AI FOUNDATIONS

CURRICULUM OVERVIEW

17 Lessons

Grades 3-9 | Ages 8-14

Includes:

- Overview
- Framework and learning objectives
- Lesson design and instructional materials
- Curriculum overview
- Instructional sequence
- Educational standards
- Computer Science lesson concepts
- Training, Research and Resources

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Artificial intelligence is reshaping how we live, learn, and work—and students deserve the tools to navigate this future with confidence and curiosity. **AI Foundations** is Minecraft Education's comprehensive AI literacy curriculum for Grades 2–8, designed to empower every learner with the knowledge, skills, and ethical mindset to understand, use, and evaluate AI technologies responsibly.

Through 17 immersive, standards-aligned learning experiences, students explore real-world applications of AI—from wildlife conservation and cultural heritage to digital safety and ethical decision-making. Built entirely in Minecraft Education, the curriculum leverages game-based learning to make complex concepts accessible, engaging, and inclusive for diverse classrooms.

Aligned to the AI Literacy Framework, developed by the European Commission, OECD, Code.org and leading international experts and major global standards, AI Foundations offers educators complete flexibility: implement as a dedicated AI unit, integrate into existing subjects, or deliver as enrichment modules. empowering educators to choose entry points based on student needs, available technology, and curricular goals. Each learning experience includes educator guides, assessment tools, and both plugged and unplugged activities to ensure accessibility for all classrooms.

Key Program Features:

- **17 complete learning experiences** with full educator support materials
- **32-37 hours** of instruction, fully flexible implementation
- **Standards-aligned** to ISTE, CSTA, and international frameworks
- **Available in 29 languages** for global accessibility
- **Free professional development** through Minecraft Teacher Academy

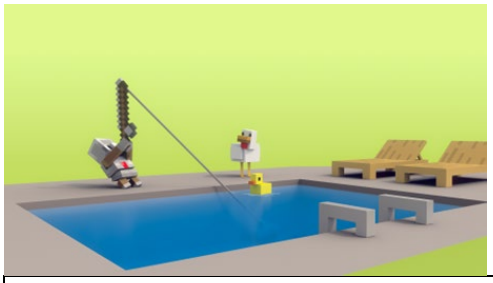
Proven Platform, Global Impact

AI Foundations builds on Minecraft Education's established success as a transformative learning platform. Minecraft Education's programs already reaches more than millions of students and teachers in 115 countries, with over 100,000 educators trained to integrate it into their classrooms. Research-backed outcomes demonstrate measurable impact: peer-reviewed studies show that Minecraft-based lessons boost student motivation and attendance. One school documented a 25% drop in absences after implementation, while others reported improved test performance in math and literacy compared to traditional methods.

Enjoy teaching *Minecraft AI Foundations*! You're helping your students gain skills and insights that will last far beyond this unit, empowering the next generation of informed, ethical innovators. Good luck, and we can't wait to hear about the amazing things your students will do with AI!

Framework & Learning Objectives

AI literacy is essential for K-12 educators to guide students in a world increasingly shaped by AI. It equips them to prepare students for future careers, foster critical thinking about AI's implications, and empower ethical and responsible AI use.

INTRODUCE AI	INTEGRATE INTO CURRICULUM	CONNECT TO COMPUTER SCIENCE
		
[AI Adventurers](#) [Fantastic Fairgrounds](#) [CloudCraft](#) [AI Job Fair](#) Build understanding and curiosity with this animated video series & lessons that explores concepts of generative AI and careers • 4 short videos • 3 immersive worlds • Parent discussion guide • Standards-aligned,classroom-ready lesson plans	[AI for Earth](#) [AI Wildlife Park](#) [Reed Smart: AI Detective](#) [The Investigators](#) [Peter is Here](#) Explore applications of AI in real-world scenarios. Use AI to preserve wildlife and ecosystems. Investigate AI misuse and build information literacy skills. Use AI to restore cultural heritage sites • 9 immersive worlds • 9 standards-aligned, classroom-ready lesson plans	[AI For Good](#) [Generation AI](#) [CyberSafe AI: Dig Deeper](#) **AI for Good Project** Explore safe and responsible AI and solve puzzles • 2 coding tutorials created with Code.org in Block or Python • 1 AI Safety Map map • Capstone Research Project • Video walkthroughs and fun trailers

