AUGUST 2025

FUTURE-READY COLORADO:
Artificial Intelligence (AI) K-12 Skills Progression Guide for Educators

About This Guide

Building a Future-Ready Colorado

This guide for educators outlines an artificial intelligence (AI) skills progression for students aligned to the Colorado Department of Education's (CDE) Computer Science Standards, defining the knowledge, skills, and behaviors needed to think computationally and understand, use, and create AI technologies that will reshape how humans live and work.

This guidance prepares students for the future by:

- Mapping AI computer science standards across grades K-12 with a **progression of key concepts and student skills**.
- Providing **grade-specific resources**, including hands-on projects, curricula, children's books, and AI tool examples for classroom use.
- **Aligning AI skills to multiple career pathways**, highlighting relevance across diverse industries.

About Colorado Education Initiative (CEI)

CEI's mission is to champion, empower, and ignite Colorado leaders to deliver on the promise of public education to develop thriving young people and flourishing communities. In May 2023, CEI launched a statewide AI education initiative at the Colorado Summit on AI Education. Since then, CEI has collaborated with educators, school districts, industry, and AI organizations to release *Colorado's Roadmap for AI in K-12 Education* and position the state as a leader in AI integration in schools. Through learning, innovation, and conversation, CEI's work in this space continues to evolve, but remains focused on equipping young people with the essential skills needed to thrive in a rapidly changing future.

Acknowledgements

Thank you to the Gill Foundation, who made this resource possible through their financial support and for their continued commitment to ensuring that Colorado's students have a future full of opportunity.

We are grateful to the Colorado educators who shared their knowledge and leadership to shape this guide. View page 28 for a special thank you message to this group.

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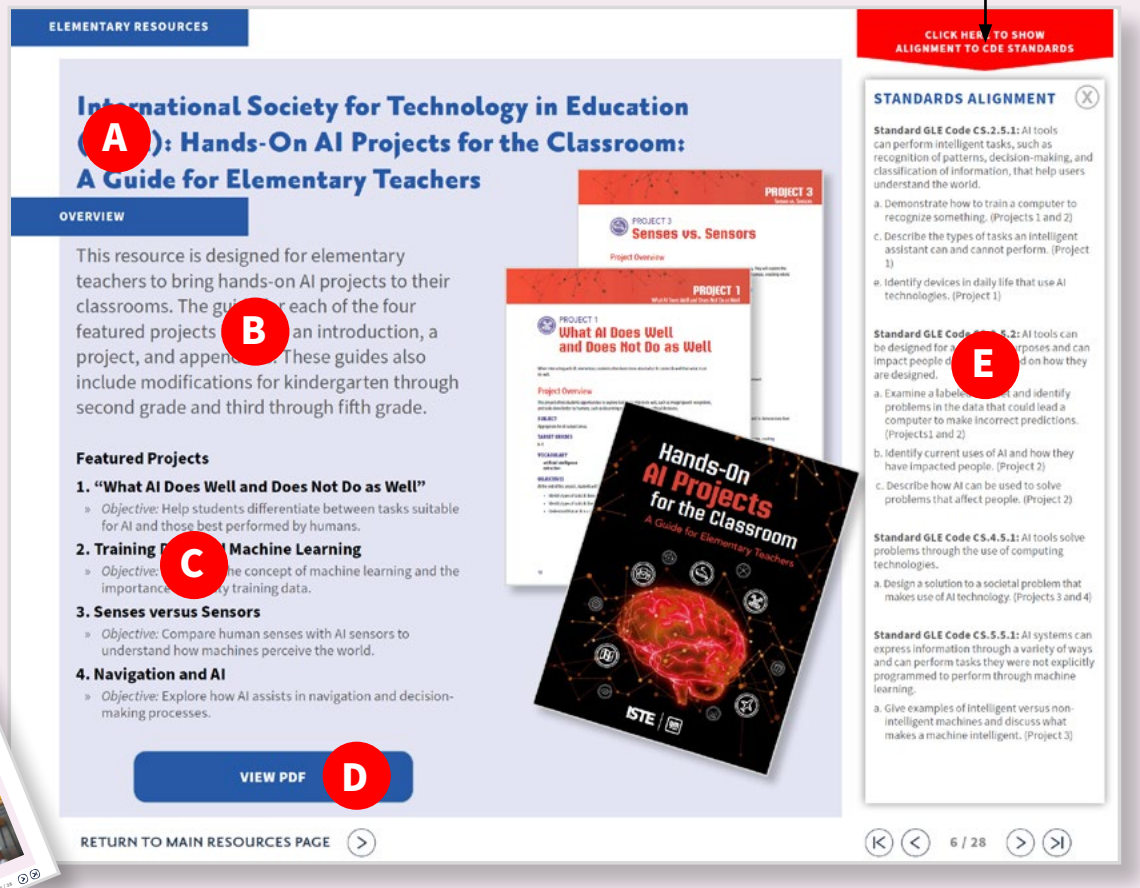
Please connect with Kelly Quinn at kquinn@coloradoedinitiative.org or Amy Spicer at aspicer@coloradoedinitiative.org with questions or to learn more.

How to Use This Guide

Each Resource Page Includes:

- **A.** Resource Source and Title
- **B.** Overview Summary
- **C.** Featured Activities, Books, Lessons, Projects, and Units
- **D.** Links to the Resource Website or PDF
- **E.** A Description of How the Resource Aligns to CDE's Digital Literacy Standards



Click on the drop-down arrow to show alignment to CDE's standards.

Return to the main Resources Menu page.

Use the navigation arrows located in the bottom right corner to move from page to page.

