

# From Users to Allies: Exploring Educator and Generative AI Roles in Shaping the Future of Higher Education

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## Abstract

*This article articulates the nuanced challenges of integrating Generative AI (GenAI) into educational settings, aiming to dispel overly simplistic narratives driven by unwarranted enthusiasm or unfounded apprehensions. It introduces a conceptual framework for the application of GenAI within higher education, delineating four key strategies that leverage the dual roles of educators—as both creators and designers—while positioning GenAI as either a facilitative agent (creature) or a utilitarian tool. The identified strategies—Interactive Co-Creation, Adaptive Design, Learning Scaffold, and Efficient Structuring—underscore GenAI's potential to revolutionize teaching methodologies by enabling personalized education, enhancing content quality, and expediting course development processes. Emphasizing GenAI's capacity to cater to diverse student needs, simplify educational content creation, and foster engaging learning environments, the model provides educators with a roadmap for integrating GenAI into their instructional practices to harness the full potential of educational technology.*

**Keywords:** *Generative AI; educator's role; instructional design.*

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## 1. Introduction

Over the past decades, artificial intelligence has made significant progress, leading to revolutionary innovations and extensive use of technology. One key milestone in AI research and applications has been the introduction of generative AI models. While AI has been generally used for predictions, Generative AI (GenAI) has been designed to generate diverse and contextually relevant content based on large sets of training datasets (Walczak and Cellary, 2023). The most popular generative models consist of large language models (LLMs), and text-to-text, such as ChatGPT, CodeWhisperer, and Bard, which can be leveraged to discuss a topic in a human-like way and provide new ideas in real-time conversations (Qadir, 2023). Other generative models that offer content in different formats include text-to-image, such as Midjourney and DALL-E, and text-to-video, such as Wibbitz and InVideo.

The use of GenAI in the education field deeply affects the curriculum design, the resource allocation as well as the teaching and learning methodologies. While fostering collaboration, engagement, and deep learning, it provides students personalized learning experiences, tailors instructional content to individual needs and helps prepare for their personal and professional challenges (Chan & Zhou, 2023). Because applications are boundless, this paper attempts to contribute to the extant literature by presenting a practical framework for the possible classification of GenAI for educational purposes. This may serve as a working guide for faculty designing and implementing their courses. Recognizing the benefits and the challenges of GenAI, we also highlight that integrating this technology must be accompanied by the right level of experimentation and willingness to address the open challenges.

## **2. Review of Student and Educators Uses of GenAI in Education**

GenAI can be exploited by students in a variety of manners: to find learning materials, to translate content from one language to another, to brainstorm and receive support on a specific topic, to simulate the questions of a test, etc. Moreover, it can help them develop higher-order skills essential for learning and growth, such as critical thinking, problem-solving, creativity, and innovation (Qadir, 2023; Hartley, 2023). When carefully directed by instructors, students can use GenAI to enhance learning responsibly, for intelligent argumentation rather than for plagiarism, and accurately, verifying the information and its sources.

GenAI has many possible applications in teaching. First, by including instructional design software, learning management platforms, and interactive content creation, it can assist educators in learning design. One example is SlideSpeak, which seamlessly transforms text into structured presentations. Other tools can help define the learning objectives and plan the learning activities inside and outside the classroom. Second, GenAI may be useful to create and craft teaching materials by personalizing and adapting the content according to the target students, their educational level, and the learning objectives. AI-based tools foster interactive and immersive learning environments by suggesting relevant content and activities based on collaborative, hands-on experiences and realistic virtual simulations (Qadir, 2023). This can ultimately enhance students' engagement and retention, leading to more meaningful learning experiences, and promote 21st-century competencies. Third, GenAI can facilitate evaluation activities by detecting plagiarism (Lodge, 2023), ensuring more efficient and objective grading (Qadir, 2023), and providing tailored and immediate feedback to students' assignments, according to their individual needs and progress (Kadaruddin, 2023). Lastly, GenAI can instantaneously address structured problems and obtain specific information for various purposes and areas. This helps save instructors' time and increase their efficiency and learning.

