MINECRAFT EDUCATION



EDUCATOR GUIDE

AI FOUNDATIONS – FANTASTIC FAIRGROUNDS

EDUCATION.MINECRAFT.NET

THEME OVERVIEW

What is AI Literacy?

AI Literacy involves understanding artificial intelligence concepts, applications, and ethical implications. It empowers students to critically evaluate AI technologies and use them responsibly. Given AI's growing influence across industries and everyday life, AI literacy is as essential as traditional literacy in preparing students for the future.

Core Components

- **Understanding AI Technologies**: Students learn how AI systems work, including machine learning and data processing, helping them grasp how AI uses data to make predictions and decisions.
- **Algorithmic Thinking**: Developing computational thinking skills, such as pattern recognition and abstraction, which are essential for understanding AI.
- **Evaluating AI**: Recognizing biases, understanding privacy issues, and assessing the societal impact of AI technologies.
- **Practical Application**: Interacting with AI tools and solving real-world problems using AI.

AI and Society

AI is transforming industries, reshaping jobs, and influencing decision-making processes. From healthcare and finance to creative arts and environmental conservation, AI's role is expanding rapidly. Understanding AI is critical for future careers, enabling students to adapt to technological changes and become informed citizens who can engage with AI technologies ethically and responsibly.

Why Teach AI Literacy?

- Preparing for Future Careers: AI literacy equips students with skills needed for the AI driven workforce.
- Responsible Citizenship: Understanding AI helps students make informed decisions and contribute responsibly to society.
- Addressing Bias and Promoting Equity: AI literacy helps students recognize and address biases, ensuring fairness.
- Ethical Awareness: Students learn to consider the ethical implications of AI, fostering responsible use.

Why Minecraft for AI Literacy?

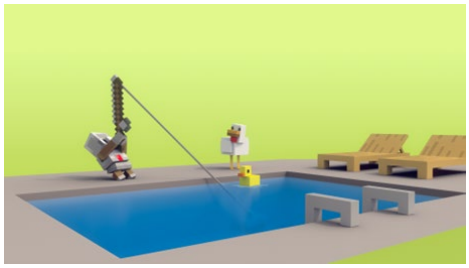
Minecraft Education provides an interactive and immersive platform for AI literacy:

- **Engagement**: Minecraft's environment makes abstract AI concepts tangible.
- **Ethical Exploration**: Minecraft allows students to safely explore AI's ethical dimensions.
- **Creativity**: Minecraft encourages students to think creatively about AI's potential.

THEME OVERVIEW

Fantastic Fairgrounds is part of the artificial intelligence (AI) progression in Minecraft Education. These lessons are designed for students ages 8 and older. Fantastic Fairgrounds is a single player map covering various AI concepts.

Other AI resources within the learning progression are as follows:

INTRODUCE AI 	Build understanding and curiosity with animated video series & discussion guides • 3 short videos • 3 discussion guides • 3 classroom-ready PPT decks
INTEGRATE INTO THE CURRICULUM 	Explore applications of AI in real-world scenarios with **AI for Earth** collection • 6 standards-aligned lesson plans • 6 immersive worlds • Case study & video
CONNECT TO COMPUTER SCIENCE 	Explore responsible AI and solve puzzles in **one-hour coding tutorials** • 2 coding tutorials created with Code.org • Teacher guides and lesson plans • Video walkthroughs and fun trailers

UNDERSTAND HOW AI WORKS

PRACTICE PROBLEM SOLVING WITH AI

SAFETY & RESPONSIBLE AI

MAKE COMPUTER SCIENCE CONNECTIONS

FANTASTIC FAIRGROUNDS — LESSON EXPLANATION

Lesson Explanation

Welcome to Fantastic Fairgrounds! Park Director Leslie needs your help… Fantastic Fairgrounds was supposed to open to the public, but there are some issues within the park. If you are willing and able, you and your AI assistant will assist in the various pavilions to get the fairgrounds fully functional.

