



Generative AI, Synthetic Contents, Open Educational Resources (OER), and Open Educational Practices (OEP): A New Front in the Openness Landscape

EDITORIAL

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ABSTRACT

This paper critically examines the transformation of the educational landscape through the integration of generative AI with Open Educational Resources (OER) and Open Educational Practices (OEP). The emergence of AI in content creation has ignited debate regarding its potential to comprehend and generate human language, creating content that is often indistinguishable from that produced by humans. This shift from organic (human-created) to synthetic (AI-created) content presents a new frontier in the educational sphere, particularly in the context of OER and OEP. The paper explores the generative AI's capabilities in OER and OEP, such as automatic content generation, resource curation, updating existing resources, co-creation and facilitating collaborative learning. Nevertheless, it underscores the importance of addressing challenges like the quality and reliability of AI-generated content, data privacy, and equitable access to AI technologies. The critical discussion extends to a contentious issue, ownership in OER/OEP. While AI-generated works lack human authorship and copyright protection, the question of legal liability and recognition of authorship remains a significant concern. In response, the concept of prompt engineering and co-creation with AI is presented as a potential solution, viewing AI not as authors, but powerful tools augmenting authors' abilities. By examining generative AI's integration with OER and OEP, this paper encourages further research and discussion to harness AI's power while addressing potential concerns, thereby contributing to the dialogue on responsible and effective use of generative AI in education.

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INTRODUCTION: FROM WRITING TO GENERATING

The emergence of generative artificial intelligence (AI) has sparked great enthusiasm, largely due to its capacity for creating novel content via natural language processing (NLP) and extensive language models (LLM). The main reason behind this enthusiasm mainly stems from generative AI's potential to comprehend and generate human language, one of the most sophisticated and advanced systems ever developed, as well as its ability to discern patterns that may elude human perception. Properly trained iterations of generative AI can learn, unlearn, and relearn language constructs, which makes it a dynamic instrument capable of evolving (Bozkurt, 2023).

Described as a technology that can produce outputs indistinguishable from human-authored content (Dwivedi et al., 2023), generative AI's utility extends to a variety of fields, notably education (Cao et al., 2023; Dwivedi et al., 2023; Haleem et al., 2022; Kasneci et al., 2023; Kukulska-Hulme et al., 2023) and it is poised to revolutionize pedagogical practices (Atlas, 2023; Megahed et al., 2023). Due to its ability to generate content, generative AI has stimulated numerous scholarly debates and encouraged research into its potential advantages and drawbacks (Bozkurt et al., 2023a; Bozkurt, 2023; Crawford et al., 2023; Johnke et al., 2023; Neumann et al., 2023; Tili et al., 2023). A pertinent but often neglected topic in these discussions is how synthetically produced generative AI content will be integrated within the concept of openness in the educational sphere.

ANOTHER TURNING POINT: FROM ORGANIC TO SYNTHETIC CONTENTS

Generative AI technologies can analyze the complex patterns and structures of human language, and they are primarily trained to understand and generate human language (Bozkurt, 2023). It is further argued that generative AI “is capable of generating human-like text and understanding natural language input in a way that is similar to a human (Bozkurt, 2023, p. 200)”. Unlike humans, Generative AI “lacks the same level of context awareness and understanding, with its comprehension of language based solely on the patterns and structures learned from its training data.” (Bozkurt, 2023, p. 200). While AI is anticipated to bring novel insights and capacities to scientific research and content creation (Méndez & Sánchez-Núñez, 2023), it is also stressed that generative AI merely reconfigures existing data, thus its output can be considered synthetic (Garon, 2023). This viewpoint calls for a more thorough examination of the influence of organic (human-created) or synthetic (generative AI-created) content on open educational resources (OER) and open educational practices (OEP).

THE NEW BATTLEFRONT: GENERATIVE OER AND OEP

Mills et al. (2023) caution that it's crucial to channel efforts into open educational practices to brace for disruptions and continual transformations in higher education. Mills et al. (2023) further provide a plethora of methods to employ generative AI for enhancing teaching and learning, considering the vantage points of both OER and OEP. Similarly, Nerantzi et al. (2023) put forth a broad array of applications that reflect foresight and demonstrate creativity.