### **3. A Theoretical Framework for GenAI Use in Higher Education**

The paper presents a theoretical framework for possible uses of GenAI that can enhance education and improve the teaching-learning process, while recognizing that “*The ultimate goal of AI is not to create machines that are intelligent, but to create machines that make us more intelligent.*” (Kurzweil, 2023). Existing frameworks related to the application of GenAI in education mostly adopt the students’ perspective and generally consist of macro-categorizations of use cases and the collection of the learners’ perceptions towards these tools. Bahja, Hammad & Hassouna (2019), Ilieva et al. (2023) as well as Chan & Zhou (2023) provide some examples. In this study, we suggest a framework that looks at how educators can use Generative AI (GenAI) based on their educational goals and the capabilities of this technology. We focus on the idea of “*roles*” in the learning process. We look at two main aspects: the role of the university professor and how GenAI can support them in their teaching..

#### **3.1. The Roles of Educators**

The role of a university educator encompasses a dual identity as both a designer and a creator, akin to the diverse roles observed in the field of instructional design. An educator, in the capacity of a *designer*, takes on the strategic planning of course structure, module development, and overall curriculum design. This involves assessing teaching methodologies, deciding the sequence of content delivery, and determining the teaching mode—whether it be in-person, remote, synchronous, or asynchronous.

On the other hand, the educator as a *creator* mirrors the contemporary concept of a “creator” on social media, reflecting a capacity to craft educational content in various formats such as text, slides, podcasts, and videos, as well as designing assessment tools like quizzes to evaluate student learning. In the realm of instructional design, educators who transition into this role draw on their pedagogical expertise to gather data on learning and teaching patterns, creating innovative educational materials. They work collaboratively with stakeholders to develop content tailored for a technologically adept student body, often in both public and private sectors, across a multitude of positions such as curriculum developers, online learning specialists, and technology integration specialists. This shift to instructional design is motivated by the desire to engage with educational content differently, often in a more traditional office setting or remotely, rather than in a classroom (Hung & Chen 2012, Bovill et al. 2016; Pollard & Kumar 2022).

#### **3.2 The Roles of GenAI in Supporting Educators**

In higher education, the integration of GenAI poses both opportunities and challenges that have different focuses depending on the metaphor that one chooses. It is worth noticing that one of the most up-to-date attempts to discuss this issue, as well as providing examples of application is the taxonomy proposed by Mollick & Mollick (2023). In their paper, they identify 7 types of use cases:

GenAI as a mentor, a tutor, a coach, a teammate, a student, a simulator, and - as a last item in the list - as a tool. We propose to simplify these roles into two: “human-like” roles played by GenAI as a “creator” or agent, or its role as a tool. This dichotomy reflects deeper questions about the nature of technology and its role in human society.

The “creature” metaphor associates GenAI with human-like qualities, focusing on cognitive capabilities and the potential for these technologies to influence human behavior and relationships. This perspective brings forth a set of philosophical, psychological, and sociological questions, emphasizing the need for a nuanced understanding of GenAI’s implications on a human level. It suggests a concern for the ethical, social, and personal dimensions of integrating GenAI into daily life, including education.

Conversely, viewing GenAI as a “tool” shifts the discourse towards practical considerations, such as the reliability, functionality, and application contexts of these technologies. This approach encourages a focus on how GenAI can enhance educational practices, support learning outcomes, and integrate into existing pedagogical frameworks without losing sight of academic integrity and the fundamental values of education.

When crossing the two dimensions of analysis discussed above it is possible to end up with four different combinations (represented in a 2x2 table) that educators could adopt (Figure 1).

		role of GenAI (in supporting the educator)	
		Creature	Tool
role of the educator	Creator	Interactive Co-Creation	Content Amplification
	Designer	Adaptive Design	Resourceful Planning

*Figure 1. Approaches for GenAI use in higher education.*

For each approach, there are practical implications for teaching as described next.

