

EJEL Editorial 2024: The Allure of AI in Education

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Abstract: The objectives of this editorial are to provide a brief overview of the themes of EJEL papers published in 2023, compare these themes with the areas of work suggested in the previous Editorial (Charbonneau-Gowdy, et al., 2023), and propose new areas of focus for future research. The present Editorial will primarily concentrate on the main challenges arising from the release and use of GPT-3 and GPT-4 in 2023.

Keywords: e-Learning, AI, AT chatbot

1. Introduction

We start this year's Editorial by sharing some key figures from the previous year of publications in EJEL.

The number of submitted and accepted papers in 2023 increased by 2% and 16% respectively compared to the previous year (2022:282 /32, 2023: 287/37).

To address some of the gaps in EJEL publications identified in our previous editorial (2023), we launched three special issue (SI) calls in 2023: i) Educational Escape Rooms (SI EER), ii) Artificial Intelligence in education (SI AI) and iii) Extended Realities for Learning (SI XR). Currently, there are 17 published papers from these SIs (2 EER, 7 AI and 8 XR), however, they are not included in the sample of papers discussed in this editorial, as their date of publication is in 2024.

There were 33 papers published in 2023 (including the editorial and one experience report) spread across 5 issues in Volume 21 and with authors from 20 different countries. These papers reflect various methodologies including quantitative (N=21, 64%), qualitative (N=16, 48%), systematic literature review (N=7, 21%) and design science research (N=3, 9%), focusing mainly on tertiary education (N=24, 73%), and learners' perspectives (N=19, 58%). The research themes include general areas such as benefits and challenges of e-learning, students' performance, satisfaction, and engagement, but additionally more specific topics particularly around e-learning approaches (e.g., mobile learning, game-based learning, seamless learning, computer-supported collaborative learning, i.e. CSCL, flipped classroom), e-learning tools (e.g., MS Teams), and new e-learning issues such as technostress.

While the journal continues to pride itself on inclusivity and diversity of perspectives, the editorial team would like to encourage more submissions related to novel learning methods, technologies and emerging issues, including teachers' perspectives and at different educational levels.

In the previous editorial (2023), we reported some discrepancies between the subjects of the most popular EJEL publications and the areas of interest suggested by the EDUCAUSE Horizon report (Pelletier et al., 2022), the European Framework (Redecker, 2017) and recent e-learning reviews from major journals (Lara, Aljawarneh, ISSN 1479-4403

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and Pamplona, 2020; Zhang, et al., 2022; Martin, Dennen, and Bonk, 2023). While we recognise that it is still early for these findings to have an impact on the submissions this year, it is worth noting that the gaps identified in the previous editorial still are evident in the volume of papers published in 2023. For this reason, we repeat our call for more publications on the issues related to the economic, political, and environmental areas of e-Learning and challenges in the areas of assessment, AI, and hybrid learning spaces.

2. Literature Review

With the call for publications on these issues in mind, the focus of this section of the editorial is on artificial intelligence (AI). In it we provide a critical summary of the existing literature chosen by our editorial team as representative on this topic from the broad educational scholarship. Gaining an overview of the various topics related to AI that are being discussed in the e-learning scholarship hopefully can not only provide insight into AI in terms of what is expected to be its deep influence on education, but also an impetus for further research.

Generative Artificial Intelligence, or GenAI, is described as a technology that accesses deep learning models, i.e. patterns and structures that have been “taught” to it through input training, to generate text, images, videos, or other data in response to prompts. ChatGPT, DALL-E and Bard are some now well recognized examples of GenAI. How these tools will affect both learning and learners, indeed education as we know it, is a matter of increasing concern and discussion in scholarship. We have chosen four articles to provide an overview of this discourse.

