LEARN ABOUT IT
WHAT IS AI?

Megan Humburg
Indiana University

Amanda Moore
Indiana Educator

Steph Duda
Indiana Educator

AI is an umbrella term encompassing many different types of artificial intelligence. While there are many benefits to using AI tools, it is still a growing field, and there are limitations to what current AI models can do for us. Explore this resource to learn about three types of AI, how they integrate into our work and lives, as well as strengths and weaknesses that we should consider when using each type of AI.

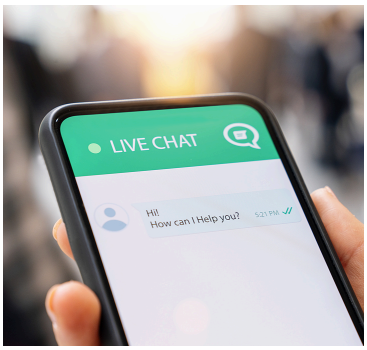
Machine Learning

CrashCourse: What is Machine Learning?

Machine learning (ML) is a type of AI that can recognize patterns and make decisions based on data and training. ML can interpret text, image, video, and audio data.

Examples:

- Music or TV recommendations
- Facial recognition to unlock a phone
- Automated grading
- Online exam proctoring software



Natural Language Processing

Simplilearn: What is NLP?

Natural Language Processing (NLP) is an approach to teaching AI how to process, categorize, and understand human language and grammar.

Examples:

- Language translation
- Predictive text in a web search bar
- Chatbots
- Email filter
- Grammar checking

Generative AI

AI Explained: How Generative AI Works

Generative AI creates new content using **machine learning** and **natural language processing**. It uses algorithms to make predictions and create content based on prompts.

Examples:

- Text
- Music
- Images
- Summarize texts
- Create leveled texts

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WHAT IS AI GOOD FOR?

Machine Learning

ML can detect important patterns that are difficult for humans to notice, such as evidence of cancer in x-rays, but humans need to be involved in any high-stakes decisions. [1, 5]

Great for:

- Grading assignments with clear rubrics and objective right answers [2]
- Noticing patterns that people might miss in large amounts of data

Struggles with:

- Making fair decisions when its data is flawed, biased, or incomplete [1]
- Identifying objects or ideas it wasn't trained to identify [5]

Natural Language Processing

NLP is great for automating mundane tasks to free up time for teachers.[4] However, we have to be careful not to automate the human parts of teaching and learning.[1]

Great for:

- Grammar checking and feedback [3]
- Organizing and summarizing large amounts of text [3]
- Drill practice and assessing basic skills and knowledge [2]

Struggles with:

- Understanding accents and dialects that it wasn't trained on
- Interpreting "messy" or "noisy" data
- Assessing creativity, sarcasm, sub-text, and other complex layers of language [2]

Generative AI

GenAI can help brainstorm ideas and give feedback, but over-reliance on AI for writing and thinking may harm students' critical thinking skills and motivation.[3]

Great for:

- Generating standard templates and advice about improving writing [3]
- Brainstorming and idea generation [3, 4]
- Acting as a peer that students can "teach" about what they're learning [4]

Struggles with:

- Reliably generating accurate information and sources [1]
- Creating innovative images or text
- Guiding students through inquiry instead of giving them the answers directly [5]

Sources

1. UNESCO (2024), AI Competency Framework for Teachers
2. Swiecki et al. (2022), Assessment in the Age of Artificial Intelligence
3. Kasneci et al. (2023), ChatGPT for Good? On Opportunities and Challenges for LLMs in Education
4. Labadze et al. (2023), Role of Chatbots in Education: Systematic Literature Review
5. Humburg & Danish (2025), Testing the Bot: Building Ethical & Effective AI Agents for Learning

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TEACHING WHAT IS AI?

Megan Humburg
Indiana University

Amanda Moore
Indiana Educator

Steph Duda
Indiana Educator

Artificial Intelligence (AI) is a broad topic. Although the technology is advanced, we can teach students simple concepts to build their AI literacy and clear up common misconceptions. Use this handout for lesson ideas, resources, key concepts, and guiding questions to help you teach AI effectively.