Skills Progression of CDE's AI Computer Science Standards

Grades K-5 (Elementary School)	Grades 6–8 (Middle School)	Grades 9–12 (High School)
MAJOR CONCEPTS		
» Introduction to AI and Pattern Recognition » Human Versus Machine Learning » AI in Daily Life » Ethical Awareness	» Machine Learning and Data Bias » Classification and Prediction » AI Applications and Societal Impacts » Ethics and Fairness	» Advanced Applications and Creativity » Ethical and Legal Frameworks » AI Domains (Natural Language Processing (NLP), Robotics) » Model Evaluation and Design
KEY STUDENT SKILLS		
» Recognize AI technologies in everyday life (e.g., smart assistants). » Train a computer using simple labeled data. » Distinguish between intelligent and non-intelligent machines. » Identify how AI affects jobs and society. » Explore basic classification tasks.	» Build and evaluate simple models (e.g., decision trees). » Analyze biased datasets and cultural representation. » Create solutions using AI extensions or plugins. » Distinguish types of learning (e.g., supervised, unsupervised, reinforcement). » Explore neural networks, natural language processing, and perception. » Connect AI functions to social problems.	» Develop AI-based solutions to address societal challenges. » Explain distinctions between narrow and general AI. » Use and evaluate model results and limitations. » Articulate ethical dilemmas and debate AI agency versus human authorship. » Distinguish AI from general programming.
BUILDING SKILLS OVER TIME		
» Build curiosity by connecting AI to real-life experiences. » Lay a foundational understanding of how machines learn. » Encourage design thinking with age-appropriate problem-solving using AI. » Develop early awareness of social and ethical implications.	» Deepen understanding of how AI models are trained and evaluated. » Explore technical and ethical complexity of data. » Start building AI artifacts using tools and basic programming. » Critically reflect on the implications of AI designs on people and systems.	» Apply AI skills to solve authentic, real-world problems. » Use AI to create original computational artifacts. » Prepare for AI-related career paths through interdisciplinary projects. » Develop ethical reasoning, civic awareness, and critical evaluation of AI systems.

Digital Literacy Progression of CDE's AI Computer Science Standards

Grades K-5 (Elementary School) FOUNDATIONS OF CURIOSITY, ETHICS, AND TECHNOLOGY	Grades 6–8 (Middle School) BEGINNER CREATION, BIAS, AND UNDERSTANDING SYSTEMS	Grades 9–12 (High School) APPLICATION, CAREER CONNECTION, AND INNOVATION
Awareness: Learn what AI is (Simple definitions: machines that "think" or "learn"). **Basic Digital Literacy:** Understand how to use technology safely (e.g., recognize human versus machine tasks). **Creativity and Exploration:** Explore basic "what if" scenarios with AI toys/tools (e.g., coding robots, visual coding apps). **Ethics and Responsibility:** Begin to learn about fairness and privacy (e.g., "Should a robot know my personal information?"). **Everyday Examples:** Identify where AI is used (e.g., voice assistants, recommendation systems). **Introduction to Data:** Begin to explore patterns and classifications (e.g., sorting, recognizing trends).	**Bias and Fairness:** Explore bias in datasets and outputs (e.g., "Why might a tool make unfair decisions?"). **Data and Models:** Begin to work with datasets and simple model training activities (e.g., teach a model to recognize fruit). **Ethical Use and Privacy:** Deepen understanding of data privacy and ethical dilemmas in AI. **Hands-On Practice:** Engage in beginner-level AI creating using block coding or tools like Teachable Machine or Scratch Machine Learning Extension. **Impact Awareness:** Explore how AI affects jobs, media, entertainment, healthcare, and other industries. **Systems Thinking:** Learn how AI systems work: inputs→ algorithms→ outputs.	**Advanced Data Literacy:** Work with real-world datasets, evaluate models, and explore basic statistics and data science. **AI Ethics and Policy:** Analyze case studies around AI ethics, societal impacts, surveillance, and misinformation. **AI in Careers:** Map AI to career pathways: How is AI used in healthcare, business, manufacturing, and creative industries? **AI Tools and Applications:** Engage in hands-on use of AI in industry tools (e.g., AI-assisted design, predictive analytics, business applications) **Capstone/Portfolio Project:** Design or evaluate an AI-infused solution aligned to an industry or community need (e.g., project-based learning). **Technical Fluency:** Understand key AI concepts (machine learning, neural networks, and natural language processing) at an introductory level.
Readiness Milestones: *Describe what AI is and identify examples in daily life.*	**Readiness Milestones:** *Explain how AI systems are trained, identify biases, and create a simple AI model.*	**Readiness Milestones:** *Analyze AI systems, apply AI tools to solve problems, articulate ethical considerations, and complete an AI project aligned to a career pathway.*

Grade Band Resources for Teaching CDE's AI Computer Science Standards

GRADES K-5

GRADES 6-8

GRADES 9-12

Grades K-5 Resources

MIT Media Lab: Primary AI: Grades 3–5 Robotics and AI Activities

International Society for Technology in Education (ISTE): Hands-On AI Projects for the Classroom: A Guide for Elementary Teachers

Code.org: How AI Makes Decisions

Artificial Intelligence (AI) for K-12 initiative (AI4K12): "AI + ME (Ready AI)" Children's Books

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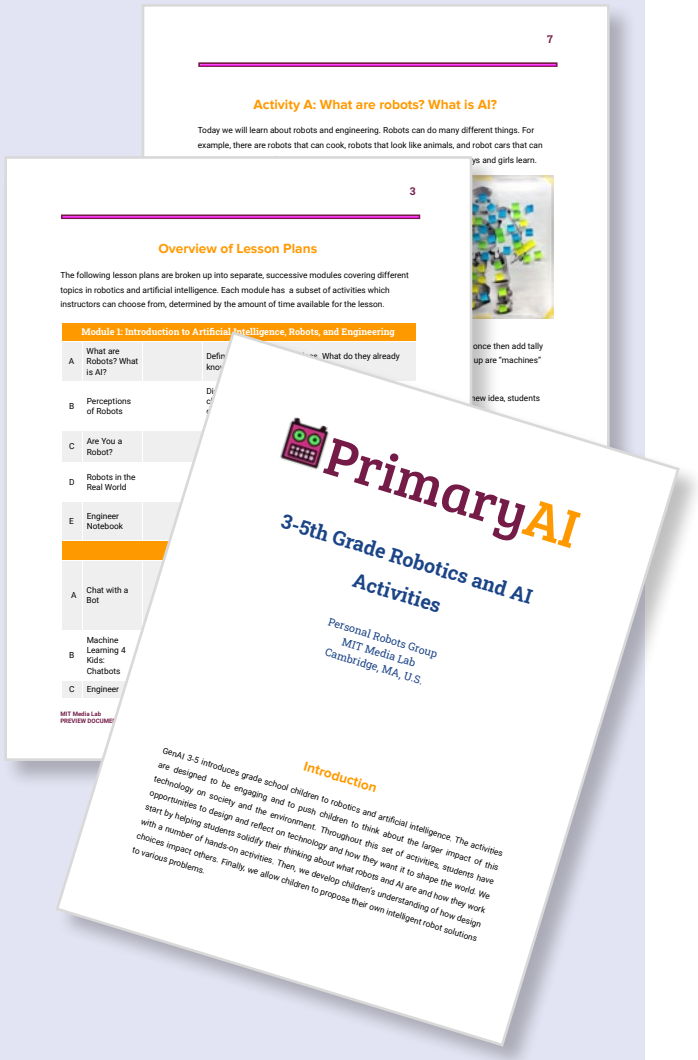
MIT Media Lab: Primary AI: Grades 3–5 Robotics and AI Activities

