

Teacher Institute for Neuroscience and Society

LESSON PLAN

AI Detectives

 Suggested Duration

4 x 45 min periods

 Grade Level

Middle School (Grades 6-8)

 Topic

Artificial Intelligence

Summary

In this lesson students will engage in an **AI Detective Challenge** where they analyze images, voice clips, text samples, and videos to determine whether they are real or generated by AI.

This activity promotes **critical thinking**, **collaboration**, and understanding of **AI technology's benefits and risks**.

Prerequisites

- Basic understanding of what artificial intelligence (AI) is and examples of AI in daily life.
- Familiarity with different types of media (images, video, audio recordings, and written text).
- Basic digital literacy and experience using computers or tablets.

With support from  Dana Foundation

For more, visit <https://zuckermaninstitute.columbia.edu/teacher-institute-lessons>

NGSS Science Standards

NYS NGSS MS-ETS1-1: Define the criteria and constraints of a design problem.

NYS NGSS MS-ETS1-3: Analyze data to determine similarities and differences among several design solutions.

NYS NGSS MS-LS1-8: Gather and synthesize information to communicate solutions about how organisms are affected by their environment.

NGSS Writing Standards

WHST1a: Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

WHST1b: Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic by identifying and using credible sources.

WHST1c: Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, and evidence.

WHST1d: Establish and maintain a formal style appropriate to the academic discipline, purpose, and audience.

WHST1e: Provide a concluding statement or section that follows from and supports the argument presented.

NGSS Practices

Constructing Explanations

Engaging in Argument from Evidence

Q Essential Questions

- What distinguishes real content from AI generated content, and what evidence can we use to support our conclusions?
- How do different forms of AI (images, voice, text, and video) impact our perception of reality?
- How do advancements in AI technology challenge our understanding of authenticity and trust in media?

Q Learning Objectives

All students will...

- Identify and differentiate between real and AI-generated content.
- Analyze evidence to support claims
- Discuss the implications of AI technologies for society.

Advanced students will...

- Critically analyze and differentiate between real and AI-generated content across various media forms, demonstrating advanced reasoning and evidence-based justification for their conclusions.
- Evaluate and articulate the ethical implications of AI technology, discussing both its beneficial applications and potential societal risks with a nuanced understanding.

Materials

Downloadable Lesson Components

- AI Detective Challenge Activity Sheet
- AI Detective Slides

Supplies

- Computer or tablet with internet access for each student
- Projector or screen for displaying slides
- Chart paper or whiteboard
- Markers

Suggested Preparation

- Teacher made heterogeneous groups
- AI & non-AI examples curated in advance for the student-facing slides

References

- “Generative AI Explained In 5 Minutes” intro video from Simplilearn
<https://www.youtube.com/watch?v=NR-mAXDWJVnU>
- “Worry about misuse of AI, not superintelligence” article from Princeton
https://www.cs.princeton.edu/~arvindn/misc/narayanan_kapoor_ai_misuse.pdf
- “Is Artificial Intelligence Good for Society?” Q&A from TIME Magazine for Kids. 9 to 12 year olds respond.
<https://www.timeforkids.com/g56/is-ai-good-for-society-g5/>
- “Which Face Is Real” website to learn how to spot AI-generated faces
<https://www.whichfaceisreal.com/>

INSTRUCTIONAL ACTIVITIES

Introduction (Engage) • 10 MIN

Ensure all multimedia resources are appropriate for student viewing. Prepare for possible discussions on data privacy and ethical considerations surrounding AI technology. This detailed lesson plan fosters critical thinking, collaboration, and ethical considerations surrounding AI technologies, equipping students with the skills needed to navigate an AI-driven world.

 “Generative AI Explained in 5 Minutes” intro video from Simplilearn

Teachers will...

- Begin with a **brief discussion about AI and its growing presence** in daily life.
- Ask students if they have encountered AI-generated content before?
- Show a quick video introduction to AI technologies, focusing on image, voice, text, and video generation.
- Pose the question: **“How can we determine what is real and what is AI-generated?”**
- Engage in a discussion protocol for students to share a few answers with the entire class.

INSTRUCTIONAL ACTIVITIES

Students will...

- Engage in discussion (teacher-led, peer-to-peer, and/or whole class).
- Watch intro video on AI and make mental notes.
- Share thoughts with peers and teacher(s).