Echoing this sentiment, Wiley (2023a) poses the thought-provoking questions, “what if, in the future, educators didn't write textbooks at all? What if, instead, we only wrote structured collections of highly crafted prompts?”. Moreover, Wiley underscores how such content can transition from static reading to a more interactive, dialogue-based exploration by employing well-crafted prompts. Expanding on this idea, Wiley (2023b) suggests that the application of generative AI with large language models (LLMs) might level the playing field between proprietary materials and OER. We asked to examine the reflections of generative AI in the context of OER and OEP with a reverse engineering approach and received the following response from ChatGPT.

Prompt: How will generative AI impact open educational resources and open educational practices?

ChatGPT: Let's delve a bit deeper into how generative AI could impact Open Educational Resources (OER) and Open Educational Practices (OEP).

Automated Content Generation: Generative AI has the capability to generate educational content across various domains. For instance, AI could be used to automatically generate textbooks, worksheets, or lessons based on curriculum guidelines or learning objectives. This has the potential to greatly expand the availability of OER.

Resource Curation and Recommendation: Generative AI could also assist in curating and recommending OERs based on learners' individual needs. By analyzing a student's performance, learning style, and interests, AI could suggest resources that are likely to be most beneficial to that student.

Updating and Improving Existing Resources: Generative AI could help keep OERs up-to-date by generating new content based on recent developments or research. It could also identify gaps or inaccuracies in existing resources and generate content to address them.

Translation and Localization: Generative AI could greatly facilitate the translation and localization of OERs, making them accessible to a wider audience. This could contribute to democratizing education by making high-quality resources available to people who might not otherwise have access to them.

Open Educational Practices (OEP):

Supporting Student Creation of OERs: As part of OEP, students often contribute to the creation of OERs. Generative AI could support students in this process by providing suggestions, improving the quality of writing, or generating initial drafts of content.

Automating Feedback and Assessment: AI could help automate the process of giving feedback and assessing student work, especially for large-scale online courses. This could free up time for educators to engage in more interactive and personalized teaching practices.

Facilitating Collaborative Learning: Generative AI could facilitate collaborative learning practices by summarizing discussions, suggesting new topics, or helping to coordinate collaborative work. For example, if students are working on a group project, AI could help manage the project by assigning tasks, keeping track of progress, or generating reminders.

Supporting Personalized Learning Pathways: Generative AI could be used to create personalized learning pathways for students, helping them to navigate the vast landscape of OERs and other online resources.

In summary, the use of generative AI in OER and OEP has the potential to greatly enhance the availability, accessibility, and effectiveness of open education. However, it also brings up important challenges and considerations, such as ensuring the quality and reliability of AI-generated content, protecting data privacy and security, and ensuring equitable access to AI technologies. These issues will need to be carefully navigated in order to fully realize the potential of generative AI in open education (OpenAI, 2023).

It is promising that both humans and generative AI have a similar vision for the future of OER and OEP. However, as emphasized by generative AI (OpenAI, 2023), it would not make sense to expect generative OER and OEP to reach their full capacity without providing solutions to issues such as "ensuring the quality and reliability of AI-generated content, protecting data privacy and security, and ensuring equitable access to AI technologies".

A critical aspect of generative OER/OEP under heated discussion pertains to the ownership of content (Bozkurt et al., 2023b). OER generally follows open licenses, such as Creative Commons, where the authors determine the type of permissions granted. Schroeder (2023) remarks, “Given that the 1976 Act of copyright law necessitates human authorship, AI-generated works aren’t eligible for registration...As far as the US Copyright Office is concerned, the outputs of generative AI programs like ChatGPT or Stable Diffusion lack copyright protection... barring any drastic shifts, generative AI outputs will continually enter the public domain immediately” (para. 10). However, the unique characteristic of generative AI being non-human implies the promise of ownership-free educational content. This, in turn, raises the question of how and by whom the extent of permissions will be determined. In addition to that perspective, another credible argument suggests that as only humans are capable of assuming legal liability for their work, they alone should be recognized as authors (Nature, 2023; Stokel-Walker, 2023). This very question was further directed at ChatGPT (OpenAI, 2023), a leading figure in generative AI services and a key player in the ownership debate.