OVERVIEW

This curriculum includes six modules and introduces robotics and artificial intelligence through an engaging set of activities developed by MIT Media Lab. Learners can access the first two lessons online at no cost. Lessons range from 10–30 minutes long.



Module 1: Introduction to Artificial Intelligence, Robots, and Engineering

- Lesson 1: What are Robots? What is AI?
- Lesson 2: Perceptions of Robots
- Lesson 3: What Do We know?
- Lesson 4: Robots in the Real World

Module 2: Chatbots

- Lesson 1: Chat with a Bot
- Lesson 2: Machine Learning 4 Kids: Chatbots
- Lesson 3:- Engineer Notebook

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International Society for Technology in Education (ISTE): Hands-On AI Projects for the Classroom: A Guide for Elementary Teachers

OVERVIEW

This resource is designed for elementary teachers to bring hands-on AI projects to their classrooms. The guide for each of the four featured projects includes an introduction, a project, and appendices. These guides also include modifications for kindergarten through second grade and third through fifth grade.

Featured Projects

1. "What AI Does Well and Does Not Do as Well"

» *Objective:* Help students differentiate between tasks suitable for AI and those best performed by humans.

2. Training Data and Machine Learning

» *Objective:* Introduce the concept of machine learning and the importance of quality training data.

3. Senses vs. Sensors

» *Objective:* Compare human senses with AI sensors to understand how machines perceive the world.

4. Navigation and AI

» *Objective:* Explore how AI assists in navigation and decision-making processes.

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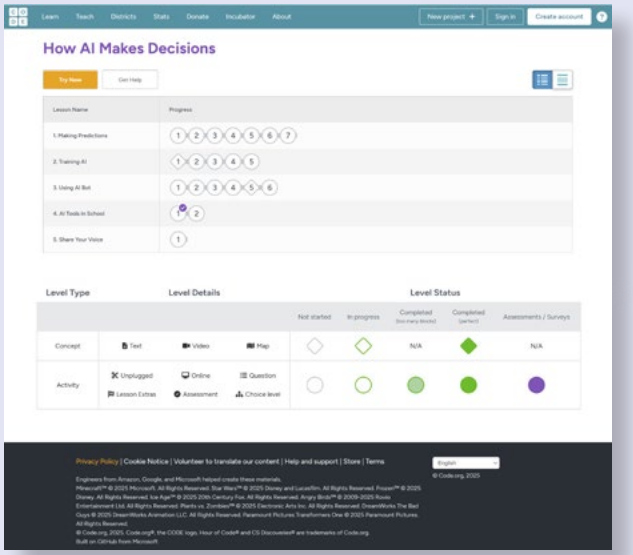
Code.org: How AI Makes Decisions

OVERVIEW

The curriculum is designed to help students understand how AI systems use data to make decisions and learn how to recognize the importance of training data in shaping AI outcomes. Students will work to identify potential biases in AI decision-making processes and explore real-world applications of AI in everyday contexts.



Featured Lessons

1. Making Predictions

» Students learn to make predictions based on observable patterns.

2. Training AI

» Introduce the concept of training data and its impact on AI decisions.

3. Using AI Bot

» Students interact with a simulated AI bot to see how it processes information.

4. AI Tools in School

» Explores practical applications of AI tools within a school setting.

5. Share Your Voice

» Students reflect on their learning and share insights about AI.

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Artificial Intelligence (AI) for K-12 Initiative (AI4K12): "AI + ME (Ready AI)" Children's Books

OVERVIEW

This five-part, picture book series is designed to introduce the "Five Big Ideas of Artificial Intelligence" to students in kindergarten through second grade .

Featured Books

1. **"Perception: How AI Sees the World"**
2. **"Representation and Reasoning: How AI Makes Choices"**
3. **"Machine Learning: How AI Learns"**
4. **"Human-AI Interaction: How We Work with AI"**
5. **"Societal Impact: How AI Can Change the World"**

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Grades 6–8 Resources

Common Sense: AI Literacy Lessons for Grades 6–12

MIT Media Lab: An Ethics of Artificial Intelligence Curriculum for Middle School Students

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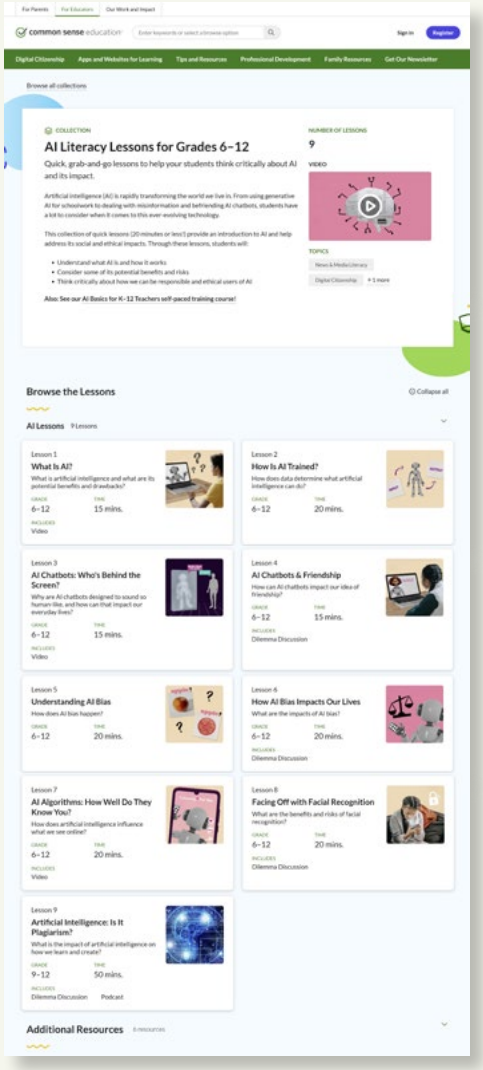
Common Sense: AI Literacy Lessons for Grades 6–12

