

Harnessing the Power of Generative AI to Enhance Student Engagement

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What Is Generative AI? What Are Some Popular GAI Tools in the Classroom?

Generative AI (GAI) is a type of artificial intelligence (AI) algorithm that generates content based on the data it has been trained on. Unlike traditional AI systems that are designed to recognize patterns and make predictions, generative AI creates new content and outputs in the form of images, text, audio, and more ([World Economic Forum, 2023](#)). Examples of GAI include Bard (by Google), Bing Chat (by Microsoft), ChatGPT (by OpenAI), Dall-E (by OpenAI), Education Copilot, Teacherbot, etc.

Multi-Faceted Student Engagement (Reeve, 2011)

Behavioral Engagement	Emotional Engagement	Cognitive Engagement	Agentic Engagement
Students exhibit focused attention, effort, and on-task behavior.	Students demonstrate curiosity, excitement, and show no signs of frustration, anxiety, or boredom.	Students employ advanced study strategies and actively manage their learning.	Students actively and positively participate in the instructional process.

How Can GAI Be Used to Promote Student Engagement?

Type of Engagement	What Teachers Can Do	How Teachers Can Incorporate GAI to Maximize Engagement
Behavioral Engagement	<ul style="list-style-type: none">Foster on-task attention, effort, and persistence	<ul style="list-style-type: none">★ Incorporate AI-enhanced quizzes and polls during lessons to gauge understanding and stimulate active participation★ Gamify behavioral management, such as offering rewards for active participation
Emotional Engagement	<ul style="list-style-type: none">Cultivate interest and enthusiasm	<ul style="list-style-type: none">★ Use AI-tools to generate variety ways of presentations of content and resources to spark students' interests★ Implement gamification elements into lessons to sustain students' interest★ Create adaptive content that adjusts difficulty levels to reduce student boredom and frustration
Cognitive Engagement	<ul style="list-style-type: none">Encourage the use of advanced learning strategies (e.g., setting goals, monitoring progress, reflection, etc.)	<ul style="list-style-type: none">★ Personalize study guides or summaries tailored to individual students' learning preferences and needs★ Generate discussion prompts and application scenarios that challenge students to think critically and apply advanced learning strategies for problem-solving★ Embed AI-assisted tutoring system into assignments and/or assessments to provide immediate feedback and promote self-regulated learning
Agentic Engagement	<ul style="list-style-type: none">Empower students to actively contribute to the flow of instruction or self-directed learning	<ul style="list-style-type: none">★ Generate self-guided project ideas that encourage students to explore beyond the learning topic★ Guide students to generate high-level questions in AI tools for meaningful content★ Model how to critically examine the ethical considerations and accuracy of AI-generated contents.

References and Resources

- Chiu, T. K., Moorhouse, B. L., Chai, C. S., & Ismailov, M. (2023). Teacher support and student motivation to learn with Artificial Intelligence (AI) based chatbot. *Interactive Learning Environments*, 1–17. <https://doi.org/10.1080/10494820.2023.2172044>
- OpenAI. (2023). *ChatGPT* (Sep 25 version) [Large language model]. <https://chat.openai.com/chat>
- Reeve, J., & Tseng, C.-M. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology*, 36(4), 257–267. <https://doi.org/10.1016/j.cedpsych.2011.05.002>
- Skrabut, S. (2023). *80 ways to use ChatGPT in the classroom: Using AI to enhance teaching and learning*. Stan Skrabut.

Recommended Further Readings for AI Incorporation in Classrooms

- <https://teaching.cornell.edu/generative-artificial-intelligence>
- <https://www.edweek.org/technology/beyond-chatgpt-the-other-ai-tools-teachers-are-using/2023/08>