Elementary

What is AI?

Day of AI: What is AI? Lesson

Through the first lesson in this free unit, students explore the idea that something artificially intelligent *can* do any of these four things: 1) *perceive* and *understand* its environment, 2) *reason* and *plan* to make decisions, 3) *learn* new knowledge and skills, and 4) *interact* with humans and the environment. Students then apply that definition to a series of objects to determine if they are AI or not AI.

Middle

When do I use AI?

AI Explained: How Generative AI Works

Students watch a video on how generative AI works and explore guiding questions like: When is generative AI most useful? (When creating something new or unique.) Why do we use search engines? (They provide articles and data with accurate information.) Students learn that generative AI combines information from many sources, which means it can sometimes include inaccuracies.

High

Can I trust AI?

AI for Education Hallucination Detective

In this lesson, students investigate how and why generative AI chatbots sometimes produce answers that contain incorrect or made-up information. To do this, students select a topic they have expertise in, then test and fact-check an AI chatbot's answers. Students use this data to create a short presentation on the risks of chatbot hallucination, and ways to combat it.

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WHAT IS AI? MISCONCEPTIONS

AI Will Take Over the World

Contrary to the popular Sci-Fi genre, AI will not take over the world. AI can only do what it is trained to do. It excels at data analysis, but it lacks the ability to adapt to unpredictable situations. Instead, we should consider who is running the AI systems, their motivations, and how it affects us.[1]

Resources:

- Discuss how China is using AI in their classrooms with students. What degree of AI use is acceptable or not? Who gets to decide?
- Read this article to understand Why AI Won't Take Over the World

AI Will Replace Teachers

AI tools can automate mundane tasks, however there is a certain human element to teaching that an AI system will not be able to replicate or replace.[3] Like with many jobs, AI integration should free up time for teachers to do more complex tasks that require understanding the social, emotional, and cultural dynamics of the classroom.

Resources:

- Watch Why AI Won't Replace Teachers
- Talk with your students about what would happen if we replaced teachers with robots. What can teachers do that robots can't? [3]

AI Is Smarter than Me

Knowing lots of information is not the same as being smart. While AI can answer many questions that you can't, it doesn't "think" the way humans do. It uses math to make guesses about what something should look or sound like, but it doesn't actually understand us on a deeper level.[4]

Resources:

- Ask older students to "cheat" on essays and discuss what GenAI adds and takes away from their own writing and learning[2]
- Help students understand that they still need to learn skills to build conceptual understanding[4]

AI is Neutral

Although AI doesn't have feelings, it does have bias. AI is trained on data, and that data reflects back the biases of society and the individuals who created the AI system. AI can also be used for helpful and harmful purposes, so we need to critically reflect on how, where, and why we use it.[1]

Resources:

- Discuss these examples of AI bias leading to wrongful arrest, unfair hiring practices, and translation errors. What can we do to minimize bias when using AI?
- Learn why AI isn't neutral with AI: Training Data and Bias

Sources

1. Selwyn (2022), The Future of AI and Education: Some Cautionary Notes
2. Fyfe (2023), How to Cheat on Your Final Paper: Assigning AI for Student Writing
3. Humburg et al. (2024), Integrating Youth Perspectives into the Design of AI Collaborative Learning
4. Volante et al. (2022), Leveraging AI to Enhance Learning

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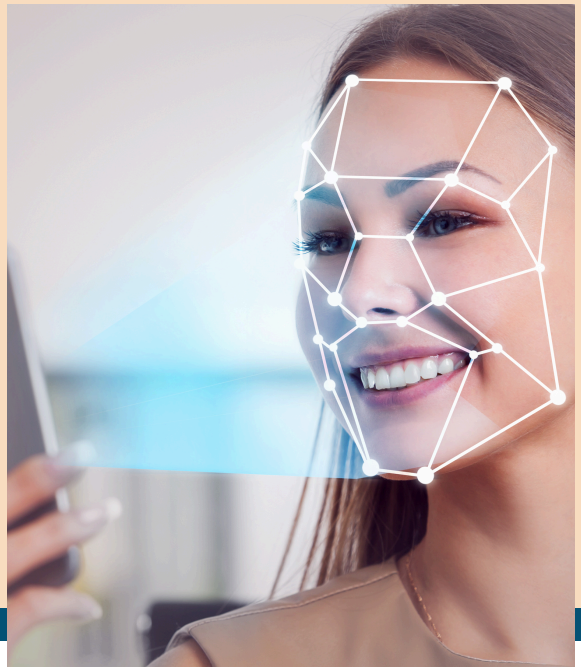