OVERVIEW

These ready-to-go lessons introduce students to AI and how it works, prompt them to consider the potential benefits and risks of AI, and invite them to think critically about the ethical and responsible use of AI. Each lesson includes a slide deck and related teaching materials (handouts, videos, etc.). There are nine lessons, with lesson nine designed specifically for students in grades 9–12.



Featured Lessons

1. What Is AI?

» *Objective:* Students get acquainted with how AI works and consider some of its potential benefits and drawbacks.

2. How Is AI Trained?

» *Objective:* Students become more critical and responsible users of this technology by gaining a deeper understanding of how AI uses data to learn and create.

3. AI Chatbots: Who's Behind the Screen?

» *Objective:* Students will explore how and why AI chatbots are designed to sound so human-like and reflect on the potential impacts of chatbots in our lives.

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(continued) Common Sense: AI Literacy Lessons for Grades 6–12

OVERVIEW

4. AI Chatbots & Friendship

» *Objective:* Students will explore how AI chatbots can provide help and reflect upon what makes human friendships special and unique.

5. Understanding AI Bias

» *Objective:* Students will think critically about the training data that informs AI tools and consider ways to reduce AI bias.

6. How AI Bias Impacts Our Lives

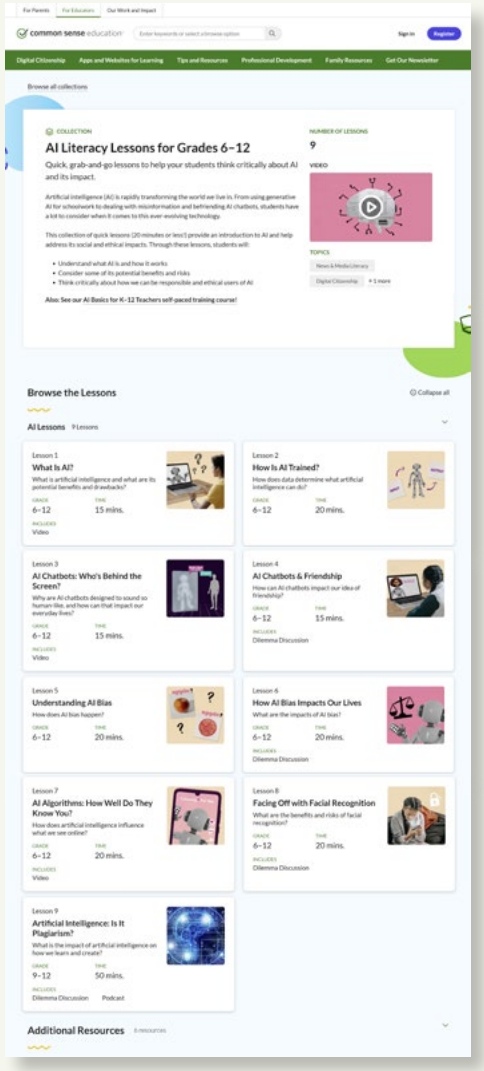
» *Objective:* Students explore how AI bias can impact people in different ways.

7. AI Algorithms: How Well Do They Know You?

» *Objective:* Students will build understanding of recommendation algorithms and reflect on how they shape our online experiences.

8. Facing Off with Facial Recognition

» *Objective:* Students use a dilemma and thinking routine to help students consider the benefits and drawbacks of facial recognition.



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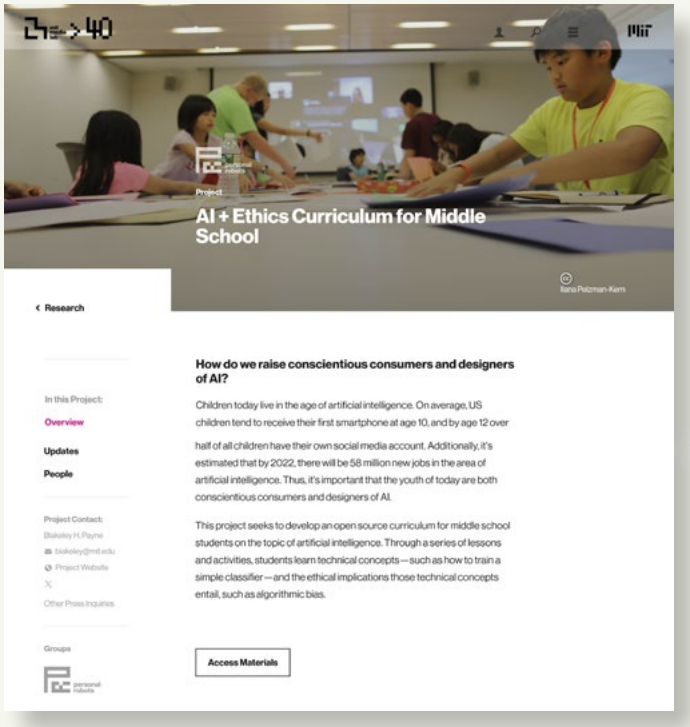
MIT Media Lab: An Ethics of Artificial Intelligence Curriculum for Middle School Students

OVERVIEW

This resource includes eight activities, each with teacher's guides and slide decks, to teach students in middle school about the ethics of AI. Activities range in length from 30 minutes to four hours.