Lesson Objectives

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

- Understand the foundations of Artificial Intelligence (AI)
- Practice with data analysis in different fields
- Identify and address ethical dilemmas in AI
- Explore careers in AI

Minecraft Mechanics – Keyboard / Mouse

ESC	Open Pause Menu; Close In-Game Menus
LEFT-CLICK	Mine a Block
RIGHT-CLICK	Interact with buttons/NPCs in the world
SPACE BAR	Jump
W/A/S/D	Player Movement (forward, back, right, left)
MOUSE MOVEMENT	Player Direction

Minecraft Mechanics – Touch Controls

	Open Pause Menu
	Open the Inventory
	Sneak
	Jump
	Run
	Player Movement (forward, back, right, left)

Educational Standards – Computer Science

Computer Science Teachers Association (CSTA)

Middle (6-8)	High (9-12)
2-AP-17 Systematically test and refine programs using a range of test cases. **2-IC-20** Compare trade-offs associated with computing technologies that affect people's everyday activities and career options.	**3A-IC-24** Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. **3B-IC-27** Predict how computational innovations that have revolutionized aspects of our culture might evolve.

International Society for Technology in Education (ISTE)

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

Computing Programmes of Study – National Curriculum in England

Key Stage 3

Aims

- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

Subject content

- Recall that a general-purpose computing system is a device for executing programs.
- Describe how AI differs from traditional programming.
- Identify examples of AI in the real world.
- Associate the use of artificial intelligence with moral dilemmas.

Australian F-10 Curriculum – Digital Technologies

Year 7 and 8

Investigate the ways in which products, services and environments evolve locally, regionally and globally and how competing factors including social, ethical, sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures

- investigating how ethics, social values, profitability and sustainability considerations impact on design and technologies
- identifying needs and new opportunities for design and enterprise (ACTDEK029)

Year 9 and 10

Explain how products, services and environments evolve with consideration of preferred futures and the impact of emerging technologies on design decisions (ACTDEK041)

- considering how creativity, innovation and enterprise contribute to how products, services and environments evolve
- explaining the consequences of social, ethical and sustainability decisions for products, services and environments
- predicting the impact of emerging technologies for preferred futures
- constructing scenarios of how the future may unfold (forecasting) and what impacts there may be for society and particular groups, and back casting from preferred futures

WAYS TO USE THIS LEARNING CONTENT

How can this lesson be used?

Integrated into classrooms	Fantastic Fairgrounds is a great way to integrate the exploration of artificial intelligence. You could easily look at your academic standards and use this learning content when you are teaching specific concepts related to artificial intelligence and other emerging technologies. This learning content is a great way to introduce and support AI concepts.
STEAM Labs or Digital Makerspaces	Who wouldn't love to use Minecraft in a fully integrated learning environment where everything from the furniture and technology to curriculum and assessment work together to support hands-on, minds-on learning?! Fantastic Fairgrounds content could be used in any of the learning spaces to help students interact with AI in a safe and responsible way!
Afterschool learning opportunities	After a full instructional day, students need something fun and engaging to provide motivation for learning. What could possibly be more fun and engaging than Minecraft Education?! Not only will students love playing Minecraft, but they will also learn educational concepts and develop their skills in creativity, communication, collaboration, and critical thinking.
Summer camps	Are you planning or hosting a summer camp? Who wouldn't love to explore and learn in Minecraft?! Whether Minecraft is the entire theme of the camp or even simply a portion of the camp, there are numerous opportunities for Minecraft Education to be a part a fun-filled summer experience!
Homeschool groups and other youth organizations	You don't have to be exclusively at a school or part of a school district to utilize Minecraft Education. Homeschools, families, and other organizations can purchase and manage Minecraft Education through our commercial offer. You can find more information here.