Prompt: Can ChatGPT listed as a coauthor if used while writing an article for a scholarly journal?

ChatGPT: As of my knowledge cutoff in September 2021, AI models like GPT-3 or GPT-4 are not generally recognized as co-authors in scholarly work for several reasons:

Lack of independent cognition: AI does not have its own consciousness or understanding of what it produces. It doesn’t have ideas or a point of view that it can contribute to a piece of work, and it doesn’t have the ability to critique or interpret data, make judgments, or form new hypotheses based on data.

Lack of creativity: While AI can generate creative-seeming outputs, these are ultimately based on patterns it has learned from existing data. It does not have the ability to introduce novel ideas or concepts that have not already been presented in its training data.

Lack of accountability: AI cannot take responsibility for its contributions, be credited or critiqued, or participate in the scholarly community in any way. Therefore, it’s not appropriate to treat it as a co-author.

Ethical and attribution considerations: AI’s outputs are generated based on the data it was trained on. This data typically includes countless human-authored texts. If an AI were to be listed as a co-author, it would raise difficult questions about how to appropriately attribute credit to the original human authors whose work influenced the AI’s output.

For these reasons, as of 2021, it’s more accurate to view an AI as a tool that can aid in the research and writing process, rather than a collaborator or co-author. When AI is used in the creation of a scholarly article, this can certainly be acknowledged and described in the paper, but it would not typically result in the AI being listed as a co-author.

However, it’s worth noting that norms and practices can change over time, especially in fields like AI and data science that are rapidly evolving. Some people have suggested that as AI becomes more sophisticated, we may need to rethink some of these conventions (OpenAI, 2023).

As can be seen from the above generative AI output, even ChatGPT concurs with this view, proposing that generative AI, lacking independent cognition, creativity, accountability, and given ethical and attribution considerations, cannot claim ownership. However, it emphasizes, it is important to note that norms and practices can change over time, particularly in swiftly advancing fields like AI and data science. There have been suggestions that as AI continues to become more advanced, a reevaluation of these conventions might become necessary.

As we navigate through the complexities of ownership and content creation in the realm of OER and OEP, the concept of prompt engineering and co-creation with AI emerges as a promising avenue (Bozkurt & Sharma, 2023). With generative AI systems such as generating learning content, it's plausible to consider them not as authors, but as powerful tools in an author's kit, especially when coupled with a process like prompt engineering. This involves designing specific instructions to guide the generative AI's output, creating a dynamic and potentially transformative dialogue between the human and the AI. It's not a matter of replacing human authors or educators, but rather, of enhancing their capabilities. In the case of generative AI, its outputs can be harnessed to create more diverse, expansive, and inclusive open educational resources, transforming not just how content is created but also how it's used and shared. Furthermore, a co-creation process with AI might also serve to address issues of ownership. If the AI is considered a tool controlled by a human operator, the human operator could assume responsibility for the resulting work, thus integrating the innovative capabilities of AI within the established legal and ethical frameworks.

FINAL REMARKS: A NEW FRONT IN THE OPENNESS LANDSCAPE

In short, in the OER/OEP landscape, a new and exciting future with many challenges and unexplored paths is ahead of us. In order to better navigate and successfully integrate generative AI with OER and OEP, educators and stakeholders must be equipped with the necessary skills and knowledge which requires a special focus on professional development and training. The integration of generative AI with OER and OEP holds significant potential for transforming the openness landscape to the next level. However, it is essential to address the challenges that accompany this integration. By critically examining generative OER/OEP, this paper aims to foster a nuanced understanding of the subject and to encourage further research and discussion on harnessing the power of generative AI to enhance generative OER/OEP experiences while addressing potential concerns. By doing so, the editorial contributes to the ongoing dialogue on the responsible and effective use of generative AI technologies education in general and openness in specific, ultimately paving the way for a more inclusive and innovative educational landscape.