A recent study by Chan and Hu (2023) offers new insights into generative AI (GenAI) in higher education (HE), with a focus on student voices. The authors argue that although students, like faculty, are often most affected by the decision to use new technologies in learning contexts, they are rarely involved in discussion. The aim of their research is to understand students’ familiarity with and their attitudes towards AI and thus to inform universities about adopting GenAI in teaching and learning across the disciplines. Drawing on the results of a survey ($n=399$) with undergraduate and postgraduate Hong Kong students, the authors report on generally positive attitudes towards GenAI citing such features as its personalised learning support and its brainstorming and analysis capabilities. Students were also aware of various issues and challenges surrounding GenAI – especially those related to academic integrity, ethics, and privacy. Concerns around accuracy were expressed as well. Theoretically, the study is grounded in Davis’ (1989) user acceptance theory and the writings of Biggs’ (1999, 2011) both of which are tied to the importance of student perception and its impact on their learning and its outcomes. In other words, students who perceive their learning environment positively are more likely to succeed in it. The findings demonstrate that while students are knowledgeable of GenAI, they are also careful and cautious about its use. Their positive perception is important for educators and HE institutions to build on as they consider whether and how to integrate GenAI (and other technologies) into teaching and learning in a mindful and ethical way that capitalises on students’ existing knowledge without compromising academic integrity and sacrificing privacy.

The second article we reviewed was conducted by Chiu (2023) and addresses the increasingly pivotal role that GenAI tools such as ChatGPT and Midjourney are playing in transforming educational practices, policies, and research directions. The author highlights the lack of extensive discussion on GenAI's impact, particularly in school settings, despite its growing integration into higher education. The study focusses on the perspectives of teachers and leaders and is framed around a systematic review of the literature into the role of AI in four key educational domains: learning, teaching, assessment, and administration. The aim was to uncover how GenAI is reshaping school education in these four areas and influencing student and teacher outcomes from participants’ perspectives. The qualitative study involved 88 schoolteachers and leaders from various backgrounds who participated in surveys and focus groups after attending GenAI technology workshops. A hybrid thematic analysis was employed to generate themes and subthemes reflective of GenAI's impact on educational practices and policies. Findings suggest that GenAI promotes a re-evaluation of educational goals, highlighting the importance of AI literacy, critical reasoning, digital media, information literacy, and generic skills development. The insights and implications of the study both for teaching and policy indicate the need for: i) teacher professional development that focuses on curriculum leadership, AI literacy, facilitating skills, and interdisciplinary teaching approaches; ii) a shift in assessment practices toward more formative approaches and those that assess generic skills and AI literacy; iii) training of administrative staff to leverage these technologies to improve efficiency in their tasks; iv) incorporating AI more broadly across the institution and v) rewriting educational standards to include AI literacy.

In a third study, Urban, et al. (2024) experimentally compared two groups of university students who were asked to fulfill a written task on improving product sales of a company. Drawing on hybrid human-AI regulation theory

(Molenaar, 2022a; 2022b), the aim of the study was to examine the impact of ChatGPT on problem solving performance, i.e. the quality, elaboration, and the originality of the solution. Participants were divided into 2 groups. The experimental group ($n=77$) used ChatGPT for solving the problem within the assigned task, while the control group ($n=68$) solved the task without ChatGPT. ChatGPT was used by the experimental group as a support in finding at least three solutions for an appointed problem in the task. The dependent variables investigated were originality, creative problem-solving, on-task self-efficacy, self-evaluation, perceived task interest, perceived task difficulty, and perceived mental effort. While the ChatGPT group reported more on-task self-efficacy, less mental effort, and achieved higher performance compared to the control group, ChatGPT did not make the task more interesting. The authors argue that GenAI tools such as ChatGPT can help learners develop or enhance their own ideas, instead of replacing them and likewise improve on the quality of their solutions. Yet, results on participants' self-evaluation of performance showed that perceived usefulness and ease of task resolution by using ChatGPT did not automatically lead to more useful and original solutions. Further, prior experiences with GenAI tools were found to influence the quality, self-elaboration, and originality of the ideas.