Featured Activities

1. AI Bingo

» Students will play AI Bingo to learn how to identify what different AI systems predict and the data they use.

2. Algorithms as Opinions

» Students will write an algorithm and discover how their opinions shape what they consider the "best" outcome.

3. Ethical Matrix

» Students will identify stakeholders and their values for a situational algorithm and use an ethical matrix to explore where those values align or conflict.

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(continued)
MIT Media Lab: An Ethics of Artificial Intelligence Curriculum for Middle School Students

OVERVIEW

4. Introduction to Supervised Machine Learning and Algorithmic Bias

» Students will explore supervised machine learning by using Teachable Machine to build and improve a cat-dog classifier, learning how biased data affects results.

5. Speculative Fiction

» Students will explore emerging technologies and use creative writing to reflect on who they might impact and how they could help or cause harm in the future.

6. YouTube Scavenger Hunt

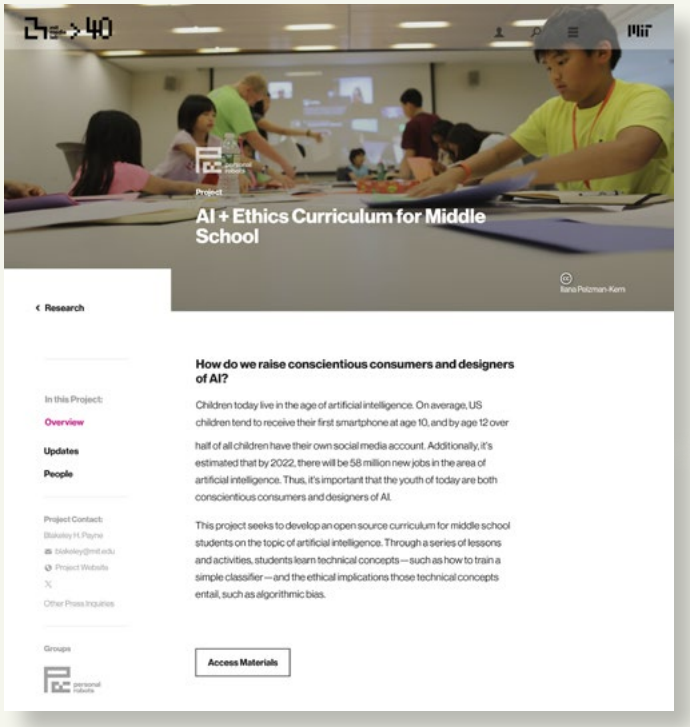
» Students will work in pairs to identify different AI systems on YouTube, what each is trying to predict, and the data they each use.

7. YouTube Redesign

» Students will create an ethical matrix for the YouTube algorithm, choose a values-based goal, and design a paper prototype that reflects their chosen priorities.

8. YouTube Socratic Seminar

» Students will evaluate stakeholders' input and influence on proposed changes to the YouTube Kids app.



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Grades 9–12 Resources

International Society for Technology in Education (ISTE): Hands-On AI Projects for the Classroom: A Guide for Secondary Teachers

The AI Education Project (aiEDU): AI Project Dashboard

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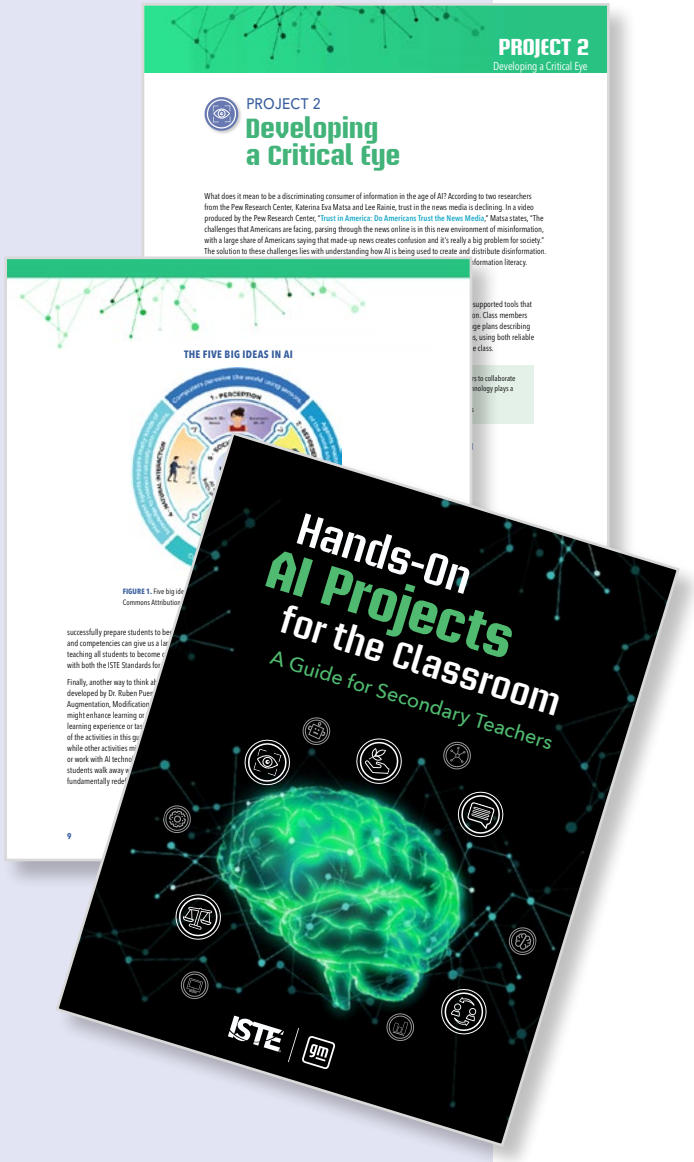
International Society for Technology in Education (ISTE): Hands-On AI Projects for the Classroom: A Guide for Secondary Teachers

OVERVIEW

This resource is designed for secondary teachers to implement a student-driven approach to AI projects in their classrooms. The guide for each of the four featured projects includes an introduction, a project, and appendices. The projects range in time from 5–12 hours.



