



AI Literacy:

Understanding AI with a Critical Eye

High School Workbook



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How to Use this Workbook



Learning Objectives

By the end of these lessons, students will be able to:

- Explain what AI is and how it works.
- Differentiate AI from human thinking and emotion, and its limitations.
- Recognize how bias in data and design can impact AI decisions.
- Identify how AI is embedded in everyday life.
- Evaluate how AI is transforming careers, skills, and opportunities, and how to prepare for a future alongside it.
- Apply safe, ethical, and empowered strategies for using AI tools as critical thinkers, creators, and problem-solvers.

Learning Rationale

Artificial Intelligence is all around us—from voice assistants to online games to learning tools. As students grow up in a world powered by AI, it's vital that they:



Build awareness of AI in their surroundings.



Develop critical thinking about what AI can and cannot do.



Practice digital safety skills and make responsible choices.



Grow confidence in digital literacy and how to ask for help when unsure about technology.

This curriculum develops essential life skills through AI literacy—helping students think critically, make responsible decisions, and navigate technology with confidence.

Pre-Assessment



Learning Objectives

By the end of the pre-assessment, students will:

- Reflect on and express their current understanding and beliefs about artificial intelligence (AI).
- Identify real-world examples of how AI appears in their daily lives.
- Recognize the differences between human intelligence and machine learning.
- Consider their personal boundaries and values when interacting with technology.
- Build self-awareness around their comfort level, curiosity, and questions about AI.

Learning Rationale

This is not a test — it's a launch point. The pre-assessment is a diagnostic tool designed to spark thinking and surface students' prior knowledge, assumptions, and lived experiences with artificial intelligence. It gives students a voice before the lessons begin — and gives educators a valuable window into what their students are bringing to the table.

Why This Matters:

- **Activates Prior Knowledge:** Connects new learning to what students already know or wonder about.
- **Encourages Dialogue:** Creates a safe space for curiosity and sets the tone for open, reflective discussions.
- **Informs Instruction:** Helps identify strengths, gaps, and potential misconceptions.
- **Establishes a Growth Baseline:** Creates a “before picture” that can be revisited during the post-assessment.

For each statement below, rate how well you understand the idea by choosing one of the following:

- I understand this well
- I kind of understand
- I'm unsure or confused

Statement	I understand this well!	I somewhat understand this.	I'm unsure or confused by this.
I can explain what artificial intelligence (AI) is.			
I know how AI learns from patterns and data.			
I understand the difference between AI and traditional computer programs.			
I can explain how AI makes predictions or decisions.			
I can spot examples of AI in the apps or websites I use.			
I understand that AI doesn't have thoughts or emotions like humans do.			
I can explain how filters, algorithms, or recommendation engines affect what I see online.			
I know that AI is used in many fields—like music, medicine, art, transportation, and more.			
I understand how bias in data can influence what AI does.			

Statement	I understand this well!	I somewhat understand this.	I'm unsure or confused by this.
I've thought about how to use AI in helpful and thoughtful ways.			
I know why it's important to use AI tools safely and responsibly.			
I know how to check if AI-generated information makes sense or needs more research.			
I've considered the ethical choices people face when designing or using AI tools.			

Which topic do you feel the most confident about? Why do you think that is?

Which statement(s) did you feel unsure or confused about? What do you think made them hard to understand?

What is one question you have about AI that you'd like to explore?

The Foundations of AI Understanding

Essential Question

What is artificial intelligence, and how does it actually work?

Core Idea

AI is built on data, patterns, and algorithms. Understanding how AI works gives us the power to use it wisely, question it when needed, and make informed decisions in a tech-driven world.

What You Will Learn



Learning Goals for this lesson:

- Explain what artificial intelligence (AI) is in your own words.
- Describe how AI uses data and patterns to make predictions or suggestions.
- Recognize examples of AI in tools and apps you use every day.
- Understand that AI doesn't think or feel like a human being.



Let's Learn about AI.

You've probably used AI already today. Whether it's unlocking your phone with facial recognition, asking a voice assistant a question, or scrolling through a playlist that seems to know exactly what you like, AI is working behind the scenes. So, what is AI?

Artificial Intelligence (AI) is a type of computer program designed to do tasks that usually require human thinking—like understanding language, recognizing images, making recommendations, or learning from past experience. But AI doesn't "think" like a person. It doesn't feel, imagine, or make decisions based on emotion. Instead, it uses data and patterns to come up with the most likely answer.

How Does AI Learn?

Imagine you want to teach an AI to recognize a dog. It doesn't know what a dog is, so you have to give it lots of examples and very clear instructions.

Step-by-step training process:

1. Show the AI thousands of pictures labeled "dog" or "not dog."
2. The AI starts to notice patterns (four legs, ears, fur, tail).
3. It tries to guess new pictures based on those patterns.
4. If it's wrong, the data gets corrected, and it learns again.
5. Over time, it gets better at spotting dogs—even in new pictures.

This is how AI improves: not by thinking, but by finding patterns in data.

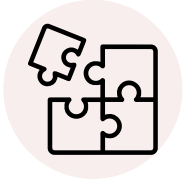
Real-Life Examples of AI

- Spotify suggests songs based on what you've listened to before.
- Maps and GPS apps adjust your route using real-time traffic data.
- Social media shows you content based on your past clicks, likes, and time spent on posts.
- Healthcare AI can help doctors analyze test results faster and more accurately.