The fourth paper we reviewed by Klyshbekova and Abbott (2023) examines the capabilities/limitations of ChatGPT-3 in terms of assessment and its disruptive innovation capabilities. The authors created a fictional essay topic and rubric and then evaluated the output of ChatGPT. ChatGPT was assigned to write an essay on a given topic, to follow a specific reference style and to assess its own work based on Paul's (2005) Intellectual standards rubric for quality control. The 6-week experiment involved a 5-step iterative query process prompting ChatGPT: 1) to write an introduction to the topic on Technology in Education inclusive of context and the aims of the article; 2) to develop an argument supported with a rationale based on its pre-mentioned introductory arguments and including five appropriate references; 3) to author a conclusion supported by the pre-mentioned arguments without the addition of new information; 4) to design a rubric and 5) to rate its own essay using the rubric produced. The authors evaluated the output first using Paul's (2005) rubric criteria - clarity, accuracy/precision, relevance, depth of logic and fairness. They then further applied a disruptive innovation lens asking GPT to reassess its output with an author-designed rubric. Generally, the results demonstrated ChatGPT-3's capabilities to produce an essay on a specific topic but with disappointing results – the essay being deemed generally descriptive and repetitive in nature with limited perspective in terms of referencing key scholars and lacking creativity and proficiency nor managing to keep within the required word count. Findings also revealed issues with ChatGPT's generated rubric in terms of design, marking scheme and grading. While ChatGPT evaluated its output at 91/100, the authors assessed it at 41/100 due to its generic nature and lack of depth of analysis. The authors concluded that ChatGPT is not yet at the disruptive innovation stage, but only completing the "illusion of complete assessment capabilities."

Each of the four articles summarized above offers a window into recent research into GenAI and its emerging capabilities and limitations in a variety of educational settings and for diverse uses. They also open a dialogue for further inquiry. Despite the different methodological approaches adopted in each of these studies, it is worth noting that the authors reach an important consensus regarding the emergent use of AI. The authors concur that regardless of i) the level of education, ii) whether AI be employed for teaching, learning and/or assessment, iii) in administration areas or for other institutional functions, access and experience with AI must be assured for all and be used to promote privacy and ethical behaviours. While their findings shed light on both the capabilities and limitations of GenAI, they open the door to myriad questions and invite further empirical analysis.

Just as a growing number of other researchers, members of our editorial team are also adding to this discourse by responding to the increasing AI questions that are being raised. Their scholarship reports on such topics as:

- Understanding the paradoxes of GenAI (friend/foe, capable/dependent, accessible/restrictive, popular/banned) with a view to exploiting it as a potential impetus in transforming education (Lim, et al., 2023)
- Data justice and fairness in AI usage for the good of learning and learners. (Pechenkina, 2023)
- Providing a synthesized view of the empirical research conducted in the last decade on AI and what it can tell us about where and what research in AI is being carried out. (Marengo, et al., 2023)
- The capabilities of AI in writing a conclusive bachelor's thesis. (Schwenke, Söbke and Kraft, 2023)

It is important to note that the authors of each of the papers in this literature review take a positive stance regarding the use of AI and its possibilities for improving learning. Yet, at the same time they recommend caution about the "how" it is used and its limitations. It is evident from the variety of topics covered in the combined

literature in this review that there is much left to be explored about GenAI and its present and potential impact on education.

3. Discussion

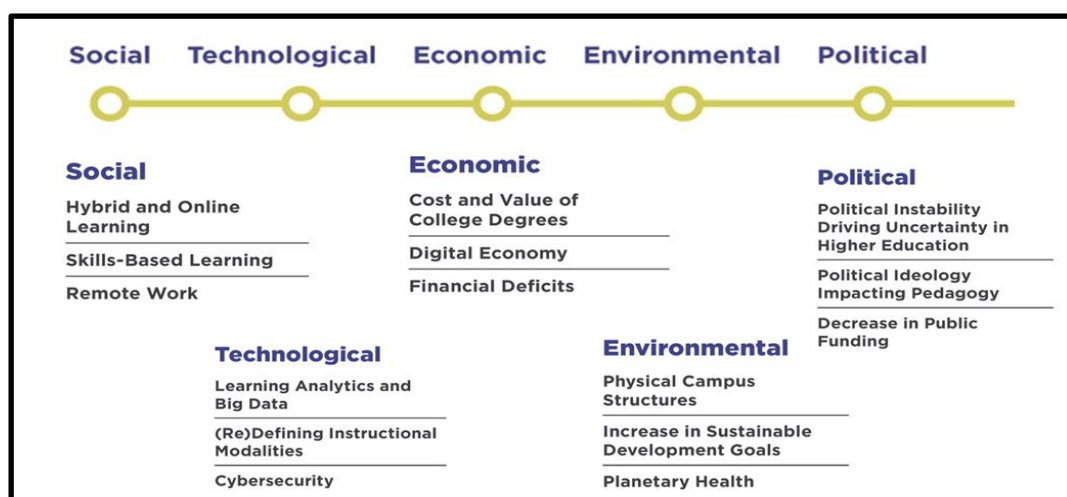
While acknowledging that our sample is not comprehensive, a deeper analysis of the representative literature in this brief overview mapped against the gaps in research that were highlighted in our previous EJEL Editorial offer some interesting insights. Most notably is the fact that these papers suggest a growing interest on the part of researchers to target AI as a topic of critical interest to explore. Also, evident in this particular sample of the AI literature are the following observations:

- an emphasis on a human rather than a system perspective, for example on giving voice to teachers and on the personalization potential of GenAI.
- a general expression of cautiousness on the part of educators, students, institutions, and researchers about the use of GenAI and its current capabilities.
- a preference for evidence-based research as opposed to technical, theoretical and conceptually based reports that are primarily quantitative.
- a focus on the tertiary level rather than the broader context of education.
- attention being given to the topic of assessment.

In the kinds of studies called for in our earlier Editorial, categorized under the headings *pedagogy*, *people* and *systems* focussed, we can see that researchers in this sample of AI reports are responding both in terms of assessment (*pedagogy*), in terms of teachers' and learners' perspectives and the personalization of learning (*people*) as well as security and privacy concerns (*systems*). Collectively, these AI studies also reflect a response to the gaps cited by the American-based Educause under their *Social* and *Technological Practices* categories and repeated by the European Framework for Digital Competences of Educators (EFDCE) for attention given to the area of *Assessment*.

Most noticeable in this literature is the glaring lack of empirical evidence for professional development and instructor training. While much of this scholarship underscores the critical need for action and research in training educators in the use of AI and indeed add important knowledge on this topic, none offer clear grounded evidence of this training being carried out *in practice*. We reiterate the urgent need for this empirical evidence.

In terms of the classifications cited in our earlier Editorial for more research related to the digital formation of educators, which is an area underlying both the European Framework for Digital Competences of Educators (2017) and the EDUCAUSE macro trends (Figure 1), of particular interest as we cited above are those related to the *environmental*, *political* and *economic* tensions around professional development in e-learning generally, but in AI specifically.



Source: First published, in 2022, in EDUCAUSE Horizon Report Teaching and Learning by Pelletier et al. (2022) under the [Creative Commons licence CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Figure 1: EDUCAUSE Horizon Report: Macro Trends in Postsecondary Teaching and Learning (Pelletier et al., 2022)

These areas are closely tied to concerns for education in the 21st century and the potential for the deep impact that AI will have on this and all areas of our lives. We see it as our combined responsibility as a journal and as researchers to respond and promote empirical research in teacher formation in AI with these perspectives in mind.

4. Conclusions

The enthusiasm that is evident in researchers' responses to the calls for scholarship for EJEL's special issues over this last year, is indeed encouraging. It is obvious judging by the level of this response that scholars are concerned about the emergent power of technology and about ensuring that stakeholders in education are well informed of its use in learning contexts and in ways that matter. Yet despite this enthusiasm and the new knowledge that this scholarship represents, most of us can admit that we have still much to learn ourselves about ways to harness this power for the good of education for all.

Encouraging as well are the findings from the individual papers that are summarized in our review of the literature on the latest GenAI technology. The review indicates that some of the gaps cited in our previous Editorial are being targeted in these studies such as those pertaining to *assessment* (pedagogy), *teachers' perspectives* (people) and *ethical/security issues* (systems). Of course, adding further to this discourse and to the need for empirical research that connects theory to practice on these topics in e-learning, remains essential. Whether it be on e-learning topics more generally or GenAI specifically, empirical studies related to *teachers' perspectives* and the *political, economic, and environmental* aspects of their *digital competency development* remain high on the list of areas needing to be addressed. Recognizing that when it comes to e-learning, indeed all institutional learning, educators and their practices are the closest link we know of to quality learning results, it lies within our key mandate as a journal and research community to contribute and promote further dialogue in this vital area of research.

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