UNDERSTAND HOW AI WORKS

PRACTICE PROBLEM SOLVING WITH AI

SAFETY & RESPONSIBLE AI

BUILD CREATIVITY, COLLABORATION, CRITICAL THINKING SKILLS

MAKE COMPUTER SCIENCE CONNECTIONS

AI Foundation's lessons are built **on three fundamental pillars**:

- **Understanding AI:** Grasping the core concepts, history, and potential future developments of AI.
- **Using AI:** Developing practical skills in data literacy, safe and responsible AI tool usage
- **Evaluating AI:** Cultivating critical thinking skills to assess the ethics, impact, and reliability of AI systems

Understanding AI	Using AI		Evaluating AI
Define AI • Explain what AI is in simple terms • Identify common AI applications in everyday life	**Explore AI Applications** • Analyze real-world uses of AI in various fields • Discuss how AI can address global challenges	**Develop Coding Skills** • Write simple algorithms • Debug basic code • Use loops and conditionals in programming	**Evaluate AI's Impact** • Discuss how AI is changing different industries • Consider AI's influence on future careers • Reflect on personal experiences with AI
Understand Key AI Concepts • Describe pattern recognition and its role in AI • Explain basic machine learning principles • Identify different types of AI	**Practice Data Skills** • Collect and organize data for AI use • Interpret simple data visualizations • Use data to make basic predictions	**Create AI Projects** • Design a simple AI solution for a real-world problem • Collaborate with peers on AI-related tasks • Present AI project ideas effectively	**Apply Ethical Thinking** • Identify potential biases in AI systems • Discuss responsible AI practice • Consider privacy and safety in AI applications

The curriculum develops skills across four key domains (AI Literacy Framework): Each lesson in the curriculum maps to one or more of these domains. This ensures a balanced approach: students not only learn *what AI is* and *how to use it*, but also *how to question it* and *how to create with it*. For instance, the AI Adventurers introduction videos primarily build engagement by showcasing fun examples of AI in action, but they also lay groundwork for managing AI by prompting students to think about responsible use. Similarly, the coding project AI Wildlife Park has students design a better AI feeder (Designing AI) while reflecting on how poor data caused the original AI to behave badly (Managing AI concept of bias). By the end of the curriculum, students will have engaged with each domain multiple times, reinforcing a holistic AI literacy.

Lesson Design

Each educator guide contains multiple activities intended to be taught over the specified number of sessions. Educators should use discretion and modify/adapt lesson activities based on students' needs and abilities. The instructional sequence follows the gradual release model:

Phase	Description
Direct Instruction—Teacher-Directed, "I Do"	In the first step, the teacher introduces and models the appropriate way of performing the skills included in the new concept being taught.
Guided Instruction—Teacher Modelling, "We Do"	After the teacher models the correct way to understand or perform the new concept being taught, the teacher will guide the students as they work through some examples together.
Independent Practice—Teacher Support, "You Do"	This step is where students demonstrate their initial level of understanding of the new concept being taught through independent practice.

Instructional Materials

Material	Description
Curriculum Overview	That is this document you are reading now! Provides insight into the curriculum structure and content
Educator Guides (EDU Guides)	17 comprehensive guides with lesson overviews, learning goals, standards addressed, preparation requirements, detailed lessons
Classroom Presentations	PowerPoint presentations for each unit providing structure and guidance through activities
Formative Assessments	After each lesson, 3-5 questions checking student understanding directly related to the learning.
Summative Assessment	Performance-based task demonstrating knowledge and skills learned throughout AI Foundations, assessed using provided rubric
Minecraft Worlds	17 pre-built, tested worlds ready for immediate use

CURRICULUM OVERVIEW

Level: Grades 3-12 | Ages 7-14

Essential Question: How is AI impacting our current lives and how will it impact our future?

Artificial intelligence—computer systems that mimic human thinking like learning and problem-solving—represents one of the most exciting and important areas of computer science. From driverless cars to robots that beat humans at chess, AI is transforming our world. However, there are also ethical questions and concerns about AI's impact on society.

This curriculum begins with foundational AI literacy lessons, then provides immersive learning experiences through AI-integrated Minecraft worlds. Students connect artificial intelligence with computer science through Hour of Code experiences, culminating in the AI for Good project where students design their own AI solutions.

