Maze: From Here to There

Computational Thinking: Sequencing

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

Objective of this Investigation:

Children will act as robots and programmers, following and giving verbal directions (i.e., a code) to get from a designated Point A to Point B.

Vocabulary:

- code
- sequence
- forward
- backward
- turn

Materials:

- a large enough space to move and move around freely
- a Point A (e.g., cone, toy, x on the ground, etc.)
- a Point B (e.g., cone, toy, x on the ground, etc.)

Progression Steps (Computational Thinking: Sequencing):

Visit **STEMIE Learning Trajectories** for details

- Simple Sequencer

This Investigation:

- Set up your Point A and Point B so that they create a straight path.
- Introduce the activity to children:

  "Today we are going to be robots and programmers!"

  "We are going to try to get a robot from here (Point A) to here (Point B) by giving them directions, or a code to follow. The programmer's job is to give directions. The trick is that the robot can only move the way the programmer says."
- Model being the robot and ask children to give you directions. Help children to be specific in their directions.

  "If you want me to take three steps. Say, 'Move forward three.' That's the code!"
- Move the number of steps children tell you to and ask children to determine if you made it to your goal or not. **(Simple Sequencer)**

Adaptations:

See **A Guide to Adaptations** for general ideas and strategies

Environment:

- Allow children to use different ways to move, such as using a wheelchair, walker, etc.

Instruction:

- Accept all forms of communication when children given directions including verbal, visual, gesture, AAC, etc.

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This Investigation (Continued):

- If not, have children suggest another number of steps to take. Keep trying until you (the robot) reach the goal.
- Once you make it to the goal, help children determine how many steps in total it took to make it to the goal.
    - **"We moved forward three and then four. 3+4=7. It took seven steps to get from there [Point A] to here [Point B]."**
- Have children give you the directions as one command.
    - **"Okay, so to get to the end, we had to move forward seven steps. Let's try it out one more time to make sure that's right."**
- Allow children to have turns as both the programmer and the robot to try both giving and following the verbal directions.

Adaptations (Continued)

- If children say that the robot made it to the goal when the robot did NOT make it to the goal, support children by modeling **"I didn't make it!"** and showing where the end point is vs where you ended up. **"We tried to make it over here"** (step to end) **"but instead we made it over here."** (step back to where the incorrect directions got you). **"I didn't go far enough. Let's try more steps."**

How to Continue This Investigation:

- Add a Point C that still involves Point A and B but includes a challenge such as a turn. **(Sequence Planner)**
    - Start a conversation comparing the first and second goal.
        - **Is one farther than the other?**
        - **Do we think it will take more or fewer steps to get there?**
        - **How many steps did it take us to get to our first goal? Can we use that to help us get to our second goal?**
- After children have determined the directions needed to get to the new goal, invite a new student to join the investigation and ask children if they remember/can lead the new student to the goal with the directions that were previously determined.