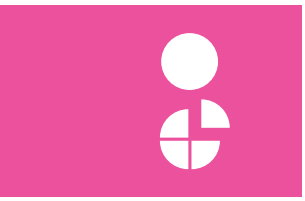
Computational Thinking in Action

A catalyst for growth and extension of Computational Thinking in the classroom.

What is Computational Thinking?

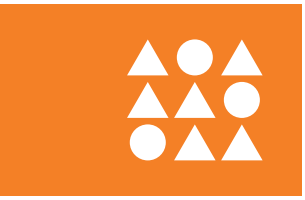
Computational Thinking is a set of skills that underpin learning within the Digital Technologies classroom. These skills allow students to engage with processes, techniques and digital systems to create improved solutions to address specific problems, opportunities or needs.

The six Computational Thinking skills:



DECOMPOSITION

Breaking down data, processes, or problems into smaller, manageable parts.



PATTERN RECOGNITION

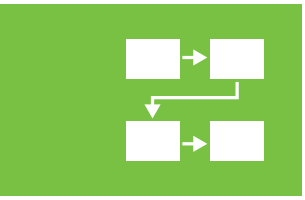
Observing patterns, trends, and regularities to make sense of data.

ABSTRACTION

Identifying and extracting relevant information.
The process of ignoring or removing unnecessary information.

MODELLING AND SIMULATION

Developing a model to imitate processes and problems.



ALGORITHMS

Creating an ordered series of instructions for solving similar problems or for doing a task.

EVALUATION

Determining the effectiveness of a solution and generalising.
Applying that information to new problems.

Thinking about Computational Thinking

Sort Computational Thinking Skills

Not important in the problem or solution	Important but not critical in the problem or solution	Critical in solving the problem or creating the solution

Compare Strategies

Challenges and successes

Other students' strategies

Wider problems and solutions

Apply Understanding

Explore real-world examples	Create designs and projects	Present and communicate findings

Smart cities

Years 3-4
Years 5-6

Groups of 3

15 minutes

Pens/paper
Island outlines
Counters, coins or tokens - all the same size (approx 1.5cm)

Student instructions

Place the mobile towers to get the best coverage on your island map, but also cost the least amount of money.

Island map

Towers

The counters represent the range of a mobile tower. Each tower costs $500.

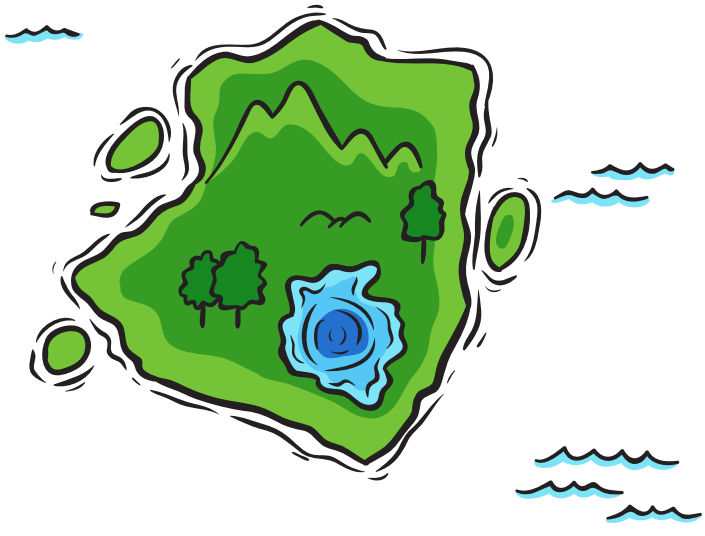
People

Randomly place 10 dots across the island. These dots represent people.

Cost efficiency

What is the best coverage you can get for the lowest price?

Does everyone on the island have coverage if there is an emergency?



Smart cities: extension

If this, then that: IFTTT

Some cities make their data available on the IFTTT platform, where people can set up alerts or cause a smart device to do something when a specific trigger occurs.

It might alert teachers, parents, students or other staff members of things that have happened at school. Sensors can be used to create the process.

Want to know more about smart cities?

Smart Cities are those that are connected via a network of sensors that alert town managers to changes, such as how full bins are, where open car parks are, and how dirty the air is on that day.

For more information and the latest news on smart cities, visit:

www.digitalcareers.csiro.au/links

Design a schedule of IFTTT to automate your school.

EXAMINE → **PLAN** → **PRODUCE** → **EVALUATE**

Submit your design to YICTE!

www.youngictexplorers.net.au