Part 1 (Engage) • 60 MIN

 AI Detective Challenge Activity Sheet

 AI Detective Slides

Teachers will...

- Lead students in the AI Detective Challenge (60 minutes).
- Make sure students are seated in teams of four.
- Make sure each student has an activity sheet.
- Through each round the teacher must allow students to **discuss with their group partners if the artifact is AI or real life.**
- The teacher must encourage amicable disagreement.
- Using a discussion protocol throughout the activity is recommended.

Students will...

- Engage in **AI Detective Challenge** rounds.
- Complete **activity sheet.**
- Explain answer responses.
- Engage in **discussion.**
- Use accountable talk during discussion.

Answer Key

Image Detectives

A (Real), B (AI), C (Real), D (Real), E (AI)

Voice Detectives

A (Real), B (AI), C (AI), D (AI), E (Real)

Handwriting Detectives

A (Human), B (Human), C (AI), D (AI), E (Human)

Video Detectives

A (AI), B (Real), C (Real), D (AI), E (Real)

INSTRUCTIONAL ACTIVITIES

Part 2: Class Discussion (Explain) • 20 MIN

Teacher will...

- Gather students' attention to discuss their findings from each round.
- Display the powerpoint showing the different categories.
- Ask students to **highlight common indicators of AI-generated content**.
- Write and capture students responses on chart paper or whiteboard.
- Display and discuss the bonus questions related to the helpful and harmful aspects of AI technology.

Students will...

- Give the teacher their attention.
 - Follow directions for class protocol.
 - Engage in discussion protocol.
 - Answer questions presented to class by the teacher.
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Part 3: Group Reflection (Elaborate) • 20 MIN

Teacher will...

- Give each group a blank chart paper.
- Have them **create a T chart and label one side beneficial and the other side risky**.
- Have students list beneficial traits of AI and the risks of AI. Reiterate that there are no correct or incorrect answers at this time.
- In small groups, students share their thoughts on the ethical implications of AI in society by attributing traits of beneficial and risky.
- After each group has completed their T-Chart, **give each group time to present their insights, focusing on the balance between benefits and risks to the class**.

Students will...

- Complete a T-Chart showing which aspect of AI they consider risky or beneficial.
- Explain their reasoning on the ethical implications of AI in society by attributing traits of either beneficial or risky (writing or speaking).

INSTRUCTIONAL ACTIVITIES

Part 4: Scoring and Feedback (Explain) • 20 MIN

Teacher will...

- Reset the class back in their groups after their brief presentations.
- Have students exchange papers with their elbow partners.
- Display and give answers.
- **Direct students to calculate points based on correct identifications, evidence to support the identification, and thoughtful reflections on the bonus question.**
- Have **students provide feedback on their peers' reflections** and encourage peer review of their justifications by asking students to give one “glow and one grow” about their peers’ work.
- Once everyone has completed scoring their peers’ work, students will retrieve their original paper.
- Students will reflect on their score in the conclusion part of the lesson.

Students will...

- Complete a T-Chart showing which aspects of AI they consider risky or beneficial.
- Explain their reasoning on the ethical implications of AI in society by attributing traits of either beneficial or risky (writing or speaking).

Meeting Mastery (65-75) **Approaching Mastery** (50-64) **Challenged in Mastery** (Below 50)

Correct Identifications: ____ × 1 point = ____

Good Evidence/Reasoning: ____ × 2 points = ____

Thoughtful Reflections: ____ × 1 bonus point = ____

GRAND TOTAL: ____ / 75 points

Conclusion: Writing/ Reflection (Evaluation) • 20 MIN

Teacher will...

- Make sure students have their original paper and a completed score with a visual rubric.
- Instruct students to respond to the following prompts on their sticky notes (use discussion protocol):
 - What was one key takeaway from the AI Detective Challenge?
 - What does your game score say about your AI knowledge?
 - How can the skills you learned today be applied in real life?
 - What is one question you still have about AI technology?

INSTRUCTIONAL ACTIVITIES

- Teachers will give themselves time to...
 - Summarize the key themes that emerged from the discussion. Highlight the interconnectedness of their reflections and the importance of continued inquiry into AI technology.
 - **Emphasize the role of critical thinking** in evaluating AI-generated content and the ethical considerations involved.