Featured Projects

AI Chatbots

» Students will learn what natural language processing is, compare virtual assistants and chatbots, and explore how they can help with subject-specific tasks.

Developing a Critical Eye

» Students will explore how AI tools spread real and false information, create their own information campaign plans, and give feedback on their student peers' ideas.

Using AI to Solve Environmental Problems

» Students will explore how AI is used to address environmental issues and create a presentation proposing their own AI-based solution.

Laws for AI

» Students will explore ethics in technology by analyzing Asimov's Laws in "Runaround" and creating their own set of AI laws with justifications.

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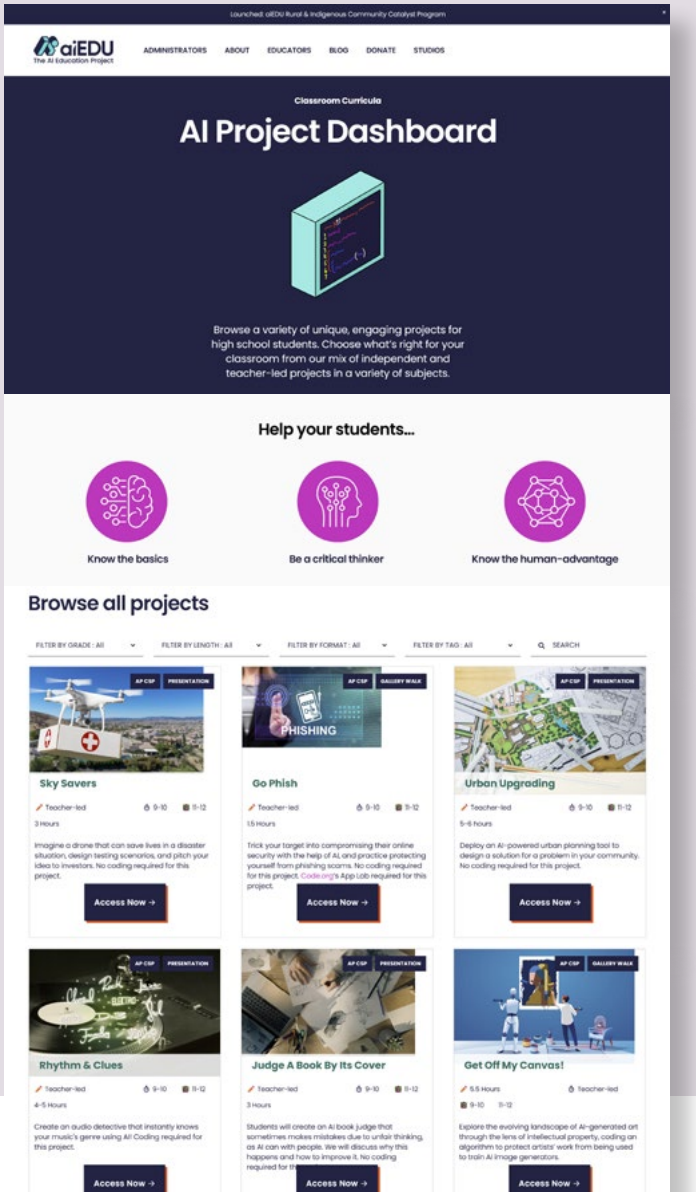
The AI Education Project (aiEDU): AI Project Dashboard

OVERVIEW

This resource offers ready-to-use AI projects for high school classrooms, with each project spanning multiple class periods. Projects are hands-on, standards-aligned, and designed for teachers with any level of AI experience.



Featured Projects

1. **[Deepfake PSA](#) (Grades 9–10)**
   - » *Objectives:* Explain how deep fakes are created, identified, and prevented. Develop fact-based and balanced written communications aimed at the general public.
2. **[Facial Recognition for Good, Evil, & Everything in Between](#) (Grades 9–10)**
   - » *Objectives:* Explain how a technology can be used to benefit or cause harm to humans. Illustrate the pervasive use of facial recognition in modern society. Demonstrate the different moral implications of the widespread use of facial recognition.
3. **[Interspecies Communication App](#) (Grades 9–10)**
   - » *Objectives:* Explain how AI is being utilized to decode animal communication. Design a mobile app prototype for interspecies communication. Identify the potential benefits and limitations of using AI to facilitate communications between humans and animals.

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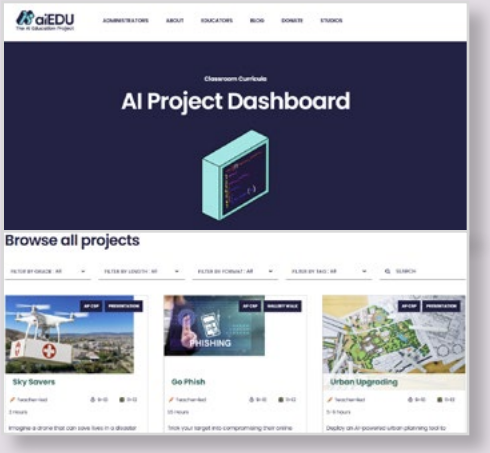
(continued) The AI Education Project (aiEDU): AI Project Dashboard



4. **[Interview with ChatGPT](#) (Grades 9–10)**
   - *Objectives:* Explain the abilities and limitations of chatbots like ChatGPT that aim to be informative. Compare and contrast the role of AI and humans in information-providing roles, such as an expert on a podcast.
5. **[Picturing the Future of Medicine](#) (Grades 9–10)**
   - *Objectives:* Explain how AI innovation has augmented the field of medicine. Predict how the field of medicine will evolve as a result of future AI innovation.
6. **[Highway to Autonomy](#) (Grades 11–12)**
   - *Objectives:* Explore audio visual (AV) technology, benefits and ethical concerns. Analyze and compare state-level AV legislation. Create a policy proposal addressing an AV concern and advocate for it.
7. **[The 29 AIs of Washington, D.C.](#) (Grades 11–12)**
   - *Objectives:* Explain how governments use AI to make practical decisions. Draw conclusions about how a person's lived experience is affected by AI-based decision-making systems.
8. **[Artificial Common Sense](#) (Grades 11–12)**
   - *Objectives:* Define common sense and the role it plays in decision-making for both humans and AI. Use background information to develop independent opinions and effectively argue those opinions in front of an audience.