FANTASTIC FAIRGROUNDS — LESSON ACTIVITIES

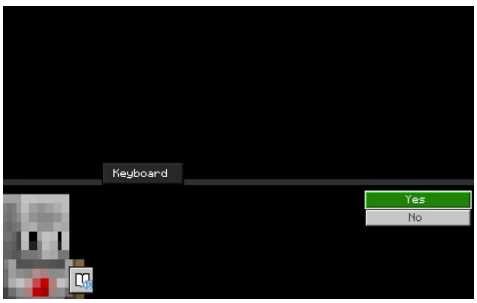
Overview of the Lesson Activities

Beginning the Map

When the world launches, players will immediately be prompted to select their configuration: keyboard, touch controls, or controller.



The player will receive another message, which will ask the player to verify their control scheme. Based on their selection, they will need to confirm by selecting “Yes” or they will need to select “No” if they selected the wrong scheme.



Next, players will be prompted with the question if they want to proceed to the tutorial experience or if they want to skip the tutorial. Students who have never played Minecraft Education (or need a refresher) should complete the tutorial.



If players select “Start Tutorial”, they will proceed to a tutorial of game play mechanics. If they select “Skip Tutorial”, they will proceed to the start of the game.

Tutorial Sequence

KEYBOARD	TOUCH CONTROLS
Task 1: Look at the golden orbs	
 Players will need to use their mouse and place the “+” (crosshairs) on the golden orbs. The player should look at the golden orb until it disappears. They will look at 9 golden orbs before moving on to the next task.	 Players will tap and drag the screen to the center of the orb. They will hold until the orb turns white and then disappears. They will look at 9 golden orbs before moving on to the next task.
Task 2: Practice moving	
 Players will practice moving in the game using the WASD keys. Press “W” to move forward. Press “A” to move right. Press “D” to move left. (NOTE: Pressing “S” will move the player backwards.)	 Players will practice moving using the touch controls. The arrows on the touch control (on the bottom left-hand side of the screen) will indicate what direction they can move.
Task 3: Practice jumping	

 Players should press “W” to move forward and then press “space” to jump. Players should move towards the gold block.	 Players need to tap and hold the (forward command) and then press the to jump.
Task 5: Press the button	
 Players will need to press the button on the top of the gray stone block. They can press the block by right-clicking on the button.	 Players need to press the button.

Welcome to Fantastic Fairgrounds! Let’s get started…



Upon arrival, a dialog box will automatically pop up into the game.

The dialog boxes often provide important information. Players should be encouraged to read all the information. If you have younger players or readers who need additional support, consider demonstrating and encouraging the use of the Immersive Reader feature.

Immersive Reader is an integrated feature of Minecraft Education. It supports learners in reading or translating in-game text, including the character dialog. When a dialog box is opened, you will see an icon in the bottom right-hand corner of the NPC picture in the dialog box.

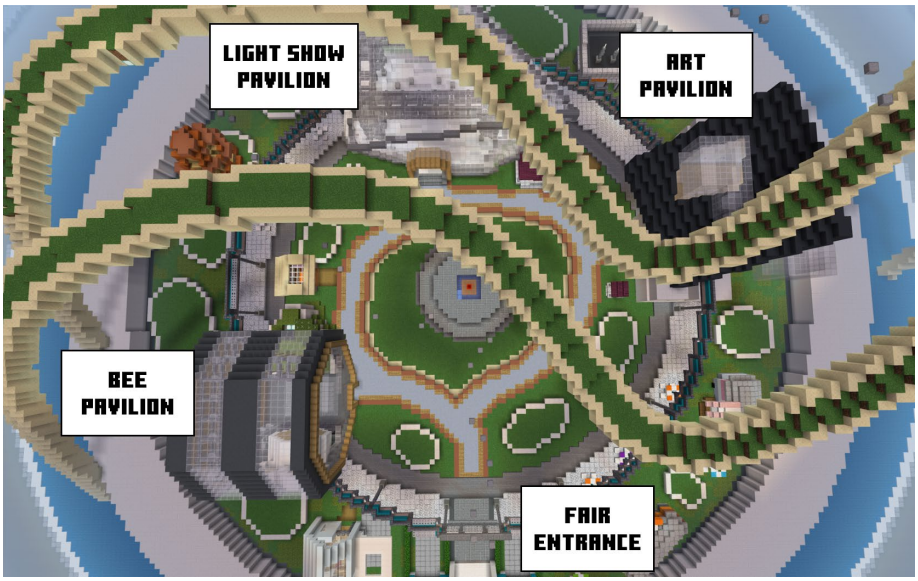


After players have read through the initial dialog box, they will be prompted to interact with a button to open the gate to enter the fairgrounds.



