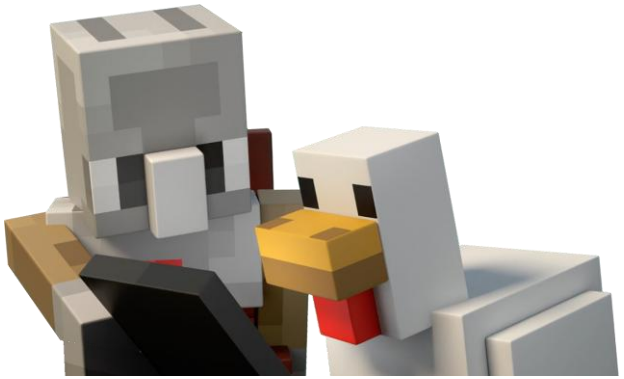
Educator's Guide to Teaching AI
Using "AI Adventurers" from Minecraft Education

Summary

This guide is a companion and lesson plan for using the video collection to provide students with artificial intelligence (AI) foundational knowledge, otherwise known as AI literacy. AI literacy involves having the skills and competencies required to use AI technologies and applications effectively and responsibly. In this series, students will journey alongside two curious companions and explore the world of AI!

This Guide includes:

1. Objectives
2. Suggested Duration & Audience
3. Learning Standards
4. Vocabulary
5. Teacher Preparation
6. Resources
7. Instructional Plan (Mini-lessons)
8. Further Learning and Extension Activities
9. Accommodations



Focus Questions

- What is artificial intelligence?
- How does artificial intelligence work?
- How do we use artificial intelligence in our everyday lives?
- How do we use AI responsibly and ethically?
- How can AI help us solve problems?
- What is the difference between generative AI and AI (predictive AI)?

Objectives

- Students will begin to understand artificial intelligence and how it works.
- Students will identify new vocabulary words around artificial intelligence.
- Students will apply their new knowledge to comprehension questions and activities.
- Students will identify ways of using AI responsibly and responsibly.
- Students will utilize appropriate skepticism when encountering AI-generated images and information
- Students will explain why it is important to cross-check AI-provided information with trusted, reliable sources
- Students will understand what makes a source more or less reliable
- Students will reflect on how AI can assist with creativity

Suggested Duration & Audience

There are 4 separate videos with different objectives and activities. It is suggested to break up these lessons into 4 or more mini-lessons.

Recommended Audience: grades 2 and up

Computer Science Teachers Association (CSTA) Standards

Elementary (K-2)	Elementary (3-5)	Middle (6-8)
1A-AP-14 Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.	**1B-AP-15** Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.	**2-AP-17** Systematically test and refine programs using a range of test cases.
1A-IC-16 Compare how people live and work before and after the implementation or adoption of new computing technology.	**1B-IC-18** Discuss computing technologies that have changed the world and express how those technologies influence and are influenced by cultural practices.	**2-IC-20** Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.
	1B-CY-01 Describe how personal information	**2-CY-04** Compare tradeoffs

Elementary (3-5)	Middle (6-8))
can be protected and how to be respectful and responsible online	between allowing information to be public and keeping it private
1B-DA-06 Use data to highlight or propose cause-and-effect relationships and predict outcomes	

ISTE
Empowered Learner

1.1d Students understand the fundamental concepts of technology operations; demonstrate the ability to choose, use, and troubleshoot current technologies; and can transfer their knowledge to explore emerging technologies.

Vocabulary

AI Foundations (AI Literacy): AI literacy involves having the skills and competencies required to use AI technologies and applications effectively and ethically.

AI-generated images: Pictures made by AI that may not be real or physically possible.

AI Model: a computer model designed to perform tasks that normally require human intelligence.

AI results: The answers or information that AI gives you.

AI search: When you ask AI a question to get ideas or answers.

algorithm: refers to programs or machines that simulate tasks that typically require human intelligence, such as: recognizing patterns, making predictions, and generating new content.

algorithmic bias: is the lack of fairness in the outputs generated by an algorithm. Or repeated errors that provide privilege to one group of users over another.