Students will...

- Make sure they have their original paper and completed score.
- Respond to conclusion prompts on their sticky notes.
- Share out their responses during the discussion protocol.

Assessment or Deliverables

Students will create a claim that assesses their understanding of social media's functions, benefits, and potential risks and support their claim with evidence and reasoning brought forth during the class activity.

Differentiation or Extension Activities

To extend this activity, students can design their own “AI or not” tests for their peers, younger/older classmates, parents and family members, or community members. Students can investigate whether different age groups are better than others at identifying AI-generated content.

Students can also apply their knowledge to create youth action messages teaching people about the risks and benefits of AI and how to spot AI-generated content.

LESSON PLAN CONSIDERATIONS

Suggested Background Information for the Teacher

Clarification Through Discussion: Regularly engage students in discussions and encourage them to express their thoughts, addressing misconceptions as they arise.

Use Real-Life Examples: Provide clear, relatable examples to illustrate the distinctions and components of AI, reinforcing understanding.

Encourage Critical Thinking: Ask probing questions that challenge students to think deeply about AI and its implications, prompting them to refine their understanding.

Possible Student Misconceptions

All AI-generated content is easily identifiable: Students may believe that there are clear and obvious markers that differentiate AI-generated content from real content. In reality, AI technology can produce highly sophisticated outputs that may be difficult to distinguish.

AI is infallible or always accurate: Some students might think that AI-generated content is always reliable. It's important to discuss how AI can make mistakes and produce misleading information. AI is only a recent development: Students may assume that AI technology is a new phenomenon. Highlighting the history and evolution of AI can provide context for its current applications.

LESSON PLAN CONSIDERATIONS

Glossary

Authenticity	The quality of being genuine or real. In the context of AI, it refers to the challenge of determining whether content is created by humans or generated by AI.
AI (Artificial Intelligence)	A branch of computer science focused on creating systems that can perform tasks typically requiring human intelligence, such as visual perception, speech recognition, and decision-making.
Bias	An inclination or prejudice against certain groups or ideas, often resulting from the data used to train AI models. Bias in AI can lead to unfair outcomes and reinforce stereotypes.
Content Generation	The process of producing various forms of media (text, images, audio, video) using AI technologies, often raising questions about authorship and originality.
Critical Thinking	The ability to think clearly and rationally, understanding the logical connection between ideas. It involves evaluating information, questioning assumptions, and making informed decisions.
Deep Learning	A type of machine learning that uses neural networks with multiple layers to analyze various forms of data, often yielding high levels of accuracy in tasks such as image and speech recognition.
Digital Footprint	The trace of data that individuals leave behind when using the internet, including social media activity, online purchases, and interactions with websites. This concept is relevant to discussions about privacy and data ethics.
Ethics	A branch of philosophy that deals with questions of morality and principles of right conduct. In the context of AI, it includes discussions about privacy, bias, and the societal impacts of AI technologies.

LESSON PLAN CONSIDERATIONS

Glossary

Forensics	The application of scientific methods and techniques to investigate crimes. In this context, it refers to the analysis of media (images, audio, video) to determine their authenticity.
Generative Models	AI models used to create new content (images, text, audio) by learning patterns from existing data, enabling them to generate outputs that resemble the training data.
Machine Learning	A subset of AI that involves training algorithms on data to enable them to make predictions or decisions without being explicitly programmed for specific tasks.
Media Literacy	The ability to access, analyze, evaluate, and create media in various forms. It equips individuals to critically assess information and recognize the influence of media on perceptions and beliefs.
Natural Language Processing (NLP)	A field of AI that focuses on the interaction between computers and humans through natural language, enabling machines to understand, interpret, and respond to human language.
Societal Impact	The effects that AI technology has on society, including changes in employment, communication, privacy, and ethical considerations related to its use.
Voice Cloning	A technology that uses AI to replicate a person's voice, often used in applications like virtual assistants and entertainment, raising ethical questions about consent and authenticity.

CROSS CUTTING CONCEPTS

Cause & Effect	Understanding the implications of AI technologies on society and individual decisions.
Systems & System Models	Recognizing how various forms of AI interact and influence each other, impacting media perception.
Stability & Change	Analyzing how advancements in AI technology can alter our understanding of authenticity and trust.

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