

The Basics of AI

SUBJECT	TEACHER	GRADE	DATE

OVERVIEW

This lesson will help students understand AI as a field of study and technology, emphasizing how AI interacts with its environment through sensors, reasoning, and decision-making. They will also gain practical insights into how AI is applied to real-world scenarios.

OBJECTIVES

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

- Understand what AI is and what it is not.
- Recognize how AI interacts with its environment.
- Learn about rule-based systems vs. self-learning systems.
- Understand the broad definition of AI and how it can be applied to real-world examples.

MATERIALS

- Whiteboard / Markers
- Projector and screen (for Power Point presentation and video playback)
- Computers or tablets for interactive activities (optional)
- Printouts of AI-related definitions and examples (optional)

LESSON OUTLINE

1. Introduction to AI (15 minutes)

- **Objective:** Set the stage for understanding what AI is.
- **Activity:**
 - Begin by showing slide 2 (Brainstorming).
 - Discuss with students: What do you think AI is? What do you think AI is NOT?
 - Ask for examples from the class (e.g., is a human child AI? Why or why not?).
 - Show Slide 3 and ask students for examples of the use of AI in various sectors: healthcare (radiology scans, robotic surgery assistance, wearable health devices...), transportation (autonomous vehicles, traffic flow optimization, navigation systems...), finance (customer service chatbots, fraud detection and prevention, personalized financial advising...), surveillance (smart traffic surveillance, license plate recognition, object detection in video feeds...), social media (fake news detection, AI-driven hashtag suggestions, content recommendation algorithms...), entertainment (AI-generated music,

automated subtitle generation, virtual reality experiences...), education (personalized learning platforms, automated grading and feedback, speech recognition for language learning...), gaming (dynamic difficulty adjustment, voice recognition for interactive gameplay, realistic animation and character movement...), robotics (cleaning robots, industrial automation, mining and excavation robots...), agriculture (AI-powered irrigation systems, pest and disease detection, AI for weather prediction...), e-commerce (dynamic pricing algorithms, automated order fulfillment, virtual fitting rooms...).

2. What Makes a System "AI"? (20 minutes)

- **Objective:** Help students distinguish between AI systems and non-AI systems.
- **Activity:**
 - Slide 4. Present two key types of systems: Rule-based systems (e.g., a calculator with predefined rules) vs. Self-learning systems (e.g., machine learning algorithms that improve over time).
 - Discuss the concept of an agent that interacts with its environment using sensors (e.g., cameras, microphones). Explain that AI involves perceiving the environment, reasoning about data, and deciding the best action.
 - Students work in pairs or small groups to discuss whether various examples are AI or not (e.g., traffic lights, a smartphone assistant, a self-driving car, a microwave with a timer).
 - Groups share their conclusions with the class.
 - Optional video: [What-is-AI Thoughts of AI](#)

3. The Definition of AI (20 minutes)

- **Objective:** Provide a clear, structured definition of AI.
- **Activity:**
 - Slide 5. Explain the main concept behind AI: AI works by using an "agent" that interacts with an environment. The process begins with the agent perceiving its environment through various sensors like cameras or microphones, which gather data. This data, which can be either structured or unstructured, is then processed and interpreted. The key to AI is how the agent uses this information to make decisions. AI systems can operate based on predefined rules (rule-based systems) or, more advanced, through self-learning processes (e.g., machine learning). In the latter case, the system improves its performance over time by learning from the data it processes.
 - Slide 6. Introduce the formal definition of AI: "AI systems are software (and possibly hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting data, reasoning, and deciding the best actions to achieve the goal."
 - Break down the definition into key components:
 - Complex goals
 - Perception through data
 - Reasoning and decision-making
 - Discuss with students how this definition can be applied to different examples (e.g., self-driving cars, video game AI, voice assistants).
 - Optional video: [What-is-AI Definition Of AI](#)

4. Activity: Create an AI System (15 minutes)

- **Objective:** Encourage creative thinking by having students design a basic AI system.
- **Activity:**
 - In groups, students will design an AI system for a specific task. The system should include the following:
 - What goal does it aim to achieve?
 - What kind of sensors would it use to perceive the environment (e.g., camera, microphone, temperature sensor)?
 - How would it process this data to make decisions?
 - Example tasks:
 - Design an AI that helps a farmer monitor crops (using temperature and moisture sensors).
 - Design an AI that helps a teacher organize classroom activities based on student participation.
 - Groups will present their AI system designs to the class.

5. Wrap-Up Discussion & Q&A (10 minutes)

- **Objective:** Summarize key points and answer any questions from students.
- **Activity:**
 - Review what AI is, the difference between rule-based and self-learning systems, and the broad definition of AI.
 - Encourage students to ask any questions or clarify concepts that were difficult.
 - For homework (optional): Ask students to write a brief reflection on a technology they use daily that could be considered an AI system.

UNDERSTANDING

- A short quiz based on this lesson can be found [here](#).
- Topics for discussion may include:
 - Why do we need AI in our life?
 - What can we expect from AI? List at least three expectations and try to comment to others' input.