Artificial intelligence (AI): refers to programs or machines that imitate tasks that typically require human intelligence.

automate: to have a machine or device carry out a task.

chatbot: A chatbot is a type of generative AI that can create new content, such as images, text, or music, based on patterns and data it has been trained on.

classical AI: This type of AI is not new and has been in our everyday lives for quite some time. It can solve problems, but this type of AI does not learn from data like newer AI.

concept image: A picture showing an idea of what something could look like.

cross-check: Double-checking information by looking at other trusted places.

facial recognition technology: is a form of artificial intelligence (AI) that copies a human's ability to recognize human faces.

generative AI: is a powerful category of AI that includes models that generate text, images, videos, or music.

idea/inspiration: A new thought or creative idea to help you get started.

machine learning: a subset of AI that deals with the ability of machines to learn from data and patterns without being programmed to do so.

pattern recognition: the ability of machines to identify patterns in data, and then use those patterns to make decisions or predictions using computer algorithms.

prediction: A statement that something might happen or is expected to happen, such as the weather.

predictive model: (AI) models predict something based on a set of features.

programmer: A person who writes programs (instructions) for a computer. The instructions come in different languages; they are called programming languages.

prompt: is a set of instructions given to an AI tool to help it focus on a specific topic, task, or purpose.

reliable source: A person, website, or book you can trust to give the right information.

think critically: Asking smart questions before believing something.

too good to be true: When something looks amazing but may not be possible.

trustworthy source: A person or place you can count on to give you correct information, like a teacher, librarian, expert on the topic, or an educational website that checks its facts before sharing them.

verification: Making sure information is reliably sourced and factually accurate.

visual clues: Little details you can see that help you tell if something is real or not.

Teacher Preparation

Prepare Online Resources and Materials

- Test video, slide decks, and website links to ensure they work.
- If you assign a digital activity, ensure you have made a copy for your personal use and distribution.

Adjusting for Age Groups

- Omit comprehension questions for the videos based on students' levels.
- Choose follow-up activities appropriately.

Accessing AI Tools and Minecraft Education

- Ensure that you have access to a generative AI tool for the activities. If students do not have access, complete the activity as a whole class.
- To access Minecraft Education, students will need their own account.

Resources

Videos

1. GET STARTED WITH AI 101: BUILDING THE BASICS
2. AI FOR GOOD: SOLVING PROBLEMS WITH AI
3. AI IN ACTION: USING AI TOOLS RESPONSIBLY
4. AI IN ACTION: USING AI THOUGHTFULLY

Slide Decks

- Video 1-"AI 101, Building the Basics"

- Video 2-"Solving Problems with AI"
- Video 3-"AI in Action: Using AI Tools Responsibly"
- Video 3-"AI in Action: Using AI Thoughtfully"

Handout(s)/Digital/Activities Available

1. AI Detectives (Video 1, can be done as a whole class activity if needed)
2. Reflection (Video 1)
3. Lesson 2, Unplugged-Algorithm Adventure (Video 3)
4. The Principles of Responsible AI (Video 3)
5. Lesson 3, Unplugged, Solving Problems with AI
6. Reliable Source Scavenger Hunt (Video 4)
7. Is It Real Image Detective (Video 4)
8. Using AI Thoughtfully-Images for Image Detective Activity
9. AI Images-Possible Student Responses

Optional: New Vocabulary Tracker

Minecraft Education Activities

- Hour of Code: Generation AI | Minecraft Education
- Reed Smart: AI Detective

Student Reflections/Assessments

Embedded comprehension questions throughout the activities and lessons

Instructional Plan (Mini-lessons)

Lesson and Video 1:
AI 101: Building the Basics

Warm Up:

1. Share the slides and introduce the topic. Reiterate all of the discussion around AI and that the character Chicken will be helping us understand artificial intelligence and how it is created. Share the big ideas that students will learn throughout the lessons.

2. Ask students "What do you think of when you hear the words "*artificial intelligence?*" *Do you think of any devices or objects we use that may have artificial intelligence?* Allow students time to discuss and share. Answers will vary.

3. Share the slide that shows examples of everyday AI tools. Then share the slide with the definition of artificial intelligence. Reiterate that AI is programmed using data by a human. Share that the most common AI we encounter is predictive AI and discuss the examples. Ask students if they can think of any other examples. Answers will vary.

Video 1 Instructional Plan and Discussion Guide

Show the students the vocabulary words along with the accompanying images. Allow students to discuss their predictions on the words' definitions.

Questions can be omitted or asked at a later date based on your student's comprehension levels.

Begin the video, stopping at the *suggested* time marks for questions, or use the questions after the video for discussion. Possible student responses are included.

(0:00-0.30)

1. Do you think finding information is a lot like fishing?
    a. Students' answers may include: it requires patience, having the right tools for the task, and a good technique.