MACHINE LEARNING

Megan Humburg
Indiana University

Amanda Moore
Indiana Educator

Steph Duda
Indiana Educator

How do machines learn? Use this resource for hands-on ways to introduce machine learning to your students, from pattern detection to deep learning and the implications of bias. Explore real-world applications in healthcare, agriculture, entertainment, and more to help students understand how AI can improve lives, and what risks we need to understand when we use machine learning to find patterns for us. [2, 4]

Elementary

Day of AI: How Do Machines Learn?

This hands-on unit guides teachers in introducing young students to core machine learning ideas through interactive activities and discussions. Teachers lead students in animal sorting games and use Google's Teachable Machine to train AI models and observe how bias can emerge from limited or skewed data. Guide students in comparing human and machine interpretation and then brainstorm how to make AI more fair.

Middle

Day of AI: How Do Machines Learn?

In this unit, teachers help students explore supervised machine learning with hands-on activities, considering real-world school problems AI could address. Students use Google's Teachable Machine to train models, recognize patterns, and see how predictions improve with more data. Students practice uncovering algorithmic bias and reflect on how inequitable models can impact people's lives.

High

Day of AI: How Do Machines Learn?

Over three lessons, students explore how machines learn, simulate neural networks, and grapple with AI bias. Using interactive activities and discussions, students learn about different types of machine learning, observe how data flows through networks, and analyze real-world examples of bias. The unit also emphasizes ethics and collaboration, helping students see their role in creating fair AI.

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APPLYING MACHINE LEARNING

Pattern Detection

Machine learning can be used to recognize a variety of patterns in large datasets that would take humans a long time to find. To do this, we can label data (text, pictures, videos) to show the computer what we want it to notice and find. The more labeled data it reviews, the better it gets at reliably finding those patterns.[2]

Examples:

- Noticing and flagging credit card fraud
- Identifying x-rays with signs of cancer
- Recommending new TV shows based on what you've rated high or low
- Filtering spam messages

Deep Learning

In addition to learning to recognize patterns that we teach it to find, a computer can also be trained to learn to solve complex tasks on its own. This "deep learning" lets the computer make sense of messy data, so the algorithm can learn and improve without human oversight.[1, 2]

Examples:

- Google Translate learns and improves from analyzing translations [1]
- Computer vision can help people with visual impairments travel safely
- Voice assistants learn to recognize a variety of accents, voices, and dialects

Ethical Concerns

Machine learning can be a powerful tool, but it also comes with concerns about fairness, bias, and privacy. Discussing ethical dilemmas can help students be mindful of how their data is used and how patterns identified by AI can be intentionally or unintentionally used against them.[3, 4]

Examples:

- What is bias and how does it impact students?
- How are AI chatbots influencing student views of friendship?
- Facial recognition is convenient, but it comes with benefits and risks to consider

AI in Careers

Understanding machine learning is useful for students interested in computer science, but it also has wide applications in a variety of career fields.[3]

Examples:

- AI can be used in agriculture for detecting diseases, removing weeds, and optimizing crops
- AI can help predict cancer diagnoses and patient outcomes by enabling faster detection
- Wildlife conservationists can easily identify and track species, speeding up research and conservation efforts