**3.2.1. Creator-Creature: Interactive Co-Creation** (*collaboration between educators and GenAI allow tailoring and enhancing learning with a touch of personalization and creativity*)

In the Creator-Creature approach, educators leverage GenAI to enhance the creation and delivery of educational materials, (Motlagh et al., 2023; Dickey & Bejarano 2023, Walczak & Cellary 2023). This method involves GenAI assisting in the research of academic resources, crafting course contents including diverse media forms, and providing personalized, immediate feedback to students on their work. Mollick & Mollick (2023) emphasize the importance of tailored feedback, which supports effective learning. Kadaruddin (2023) highlights how GenAI-driven adaptive assessments cater to individual learning needs, especially for students with learning disabilities, by adjusting difficulty levels. Allowing the students to participate in co-creation would

also reduce test anxiety, marking a shift from traditional standardized tests to evaluations that respect each student's unique learning journey.

**3.2.2. Creator-Tool: Content Amplification** (*enhancement of content creation processes, making them more versatile and accessible across different formats and languages*)

In the Creator-Tool approach, educators utilize GenAI as a robust support mechanism for various tasks, such as summarizing information, translating educational content into multiple languages, and generating examinations and tests based on specific teaching materials (Motlagh et al., 2023). This method streamlines the content creation process, enabling educators to efficiently prepare diverse and comprehensive educational materials, including in-class exercises and quizzes, thereby enhancing the learning experience through tailored, accessible, and varied formats.

**3.2.3. Designer-Creature: Adaptive Design** (*a partnership for creating learning experiences that adapt to student needs and contexts in real-time*)

In the Designer-Creature approach, educators collaborate with GenAI to meticulously design educational experiences, emphasizing the creation of lesson plans, learning objectives (LOs), and interactive activities that cater to the specific needs and levels of students, while reaffirming the use of Bloom's taxonomy to ensure the learning objectives are effectively targeted (Dickey & Bejarano, 2023). Dickey et al. (2023) also illustrate how GenAI can be tasked to simulate a professional role within a specific educational context, thereby enriching lesson planning with realistic, professional insights. Furthermore, comprehensive course activity plans can be designed with precise time allocations to optimize learning outcomes. Kadaruddin (2023) underscores the importance of designing interactive and immersive learning experiences that not only enhance comprehension and critical thinking but also equip students with essential 21st-century skills. This method represents a strategic shift towards leveraging GenAI's capabilities to create more engaging, relevant, and personalized educational experiences.

**3.2.4. Designer-Tool: Resourceful Planning** (*GenAI used as a tool in resourcefully planning and optimizing educational materials and assessments*)

The Designer-Tool approach leverages GenAI to enhance the sourcing and personalization of educational materials, particularly underlining its utility in creating adaptive content for students with learning disabilities (Motlagh et al., 2023; Mollick & Mollick, 2023). This strategy enables the generation of learning materials that are not only flexible but also tailored to individual student needs, thereby fostering motivation, encouraging self-directed learning, and empowering students. Additionally, Motlagh et al., (2023) highlight the application of GenAI in assessment and evaluation processes, specifically through the use of GPT output for plagiarism detection, thereby streamlining and enhancing the integrity of educational evaluations.

#### **4. Opportunities and Threats of GenAI**

The integration of generative AI opens up paradigmatic shifts in pedagogical approaches. It contributes to creating dynamic, personalized, and inclusive systems that effectively prepare students to face a constantly changing world. Integrating these tools into instructional design can transform education by customizing virtual learning to the needs of individual students. Engaging learning experiences such as immersive activities, interactive quizzes, and GenAI-driven collaborative games can improve student retention and engagement (Qadir, 2023; Hartley, 2023). Moreover, chatbots using machine learning algorithms and AI improve access to personalized information. Greater efficiency can be achieved through the automation of exam grading, task assessment, and the generation of real-time feedback, without precluding the supervision by the teacher, who can supplement draft evaluations with targeted comments (Ruiz-Rojas et al., 2023).