2. How can artificial intelligence help us?
    a. Answers will vary. This topic will be addressed in a later video/lesson.

(0:30-1.01)

3. What is the first step for an AI model to be trained? Who does this training?
    a. Programmers have to teach the AI model. This is done by giving the model a lot of information on different things.

4. Let's think about Chicken training with huge amounts of information on "lots of different things," why is this important?
    a. This is important so the model has a lot of information and can find patterns and make accurate predictions.

(1:02-2:12)

5. What happens after Chicken is done looking at information?

a. It finds patterns and makes predictions.

6. How does the AI model find patterns?
    a. By analyzing all of the information it receives (millions and millions).

7. Let's think about one of the examples that Chicken gave us: why would books about tigers mention cats, but websites about cats rarely mention cars?
    a. Cats and tigers are in the same animal family, but cars are a completely different subject.

8. Why might an AI tool predict that whales live in lakes?
    a. An AI tool might predict that whales live in lakes because lakes are a body of water and whales live in water.

9. Do you think AI is always correct? Can you think of some ways we can check if AI is correct?
    a. Answers will vary. We can check if AI is correct by looking at other information sources.

Review the Lesson Big Ideas

After the video, review the big ideas and concepts. Share the correct definition of each vocabulary word. Highlight that "machine learning" is not in the video but it is important to understand the concept. Clarify any questions that the students may have. It may be helpful to re-watch the video and pause as needed. Allow students to discuss each question after the big ideas have been shared.

Activities

The activities are designed to reinforce the big ideas of the lesson, as well as the new vocabulary words. *The activities can also be done as a whole class or in partnerships.*

1. AI Detectives (student worksheet)
2. Reflection (student worksheet)
3. Hour of Code: Generation AI | Minecraft Education

Optional: Have students add new words to the vocabulary tracker worksheet.

Lesson and Video 2: Solving Problems with AI

Warm Up

1. Share the slides and introduce the topic. Share the big ideas that students will learn throughout the lessons. Begin the lesson by reviewing a few of the big points from the previous lesson and activities. For this activity, it is just reviewing a few big ideas from lesson 1. Alternatively, you can use this time to review any activities the students may have completed.

2. For this lesson, share the photos of the robot vacuum and pose the following questions:
    a. Do you recognize the device in the photos?
    b. Do you think this device uses AI? Why or why not?
    c. Does this device help us solve a problem?

Allow students time to discuss their answers as a whole class/group.

Video 2 Instructional Plan and Discussion Guide

Show the students the vocabulary words along with the accompanying images. Allow students to discuss their predictions on the words' definitions.

Begin the video, stopping at the *suggested* time marks for questions, or use the questions after the video for discussion. *Questions can be omitted or asked at a later date based on your student's comprehension levels.*

(0:00-0.54)

1. Do you use facial recognition? If yes, with what device?
    a. Student answers will vary. Typical facial recognition occurs when opening a phone or tablet, when using filters on social media apps, and in airports through security cameras.

2. When you are using facial recognition, what do you think is happening?
    a. Student answers will vary.

3. Have you heard of people being able to create their own chatbot?
    a. Student answers will vary.

4. What kind of AI do you think is used by a self-driving taxi?
    a. Student answers will vary.

5. Do you think a self-driving car is a good idea? Why or why not?
    a. Student answers will vary. Allow students time to discuss the pros and cons.

(0:54-end)

6. Do you think using AI to learn more about our oceans is a good use of AI? Why or why not?
    a. Student answers will vary.

7. Chicken was able to understand the dolphin in the video. How is this helpful for the dolphin?
    a. The dolphin could show Chicken where another dolphin was stuck and injured. This allowed Chicken to help the other dolphin that was trapped/stuck.

Review the Lesson Big Ideas

After the video, review the lessons' big ideas. These include classical AI, facial recognition, and algorithmic bias. It is important to note that algorithmic bias is not directly mentioned in the video. Understanding how facial recognition works may be difficult for some students and may require additional activities/lessons as shared on the “further learning” slide. The idea of “AI for Good” is reviewed in both recommended activities.

Activities

The activities are designed to reinforce the big ideas of the lesson, as well as the new vocabulary words. The activities can also be done as a whole class or in partnerships.

1. Unplugged - Solving Problems with AI
    a. *For lower grades, it is suggested to have the students complete this activity as a whole class or with a partner, using the second worksheet that is provided.*

2. AI for Good from Minecraft Education

Optional: Have students add new words to the vocabulary tracker worksheet.

