EARLY CHILDHOOD EDUCATOR ACTIVITY SHEET

ROBOTS: THINKING LIKE A COMPUTER

national science week

BIG IDEA

- Robots follow clear instructions.
- Scientists and computer programmers plan, test, and adjust instructions to solve problems.

LEARNING INTENTIONS

Children will explore sequencing and instructions, use language to give and follow directions, and develop early problem-solving and computational thinking skills.

EARLY YEARS LEARNING FRAMEWORK (EYLF) V2.0 ALIGNMENT

Outcome 4.2	Outcome 4.3	Outcome 4.4	Outcome 5.1
Inquiry and investigation through experimentation	*Transfer learning across contexts through testing and adjusting*	*Resource their own learning through connecting ideas and processes*	*Communication of observations and ideas*

SETUP AND DELIVERY

Book

Robots, Robots Everywhere
Sue Fliess

Materials

- ☐ Open space or mat
- ☐ Arrows or directional markers
- ☐ Blocks or loose parts
- ☐ Simple obstacle course or target
- ☐ Paper for drawing sequences

Experience suggestions

- Read *Robots, Robots Everywhere* and explore the different kinds of robots shown.
  - Discuss what robots do and how they help people.
  - What do all robots have in common?
  - What do they need to work?
- Human robot game: one child gives step-by-step instructions, the other follows exactly like a robot.
- Navigate a simple obstacle course using verbal directions (e.g. forward, turn, stop).
- Introduce errors in instructions and encourage children to debug (fix) them.

Developed by the University of Canberra CASE (Centre for Advanced Studies in Education), in partnership with Questacon.

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EDUCATOR PROMPTS

Noticing and describing

- ☐ What did the robot do?
- ☐ What happened first? What happened next?
- ☐ What instructions did you hear?
- ☐ Did the robot follow the instructions exactly?

Sequencing and ordering

- ☐ What step comes first?
- ☐ What do we need to do next?
- ☐ Can we put these steps in the right order?
- ☐ What happens if we change the order?

Interpreting and inferring

- ☐ Why didn't that work?
- ☐ What went wrong with the instructions?
- ☐ What do you think the robot understood?
- ☐ How could we make that clearer?

Predicting and testing

- ☐ What do you think will happen when we give this instruction?
- ☐ What do you think the robot will do next?
- ☐ What might happen if we change one step?
- ☐ Do you think this plan will work?

Debugging and adjusting

- ☐ What do we need to fix?
- ☐ Which step needs to change?
- ☐ How can we improve the instructions?
- ☐ Let's try again—what will we do differently?

Comparing and classifying

- ☐ Which instructions worked best?
- ☐ How are these instructions the same or different?
- ☐ Which sequence was easier to follow?
- ☐ What made one set of instructions clearer?

Reflecting on learning

- ☐ What did you learn about giving instructions?
- ☐ What made instructions easy or difficult to follow?
- ☐ How did you solve the problem? What would you do next time?

Connecting to experience

- ☐ Have you ever followed instructions before?
- ☐ When do we need to follow steps in order?
- ☐ Have you used something that works like a robot?

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RISK ASSESSMENT

ACTIVITY	RISK LEVEL
Human robot games, obstacle navigation, movement-based sequencing	Low to Moderate (depending on setup)

HAZARDS	CONTROL MEASURES

• Trips or collisions during movement activities
• Misinterpreted instructions leading to unsafe actions
• Overexcitement in active play
• Use of small loose parts (if building robots)
	• Use a clear, open space free of obstacles
	• Keep movement activities simple and controlled (no running required)
	• Model safe movement behaviours (slow walking, stopping on cue)
	• Clearly define boundaries and stopping signals
	• Supervise closely during human robot activities
	• For loose parts:
	  ○ Ensure materials are age-appropriate
	  ○ Avoid choking hazards
	• Scaffold instructions to prevent unsafe or confusing directions

HYGIENE / INCLUSION CONSIDERATIONS

- Adapt for children with mobility needs (e.g. seated robot play)
- Support turn-taking to reduce crowding and collisions