

Teaching (and Learning) in the Age of AI

Ohio Confederation of Teacher Education Organizations (OCTEO)

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Part 1: Why We're Here (GenAI)

Our goal is to shift the room from *AI talk* to *AI practice*.

- Try 3 tools with your own content
- Teach with limits + ethics in view
- Leave with a ready-to-use plan

Big Ideas:

- AI is not magic or perfect. What are hallucinations?
- The tools present ethical and environmental challenges as well as opportunities.
- We need to help our future teachers to work with students with AI.

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Collaboration Ground Rules

As we collaborate, be mindful of the following operating procedures:

- **Try first, judge later:** short sprints; show what you tried.
- **Use safe content:** no student PII or confidential files; only material you own or is licensed.
- **Privacy on:** use demo accounts; turn off chat history/training where possible.
- **Be transparent:** mark AI-assisted work; note tool/model/date; keep prompts for reproducibility.
- **Respect the room:** share time, help neighbors; captions on & headphones low; photos/recordings are opt-in.

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Part 2: AI in Education

Challenges

- The limitations of probability-based prediction
- AI-based hallucinations
- Ethical and environmental concerns

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No Intelligence: Probability-based Prediction

On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?

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The Aether

Source: Bender,
Emily. M., Gebru,
Timnit.,
McMillan-Major,
Angelina., &
Shmitchell,
Shmargaret. (2021).

<https://doi.org/10.1145/3442188.3445922>

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AI-based Hallucination

arXiv > cs > arXiv:2401.11817

Source:
<https://doi.org/10.48550/arXiv.2401.11817>

Computer Science > Computation and Language

[Submitted on 22 Jan 2024]

Hallucination is Inevitable: An Innate Limitation of Large Language Models

Ziwei Xu, Sanjay Jain, Mohan Kankanhalli

Source:
<https://www.newsguardtech.com/special-reports/moscow-based-global-news-network-infected-western-artificial-intelligence-russian-propaganda/>

A well-funded Moscow-based global 'news' network has infected Western artificial intelligence tools worldwide with Russian propaganda

An audit found that the 10 leading generative AI tools advanced Moscow's disinformation goals by repeating false claims from the pro-Kremlin Pravda network 33 percent of the time



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Ethical Considerations

- Bias in AI algorithms
- Control of AI as computers/robots become more intelligent
- Invasion of privacy
- Ownership of AI generated artifacts from data
- Implications for the environment of increasing computing machines
- Lack of understanding of the rationale used by AI algorithms to reach conclusions.

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Why Consider GenAI?

- New, incredibly fast systems that can augment and support human researchers and **expand teachers' capabilities**
- Large data sets and/or customizable data sets that can provide machine-focused insights and potentially **new ways of researching, teaching, and learning**
- Opportunities for exploration across all disciplines and age groups so we can make research-supported decisions about pedagogy, usage, etc.

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Uses of GenAI for Learning



Creative Brainstorming

Generate fresh ideas and explore different angles for assignments and research projects.



Writing Enhancement

Get detailed feedback on writing structure, clarity, and language use to improve communication skills.



Perspective Exploration

Discover multiple viewpoints on complex topics and test your understanding through dialogue.



Critical Evaluation

Develop critical thinking by analyzing and questioning AI's suggestions and responses.

How does AI effect how we learn?

- ❖ Struggle and mental effort are crucial to the cognitive work of learning, remembering, and strengthening connections in the brain.
- ❖ Our brains are akin to a muscle, requiring genuine hard work to see gains.
- ❖ Studies reveal that AI can work well to scaffold learning and motivate effort.
- ❖ AI reduces the cognitive burden momentarily and can weaken critical thinking and analytical skills in the long run.

Part 3: Let's Play

Type

| Example Tools

Writing & Chat

| ChatGPT, Claude, Gemini

Visual Art

| Craiyon, Napkin, DALL-E

Voice & Emotion

| Suno, ElevenLabs

Search & Study

| NotebookLM, Perplexity

Game & Bias

| Quick, Draw!, AJL Bias

Writing Code

| GitHUB, CoPilot

Learning Partner

| Quizlet AI, Diffit

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Gemini, ChatGPT, & Claude

Use Case: Conversational AI, multimodal reasoning, research, and creative support

Strength: Strong at understanding text, images, and complex prompts; integrated with Google Workspace

Great For: Faculty, researchers, students, creatives

URL: <https://gemini.google.com>



Sample Activity:

- Use the same prompt in Gemini, Chatgpt, & Claude. What are the similarities and differences?
- Act as my metacognition coach. Ask me questions to help me reflect on how I approached this

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Craiyon or DALL-E

Use Case: Text-to-image generation

Strength: Free and easy

Great For: Everyone

URL: <https://www.craiyon.com>



Sample Activity:

- Generate a cartoon scene from a book or article you read for a class.
- Create a 3-panel visual story showing a learning concept (e.g., 'growth mindset'; metacognitive)