Lesson and Video 3
AI in Action: Using AI Responsibly

Warm-Up:

1. Share the slides and introduce the topic. Share the big ideas that students will learn throughout the lessons. Begin the lesson by reviewing a few of the big points from the previous lesson and activities. Optional: have students share their ideas for using AI for good.

2. Then, move on to reviewing the big ideas that will be learned in this activity. The warm-up question "What do you think of when you hear the word generative?" should be shared before the video. Allow students time to discuss their predictions on the word generative.

Video 3 Instructional Plan and Discussion Guide

Show the students the vocabulary words along with the accompanying images. Allow students to discuss their predictions on the words' definitions.

Begin the video, stopping at the *suggested* time marks for questions, or use the questions after the video for discussion. *Questions can be omitted or asked at a later date based on your student's comprehension levels.*

(0.00-0.48)

1. What was Chicken watching at the start of the video?
    a. A video of a trick shot in basketball.

2. What type of AI is used in the car's GPS or mapping system?
    a. Predictive AI is used in a car's GPS.

3. Why wouldn't this type of AI be preferred for help with making a "trick shot?"
    a. A car's GPS is programmed to help the car get through traffic and find a shortened route. Its AI model is not designed to help with a trick shot in basketball.

(0.48-1:45)

4. Have you heard of the term chatbot before? Have you used a chatbot?
    a. (answers will vary)

5. Why wasn't it enough that the chatbot helped Chicken get the basketball in the basket?
    a. The chatbot only got the ball in the basket, but it did not do a "trick shot."

6. Why does generative AI only do what you tell it to do?
    a. The chatbot is programmed and will follow specific instructions. It is not a human.

7. What does the speaker mean when they say, "review what the AI tells you and make it your own?"
    a. They are reminding us that AI isn't human, and we need to be

mindful of the information it provides us. We need to make sure it is accurate and safe.

8. Why must the instructions to generative AI be detailed and specific?
    a. Since AI is not human, we need to give it detailed and specific instructions or else it will do exactly as it is told.

(1:45-2:30)

9. Did the chatbot give Chicken correct instructions for making a trick shot? Why or why not?
    a. The chatbot did not provide correct instructions for making a trick shot because Chicken had to jump in and complete the shot.

10. What did Chicken have to do to complete the trick shot?
    a. Chicken had to interfere and complete the trick shot.

11. What lesson can we learn from Chicken's interaction with the chatbot for his trick shot creation?
    a. The lesson we can learn from Chicken's interaction with the chatbot is that we always need to be mindful and safe of the information we receive from any type of AI. We need to make it "our own" to use AI responsibly.

Review the Lesson Big Ideas

After the video, review the lesson's big ideas which include discussing algorithms. Although this term is not specifically in the videos thus far, students need to know this term for their understanding of AI. After reviewing algorithms and chatbots, *allow students to have one more discussion where they differentiate between generative AI and predictive AI.*

Some possible answers may include:

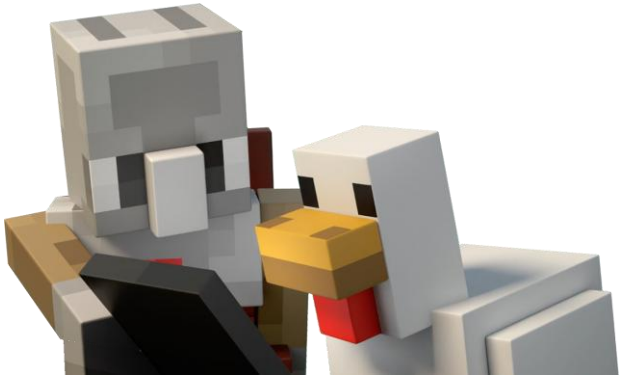
Generative AI	**Predictive AI**
Generative AI is most effective for generating new information like content, and images, identifying patterns in data, and producing text.	Predictive AI is useful for analyzing patterns to make forecasts and predictions, aiding in decision-making processes.

Activities

The activities are designed to reinforce the big ideas of the lesson, as well as the new vocabulary words. The activities can also be done as a whole class or in partnerships.

1. Giving Instructions and Algorithm Creation (teacher instructions)
2. The Principles of Responsible AI (teacher instructions)
3. Hour of Code: Generation AI | Minecraft Education (this activity can be utilized throughout all video lessons)

Optional: Have students add new words to the vocabulary tracker worksheet.



