Computational Thinking: Algorithm Design

Algorithm Design moves the problem from the modelling phase to the operation stage, when the proposed solution is tested.

What is an Algorithm?

- A set of step by step instructions to get something done.
- The set of rules describing how something works.
- A set of instructions for completing a task.
- A set of rules for solving a problem in a finite number of steps.
- May or may not involve mathematics.

Algorithm Examples

- Following a recipe
- Learning dance steps
- Storyboarding an animation
- Getting dressed
- Planting seeds

Necessary Understandings for Algorithm Design

- Your instructions need to be unambiguous.
- You need defined inputs and outputs.
- You need to have a defined end point.
- You need to be able to interpret the computer's results.

Sponsored by at&t

Communicating with Computers

Computer programmers work to create instructions through coding that are born from human ideas but translated for a computer to understand. For example, WISIWYG (What You See Is What You Get) interfaces help non-computer programmers communicate with computers.

Algorithm Sequence

- Flowcharts can help identify actions and the order in which they need to occur.
- Sets or pieces of the instructions that happen over and over again are called a loop or iteration.
- Conditional statements affect the variables (if/then, yes/no, true/false). The first condition dictates the second.

play sound meow
show variable var
move 10 steps
pen down

Coding for Non-Programmers

- Free, online tools that allow users to program animations and games using pre-coded blocks instead of computer languages.
- You don't have to know how to program (write code) but you do have to understand algorithms (creating a logical set of instructions).

Access the Course: Problem Solving through Computational Thinking for Educators

Access this Module: Algorithm Design