Once inside of the fairgrounds, there will be three main attractions for students to explore. Each of the main attractions will have a corresponding activity.

- AI Behaviors – Bee Pavilion
- AI Applications – Light Show Pavilion
- AI, Our World – Art Pavilion



This is an aerial perspective of the fairgrounds.

Students can complete the activities in any order; however, once they start one activity, they will not be able to move onto another activity until they complete the activity they started.



Once these pavilions are completed, students will have access to fun and learning opportunities at the AI Carnival. Students will test their skills in a variety of AI-themed games.

Exploring the Pavilions

OPTIONAL: This is a good opportunity for students to work together. You are welcome to divide students into small working groups and allow them to collaborate via paired play. Each member could be responsible for exploring and completing a pavilion.

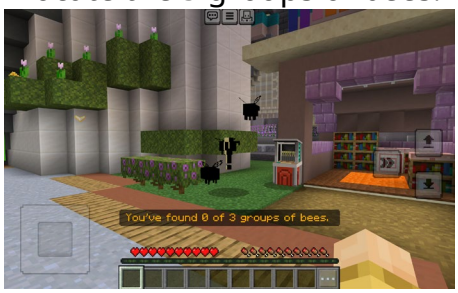
ACTIVITY: BEE PAVILION



In the bee pavilion, students will interact with Beekeeper Sashi. Beekeeper Sashi needs help – the new robot bees need to be trained by real bees.



Students will need to use their AI Assistant to analyze the groups of bees in the park to gather data about their pollen. This data will help Beekeeper Sashi find out if there are pollutants in the fairgrounds.

Locate the 3 groups of bees.	Not all the bees are actually bees!
	

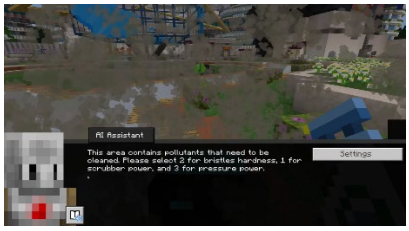
After the three groups of bees have been located, students will return to the bee pavilion to interact with Beekeeper Sashi, who will provide students with a brood honeycomb to lure the queen bee back to the pavilion.

The honeycomb will be in the first slot of the hotbar.	Place the honeycomb into the pillar.	The screen will turn green when the queen bee arrives.
		

To continue to the next part of this activity, students will interact with Botanist Amit.