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AI in Action: Examples of Tool and Core Content Integration in the Classroom

AI Tool and Platform	*Classroom Use Cases*
Custom Chatbot (Teacher Tool): Magic School	Students taking economics in high school interviewed the chatbot acting as either Karl Marx or Adam Smith. They used prior knowledge to develop interview questions, reinforcing their understanding of economic systems through dialogue with the AI character. In an eighth-grade social studies class, students carried out a community action project. A custom chatbot helped them brainstorm community needs, narrow their focus, and plan actions. The chatbot was programmed with research strategies and pushed students' thinking without giving away answers — enhancing **student initiative** and **problem-solving.**
Google Chrome Extension: Brisk Teaching	A sixth-grade English language arts (ELA) teacher used Brisk to turn comprehension questions into an **interactive** AI chat activity. Students accessed the Boost Inquiry through a link or QR code, discussed the questions with AI, and received feedback tied to learning targets. Once they showed understanding, they completed written responses. This approach promoted **deeper thinking** and **made progress visible**. A teacher used Brisk to create a lesson plan for a substitute teacher where students watched a video on stress and then interacted with the AI Inquiry chat to reflect on what they learned. The activity reinforced key concepts, tracked student understanding, and provided a meaningful, low-pressure break during a larger project.
Image Generator (Student and Teacher Tool): Magic School	During a second-grade art and ethics lesson, students explored real versus AI-generated images. They discussed how AI can create art and why it matters and created their own imaginative images with AI. This was an engaging way to introduce **AI concepts** and **responsible use.**

Informational Text and Text Dependent Questions (Student and Teacher Tool): Magic School	A fourth-grade ELA teacher used this tool to generate nonfiction articles connected to social studies standards. Students worked through the writing process using this content. It **saved educators time** in finding suitable articles and helped **integrate literacy** across subjects.
Jeopardy Review (Teacher Tool): Magic School	For second through fifth grade classes, a science teacher used this tool to review key content before assessments. Students played in teams, practicing recall and application in a **fun, competitive format.** The teacher **gained insight** into which concepts needed reteaching.
Multiple Choice Quiz/Assessment Generator (Teacher Tool): Magic School	A Career Kickstart Cybersecurity teacher used this tool to generate extra multiple-choice questions tied to course standards. This helped more comprehensively **assess students' understanding** than the limited 10 sample questions per unit.
Presentation Generator (Teacher Tool): Magic School	A team leading an AI for Educators training used this tool to create a slide deck for a school district professional development activity. They showcased how to differentiate lessons and demonstrated how AI can save teachers time while promoting **ethical use** and **student engagement**. An English teacher used this tool to make quick and clear note slides for all class units. It **saved planning time** and allowed more focus on interactive class activities rather than creating slide decks from scratch.
Raina Chatbot (Student Tool): Magic School	In a course unit focused on the Cold War, a high school history teacher used Raina to create an overview of the Central Intelligence Agency (CIA) and the Committee for State Security (KGB) and generated realistic character profiles for a CIA/KGB **simulation**. Students assumed roles and used the informational text to guide their thinking and participation in a week-long **interactive activity**. In a design seminar, students reviewed course standards and struggled to interpret them. The teacher introduced Raina as a support tool. Students asked Raina questions about the standards to help translate them into **student-friendly language** and build a rubric. This added **clarity** and **autonomy** to the process.
Rap Battle and Song Generator (Student and Teacher Tools): Magic School	In a culinary nutrition class, students created songs or rap battles about their recipes. They used vocabulary from the unit (e.g., "saturated fats" and "ingredients") and performed their pieces during presentations. This brought **energy and humor** to class, encouraged content review through **creativity**, and reinforced subject-specific terms.

Real World Connections Generator (Student and Teacher Tool): Magic School	In an intro programming course, a teacher used this tool to find relevant real-world examples of concepts like iteration and selection. This helped students make **meaningful connections** beyond abstract code (e.g., “Iteration in grocery store restocking systems”).
School AI	SchoolAI is an AI-powered platform that supports teaching and learning in kindergarten through 12th grade by offering **personalized student learning spaces, AI teaching assistants**, and **real-time progress tracking**. It integrates with tools, such as Google Classroom and Canvas, helps streamline lesson planning and student support, and is designed with strong data privacy protections. This tool is free for teachers, with expanded features available to schools that have a subscription.
Text Leveler (Teacher Tool): Magic School	A support teacher adapted the novel *Tuck Everlasting* for fifth-grade students enrolled in English language development courses. Using Magic School’s Text Leveler, the teacher simplified the text to a third-grade reading level and added vocabulary support with appositives. This helped students **access** the content and **build background knowledge** before reading the original novel.

Core Content Integration

aiEDU Snapshots

[Grades 3–5]

[Grades 6–12]

Includes integrations into:

- English
- Math
- Science
- Social Studies

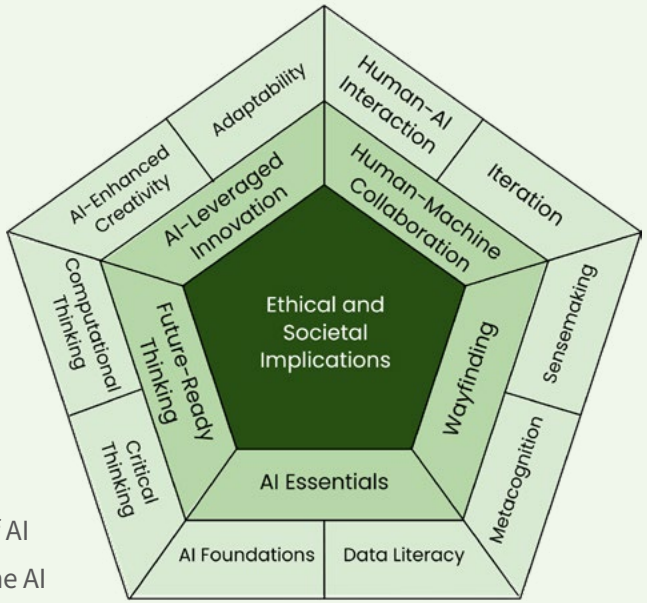
The AI Education Project (aiEDU) Snapshots present a series of classroom warm-ups designed to foster students' understanding of artificial intelligence. These brief activities, around 10 minutes long, encourage students to define, identify, and critically think about AI's impact. The snapshots are organized by core subjects, including English, science, math, and social studies, and offer real-world examples of how AI affects any career field, consumer product, and policies shaping their lives — ultimately empowering students with essential knowledge for the future. Each snapshot includes clear learning objectives, aligns with AI literacy competencies and subject-specific standards, and provides suggestions for facilitation and differentiation.