Some AIs are basic. Others are advanced. But they all depend on data and rules created by people. They can be helpful, but they're not perfect—and they're not human.



Where do you think AI shows up in your life the most—and how does it help (or influence) what you do, watch, or decide?



Activity 1: Guess the Rule

AI systems learn by finding patterns in data—but they're not told the rules. In this activity, you'll act like an AI and try to figure out the hidden rule just by analyzing labeled examples.

Look at the sample data and see if you can solve the hidden rule in each!

Data Set 1	
Number	Label
10	Yes
7	No
2	Yes
13	No
8	Yes

The Hidden Rule: _____

Data Set 2	
Word	Label
table	Yes
banana	Yes
jump	No
fox	No
hat	No
computer	Yes

The Hidden Rule: _____

Data Set 3	
Food	Label
cake	Yes
candy	Yes
broccoli	No
spinach	No
apple	Yes
chicken	No

The Hidden Rule: _____

Data Set 4	
Word	Label
rocket	Good
pencil	Good
game	Bad
music	Good
book	Bad
cup	Bad

The Hidden Rule: _____



Answer Key
Data Set 1 - If a number is even, label it YES.
Data Set 2 - If a word has 2 or more syllables, label it YES.
Data Set 3 - If a food is sweet, label it YES.
Data Set 4 - If a word has 5 or more letters, classify it as a "good word." If it has fewer than 5 letters, label it "bad word."



Activity 2: AI Sort

Not all AI works the same way. Some systems follow strict rules that never change. Others learn from examples and improve over time — this is called machine learning.

Traditional AI (rule-based): Follows programmed logic (e.g., calculator, old chatbots)

Machine Learning: Learns from data and improves over time (e.g., spam filters, Roomba navigation)

Deep Learning: Uses artificial neural networks for complex pattern recognition (e.g., facial recognition, speech-to-text)

Generative AI: Creates new content based on learned patterns (e.g., ChatGPT, DALL·E)

Look at each example below and decide what type of AI each tool uses.

Item	Type of AI	How do you know?
Roomba that vacuums your floor while avoiding obstacles		
Spotify recommends new music based on what you've listened to		
A chatbot that answers based on keywords (but gives the same answers every time)		
An image app that improves its photo tagging based on user feedback		
ChatGPT gives you different answers based on how you ask questions		

Item	Type of AI	How do you know?
Facial ID that unlocks your phone using facial recognition		
Autocorrect that fixes spelling or grammar as you type		
SnapChat filters that add effects to your face in real time		
AI Art Generator that makes pictures from your text prompts		



What do you notice about the difference between traditional programming and learning-based AI?



Activity 3: You Be the AI – Write the Rules, Follow the Patterns

AI doesn't "think" like a person—it uses rules and patterns learned from data. One common method for building AI logic is using "if-then" statements (also called conditional logic). These help AI respond based on what it sees. For example:

- **If** a customer orders coffee at 6:00 AM, **then** recommend a breakfast sandwich.
- **If** a photo has four legs, fur, and a tail, **then** label it "animal."
- **If** a message contains "LOL," **then** recommend a laughing emoji.

Step 1: Review the dataset below

Message	AI Response
"I'm starving right now."	Suggest food delivery app
"How do I get to the library?"	Open maps or directions
"Play chill music."	Open lo-fi playlist
"Remind me at 3 PM."	Set reminder notification

Step 2: Write If-Then Rules

Write at least three if-then rules the AI might be using with this data set above.

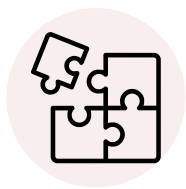
Step 3: Create your Own Mini-AI

Your job is to write logic rules to help a basic AI sort and respond to data. These rules help it ‘understand’ patterns.

Message	AI Response



- How does writing rules help you better understand how AI works?
- What would happen if the AI got incomplete or confusing data?
- What makes human decision-making different from these if-then rules?



Activity 4: Quick, Draw! Pattern Recognition in Action

AI doesn't "see" like a person. Instead, it analyzes lines, shapes, and patterns and makes fast predictions based on what it's been trained on. In this activity, you'll test how an AI tool makes guesses—and what happens when your drawing doesn't match its expectations.

With a teacher or parent's permission, go to: <https://quickdraw.withgoogle.com>



This game will give you 6 items to draw. Try your best to sketch each one in under 20 seconds. As you draw, the AI will shout out guesses. Notice how it improves—or doesn't—as you go.

After playing with Quick, Draw! answer these questions in a small group or written responses:

- What do you think this AI has been trained on? How could its training affect what it gets right or wrong?
- Did the AI guess things you weren't trying to draw? Why might that happen?
- How is the AI's way of recognizing different from how a person might recognize your drawing?
- What are the strengths and limits of using this kind of AI in real life? Where could it help? Where might it cause problems?

Optional Extension

Play a second round of Quick, Draw! — but this time, intentionally try to trick the AI by:

- Drawing in a totally different style (abstract, symbols, emoji-like)
- Making your drawing as realistic or complex as possible
- Using only straight lines or weird shapes



This activity shows how AI uses pattern recognition—not human intuition—to make decisions. While this can be powerful, it also has limits. AI can be confused by unusual inputs or learn bad habits if its training data is flawed. Understanding this helps us think more critically about the tools we use—and how they're built.