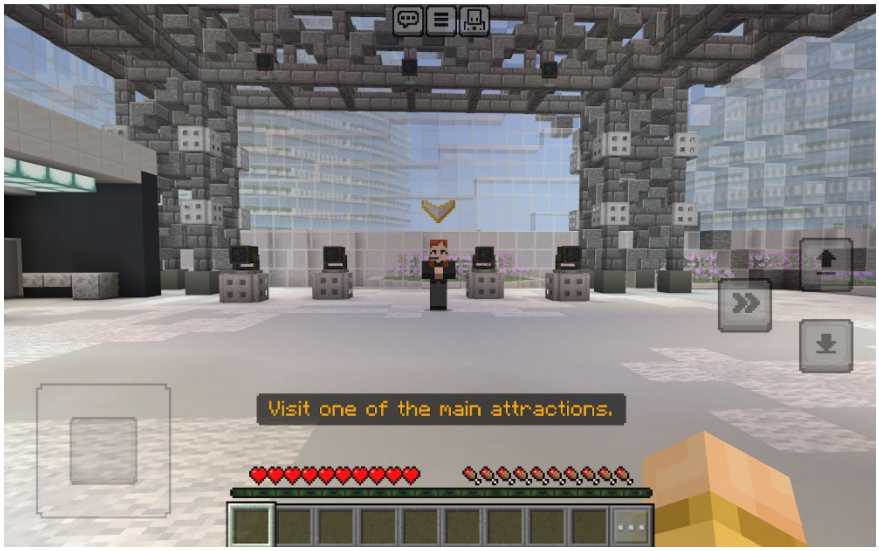


After speaking with Botanist Amit, a sweeper vehicle will spawn outside of the bee pavilion. Students will be able to ride on the sweeper vehicle to move through the fairgrounds quicker.

Interact with the sweeper vehicle to ride. 	Collect the cleaning bottles. 	Find the pollutants in the fairgrounds. 
Walk (ride) over the pollutants to start the cleaning. 	Each pollutant will have a specific formula for cleaning: bristle hardness, scrubber power, and pressure power. 	Adjust the controls for the cleaning formula. 

After the pollutants are cleaned up, this activity is complete! Students can visit another attraction.

ACTIVITY: LIGHT SHOW PAVILION



In the light show pavilion, students will interact with Light Show Technician Annika. Beekeeper Annika needs help – the light show is out of sync and there is a lot of data to be analyzed in order to get the lights working out.

Follow Annika over to the wall.	Interact with the wall of chips.
	

Students will then need to go outside of the pavilion to search for the 3 terminals. Once they find the terminal, they will need to interact with the terminal to have their AI assistant analyze the terminal for data.

After analyzing the terminals, students will return to the light show pavilion. They will interact with the chipsets on the wall. Students will receive 6 chips in their hotbar.



Students will return to the terminals. They will need to look at the different chips, match the colors and dot patterns on the chips, and place them into the correct terminals to fix the lights.

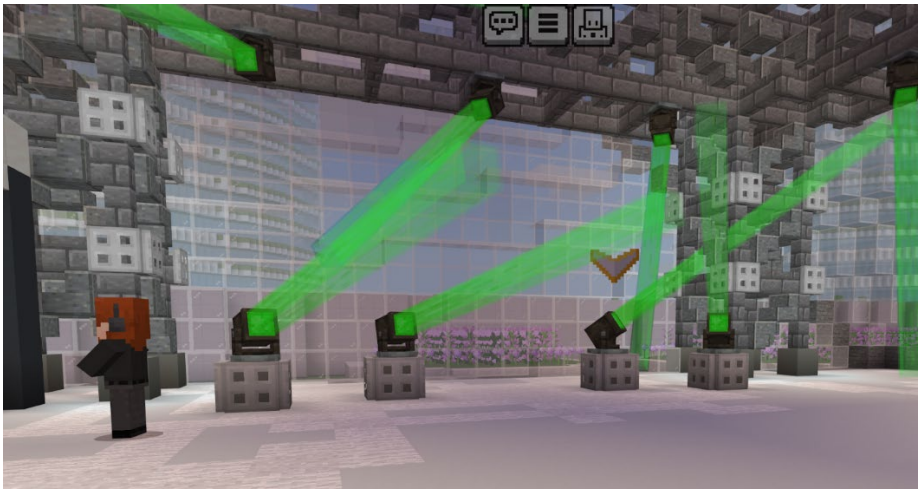


Once all the terminals have their chips, students will return to the light show terminal and interact with the chipset wall once more. They will place the final chips into the terminal to activate the light show!





After the light show is fixed, this activity is complete!



ACTIVITY: ART PAVILION



In the art pavilion, students will interact with Gallery Curator Nitro. Gallery Curator Nitro needs help – he wants to add more human interaction and use AI to generate new art pieces. However, he must get consent from the participants.

Search and interact with the 8 visitors at the fairgrounds.	If they provide consent, the camera in your hotbar will take their picture.
	