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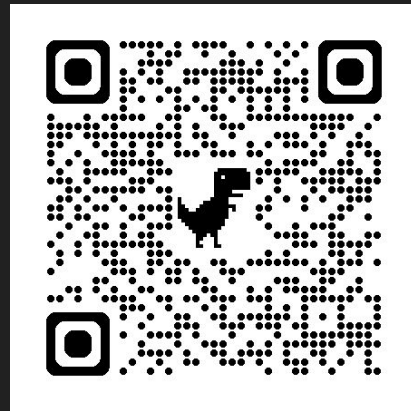
Suno

Use Case: Creates music

Strength: Easy to use

Great For: Everyone

URL: <https://suno.com>



 **Sample Activity:**

- Generate a song about your favorite food or a concept you just discussed in class.
- Generate a song to match your current mood, then write about how mood and learning relate

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NotebookLM

Use Case: Research assistant for personal documents

Strength: Understands your PDFs and notes

Great For: Faculty, students, anyone doing research

URL: <https://notebooklm.google>



Sample Activity:

- Upload two articles, click on Interactive Mode which allows you to ask questions during the podcast.
- Upload two sources and ask NotebookLM to outline how their arguments differ. Then reflect on which is more convincing.

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Quizlet

Use Case: Smart flashcard generator and study assistant

Strength: Creates interactive study sets from your notes, definitions, and concepts

Great For: Students, educators, study groups

URL: <https://quizlet.com>



Sample Activity:

Upload your course notes or a textbook chapter and use AI-enhanced flashcards to quiz yourself on key concepts. Try *Match Mode* to gamify your review or *Test Mode* to simulate an exam.

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MagicSchool.AI

- Select a grade level appropriate for your teaching context.
- Use [MagicSchoolAI](#) to create a well-structured writing prompt suitable for students at that level.
- Next, try your hand at generating a scoring rubric for your prompt using [MagicSchoolAI](#)'s assessment tools.

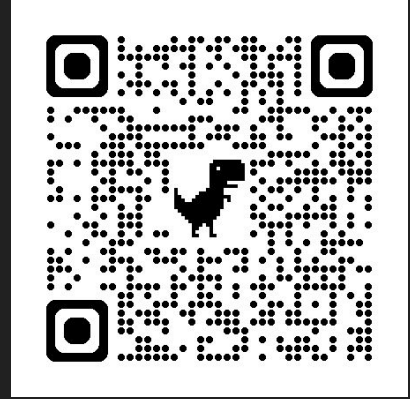


Try this: Experiment with different grade levels and writing prompts. Analyze how the AI-generated rubric aligns with best assessment practices and discuss potential modifications.

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Napkin

- Use Case: Text-to-Image generation
- Strength: Auto-generated infographics, diagrams, flowcharts, easy to use
- Great For: Everyone, especially researchers
- <https://www.napkin.ai>



Sample Activity: Create a conceptual model showing how teacher self-efficacy, classroom climate, and student engagement interact to influence academic achievement

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Part 4: Discussion / Q&A

Some ideas to consider:

- What are some **next teaching and learning steps** you're planning with AI?
- What are some aspects of teaching and learning that AI makes **obsolete**?
What are some aspects that remain important or become more important with AI in the classroom?
- How can we better understand the **challenges** of AI?
- **Final thought:** What's one AI tool or idea you'll take forward?

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Part 5: Resources

Reference Materials

- Artificial intelligence in education. <https://iste.org/ai> (International Society for Technology in Education)
- [AI education and AI in education](#) (National Science Foundation)
- Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations <https://www.ed.gov/sites/ed/files/documents/ai-report/ai-report.pdf> (U.S. Department of Education)
- [Artificial Intelligence \(AI\) in K-12 Education](#) (Miami University AI Modules for Teachers)
- [5 Teacher-Tested AI Tools for Beginners](#) (Edutopia article)
- [There's An AI for That](#)
- [Texas Tech AI Tools](#)
- [How does AI affect how we learn?](#)

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Part 5: Resources (Continued)

Teaching & Learning Materials

- Five Quality Indicators for EdTech (ISTE) — tool to assess AI/EdTech quality.
<https://iste.org/blog/easing-burden-on-schools-five-quality-indicators-for-edtech-ai-products>
- Choose the Right Tech (ISTE video) — why/how to vet EdTech.
https://youtu.be/lVZXROi6U6I?si=sBG16B7l_xRVb16G
- EdSurge Index — in-depth reviews of 1,500+ tools. <https://index.edsurge.com/>
- Common Sense Privacy Program — privacy ratings & guidance for classroom tools.
<https://privacy.commonsense.org/>

Part 5: Resources (Even More!)

Teaching & Learning Materials

- Prompt Literacy (Maloy & Gattupalli) — practical primer.
https://edtechbooks.org/encyclopedia/prompt_literacy
- Five-S Prompt Framework for Educators — structured approach.
<https://www.aiforeducation.io/ai-resources/the-five-s-model>
- Effective Prompting for Educators — strategies & examples.
<https://www.aiforeducation.io/ai-resources/effective-prompting-for-educators>
- “AI Is Dangerous, But Not for the Reasons You Think.” <http://youtu.be/eXdVDhOGqo>
- <https://www.futurepedia.io/>

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Exploring AI Modules

- Visit the following link on your device:
- Explore some of the modules.
- As you look through the modules, consider the following question: 'How do the modules address the needs of students and their teachers?'



Thank you!

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