

# Utilizing STEAM Learning in a Generative AI World



**GENERATIVE AI (AI)** has launched itself into education at a tremendous pace, and educators are in the process of understanding how this is impacting student learning. STEAM pedagogy and processes can help support educators as they grapple with this new technology and its impact on education.

## RISKS OF GENERATIVE AI: COGNITIVE OFFLOADING AND PLAGIARISM

The new world of generative AI comes with both risks and benefits. Educators are using various methods to ensure that students do not allow AI tools to “do thinking for them”, known as cognitive offloading. In addition, educators are concerned that students are choosing to avoid learning, using AI as a form of plagiarism. Project based learning (PBL) is one of many effective STEAM strategies which can help reduce cognitive offloading and potentially increase intrinsic motivation with learning tasks, encouraging students to engage with the content instead of avoiding it. In PBL, students work on complex, real-world challenges that require them to design experiments, prototype solutions, or create artistic representations—tasks that AI cannot easily replicate and which students are likely to feel more motivated to engage with. Visit [PBLWorks](#), and find lessons to try out!

In addition, [Common Sense Education](#) offers some helpful resources for teachers wanting to better understand AI literacy and how it impacts their students, including a lesson on [plagiarism](#). More information about additional conditions and strategies that mitigate cognitive offloading and support students applying critical thinking when using AI can be found at ODE’s [Generative Artificial Intelligence \(AI\) for K-12 Schools](#) site.

## BENEFITS OF GENERATIVE AI: INCORPORATING AI INTO STEAM LEARNING

Limiting the use of technology is one strategy to mitigate the risks of AI. However, AI is here, students are already using it, and it is becoming a critical component to technology education and digital literacy. In engineering and design, AI-powered tools can assist with coding, 3D modeling, and simulation testing. In science and math, AI can process complex datasets, visualize patterns, and support hypothesis testing<sup>1</sup>. Deep integration of the [arts in STEAM](#) learning provides natural opportunities to explore the ethical and social impacts of AI, fostering a holistic, equitable, and sustainable understanding of AI technologies ([Mertala et al., 2024](#)). This process helps students discern for themselves where AI can be a supportive technology, and where it is important to keep human interaction at the forefront in a project or problem. Oregon Open Learning has many resources and lessons about incorporating AI. Check out the [Oregon Artificial Intelligence Group](#) to learn more!

As a future that may be integrated with AI becomes more fully understood, AI literacy may be incorporated into curriculum and standards. ODE will continue to evaluate standards alignment with safe and effective AI practices for students.

1 Examples provided for engineering, science, and math generated by ChatGPT in February 2025 using the prompt, “Why would educators want to embed generative AI tools into STEAM learning?”