After students have interacted with all 8 people, return to the art pavilion with the photos. Interact with Gallery Curator Nitro and then students will select from one of the three art inspirations for the basis of the design. Next, students will interact with the computer to design generative AI art.





Finally, the art gallery will reveal the new generative AI art to the public!



Once you have finished all three activities, the main attractions are complete! Additional areas will appear for exploration.

Custodial Building  The player may speak with a custodian and ride the eco sweep around the park more. The custodian explains that thanks to AI they managed to get the park swept earlier and that the player may take for a stroll. They also mention that if the player leaves the eco sweep alone for too long someone will bring it back, and the player may ride it again.	**Translating Alien**  The alien walks up to the translator and starts speaking but nobody can make any sense of what they are saying. Your AI speaks up that if the player uses images that each character, including the alien, can say the name for; we can decode the alien language.
Perfect Popcorn  This vendor will give the player some popcorn. The popcorn will give the player a speed boost when eaten. While talking to the vendor, the vendor mentions that thanks to AI they can make perfect popcorn: cooking time, butter amount and salt amount all perfectly optimized. Before AI, they burnt a lot of popcorn and now their job is easier.	**Robot Pet**  The player will have a hand in making their pet robot by recreating 3 major steps in AI history in a small way: neural networks, machine learning, and deep learning. Each step will be a simple interaction.
Hydration Station	**Interactive Sculptures**

 The vendor lets the player know that with the assistance of AI, they can discern whether they or someone else might be dehydrated! The AI also has a quick way to tell if someone may be showing symptoms of heat exhaustion or heat stroke.	 All around the park are cosmetic sculptures that can shapeshift thanks to AI and machine learning. They then say the sculptures are made of tons of tiny robots that rearrange themselves into the sculpture you can see. If the player would like, they may receive the sculptor pass that allows them to interact with the sculptures around the park changing their looks.

NAME: _____ Date: _____

FANTASTIC FAIRGROUNDS: CHECK FOR UNDERSTANDING

Define artificial intelligence. Explain one of the principles of AI.	
How is data analysis related to AI? Give one specific example learned from Fantastic Fairgrounds.	
What are some of the ethical and societal impacts of AI?	
Explain one way that AI is utilized in a job/career.	

ADDITIONAL RESOURCES

Artificial Intelligence Resources for Educators

Responsible AI
Microsoft | Reimagine Education
Microsoft Education AI Toolkit
AI Guidance for K-12
Minecraft Education Prompt Lab
Microsoft Learn | AI for Educators
AI Kick-Off Projects
AI for Good Lab

Artificial Intelligence Resources: Extension Activities

Introduction to AI **AI Literacy 101 – Chapter 1** **Building the Basics**	Video Presentation Vocabulary Tracker Unplugged Reflection AI Detectives
Introduction to AI **AI Literacy 101 – Chapter 2** **Solving Problems with AI**	Video Presentation Vocabulary Tracker Unplugged Reflection
Introduction to AI **AI Literacy 101 – Chapter 3** **AI in Action**	Video Presentation Vocabulary Tracker Unplugged Algorithm Adventure Unplugged – The Principles of Responsible AI
AI for Earth **1 – Who is that Ocelot**	EDU Guide Classroom Presentation
AI for Earth **2 – Mapping Terrain**	EDU Guide Classroom Presentation
AI for Earth **3 – Sustainable Farming**	EDU Guide Classroom Presentation
AI for Earth **4 – Ocean Observations**	EDU Guide Classroom Presentation

AI for Earth **5 – Water Quality**	EDU Guide Classroom Presentation
AI for Earth **6 – Fantastic Fairgrounds**	EDU Guide Classroom Presentation
Hour of Code 2019: AI for Good	EDU Guide (Lesson Plan) Solution Guide Video Trailer Video Walkthrough
Hour of Code 2023: Generation AI	EDU Guide Classroom Presentation Solution Guide Student Certificate Video Trailer Video Walkthrough HOC Flyer
Additional AI Resources	AI Curriculum Overview AI Summative Assessment Task Imagine Cup Junior