How AI Learns and Solves Problems

SMaiLE Project

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Key Information

Target Group: 8 - 12 y.o.

Duration: Approx. 3-4 hours (Modular)

Key Learning Goals:

1. **AI Concepts:** Introduce fundamental concepts of how AI learns (Supervised, Reinforcement, LLMs).

2. **Real-World Application:** Demonstrate diverse applications in solving problems (sustainability, ecology).

3. **Teacher Training:** Provide teachers with practical experience in facilitating AI education.

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Learning Outcomes

Students will be able to:

KNOWLEDGE & UNDERSTANDING:

- Define AI and articulate basic concepts of how it learns.

- Identify key AI learning paradigms: reinforcement learning, supervised learning, LLMs, computer vision.

- Recognize AI types and match them to appropriate real-world problems.

SKILLS & ABILITIES:

- Differentiate between human and AI-generated content (Critical Thinking).

- Design conceptual AI solutions for real-world problems.

- Work collaboratively to research and present ideas.

ATTITUDES & VALUES:

- Recognize AI as a tool for innovation and sustainability.

- Understand ethical implications (safety, fairness, limitations).

European Dimension / Erasmus+ Connection

- **Bridging the Gap:** Addresses the need to increase AI knowledge for both students and teachers.

- **Professional Development:** Implementing this scenario serves as practical hands-on training for educators.

- **Collaboration:** Group work and discussions foster teamwork valuable in European settings.

- **Global Challenges:** Connection to sustainability and ecological problems.

1.   Resources and Tools

- **Hardware:** Computers/laptops or tablets with internet access, Projector and screen.

- **Materials:** Pre-prepared cards/digital matching game for AI types, Whiteboard or flipchart.

- **Digital Tools:** Access to YouTube (Intro videos), Kahoot/Mentimeter (Quiz), Padlet (Reflection).

- **Assessment:** Peer evaluation forms, Self-assessment rubric (included).

Activity Overview

Phase	Time	Activity
Intro	30 min	Brainstorming "AI in Our Lives", "What is AI?" Video, Quick Quiz.
Research	90-120 min	Intro to AI Paradigms, Research Task, "Find the AI Impostor" Game.
Creative	50-60 min	"AI Matching Game", "Design Your AI Solution" Project.
Reflection	20 min	Digital Reflection (Padlet), Self-Assessment Rubric.

2.   Introduction and Motivation

Goal: Equip students to navigate the digital landscape.

- **Video & Discussion:** Watch a short intro video. Teacher asks: "Where have you encountered AI in everyday life?" "What are your concerns?"

- **Quick Quiz:** Use digital tools (Mentimeter/Kahoot) to assess baseline knowledge.

3.   Research and Learning

Activity 3.1:   Beyond the Basics: Diverse AI in the Real World

Introduce core paradigms using simplified explanations:

- **Supervised Learning:** Like teaching a child with examples (e.g., identifying spam, predicting prices).

- **Large Language Models (LLMs):** Chatbots, text summarization.

- **Computer Vision:** Self-driving cars recognizing objects, medical analysis.

Task: Students research an industry (e.g., healthcare, environment) and identify the AI paradigm used.

Activity 3.2:   Game: Find the AI Impostor (Turing Test Simulation)

- **Setup:** Divide class into "Detectives" and "Suspects." Some suspects are "AI Impostors" (teachers secretly using a chatbot).

- **Gameplay:** Detectives ask creative questions (e.g., "What is the name of my cat?").

- **Debrief:** Discuss how to identify fake/robot-like answers vs. human responses. This addresses concerns about fake content.

4.   Creative Application

Activity 4.1:   AI Matching Game

Students use cards to match **Real-World Problems** (e.g., detecting cancer) to **AI Solutions** (e.g., Computer Vision). This reinforces understanding of diverse AI applications.

Activity 4.2:   Design Your AI Solution

Assignment: In small groups, choose a real-world problem (potentially focusing on sustainability) and design a solution. **Output:** A short pitch or drawing covering:

- The Problem.

- The Proposed AI Solution.

- The "Learning Method" used (e.g., "We used Supervised Learning").

- Ethical Considerations (Privacy, Safety, Fairness).

5. Reflection and Evaluation

Reflection Questions (Padlet): "What was the most surprising thing you learned?" "How can we use AI safely?"

Self-Assessment Rubric

Criteria	I did very well	I did okay	I need help
Defining AI	I can explain it in my own words and give examples.	I understand a little, but hard to explain.	I'm not sure what it is.
Types of AI	I can name several types and give real examples.	I can name one or two with help.	I don't remember the types.
Participation	I worked actively and shared ideas with my team.	I joined sometimes, but not always.	I found it hard to join/didn't participate.
Design Project	I helped create and present a clear idea.	I understood the idea with help.	I didn't really understand.
Critical Thinking	I can give examples of fake/robot answers.	Sometimes I can tell.	I don't know how to tell the difference.
Ethics/Safety	I talked about risks or good choices (privacy/fairness).	I heard about it, but not sure.	I haven't thought much about that yet.

Online Resources

1. FAO – Food and Agriculture Organization: https://www.fao.org

2. Code.org AI for Oceans: https://code.org/oceans

3. National Geographic: https://www.nationalgeographic.com