

# Training AI Using Data

## [Lesson Video](#)

### Objectives: *Students will be able to...*

- Understand and model how artificial intelligence is trained with data to make predictions.

### Materials & Tools

- [Ready-to-Go Slides](#) or [Teacher-led Slides \(Spanish\)](#)

**Computer Science Explanation**  
 Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks typically requiring human intelligence, such as learning, reasoning, problem-solving, and decision-making.



### Lesson Preparation

- Share the interactive AI training model activity with students to complete it individually or with a partner.
- This hour of code lesson provides multiple opportunities to explore AI. It would be best to project the Interact with a Chatbot and AI exploration tools for students to interact as a class.
- Print this [Completion Certificate](#) for students.

### Vocabulary

Word	Definition
<b>Artificial Intelligence</b>	The imitation or mimicking of human intelligence by machines, especially computers
<b>Data</b>	A collection of information

### Lesson Agenda

- What is AI (10 mins)
- Training an AI Model (25 mins)
- Using a Chatbot (10 mins)
- Exploring AI Tools (10 mins)
- Closing (5 mins)

## Lesson Details

### What is AI (10 mins)

Explain to students that AI is all around us. Ask students if they have heard of AI. Have students discuss what AI is and share examples with a partner.

- List different real-world examples of AI such as an Alexa or Siri. AI is self-driving cars, cell phone face recognition, and movie recommendations on streaming services. Explain to students that doctors use AI to diagnose patients based on medical scans, like X-rays. Movies use AI while video games use AI to act as opponents or nonexistent players. Tell students that astronauts can use AI models to detect planets outside our Solar System.
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### Training an AI Model (25 mins)

This section explores how computers learn and make choices.

- Students will play an AI robot sorting game. Students will act as “programmer” and “robot” sorting objects. The class will make predictions and guesses to the criteria the robot is sorting by.
  - After the activity, discuss the 2 follow-up questions.
  - For the next part of the AI training model, share the Interactive Activity with students to demonstrate how you can train a computer to predict and make assumptions about similar items in the future. Students will be letters and numbers.
  - Reflect on the 2 activities and how they relate to training an AI model explaining that the more examples we give the robot, the more accurate it will be.
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### Using a Chatbot (10 mins)

Describe what a chatbot is and ask if students have ever used a chatbot. Share this interactive activity chatbot activity with students. But for younger students, due to the typing and reading required, it would be better to do this as a whole class activity and project the interactive activity for students to follow along.

- As a class, discuss ways to safely use a chatbot and see if students would add anything else to the list.
- The program works by using lists to store what questions and answers Scout knows.
- If Scout knows the answer, Scout will respond. If not, Scout will ask how to respond next time. Type the response you want Scout to say and click the check mark.
- Reflect on the activity and how it relates to AI, but that our model can't be trained in the way other virtual assistants can be.

### Common Challenges and Questions

Question/Challenge	Answer
<b>When I ask Scout a question, Scout is asking how to respond.</b>	If Scout doesn't have the prompt on the prompt list, Scout will ask how to respond in the future. Scout will add the prompt/response to the list. If you ask the same question again, Scout should answer correctly.
<b>What can I ask Scout?</b>	You can program Scout to respond to statements like a conversation or questions.

### Exploring AI Tools (10 mins)

There are 4 additional AI tools for students to explore. Decide if you want students to have access to all 4, or choose just one. With many students being prereaders it may be easier to explore these as a class.

- Pre-Programmed [Teachable Machine](#) example: this AI model is trained to recognize the voices of CodeHS mascots. Make different sounds to test. Students may have to give permission to their microphone.
- [Face Sensing- Scratch Lab](#): Make animated costumes and games that interact with your face. Students may have to give permission to use their camera.
- [Quick Draw](#): Check out Quick Draw to help with machine learning research. See if the computer can guess your drawing!
- [Auto Draw](#): Auto Draw is similar to Quick Draw, but predicts what you're drawing and provides completed examples you can swap your work for.

### Common Challenges and Questions

Question/Challenge	Answer
<b>Can I upload my own Quick Draw prompts?</b>	No, Quick Draw will provide 6 random drawing prompts. If you don't like the prompt, you can start over to get new prompts.

### Closing (5 mins)

If time permits, give students time to showcase what they created during the exploring AI tools section with a partner. Discuss how AI is still a new tool that is rapidly changing. With a partner or as a class discuss what student's favorite AI tool they explored today is, and why. Then have students share in their own words, how they would describe AI.

## Resources

### Assessment Rubric

Category	4	3	2	1
	Advanced: demonstrates superior performance	Proficiency: demonstrates consistent performance	Moving toward proficiency/expectations	Experiencing significant difficulty
Understand and model how artificial intelligence is trained with data to make predictions.	Student successfully explains what AI is in their own words. Student participates in the training of an AI model game, the chatbot activity, and the training of an AI model sort.	Student successfully explains what AI is in their own words. Student participates in the training of an AI model game, and one other activity.	Student participates in the training of an AI model game, the chatbot activity, and the training of an AI model sort but needs support to explain what AI is.	Student needs significant support to explain what AI is.

Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab. See <http://scratch.mit.edu>.