How to use Emerging Technologies for Learning

Abstract

The chapter introduces emerging technologies like Artificial Intelligence (AI) and Web3 that can change learning. Indeed, these technologies enable educators to rethink, redesign and deliver content differently. Several landscapes of emerging technologies, namely generative AI, cover many domains such as expertise domain, efficiency, video creation, image generation, text generation, audio creation, music creation, and diagram generation.

The most simplified classification of generative AIs covers four areas: generative AIs platforms such as text, image, audio, and code generation. Each domain's AI tool can empower educators to develop existing and new curriculums in many ways. Educators are encouraged to be inspired and engaged in many provided solutions and find how and where to integrate best. The chapter concludes that emerging technologies/solutions-infused, like AI/ML, are changing daily. Therefore, educators should be aware and ready to think, try, design, and deliver new learning experiences.

"I think that the importance of instruments like ChatGPT, Dall-E-2, MidJourney, etc. will outlast/surpass the advent of the Internet" (Ilja Laurs)

1 Introduction

Emerging technologies like AI and Web3 can change and enhance the learning experience. There are some ways in which these technologies can be used for learning, including immersed reality, using virtual or augmented reality solutions, offering sophisticated gamified options for many activities or enhancing educational material in many ways, and personalized learning experiences (assessments, content). Additionally, educators empowered by social media platforms can be used for networking options or collaborative projects. Nevertheless, using various AI solutions is the most challenging for educators because it has just started to revolutionize existing education of how the educational content is created and delivered for learners. The following sections cover the types of generative AI solutions and their use cases.

2 Advanced Technologies for Educational Material Creation

Generative AI is a broad label that denotes any AI algorithm that enables using existing content like text, audio files, or images to create new text, images, videos, audio, code, or synthetic data. (Richman, Boyd, 2023; Market trends, 2021)). There are different generative AIs in many areas: education, business, the game industry, art, and writing. Therefore, many landscapes generative AIs exist dedicated to education, business, and developers or game creators. The image presents four areas of generative AIs platforms: text, image, audio, and code generation.

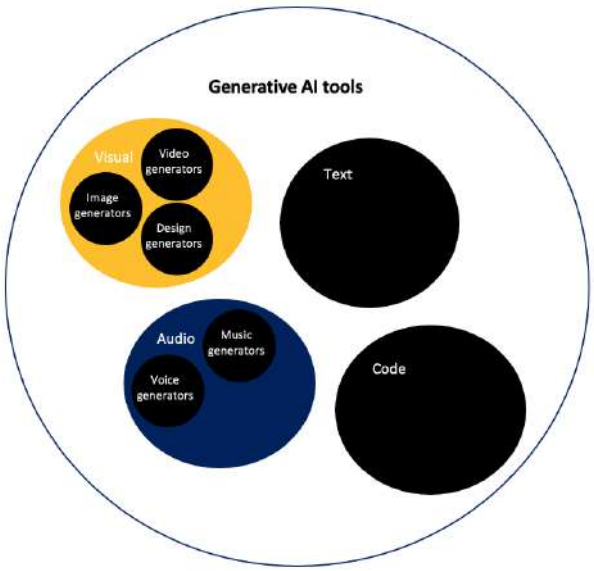

Image 1. Classification of generative AI.
Source: https://research.aimultiple.com/generative-ai-tools/

Visual generative AI covers three thematic areas: video, image, and design generation. In addition, the audio involves music and voice-generative AIs. Notably, all these four generative AI types can be used for learning.

3 Advanced Technologies for Educational Material Creation

Recently, learning scholar and expert Hardman (2022) from Cambridge University has provided the generative AI landscape using approximately 40 existing AI-infused tools for learning that cover eight domains (see Image 2): expertise domain, efficiency, video creation, image generation, text generation, audio creation, music creation, diagram generation. In addition, these generative AIs can be used for various content creation of educational materials or delivery formats.

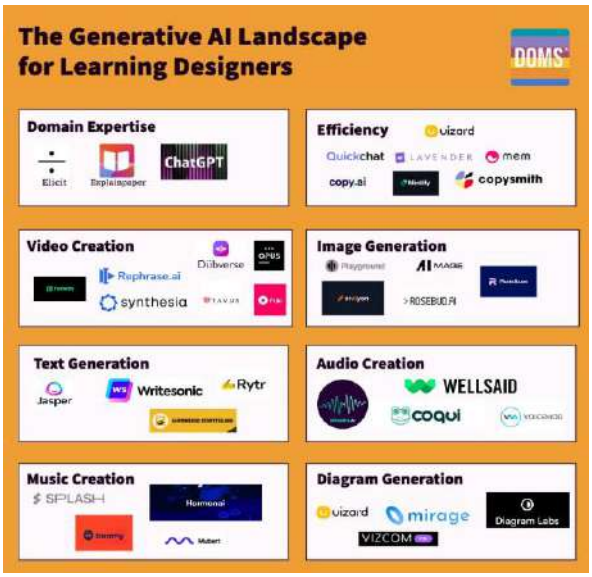

Image 2. The Generative AI Landscape for Learning Designers by DOMS™.

