



Embodied Movement

The purpose of this activity is for educators to engage in unplugged computational thinking by creating and following algorithms.

Key Concepts

- **Algorithm:** set of step-by-step instructions required to solve a problem or complete a task
- **Computational thinking:** set of critical thinking and problem-solving skills, practices, and processes that everyone, including computer scientists, can learn and use in various contexts
- **Unplugged:** without the use of technology

Materials and Setup

- Directional Arrow Cards (one set per pair/small group, page 3)
- Tape
- Paper
- Pen or pencil
- Assorted objects that could be used as obstacles for a maze



20 minutes



Pairs or small groups



In-person

Activity Instructions

1. Each pair or small group receives one set of Directional Arrow Cards (page 3). On each card is a directional arrow and label that represents the direction in which to move.
2. Round 1: Create and Act Out Algorithms
 - a. In each pair or small group, identify one person to be the “programmer” and the others to be the “computer.”
 - b. The “programmer” will create an algorithm, or a step-by-step sequence, by putting the cards in a specific order. For example, they might put the cards in this order: Forward, Forward, Turn Right, Backward.





- c. The “computer” will act out the algorithm with their body. For example, they might move two steps forward, turn right, and move one step backward. Another way to act it out might be to reach forward two times, turn their torso to the right, and reach backward.
- d. Take turns being the “programmer” who creates the algorithms and the “computer” who follows the algorithms.

3. Round 2: Create Mazes

- a. In each pair or small group, identify one person to be the “maze creator” and the others to be the “maze solver.”
- b. The “maze creator” will imagine a story or challenge for their maze. For example, “This is Chuy, and he can’t find his glasses. Let’s help him get from the start to where his glasses are!”
- c. The “maze creator” will create a simple maze on the floor or table using tape, paper, and objects to mark the path and obstacles. They will decide where the start and end points are in their maze. For example, Chuy starts on one side, and his glasses are on the other side.
- d. The “maze solver” will use the directional cards to build an algorithm that will guide Chuy to his glasses, avoiding obstacles along the way.
- e. The “maze solver” will act out the algorithm, moving through the maze as Chuy would, to show how he finds his glasses.
- f. Take turns being the “maze creator” (the person who creates the story and sets up the maze with obstacles) and “maze solver” (the person who develops the algorithm to solve the maze and acts it out).

Reflect and Discuss

- How does this activity support your understanding of algorithms?
- What are other examples of algorithms you create or follow in your everyday life?
- How might you adapt this activity for children in your learning setting?





Directional Arrow Cards



Forward



Forward



Forward



Forward



Backward



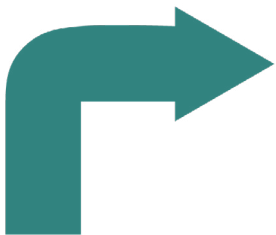
Backward



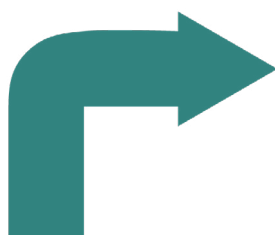
Backward



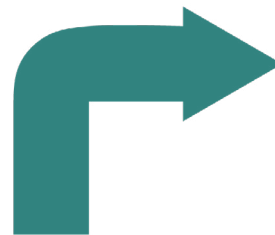
Backward



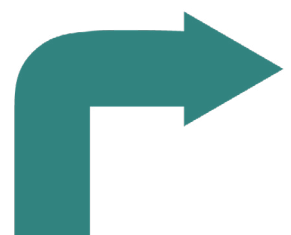
Turn Right



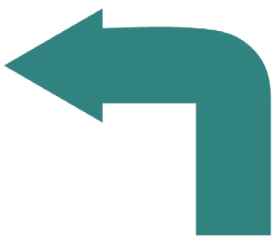
Turn Right



Turn Right



Turn Right



Turn Left



Turn Left



Turn Left



Turn Left