DATA ACCESSIBILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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COMPETING INTERESTS

The author has no competing interests to declare.

AUTHOR CONTRIBUTIONS

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REFERENCES

- Atlas, S. (2023). *ChatGPT for higher education and professional development: A guide to conversational AI*. Independently Published.
- Bozkurt, A. (2023). Generative artificial intelligence (AI) powered conversational educational agents: The inevitable paradigm shift. *Asian Journal of Distance Education*, 18(1), 198–204. DOI: <https://doi.org/10.5281/zenodo.7716416>
- Bozkurt, A., Gjelsvik, T., Adam, T., Asino, T. I., Atenas, J., Bali, M., Blomgren, C., Bond, M., Bonk, C. J., Brown, M., Burgos, D., Conrad, D., Costello, E., Cronin, C., Czerniewicz, L., Deepwell, M., Deimann, M., DeWaard, H. J., Dousay, T. A., Ebner, M., Farrow, R., Gil-Jaurena, I., Havemann, L., Inamorato, A., Irvine, V., Karunanayaka, S. P., Kerres, M., Lambert, S., Lee, K., Makoe, M., Marín, V. I., Mikroyannidis, A., Mishra, S., Naidu, S., Nascimbeni, F., Nichols, M., Olcott, Jr., D., Ossiannilsson, E., Otto, D., Padilla Rodriguez, B. C., Paskevicius, M., Roberts, V., Saleem, T., Schuwer, R., Sharma, R. C., Stewart, B., Stracke, C. M., Tait, A., Tlili, A., Ubachs, G., Weidlich, J., Weller, M., Xiao, J., & Zawacki-Richter, O. (2023b). Openness in Education as a Praxis: From Individual Testimonials to Collective Voices. *Open Praxis*, 15(2), 76–112. DOI: <https://doi.org/10.55982/openpraxis.15.2.574>
- Bozkurt, A., & Sharma, R. C. (2023). Generative AI and prompt engineering: The art of whispering to let the genie out of the algorithmic world. *Asian Journal of Distance Education*, 18(2). DOI: <https://doi.org/10.5281/zenodo.8174941>
- Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., Farrow, R., Bond, M., Nerantzi, C., Honeychurch, S., Bali, M., Dron, J., Mir, K., Stewart, B., Costello, E., Mason, J., Stracke, C. M., Romero-Hall, E., Koutropoulos, A., Toquero, C. M., Singh, L. Tlili, A., Lee, K., Nichols, M., Ossiannilsson, E., Brown, M., Irvine, V., Raffaghelli, J. E., Santos-Hermosa, G. Farrell, O., Adam, T., Thong, Y. L., Sani-Bozkurt, S., Sharma, R. C., Hrastinski, S., & Jandrić, P. (2023a). Speculative futures on ChatGPT and generative artificial intelligence (AI): A collective reflection from the educational landscape. *Asian Journal of Distance Education*, 18(1), 53–130. DOI: <https://doi.org/10.5281/zenodo.7636568>
- Cao, Y., Li, S., Liu, Y., Yan, Z., Dai, Y., Yu, P. S., & Sun, L. (2023). A Comprehensive Survey of AI-Generated Content (AIGC): A History of Generative AI from GAN to ChatGPT. *arXiv preprint*. DOI: <https://doi.org/10.48550/arXiv.2303.04226>
- Crawford, J., Cowling, M., & Allen, K. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). *Journal of University Teaching & Learning Practice*, 20(3). DOI: <https://doi.org/10.53761/1.20.3.02>
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., ... Wright, R. (2023). “So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642. DOI: <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- Garon, J. M. (2023). A practical introduction to generative AI, synthetic media, and the messages found in the latest medium. *SSRN*. DOI: <https://doi.org/10.2139/ssrn.4388437>
- Haleem, A., Javaid, M., & Singh, R. P. (2022). An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, 2(4), 100089. DOI: <https://doi.org/10.1016/j.tbench.2023.100089>
- Johinke, R., Cummings, R., & Di Lauro, F. (2023). Reclaiming the technology of higher education for teaching digital writing in a post—pandemic world. *Journal of University Teaching & Learning Practice*, 20(2). DOI: <https://doi.org/10.53761/1.20.02.01>
- Kasneji, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., ... Kasneji, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103, 102274. DOI: <https://doi.org/10.1016/j.lindif.2023.102274>
- Kukulska-Hulme, A., Bossu, C., Charitonos, K., Coughlan, T., Deacon, A., Deane, N., Ferguson, R., Herodotou, C., Huang, C-W., Mayisela, T., Rets, I., Sargent, J., Scanlon, E., Small, J., Walji, S., Weller, M., & Whitelock, D. (2023). *Innovating Pedagogy 2023: Open University Innovation Report 11*. The Open University. <https://www.open.ac.uk/blogs/innovating/?p=784>
- Megahed, F. M., Chen, Y. J., Ferris, J. A., Knoth, S., & Jones-Farmer, L. A. (2023). How Generative AI models such as ChatGPT can be (Mis) Used in SPC Practice, Education, and Research? An Exploratory Study. *arXiv preprint*. DOI: <https://doi.org/10.1080/08982112.2023.2206479>