K-12 Integration Context

While AI Foundations serves grades 2-8, it fits within a comprehensive K-12 pathway:

- **K-1:** CyberSafe digital citizenship foundations (existing Minecraft Education content)
- **2-8:** AI Foundations curriculum (this program)
- **9-12**: Advanced CS/AI pathways

Materials

Hardware	• The teacher will need a laptop or tablet with a projector for the plugged-in coding lessons. • Internet access will be required for a portion of the lessons and activities. • Each student will need a device to complete the plugged-in coding activities.
Software	• Minecraft Education needs to be deployed on the devices utilized within these lessons. • Use this link to find information about Getting Started with Minecraft Education and review the Licensing & Deployment Guide.

Instructional Sequence

This section will provide you with an overview of the activities included in this lesson sequence. The lesson sequence is presented in chronological order—we suggest working in order, as the content will build upon skills presented in the previous session. A session is equivalent to one class period, or a 45–60-minute session. However, educators should feel empowered to modify and adapt the lesson sequence to best meet the needs of their students.

Lesson Sequence Overview - INTRODUCE AI

SESSION	OBJECTIVES	TEACHER WILL	STUDENTS WILL	RESOURCES	AI Literacy Domains
1*	Students will learn what artificial intelligence is, how AI is created, and how AI works.	*Explain the foundations of AI (i.e., AI Literacy)*	*Students will practice identifying ways to detect if information from AI tools is correct.*	AI Adventurers 1 – What is AI? Building the Basics	Engaging
2*	Students will identify different types of AI tools, recognize how AI is changing the world, and explore ways AI can be used to address global issues.	*Provide an overview of old and new types of AI; introduce students to the concept of machine learning*	*Students will identify a global issue and brainstorm ways that AI tools could be utilized to solve the problem.*	AI Adventurers 2 – AI All Around Us (Solving Problems with AI)	Engaging
3*	Students will explore generative AI and chatbots, how these AI tools help us	*Facilitate a discussion around using AI tools responsibly based on the*	*Students will practice creating precise algorithms to train AI and chatbots.*	AI Adventurers 3 – Learning with AI (AI in Action)	Engaging

	with tasks, and how to use AI responsibly.	*principles of responsible AI*			
3.5*	*Students will understand advanced generative AI concepts and ethical considerations*	*Guide exploration of AI creativity and limitations*	*Analyze AI-generated content and discuss authenticity*	**AI Adventurers 4 – AI in Action: Using AI Thoughtfully**	Engaging
4*	Students will practice data analysis in different fields and explore AI careers	*Review AI foundations, explore ethical dilemmas, identify AI careers*	*Practice using AI assistant to identify and repair pavilions at world's fair*	***Fantastic Fairgrounds***	All domains
5*	Students will understand digital infrastructure and data privacy	*Explain cloud computing and where AI "lives"*	*Explore data centers and privacy concepts*	***Cloudcraft***	Managing
6*	Students will explore AI careers and design their own AI career exhibit	*Guide exploration of AI-powered cityscape and career research*	*Research AI's influence on careers and build exhibit showcasing AI in a career of interest*	**AI Job Fair**	Engaging, Creating

*Educators should modify and adapt the number of sessions based on students' needs.

Lesson Sequence Overview - INTEGRATE INTO CURRICULUM

SESSION	OBJECTIVES	*TEACHER WILL*	STUDENTS WILL	RESOURCES	AI Literacy Domains
7*	Students will utilize semi-supervised machine learning to recognize patterns on ocelots' coats	*Introduce artificial intelligence and lead coding activities*	*Code an AI to compare and match patterns to track ocelots*	**AI Lesson 1: Who is that Ocelot?**	Designing
8*	Students will learn how to use machine learning algorithms to detect anomalies in geographical data	*Introduce artificial intelligence and lead coding activities*	*Code dataset using terrain pictures and detect forest anomalies*	**AI Lesson 2: Mapping Terrain**	Designing
9*	Students will use machine learning algorithms to improve crop yields and soil efficiency	*Review artificial intelligence and lead coding activities*	*Use predictive analysis to find optimal farming areas*	**AI Lesson 3: Sustainable Farming**	Designing
10*	Students will use sensors and gather live data for AI ocean mapping	*Review artificial intelligence and lead coding activities*	*Create autonomous navigation algorithm for ocean floor mapping*	**AI Lesson 4: Ocean Observations**	Designing
11*	Students will use machine learning algorithms in water quality testing	*Review artificial intelligence and lead coding activities*	*Collect samples and code algorithm to find pollution sources*	**AI Lesson 5: Water Quality**	Designing
12*	Students will debug biased AI systems	*Facilitate discussion on bias in AI*	*Improve AI feeding system with better training data*	**AI Wildlife Park**	Designing, Managing
13*	Students will explore AI in cultural heritage	*Connect AI to arts and history*	*Use AI to preserve historical artifacts virtually*	**Peter is Here**	Creating, Engaging