Sources

1. Castelvecchi (2016), Deep Learning Boosts Google Translate Tool
2. Syracuse University (2025), What is Machine Learning? Key Concepts and Real World Uses
3. Tedre et al. (2021), Teaching Machine Learning in K-12 Classrooms
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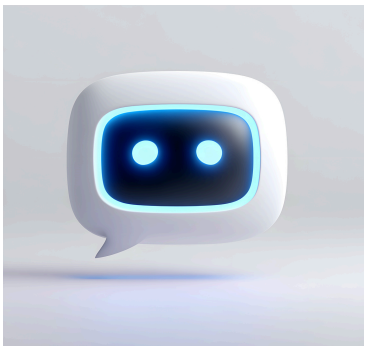
TEACHING GENERATIVE AI

Megan Humburg
Indiana University

Amanda Moore
Indiana Educator

Steph Duda
Indiana Educator

Students can engage with generative AI productively by using tailored chatbots as learning companions with guided limits on their outputs, developing their own classroom policies for responsible use, and critically evaluating the validity of AI-generated images, text, and video. Together, these practices foster digital literacy, ethical awareness, and independent judgment in navigating AI technologies. [1, 2]



Learning with Chatbots

Sidekick through Schoolai

Create a chatbot for students about a topic you've been discussing in class. Ensure the chatbot has specific parameters, such as setting age restrictions and ensuring students are unable to get answers to inappropriate questions. [4]

Examples:

- Historical figures
- Science topics
- Author investigation
- Teach the chatbot what they've been learning

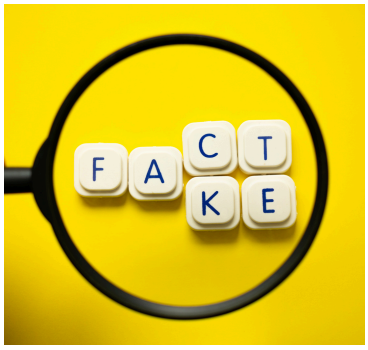
Creating GenAI Policies

AI Responsibility Checklist

Discuss what rules your class should have for how you use GenAI to learn. Create a class contract of expectations for GenAI use and conduct. [2]

Examples:

- Have students sort examples into appropriate and inappropriate uses of AI (e.g. outline an essay)
- Consider this scenario from Common Sense Media and discuss plagiarism



Spotting AI Mistakes and Fakes

PBS AI Unlocked: Recognizing AI

Practice recognizing how AI outputs look and the mistakes they can make. Be especially critical of content—like stories, videos, or images—that seems too good to be true. [1]

Examples:

- Students create their own AI images and then observe flaws
- Play Odd One Out to spot the AI art
- Generate text with certain flaws and have students fix mistakes

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STUDENT SKILLS FOR GEN AI

Write clear, specific prompts

Learning how to write concise and intentional prompts is an important shift for students accustomed to texting and abbreviations, since generative AI requires clarity and sufficient detail to produce meaningful results.[3]

Activity Ideas:

- Say What You See allows students to practice writing to create specific images
- Students draw a vague prompt ('dog') then a detailed one ('a black dog with a log')
- Start with a broad prompt like "Write about planets" and have students revise it three times to make it more specific (e.g., size, atmosphere, habitability).

Question the validity of AI outputs

Students need practice checking GenAI output for accuracy as well as quality and bias.[1, 2] Teach students to think of GenAI as a confident robot that reads a lot but often gets mixed up. It doesn't have its own opinions - it shares what is most common in its data.

Activity Ideas:

- Have students generate AI-created text that includes quotes, then guide them to research each quote to determine whether it is authentic or fabricated
- Create images using career titles (e.g. professional basketball player, scientist, nurse). Lead a discussion about bias in our culture and how it is reflected in GenAI

Revise and build on AI output

Students may be used to having GenAI write and create for them, but the real power of the tool comes from learning to revise and remix what it gives you to add your own creativity, ideas, and style. [2]

Activity Ideas:

- Brainstorm topics and outlines with AI and have students assess the AI's creativity
- Have AI write an introductory sentence to a story that students finish in a unique way
- Generate advice and feedback for how to improve a draft students write
- Ask a GenAI tool to create a low-quality paragraph and ask students to make it better

