Chapter 10
Strategies for Utilizing Generative AI in Educational Environments:
Looking Towards the Workforce

Wyatt Porter Jones
https://orcid.org/0009-0008-5361-2867
Belmont University, USA

Stiles B. Logan
Belmont University, USA

ABSTRACT

The development of widely accessible generative AI tools, such as ChatGPT, has significantly impacted education and the workforce. Users have the capability to synthesize information from across the whole internet in seconds, which gives rise to new methods of learning, teaching, and optimizing workflows. The ways in which educators choose to handle this development greatly affects the quality and equity of instruction and learning available to their students, and their preparedness for life after education. This chapter will share research regarding generative AI and educational strategies. This research will be used as the basis for a list of strategies to help implement generative AI tools into the classroom effectively to prepare students for their futures.

DOI: 10.4018/979-8-3373-0004-7.ch010

Copyright © 2025, IGI Global Scientific Publishing. Copying or distributing in print or electronic forms without written permission of IGI Global Scientific Publishing is prohibited.

BACKGROUND

Generative AI is a rapidly evolving technology that has already had an impact on a wide variety of fields. In order to utilize generative AI effectively, it is important to understand its most common forms, how they function, and how they can be utilized effectively.

AI, or artificial intelligence, is "technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy" (Stryker & Kavlakoglu, 2024, para. 1). While discussions around AI have spiked recently, the technology is not new. It was first envisioned in 1950 by Alan Turing, who published the first paper questioning whether machines can imitate human intelligence (Turing, 1950). Since then, AI has developed rapidly, been implemented into a number of technologies (Muthukrishnan et al., 2020), and seen a huge surge in popularity and development.

This is largely due to recent advancements in the field of "generative" artificial intelligence technology. (Kılınç & Keçecioğlu, 2024). The term "generative AI" refers to "computational techniques that are capable of generating seemingly new, meaningful content such as text, images, or audio from training data" (Feuerriegel et al., 2023, p. 1). Not all of the newly created generative AI tools are the same, and it is important to recognize the differences in model types to properly utilize each tool. In this chapter we will discuss three major model types: the Generative Adversarial Network, the Diffusion Model, and the Generative Pre-trained Transformer.

Generative Adversarial Network

The first model type is called a Generative Adversarial Network, or GAN. Proposed by Ian Goodfellow and his colleagues at Université de Montréal in 2014, Generative Adversarial Network model AIs use two "networks" and a "discriminator" to operate. One network attempts to generate a synthetic response (for example, a picture of an apple), while the other network displays real images and videos from the software's training data. The discriminator then chooses which image it believes to be real. As this process is repeated, the generating network learns to produce images that become continually more accurate to the training data. When the discriminator can no longer decipher between the images and identifies the synthetic image as "real," then the verification process is completed, and the synthetic image is returned to the user. (Baidoo-Anu & Owusu, 2023)

The main use of this type of model is digital image/content generation. The model has seen heavy use in digital media and fashion, for things like creating renders for video games (Amazon, 2024), designing shoes (Wei, 2019), and even creating "the world's first digital supermodel" (Wong, 2019, para. 3). While this

26 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/strategies-for-utilizing-generative-ai-in-educational-environments/376028

Related Content

A Framework for National Foundational Digital Literacy Skills Training of Citizens in Kenya

Jimmy K. N. Macharia, Grace Githaiga, Mwendwa Kivuvaand Harriet Alice Mwango Ratemo (2026). *International Journal of Digital Literacy and Digital Competence (pp. 1-28).*

www.irma-international.org/article/a-framework-for-national-foundational-digital-literacy-skills-training-of-citizens-in-kenya/399172

Pedagogical Storytelling Material for Children Regarding Online Safety: Pilot Study in Kindergartens

Rita Britoand Patricia Dias (2021). *Connecting Disciplinary Literacy and Digital Storytelling in K-12 Education (pp. 216-233).*

www.irma-international.org/chapter/pedagogical-storytelling-material-for-children-regarding-online-safety/268220

Synthesizing Technological and Pedagogical Knowledge in Learning Design: A Case Study in Teacher Training on Technology Enhanced Learning

Kyparisia A. Papanikolaou, Katerina Makrh, George D. Magoulas, Dionisia Chinou, Athanasios Georgalasand Petros Roussos (2016). *International Journal of Digital Literacy and Digital Competence (pp. 19-32).*

www.irma-international.org/article/synthesizing-technological-and-pedagogical-knowledge-in-learning-design/152606

Impediments to Digital Fabrication in Education: A Study of Teachers' Role in Digital Fabrication

Rachel Charlotte Smith, Ole Sejer Iversenand Rune Veerasawmy (2016). *International Journal of Digital Literacy and Digital Competence (pp. 33-49).*

www.irma-international.org/article/impediments-to-digital-fabrication-in-education/152607

Implementing a New Class-Lab: Guidelines for Integrating Innovative Devices in Pre-Service Teachers' Practice

Assunta Tavernise, Francesca Bertacchini, Pietro S. Pantanoand Eleonora Bilotta (2015). *International Journal of Digital Literacy and Digital Competence (pp. 33-49).*
www.irma-international.org/article/implementing-a-new-class-lab/142166