

Generative AI for STEAM Learning

GLC RESEARCH GROUP 1: Learning with and about AI

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STEAM learning, which encapsulates Science, Technology, Engineering, Arts, and Mathematics, plays a pivotal role in preparing students for the challenges of the modern world by fostering critical thinking, problem-solving, and interdisciplinary knowledge application. Recognizing the transformative potential of Generative Artificial Intelligence (AI) in educational paradigms, we aspire to harness this innovative technology to transform STEAM education. Integrating AI into STEAM education can promote effective learning outcomes and experiential learning if applied properly, allowing students to actively engage and gain practical insights. By integrating Generative AI into the learning process, we aim to offer students more personalized, engaging, and interactive learning experiences. This initiative is driven by the need to address current limitations within STEAM education, such as the difficulty in visualizing abstract concepts and the lack of hands-on, creative, and customizable learning opportunities. Through the development of AI-driven tools and platforms, our research seeks to provide a more intuitive understanding of complex subjects, foster collaboration and creativity among students, and cultivate an environment where learning is not only about acquiring knowledge but also about applying it creatively in real-world scenarios.

Objectives:

- Our primary objective is to explore how Generative AI can enhance creativity and expression within STEAM education. By providing students with tools to generate visual and artistic outputs based on multi-modal input, we aim to foster creative exploration and experimentation.
- We are committed to developing intuitive and user-friendly tools and interfaces that enable seamless interaction with Generative AI. Our goal is to make AI-powered learning accessible to all students, regardless of their technical background or expertise.
- Through the use of Generative AI, we aim to enhance student engagement and comprehension of complex STEAM concepts. By providing interactive and immersive learning experiences, we strive to make learning more enjoyable and effective for students.
- Another key objective of this initiative is to promote collaboration and innovation among students. By incorporating collaborative features and project-based learning



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activities into our tools and applications, we aim to foster teamwork, communication, and problem-solving skills.

Timeline:

Mar 2024 – April 2024	Initial research and literature review
May 2024 – June 2024	Position paper draft and presentation
July 2024 – Aug 2024	Algorithm development
Sept 2024 – Oct 2024	Pilot testing and evaluation
Nov 2024 – Dec 2024	Iterative improvement
Jan 2025 – Feb 2025	App development
Mar 2025 – April 2025	Documentation (Research paper)

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