed or growth mindset?  Focus for instructor: Instructor should give feedback around problem solving and process, and ask questions that help students to help themselves. The problem-solving strategies they use are the important part of the learning. e.g. “what could be stopping this circuit from working?” or “what steps would I need to take to get this result?”  If students need assistance, demonstrate key processes, eg: recording sounds, doing the code, connecting the Makey Makey, making the circuit etc |
| 20 mins | Students present their work | Students move around the room, playing with the monsters of other groups.  **Focus:** Students should focus on the success of others’ projects. Other people’s success is not a threat to your achievements, but something to celebrated and learned from. |
| 10 mins | Conclusion | Instructor guides a discussion around self-talk in the activity.  Create a 2-column table on the board. Label the columns fixed mindset and growth mindset.  Ask students for some examples of their self-talk during the activity. For fixed mindset self-talk, ask students how they could reframe it as growth mindset self-talk.  What impact did your mindset have on your work in this session? |

## Additional References

### Growth Mindset Resources

Dweck, C. 2006, *Mindset: the new psychology of success*, Random House, New York.

Gross-Loh, C. 2016, ‘How praise became a consolation prize’, *The Atlantic,* 16 December, viewed 9th August 2018, <<https://www.theatlantic.com/education/archive/2016/12/how-praise-became-a-consolation-prize/510845/>> [opens in external site].

Project for Education Research That Scales n.d., *Mindset kit*, viewed 10th August 2018, <<https://www.mindsetkit.org/>> [opens in external site].

Spencer, J. 2017, *Mindsets: Fixed Versus Growth*, video recording, YouTube, viewed 17 August 2018, <<https://youtu.be/M1CHPnZfFmU>> [opens in external site].

### Makey Makey Resources

Brooklyntonia n.d., *Interactive art with Scratch and Makey Makey*, Instructables, viewed 9th August 2018, <<https://www.instructables.com/id/Interactive-Art-With-Scratch-and-Makey-Makey/>> [opens in external site].

Graves, C. 2017, *20 Makey Makey projects for the evil genius*, McGraw-Hill Education, New York.

Graves, C. 2016, *Resource: hacking poetry with Makey Makey*, viewed 9th August 2018, <<https://colleengraves.org/2016/12/01/resource-hacking-poetry-with-makey-makey/>> [opens in external site].