SESSION	OBJECTIVES	*TEACHER WILL*	STUDENTS WILL	RESOURCES	AI Literacy Domains
14*	Students will practice media literacy and information verification	*Guide critical evaluation of sources*	*Identify misinformation and verify facts*	The Investigators	Managing
15*	Students will investigate AI misuse cases	*Support case-based learning*	*Solve mysteries involving deepfakes, bias, and manipulation*	Reed Smart: AI Detective	Managing

Lesson Sequence Overview - CONNECT TO COMPUTER SCIENCE

SESSION	OBJECTIVES	TEACHER WILL	STUDENTS WILL	RESOURCES	AI Literacy Domains
16*	Students will develop essential digital citizenship and AI literacy skills	*Guide immersive role-playing activities on responsible AI use*	*Develop skills through interactive scenarios on bias, verification, and data protection*	CyberSafe AI: Dig Deeper	Managing
17*	Students will gain understanding about using AI for environmental challenges	*Support self-paced coding journey*	*Create coding solutions for 8 quests including forest fire prevention*	Hour of Code: AI for Good	Creating, Designing
18*	Students will learn principles of responsible AI	*Facilitate discussion and support coding*	*Solve puzzles to train AI to act responsibly*	Hour of Code: Generation AI	Creating, Managing

Optional Synthesis Activities

SESSION	OBJECTIVES	TEACHER WILL	STUDENTS WILL	RESOURCES	AI Literacy Domains
19-20*	Students will collaborate to create computational artifact	Explain task and provide success criteria	Plan, design, test, and present AI for Good Project	AI for Good Project	All domains

Educational Standards

Global Adaptability

- Maps to national curricula worldwide
- Supports computational thinking standards globally
- Available in 29 languages

CSTA Standards

K-2	3-5	6-8	9-10
• **1A-IC-16** Compare how people live and work before and after the implementation or adoption of new computing technology. • **1A-DA-07** Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions. • **1A-AP-08** Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks. • **1A-AP-10** Develop programs with sequences and	• **1B-IC-18** Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices. • **1B-IC-20** Seek diverse perspectives for the purpose of improving computational artifacts. • **1B-AP-08** Compare and refine multiple algorithms for the same task and determine which is the most appropriate.	• **2-IC-20** Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options. • **2-IC-21** Discuss issues of bias and accessibility in the design of existing technologies. • **2-AP-10** Use flowcharts and/or pseudocode to address complex problems as algorithms. • **2-AP-12** Design and iteratively develop programs that combine control structures, including nested	• **3A-IC-24** Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices. • **3A-IC-25** Test and refine computational artifacts to reduce bias and equity deficits. • **3A-IC-27** Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields. • **3A-IC-28** Explain the beneficial and harmful effects that intellectual

simple loops, to express ideas or address a problem. • **1A-AP-11** Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions. • **1A-AP-12** Develop plans that describe a program's sequence of events, goals, and expected outcomes. • **1A-AP-14** Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.	• **1B-AP-11** Decompose (break down) problems into smaller, more manageable subproblems to facilitate the program development process. • **1B-AP-15** Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended. • **1B-AP-17** Describe choices made during program development using code comments, presentations, and demonstrations.	loops and compound conditionals. • **2-AP-13** Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. • **2-AP-17** Systematically test and refine programs using a range of test cases. • **2-AP-18** Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts. • **2-AP-19** Document programs in order to make them easier to follow, test, and debug.	property laws can have on innovation. • **3A-IC-29** Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users. • **3A-IC-30** Evaluate the social and economic implications of privacy in the context of safety, law, or ethics. • **3A-DA-11** Create interactive data visualizations using software tools to help others better understand real-world phenomena.