Source: https://drphilippahardman.substack.com/p/the-generative-ai-landscape-for-learning

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For business education, diverse generative AI platforms can be used for various business functions. Table 1 presents several use cases and links examples.

Table 1. The list of generative AIs of business was generated based on foundationcapital.com(2022).

Business function	Examples of cases	AI platform links
Marketing	SEO optimization, copywriting, personalization	https://writer.com *https://www.jasper.ai* https://www.copy.ai/
Customer support	User insights	https://forethought.ai https://cresta.com
Legal	Document drafting, synthesis, legal to no-legal translation	https://casetext.com
Human Resources	Job description writing, interviewing, performance reviews, AI couch	https://www.converzai.com

This business education example indicates that there are many ways how learning experience can be enhanced by using a set of AIs platforms. Moreover, there are more areas and how Ais can be implemented. These options suggest that educators can quickly test many existing generative AI platforms and select the most appreciated one for their learners. Finally, some ideas for curriculum development are discussed below.

4 Curriculum Development using Emerging technologies

Essential aspects of curriculum development include six steps or a six-step approach: problem identification and general needs assessment, targeted needs assessment, goals, and objectives, educational strategies, implementation and evaluation, and feedback (Kern, 2022). Meanwhile, the most recent research by Bhatt and Muduli (2022) has indicated that AI solutions such as natural language processing, artificial neural networks, interactive voice response, text-to-speech, and technology-enhanced learning can efficiently enhance the learning and development process. In addition, the authors have covered several curriculum development issues like educational strategies (delivery format or a question" How") and assessment.

5 Examples generated using generative AIs

The first example was generated using the visual AI solution "Stablediffusionweb.com" and three keywords (strawberry, fields, evening) in a few seconds.

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Image 3. The photo-realistic image was generated using the Stable Diffusion solution by giving three keywords (strawberry, fields, evening). *Source*: https://stablediffusionweb.com

AI-generated visuals can be used in education to enhance the learning experience and improve learners ' engagement. There are several ways where to use AI-generated visuals, such as data visualization of educational material, educational games or quizzes, visual storytelling, or even for personalized learning experiences.

Similarly, AI-generated text can enable the educator to quickly generate educational content such as quizzes, study guides, and lecture plans (see Image 4).

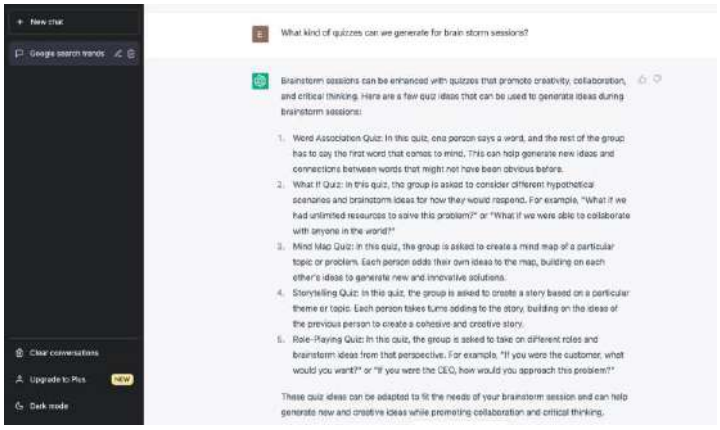

Image 4. Example of the Q and the answer provided by Chat GPT.

Source: https://chat.openai.com/chat#

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Text generator tools can be used for language learning and writing assistance. Furthermore, AI-infused text tools can be used for automatic assessment tasks. However, generative AI-infused text tools can create a more personalized learning experience.

The generative AI platform "Chat GPT3" can be combined with other platforms and create new outcomes. For instance, in the business domain example provided by an SEO expert (SEOtraininglondon.org, 2023), educators can leverage the power of GPT3 and SparkToro (https://sparktoro.com), a search engine for audience Intelligence to identify winning content topics for X targeted audience.

6 References

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