Sources

1. Kasneci et al. (2023), ChatGPT for Good? On Opportunities and Challenges for LLMs in Education
2. UNESCO (2024), AI Competency Framework for Students
3. Park & Choo (2024). Generative AI Prompt Engineering for Educators: Practical Strategies
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AI ETHICS CONVERSATIONS

Megan Humburg & Amanda Moore
Indiana University Indiana Educator

Exploring ethical dilemmas is a great way to help students develop deeper understandings of AI. Recent research has shown that students are ready and able to have complex discussions about how AI is impacting their lives and how it could impact them in the future.[1] Explore this handout for lesson ideas, resources, and guiding questions that can help you jumpstart AI ethics discussions with your own students.

Elementary

Children's Rights and AI

Day of AI: Human Rights Curriculum

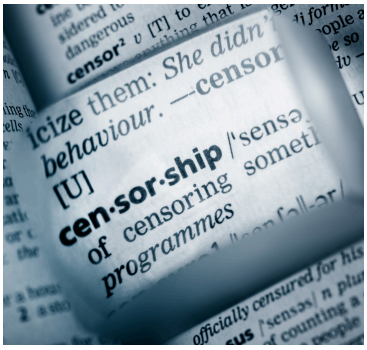
Through a series of free lessons, students explore how AI tools impact our rights as citizens. They are introduced to the concept of rights and privileges and how our rights have been defined and protected throughout history. Students learn about bias, privacy, and ethical decision making related to human rights when designing systems. Finally, students consider what should be included in an AI bill of rights.

Middle

Privacy and Surveillance

TUM Scenarios for AI Ethics

Students reflect on how AI tools should and shouldn't be used in the classroom through a series of free ethical scenarios. For example, should teachers use facial recognition software to monitor student emotions and support their wellbeing? Students can debate ideas around privacy, surveillance, data ownership, and bias as they explore different uses of AI for learning in and out of the classroom.



High

Censorship and Bias

aiEDU: AI Snapshots

Find 180 free discussion starters related to various content areas. For example, in exercise 44, students consider how misinformation is spread online. Who determines what speech should be censored, and what is the best way to respond to wrongfully censored speech? In exercise 2, students consider the possible harmful effects of a company using a filter to ban aggressive group chat users.

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AI ETHICS CONVERSATIONS

Data

Many of the apps and websites we use collect our personal data. That data can be sold to companies for targeted advertising or used to power AI tools.[2, 3]

Questions:

- Think about the apps on your phone or computer. Which apps collect personal data? How do you know?
- What do the terms and conditions say for a recent app or computer program you started using?
- Who do you want to empower with your data?

Bias & Algorithms

AI tools are not neutral; they act like a mirror, reflecting the biases of the people represented by the data. It is important to question AI results, cross check with multiple sources, and challenge unfair outcomes.[2, 4]

Questions:

- AI image generators often show bias in the kinds of images they make and who is represented in those images. Try asking an AI tool to show you a scientist. Who is represented, and who is missing?
- What can you do when you notice bias in AI to challenge unfair outcomes?

Privacy & Surveillance

AI tools can be used to watch us and evaluate our behavior. They can measure our emotions, assess our actions, and record data about us to share with others.[3, 4]

Questions:

- What rights should we have for how AI is used to observe and evaluate us?
- How could AI be used to help students by watching them? How might AI harm students by watching them?
- Computers are not always good at understanding people, our emotions, and our behaviors. How might an AI tool misunderstand you in the classroom?

Sustainability

AI is dangerous, but not for the reasons you think. AI consumes lots of natural resources. AI servers need lots of water to cool down, as well as a ton of electricity to train and run their models.[2]

Questions:

- Asking AI a question uses 5-10 times more energy than a web search. When is it worth the extra energy? When is it not?
- Who should pay for the water and electricity that AI uses?
- How should AI companies be held accountable for the carbon footprint of the tools they make?

