Digital Technologies
a cross-curricular approach

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1. The cross-curricular approach

2. Activities

3. Assessment

4. Challenges

5. What's next?

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The Cross-Curricular Approach

- Address the majority of Digital Technologies outcomes via Maths and Science classes.

- Withdrawal programs to address additional outcomes
  - ICT etiquette
  - Social Engineering Challenge

- New initiatives trialled through enrichment programs.

- Dedicated Digital Technologies electives at Year 10.

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Is data a sweet spot for cross-curricular?

- In Maths we define a variable as a letter that represents a number that can change. We classify a variable as either explanatory or response.

- In Science a variable is a quantity or factor that can occur in varying amounts or types. We classify a variable as dependent, independent or controlled.

- In programming a variable represents a quantity or factor that can change. We classify variables by type, e.g. int, float, string.

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Year 7 Ecology Investigation

Task

Part 1: Melbourne Zoo Booklets

Complete at least 4 booklets from the Melbourne Zoo excursion

Part 2: Field Study – Group Activity

Each group will map and collect data for a nominated section of Kew High School's external environment. Each data set from each class will be combined for analysis in Part 3.

Part 3: Field Report – Individual Activity

Students will need to prepare a field report individually explaining their experience and analysis of the environment using data collected in Part 2.

Curriculum Link: Data and Information

- Acquire data from a range of sources and evaluate their authenticity, accuracy and timeliness

- Analyse and visualise data using a range of software to create information, and use structured data to model objects or events

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Egyptian Fractions and Number Systems

Curriculum Links Data and Information:

- Investigate how digital systems represent text, image and sound data in binary

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Smart City Investigation

Students measure the energy consumption in a Lego city.

Initially it will just contain two Lego houses and simple utilities.

Students are asked to analyse the consumption of each house. They can then suggest and implement improvements to the city to future-proof its energy needs.

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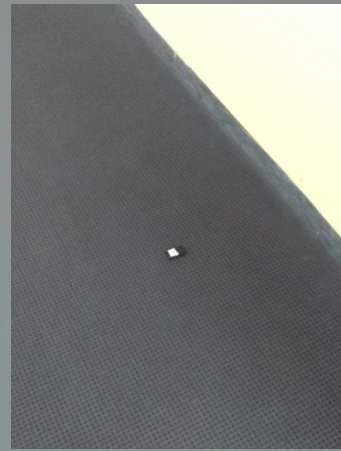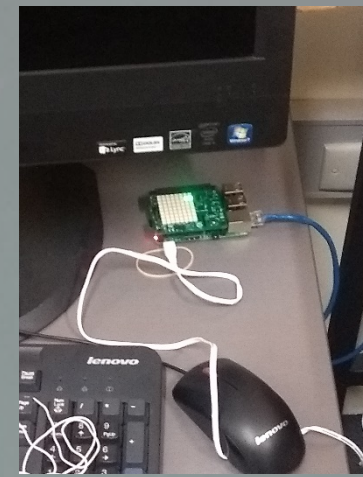