Lesson and Video 4
AI in Action: Using AI Thoughtfully

Warm Up:

1. Ask students: Have you ever heard the expression "too good to be true" before? What do you think that means? a. Invite a few students to share examples of something they saw that looked amazing but wasn't real or safe. Provide an example if needed.

2. Explain to students that in this lesson, you will further explore this concept and develop an understanding of how it applies to using AI tools.

Video 4 Instructional Plan and Discussion Guide

Show the students the vocabulary words along with the accompanying images. Allow students to discuss their predictions on the words' definitions.

Begin the video, stopping at the suggested time marks for questions, or use the questions after the video for discussion. Possible student responses are included.

(0:00-1:21) Big Question: Why should I be careful when encountering information online?

1. What are Agent and Chicken looking for ideas for at the beginning of the video? a. Agent and Chicken are looking for ideas to build a

treehouse.

2. Why does the narrator warn Agent and Chicken about the first treehouse image they see? a. The narrator warns them because the image might be AI-generated, and it can be hard to tell if those pictures are fake.

3. What are some of the "weird" or "impossible" features of the AI-generated treehouse that Chicken explores? a. Some weird features include a door that leads to thin air, impossible-looking columns, stairs where Chicken reappears below another stairway, and walking upside-down on the bottom of a balcony.

(1:22-2:51) Big Question: How can I make sure I am using AI thoughtfully?

4. Why is it important to cross-check information, even if it comes from AI? a. It's important because even though AI can be very accurate, you always have to verify it with other reliable sources.

5. How does AI help Agent and Chicken after they are disappointed by the fake image? a. AI helps them by providing detailed instructions on how to build a safe treehouse, materials needed, and safety ideas like adding a safety net.

6. Who are the Building Birds and why does the narrator trust them? a. The Building Birds are experts who build cool treehouses that are chicken-certified for safety, and the narrator has been following them for years.

7. How do Agent and Chicken use both the AI information and the "Building Birds" video to construct their treehouse? a. They use AI for initial ideas, then use the Building Birds video to make improvements, like using better steps instead of a ladder and adding a guardrail.

8. After building their treehouse, how do Agent and Chicken use the initial AI image again? a. They use the AI-generated image for inspiration for decorating their real treehouse.

Review the Lesson Big Ideas

After the video, review the big ideas and concepts. Share the correct definition of vocabulary words. Clarify any questions that the students may have. It may be helpful to re-watch the video and pause as needed. Allow students to discuss each question after the big ideas have been shared.

Activities

The activities are designed to reinforce the big ideas of the lesson, as well as the new vocabulary words. The activities can also be done as a whole class or in partnerships.

1. Reliable Source Scavenger Hunt (student worksheet)

2. Is It Real Image Detective (student worksheet)

3. When is AI a Good Creative Helper? (discussion activity)

4. Fantastic Fairgrounds | Minecraft Education

Optional: Have students add new words to the vocabulary tracker worksheet.

9. Further Learning and Extension Activities

- Fantastic Fairgrounds | Minecraft Education

Further Learning and Extension Activities

Elementary:

- PBS Kids Sci Girls (Code Quest)
- Code.org's AI for Oceans
- Code.org's How AI Works Video Series

Grades 6 and up:

- Making a Flower Maze in Minecraft!
- Sequencing | Minecraft Education
- Code.org's AI and Machine Learning
- How AI Works- (Code.org) Lesson 6: Algorithmic Bias
- What is algorithmic bias? (ADL)
- Unlock generative AI safely and responsibly—classroom toolkit | Microsoft Learn

For Educators and School Leaders:

- https://www.teachai.org/toolkit

Accommodations

Engagement Options

- To stimulate discussion, try teaching the lesson to smaller student groups.
- Allow students time to independently watch the videos before a whole class viewing/discussion.
- Increase engagement by utilizing interactive slide add-ons and other edtech tools.
- Allow students flexibility when completing the activities, in partnerships, or independent work.

Representation Options

- Print out information from the slide deck(s) for students to have personal copies.
- Break each lesson into multiple parts across multiple days/periods.
- Highlight vocabulary in the classroom on a word wall.

Action and Expression Options

- Allow students a choice: complete any written work digitally or respond using a recording such as the Flip Camera in Microsoft Teams.
- If students are struggling, provide a sentence starter or frame as needed.