Sources

1. Humburg et al., (2024). Youth Perspectives on the Roles and Risks of AI in Their Classrooms.
2. Barnes et al., (2024). Toward Ethical and Just AI in Education Research.
3. UNICEF et al., (2019). Memorandum on Artificial Intelligence and Child Rights.
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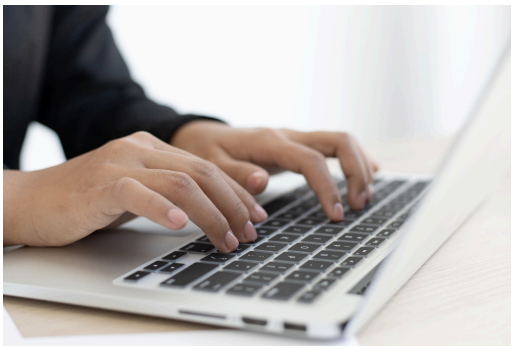
LEARN ABOUT IT
AI TO ASSIST YOU

Megan Humburg
Indiana University

Amanda Moore
Indiana Educator

Steph Duda
Indiana Educator

Using GenAI can save teachers time by quickly generating lesson ideas, resources, or examples that would otherwise take hours to create. The key is learning to write detailed prompts,[4] which leads to more useful and targeted results. At the same time, it's important to review the output carefully, making sure it not only meets the instructional need but also aligns with your teaching philosophy and best practices.[1]



Prompt Engineering

Prompt Library for Educators

Prompt engineering is the term for writing, trying out, and revising the directions you give to a GenAI tool in order to get a useful output.

To write a good prompt:[4]

- **Be specific** about what format and level of detail you want the output to be
- Mention any **relevant context** (e.g., content area, age group, your role as a teacher)
- Provide the AI tool with **resources to guide it** (e.g., standards, example lessons, a list of key topics)
- **Clarify** any changes you would like to see reflected in future revisions (tell the tool to be more concise, provide examples, include certain details, or meet particular goals you have)

Align Your Teaching Philosophy

Guide to AI-Assisted Lesson Planning

Evaluate the output any AI tool gives you to make sure it aligns with your teaching beliefs and practices.[1] While AI can sound convincing, not all suggestions will be effective. If you want to develop a new teaching strategy (e.g., collaborative learning), you can use AI to spark ideas that support your goal.

Teaching strategies to consider adding to your prompt:

- Student-centered approach
- Hands-on student activities
- Performance assessments
- Collaborative activities
- Build classroom community
- Provide student choice
- Student engagement

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AI TO ASSIST THE TEACHER

Plan

AI can be a powerful tool for creating new lesson plans or revising existing ones by generating instructional ideas and teaching strategies tailored to your students' needs [2]

Ideas to try:

- Ask for common misconceptions and how to address them
- Create nonfiction texts to support your instruction
- Differentiate classwork and texts

Example prompts:

- What are the common misconceptions of (copy standard)? How can I address them?
- Rewrite this text at a 4th grade level (copy text)

Assess

GenAI can do more than create multiple-choice questions—it can help us quickly design student-centered, meaningful assessment options. [2, 3]

Ideas to try:

- Create choices for student projects
- Generate a rubric for a specific assignment and standard
- Develop questions for checks for understanding during the lesson

Example prompts:

- List 5 creative ways for my 11th grade students to demonstrate their understanding of (list topic/standard)
- List questions to see if students understand (standard). Use different depths of knowledge for questions.

Communicate

Educators can enhance professional communication with GenAI. It can assist with tone and clarity, while maintaining key aspects of the correspondence.

Ideas to try:

- Generate text for weekly newsletter
- Provide specific feedback for student writing based on standard and rubric [2, 3]
- Craft professional email responses

Example prompts:

- Provide specific writing feedback for this student. The prompt was (copy) and the goal is (add rubric criteria).
- Reply to the parent of a student in a clear and professional way. I want to say (add your thoughts).

Sources

1. Kasneci et al. (2023), ChatGPT for Good? On Opportunities and Challenges for LLMs in Education
2. Celik et al. (2022), The Promises and Challenges of Artificial Intelligence for Teachers
3. Swiecki et al. (2022), Assessment in the Age of Artificial Intelligence
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