ISTE Standards

1.1.d 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.
1.3.a Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
1.4.a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
1.5.b Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
1.6.c Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.
1.7.c Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.
1.7.d Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.

UK National Curriculum: Computing

- Key Stage 2: Safe technology use, programming, algorithms, digital content creation
- Key Stage 3: Computational thinking, multiple programming languages, creative projects

Australian f-10 Curriculum: Digital Technologies

- Years 7-8: Investigate technology evolution and competing factors
- Years 9-10: Explain emerging technology impacts on design decisions

Computer Science Concepts

LESSON	CONCEPTS
AI Adventurers **Video 1 – Building the Basics**	• Artificial Intelligence • Pattern Recognition • Machine Learning • Predictive Models
Video 2 – Problem Solving with AI	• Algorithmic Bias • Facial Recognition • Classical AI
Video 3 – AI in Action	• Automation • Algorithms • Chatbots • Prompts • Generative AI
Video 4 – Advanced Generative AI	• Large Language Models • Creative AI • AI Limitations • Authenticity
AI-1: Who is that Ocelot?	• Pattern Recognition • Data Sets • Data Analysis
AI-2: Mapping Terrain	• Data Sets • Pattern Recognition • Machine Learning
AI-3: Sustainable Farming	• Data Sets • Data Analysis • Algorithms
AI-4: Ocean Observations	• Data Sets • Sensors (input/output) • Automation
AI-5: Water Quality	• Data Sets • Data Analysis • Algorithms
Fantastic Fairgrounds	• Debugging • Data Sets • Data Analysis • AI Career Exploration
AI Job Fair	• AI Career Exploration • Real-world AI Applications • Design Thinking • Creative Building • Research Skills
CloudCraft	• Digital Infrastructure • Cloud Computing • Data Privacy • System Architecture
CyberSafe AI: Dig Deeper	• Human Agency in AI • Ethical Decision-Making • Verifying AI Outputs • Safeguarding Personal Information • Recognizing Deepfakes
AI Wildlife Park	• Training Data • Bias in AI • Data Quality • System Debugging
Peter is Here	• AI in Cultural Heritage • Pattern Matching • Translation AI • Digital Preservation
The Investigators	• Media Literacy • Information Verification • Critical Analysis • Source Evaluation
Reed Smart: AI Detective	• AI Misuse Detection • Deepfake Analysis • Bias Identification • Critical Thinking
Hour of Code 2019: AI for Good	• Data Collection • Sequencing • Events • Loops • Conditionals
Hour of Code 2023: Generation AI	• Principles of Responsible AI • Language Models • Data Privacy • Generative AI
AI for Good Project	• Program Development • Peer Feedback • Collaboration • Debugging

More resources

Teaching AI can feel like a new frontier, but Minecraft Education and this curriculum provide robust support. This section offers guidance on how to implement the curriculum effectively, including lesson planning, technical setup, classroom management, assessment, and professional development resources.

Impact and Research Learn how Minecraft Education is transforming education around the world

- Case studies
- Student outcome data
- Best practice reports
- Academic research partnerships

Professional Development: Minecraft Education professional learning helps educators build the skills and knowledge to integrate Minecraft into their teaching practice effectively. The goal is a more effective, engaging, and empowering learning experience for all your students—topped off with a healthy dose of fun!

Minecraft Education Teacher Academy - AI Foundations
Teaching an AI curriculum might be new territory, but you're not alone. Minecraft Education's Teacher Academy offers a free "AI Foundations for Educators", which we highly recommend taking before or during your teaching of this unit. It covers the big ideas of AI literacy, showcases the Minecraft worlds from a teacher's perspective, and shares classroom implementation strategies (you even get a badge/certificate upon completion)

- Free, self-paced online course (3 hours)
- Certificate of completion with digital badge

Implementation Support

- **Monthly Webinars:** Live sessions with expert educators
- **Teachers Lounge - Global Community Forum:** Connect with teachers worldwide
- **Resource Library:** Lesson modifications, student exemplars
- **Technical Documentation:** Troubleshooting guides

Getting Started Resources

- **Quick Start Guide:** 2-week implementation plan

- **Device Setup:** Technical requirements and optimization
- **Parent Communication:** Multi-language templates
- **Assessment Portfolio:** Rubrics and tracking tools

Contact Information

- **Website:** AI Foundations | Minecraft Education
- **Support:** aka.ms/minecraftedu-support