Evergreen Education's AI Literacy Model

[AI Literacy Model]

Evergreen Education's (Evergreen) "Competency Model" identifies 60 AI graduation requirements for schools to strive for in the "Age of AI." To bring these competencies to life, Evergreen has created 250 AI lesson starters that begin in kindergarten and span the following subjects:

- Language Arts
- Math
- Science
- English
- Social Studies
- Art
- Geography
- Career Education
- Statistics
- More!



Evergreen believes that the only way AI literacy (knowledge, skills, and behaviors) can be taught is through integration of AI into existing curricula, rather than creating a new, standalone AI class. Evergreen is actively seeking feedback on this model to refine its clarity, relevance, and practicality for educators and students; it is also actively seeking schools that want to partner on AI rollouts.

The National Career Clusters® Framework

Career Clusters
Pathways to College & Career Readiness

Caring for Communities

Education
- Early Childhood Development
- Education Administration & Leadership
- Learner Support & Community Engagement
- Teaching, Training, & Facilitation

Healthcare & Human Services
- Behavioral & Mental Health
- Biotechnology Research & Development
- Community & Social Services
- Health Data & Administration
- Personal Care Services
- Physical Health

Public Service & Safety
- Emergency Response
- Judicial Systems
- Local, State, & Federal Services
- Military & National Security
- Public Safety

Building & Moving

Advanced Manufacturing
- Engineering
- Industrial Machinery
- Production & Automation
- Robotics
- Safety & Quality Assurance

Construction
- Architecture & Civil Engineering
- Construction Planning & Development
- Equipment Operation & Maintenance
- Skilled Trades

Supply Chain & Transportation
- Air & Space Transportation
- Ground & Rail Transportation
- Maintenance & Repair
- Marine Transportation
- Planning & Logistics
- Purchasing & Warehousing

Connecting & Supporting Success**

Digital Technology**
- Data Science & AI
- IT Support & Services
- Network Systems & Cybersecurity
- Software Solutions
- Unmanned Vehicle Technology
- Web & Cloud

Management & Entrepreneurship**
- Business Information Management
- Entrepreneurship & Small Business
- Leadership & Operations
- Project Management
- Regulation

Marketing & Sales**
- Market Research, Analytics, & Ethics
- Marketing & Advertising
- Retail & Customer Experience
- Strategic Sales

Creating & Experiencing

Arts, Entertainment, & Design
- Design & Digital Arts
- Fashion & Interiors
- Fine Arts
- Lighting & Sound Technology
- Media Production & Broadcasting
- Performing Arts

Hospitality, Events, & Tourism
- Accommodations
- Conferences & Events
- Culinary & Food Services
- Travel & Leisure

Cultivating Resources

Agriculture
- Agribusiness
- Agricultural Technology & Automation
- Animal Systems
- Food Science & Processing
- Plant Systems
- Water Systems

Energy & Natural Resources
- Clean & Alternative Energy
- Conservation & Land Management
- Ecological Research & Development
- Environmental Protection
- Resource Extraction
- Utilities

Investing in the Future

Financial Services
- Accounting
- Banking & Credit
- Financial Strategy & Investments
- Insurance
- Real Estate

The Digital Technology Career Cluster is a Cross-Cutting Cluster, meaning the skills gained through this Career Cluster are applicable across all others. Advance CTE encourages practitioners to combine content from this Cluster across other career and technical education programs.

Access the complete National Career Clusters Framework from Advance CTE, including the Digital Technology cluster, **HERE**.

***Cross-Cutting Clusters** Denote careers that overlap in all industries, highlighting the versatile and interconnected nature of today's workforce. These careers can stand on their own or be contextualized in each Cluster and emphasize the need for adaptability in navigating the modern economy.

Notes:
Clusters are listed in alphabetical order. Clusters and Sub-Clusters represent the entire world of work (Please see the structure definitions listed at this link).

Source: https://careertech.org/career-clusters/

Examples of AI Uses and Relevant Skills for Key Career Pathways

Industry	Uses	Skills
Advanced Manufacturing	AI can be used to enhance predictive maintenance, reduce material waste, automate production performance tracking, and optimize scheduling.	Technical skills in robotics, human-centered skills, including leadership and adaptability, will be important to have. Analytical skills and AI tool literacy are also critical to this work.
Digital Technology	AI can be used to automate coding, troubleshooting, and security protocols and to elevate data analysis, machine learning development, and advanced research.	Strong analytical and technical skills will remain critical along with AI tool expertise and interpersonal skills for collaboration and user support.
Healthcare	AI can be used to elevate robotics-assisted surgery, diagnostics, data analysis, virtual health assistants, and to personalize treatment.	Interpersonal skills, including communication, cross-functional collaboration, conflict resolution, and emotional intelligence, will remain necessary, while AI literacy will be critical to succeed.
Marketing and Sales	AI can be used to elevate customer service, create personalized shopping experiences, enhance data-driven decision making, and drive programmatic advertising.	Complex analytical and interpersonal skills remain important. Coding and software testing will be critical to these sectors.

These insights are drawn from Jobs for the Future's The AI-Ready Workforce report that explores how to prepare all learners for success in future careers.

Thank You

Thank You to the ElevateAI Skills Progression Working Group.

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Your feedback helped shape the contents of this guide, and your dedication to innovation is bringing meaningful, future-ready learning to students across the state. Thank you for your commitment to advancing AI literacy in Colorado classrooms.

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