- Méndez, E., & Sánchez-Núñez, P.** (2023). Navigating the Future and Overcoming Challenges to Unlock Open Science. In: González-Esteban, E., Feenstra, R. A., Camarinha-Matos, L. M. (eds), *Ethics and Responsible Research and Innovation in Practice. Lecture Notes in Computer Science*, vol 13875. Cham: Springer. DOI: https://doi.org/10.1007/978-3-031-33177-0_13
- Mills, A., Bali, M., & Eaton, L.** (2023). How do we respond to generative AI in education? Open educational practices give us a framework for an ongoing process. *Journal of Applied Learning & Teaching*, 16(1), 16–30. DOI: <https://doi.org/10.37074/jalt.2023.6.1.34>
- Nature.** (2023). Tools such as ChatGPT threaten transparent science; here are our ground rules for their use. *Nature*, 613. DOI: <https://doi.org/10.1038/d41586-023-00191-1>
- Nerantzi, C., Abeglen, S., Karatsiori, M., & Martinez-Arboleda, A.** (Eds.) (2023). *101 Creative ideas to use AI in education: A crowdsourced collection*. A collection curated by #creativeHE. DOI: <https://doi.org/10.5281/zenodo.8072950>
- Neumann, M., Rauschenberger, M., & Schön, E. M.** (2023). “We Need To Talk About ChatGPT”: The Future of AI and Higher Education. Hochschule Hannover. DOI: <http://doi.org/10.25968/opus-2467>
- OpenAI.** (2023). ChatGPT-4 (July 11 version) [Large language model]. <https://chat.openai.com/chat>
- Schroeder, R.** (2023). *In the coming weeks, how to respond to generative AI*. Inside Higher Ed. <https://www.insidehighered.com/digital-learning/blogs/online-trending-now/coming-weeks-how-respond-generative-ai>
- Stokel-Walker, C.** (2023). ChatGPT listed as author on research papers: many scientists disapprove. *Nature*, 613, 620–621. DOI: <https://doi.org/10.1038/d41586-023-00107-z>
- Tlili, A., Shehata, B., Adarkwah, M. A., Bozkurt, A., Hickey, D. T., Huang, R., & Agyemang, B.** (2023). What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education. *Smart Learning Environments*, 10(1), 1–24. DOI: <https://doi.org/10.1186/s40561-023-00237-x>
- Wiley, D.** (2023a). Generative Textbooks. improving learning: eclectic, pragmatic, enthusiastic. <https://opencontent.org/blog/archives/7238>
- Wiley, D.** (2023b). AI, Instructional Design, and OER. improving learning: eclectic, pragmatic, enthusiastic. <https://opencontent.org/blog/archives/7129>

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