DIGITAL TECHNOLOGIES HUB

Australian Curriculum V9.0
Algorithms

The precise sequences of steps and decisions needed to solve a problem, often involving iterative (repeated) processes
ACARA, 2022

Teaching about algorithms F–10

View your year band for an overview of the content related to algorithms. It also includes suggested related content so you can integrate with another learning area.

Approaches include:

Complexity

Match an algorithm to an outcome
- Provide different algorithms and match to the task it solves, then follow.

Arrange and follow a series of steps in correct order
- Provide steps of an algorithm to order correctly.

Fill in the gap of a missing step
- Provide an algorithm with a step missing in the sequence.

Identify elements of an algorithm
- Which part is where we make a decision, is anything repeated?

Compare two different algorithms for the same problem
- Do they each work? Is one more efficient than the other?

Fix bugs in algorithms
- Review and modify an algorithm that includes too many assumptions, is inaccurate or is inefficient.

Create an algorithm
- Use computational thinking to solve a problem and create an algorithm.

Write an algorithm in pseudocode
- Convert algorithms from Pseudocode into code.

Trace and validate algorithms
- Use input data to test and check output against expected values.

Foundation

This concept does not appear in the Australian Curriculum: Digital Technologies in Foundation.

There is related content in Design Technologies and English.

Related content

Sequence pictures to retell a story.

| English | Retell and adapt familiar literary texts through play, performance, images or writing | English AC9EFLE05 |

Related content

Follow a series of steps when designing a solution to a problem using available materials.

| Design Technologies | Generate, communicate and evaluate design ideas, and use materials, equipment and steps to safely make a solution for a purpose | Design Technologies AC9TDEFP01 |

Years 1–2

I can follow and describe ordered steps. They can include simple choices and parts that repeat.

An algorithm describes a sequence of steps and decisions. It can be spoken as instructions, written as a list, or presented as a series of images.

While following an algorithm, often by physically acting out the steps, we can see if the algorithm achieves the intended outcome.

For example, design and follow **a series of steps** and **decisions** to make a sandwich or rice paper roll.

The order of certain steps may affect the outcome. For example, 'Slice the vegetables' is before 'Spread the ingedients onto the rice paper and roll'.

Branching is when the steps include a decision with a *yes* or *no* answer.

Have you fed the dog?

No ➡ Put food in the bowl

Yes ➡ Don't put food in the bowl

Sometimes a single step is repeated multiple times. This is called **iteration**. We can look at more efficient ways of describing repeated steps.

Pick up the basketball
Bounce the ball 5 times
Take a shot at goal.

Collect the ball.
Place the ball back.
x 5

| Achievement standard | Students follow and describe basic algorithms involving a sequence of steps and branching. |
| Content descriptions | Follow and describe algorithms involving a sequence of steps, branching (decisions) and iteration (repetition) | AC9TDI2P02 |

Related content

Give and follow simple directions to move from one place to another using familiar reference points.
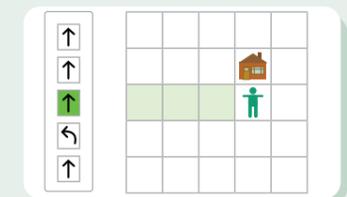
| Mathematics | Give and follow directions to move people and objects to different locations within a space | Mathematics AC9M1SP02 |

Find more resources at www.dthub.edu.au

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