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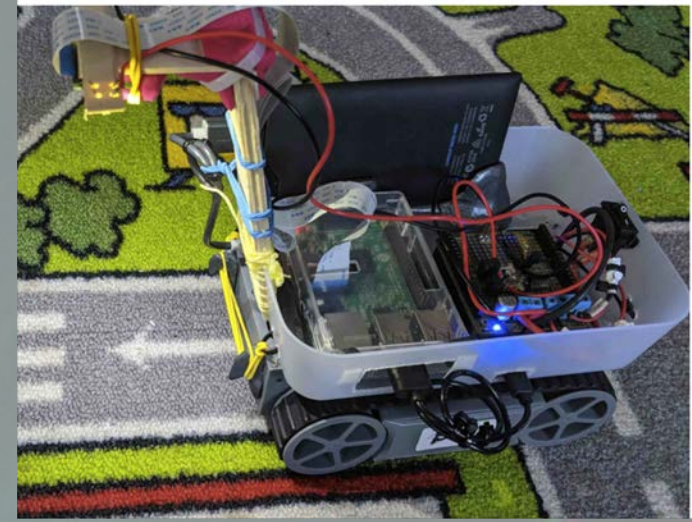
Transformations in Scratch
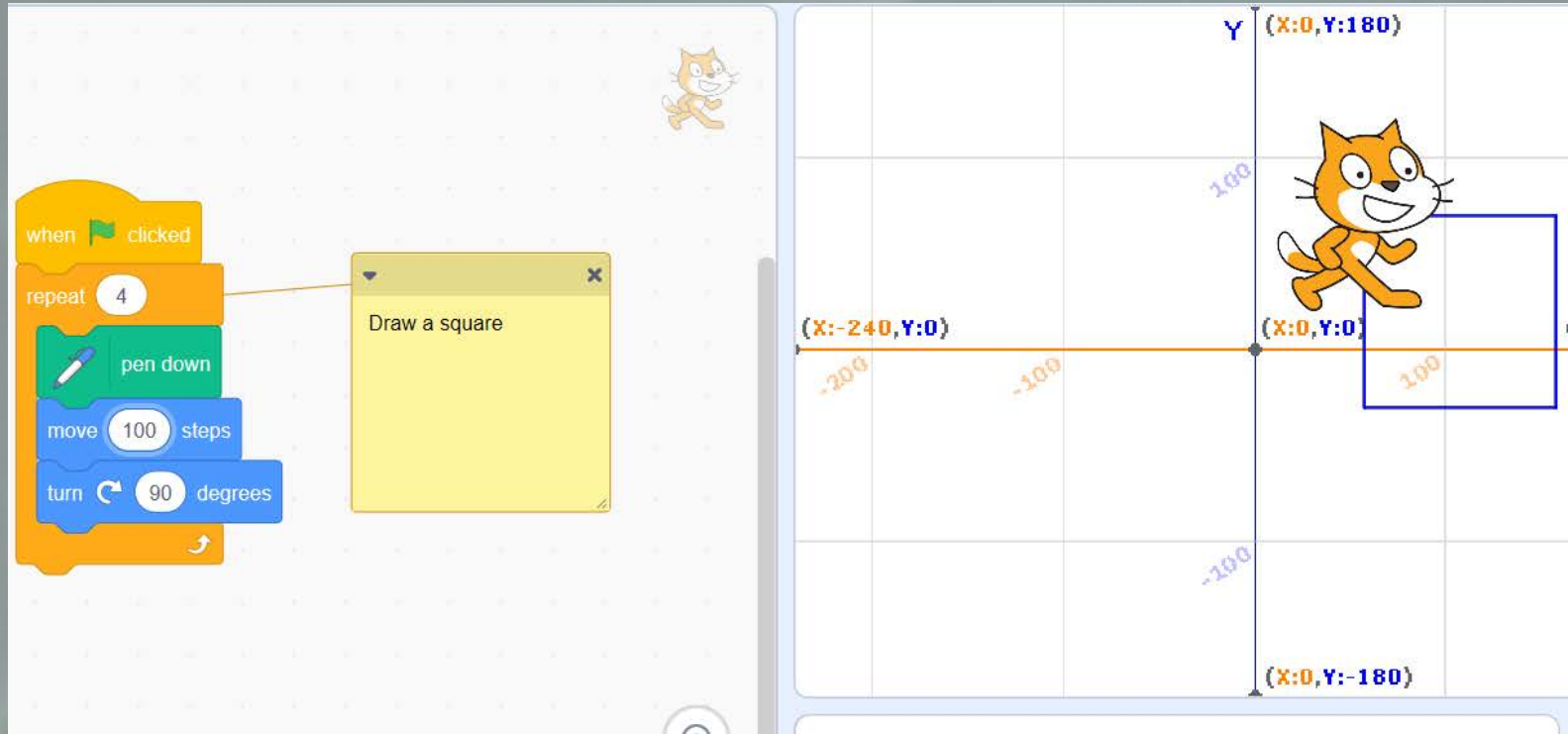
Curriculum Links Data and Information:

- Develop and modify programs with user interfaces involving branching, iteration and functions using a general-purpose** programming language
- Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors

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Social Engineering Challenge

Links with eSmart and Wellbeing.

Curriculum Links: Creating Digital Solutions

- Evaluate how well student-developed solutions and existing information systems meet needs, are innovative and take account of future risks and sustainability

- Develop and modify programs with user interfaces involving branching, iteration and functions using a general-purpose programming language

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Year 10 Electives

- Computer Programming

- Robotics

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Assessment

- Some Digital Technologies outcomes are formally assessed in Maths and Science

- We plan to assess the work products of the Social Engineering Challenge in future years.

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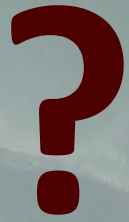bernie.mcgrath@kew.vic.edu.au

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Challenges

- Upskilling staff

- A maturing clientele

- Scheduling withdrawal programs.

- Promoting our efforts

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Some Useful Resources

- Trinket for Sense Hat Simulation
  - https://trinket.io/sense-hat
- REPL for class development
  - https://repl.it/repls
- Snakify for self-paced development
  - https://snakify.org/en/

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