Learning Like a Robot

SMaiLE Project

Key Information

Target Group: 4 - 7 y.o.

Duration: 3–4 sessions (30–45 min)

Key Learning Goals:

1. **Machine Learning Concept:** Understand that computers learn from examples, just like people.
2. **Role of Humans:** Learn that computers need humans to show them examples (data).
3. **Mistakes:** Notice that sometimes machines get things wrong if they are confused.
4. **Categorization:** Practice sorting and grouping images to "teach" the robot.

Learning Outcomes

By the end of the project, students will be able to:

KNOWLEDGE & UNDERSTANDING:

- Know that machines can "look" and "learn" from pictures.
- Understand that computers need humans to show them examples.
- Notice that sometimes machines get things wrong.

SKILLS & ABILITIES:

- Sort and group images (e.g., Animals vs. Birds, Fruits vs. Vegetables).
- Describe what they see in pictures.
- Notice patterns or differences between objects.

ATTITUDES & VALUES:

- Feel curious about how robots work.
- Learn to share ideas and listen to others.
- Recognize that people and robots can work together.

European Dimension / Erasmus+ Connection

- **Scientific Collaboration:** Simulates real-world research where diverse data leads to better AI models.
- **Digital Inclusion:** Makes complex concepts accessible to very young learners.
- **Critical Thinking:** Introduces the concept that technology relies on human input and isn't magic.

1. Resources and Tools

- **Printable Cards:** Animals, Birds, Emotions, Fruits, Vegetables (provided).
- **Sorting Materials:** Hula hoops, baskets, or marked tables.
- **Props:** A "Robot" puppet or costume/hat for the teacher.
- **Story:** "Boy + Bot" by Ame Dyckman or similar robot stories.

Activity Overview

Phase	Activity	Description
Intro	Train the Robot	Students work in teams to sort cards (e.g., Fruit vs Vegetable) into hoops to "feed" data to the robot.
Testing	Robot Guesses	The teacher (as Robot) picks a card and guesses. Students correct the robot if it makes a mistake.
Advanced	Human vs. Robot	Sorting tasks into "Robot Job" (math, patterns) vs "Human Job" (hugging, feelings).
Reflection	I Helped the Robot	Drawing a picture of how they taught the robot something new.

2. Introduction: Train the Robot

Concept: Machine Learning is like teaching a child with examples.

- **Hook:** "I have a robot friend who doesn't know what a strawberry is! Can we teach him?"
- **Activity:** Place hoops labelled "Fruit" and "Vegetable".
- **Action:** Students sort cards into the hoops.
- **Explanation:** "You are giving the robot *data* so it can learn patterns."

3. Testing: Robot Guesses

Concept: Testing the model and handling errors.

- **Role-Play:** Teacher puts on a robot voice.
- **Scenario:** Robot picks up a tomato card and says "Beep boop... this is an Apple!"
- **Response:** Children shout "No!" and explain why (e.g., "It's a vegetable/fruit," "It's red but different shape").
- **Lesson:** Robots make mistakes if they haven't seen enough examples.

4. Advanced: Human vs. Robot

Concept: Emotional Intelligence vs. Artificial Intelligence.

- **Cards:** Use "Action Cards" (e.g., Adding numbers, Giving a hug, Knowing red).
- **Sorting:** "Can a robot do this, or do we need a person?"
- **Discussion:** Use the Emotion Cards. Can a robot feel "Happy" or just show a picture of a smile?

5. Reflection: Creative Drawing

Task: "I Helped the Robot!"

- Students draw a picture of themselves teaching the robot.
- **Captions:** Teacher helps scribe: "I showed the robot a green apple" or "I told it the dog was not a cat".
- **Display:** Create a "Robot Helpers" wall in the classroom.