However, challenges abound. ChatGPT and similar applications collect large amounts of data from chat logs, forums, and social media posts, including sensitive and personal data, without proper consent. This practice raises concerns about compliance with data protection regulations and ethics in handling student information (Ruiz-Rojas et al., 2023). For the same reason, the information generated by GenAI may result in biased or discriminatory outcomes, including gender, race, or social class biases. Another risk is the over-reliance on generative artificial intelligence. Despite the continuous progress of these tools in generating coherent and relevant content, they can still present difficulties in understanding complex contexts or interpreting abstract concepts (Ruiz-Rojas et al., 2023), thus compromising the accuracy and quality of responses or even resulting in nonsensical or false information (i.e., misinformation) (Qadir, 2023). Even more concerning, authorship issues and the difficulty of distinguishing if the content is generated by a human or a machine are widespread, both for students and teachers.

Finally, while AI-generated content is generally original and relevant to the topics and now contains appropriate references (Chan & Hu, 2023), it still lacks a personal perspective. With the advancement of technology, paradoxically, skills such as critical thinking, communication, and problem-solving have become increasingly essential to exploit these tools effectively. Table 1 summarizes sample opportunities and challenges of GenAI implementation.

#### **5. Conclusions**

Integrating generative AI tools within educational frameworks heralds the promise of revolutionizing pedagogical approaches, fostering dynamic and inclusive learning ecosystems equipped to navigate the challenges of a rapidly evolving educational landscape. However, this paradigm shift is accompanied by a host of multifaceted challenges that necessitate nuanced considerations and robust strategies for effective implementation. In light of these considerations, the integration of generative AI tools in education necessitates a balanced approach that

**Table 1. Opportunities and Challenges of GenAI in Education**

Opportunities	Challenges
<b>1. Creation of virtual and collaborative learning experiences</b>	<b>1. Data privacy concerns:</b> AI tools collect sensitive data without proper consent or attribution
<b>2. Improved student engagement and retention through gaming and other detailed feedback</b>	<b>2. Potential biases and discriminatory outcomes</b> in AI-generated content that is train from the same datasets and does not understand context
<b>3. Personalized learning experiences</b>	<b>3. Risk of over-reliance on AI</b> leading to inaccurate or nonsensical information (hallucinations)
<b>4. Efficiency and time-saving for teachers by automating routine tasks</b>	<b>4. Difficulty in attribution and authorship</b> determination
<b>5. Promotion of inclusion and equity by enabling focus on individuals</b>	<b>5. Lack of personal perspective</b> in AI-generated content leading to replication rather than new knowledge creation
<b>6. Higher focus on critical thinking &amp; problem-solving skills to add real value</b>	<b>6. Addressing skills gaps</b> through training as users need to own the tools to use them appropriately

amalgamates technological advancements with pedagogical imperatives. This paper proposed a methodological framework that can be used as a guide when designing and developing GenAI supported learning experiences. Deciding what level of engagement with GenAI as a tool is suitable to accelerate and support learning, rather than replacing understanding and synthetic elaboration is one of the first tasks that educators could engage in when designing their courses. Finally, it is important to progressively adopt and evaluate the impact and effectiveness of these tools by collecting educators’ and students’ feedback to identify beneficial applications as well as areas of improvement. Collaboration and experimentation among educators, researchers, policymakers, and AI developers would also be crucial to refine and optimize the use of Generative AI in ways that respect intellectual property, reaffirm boundaries of meaningful and fair use, and define sustainable strategies for augmenting knowledge creation and innovation, rather than replication and standardization.

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