

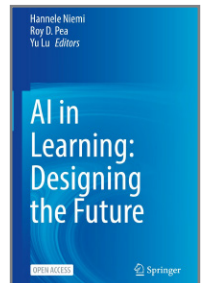
Andrzej Skupień  
ORCID: 0000-0003-0432-8444  
University Ignatianum in Cracow

# A Revolution in Education: The Transformative Role of Artificial Intelligence in Shaping the Future of Learning

*AI in Learning: Designing the Future*,  
edited by Hannele Niemi, Roy D. Pea,  
and Yu Lu, Springer, Cham 2023, pp. 354

A multi-author monograph entitled *AI in Learning: Designing the Future* was written in 2022, edited by Hannele Niemi, Roy D. Pea and Yu Lu, representing three academic centres—the University of Helsinki, Beijing Normal University and Stanford University. The authors' research interests are issues arising at the intersection of artificial intelligence (AI) and education.

The book explores artificial intelligence's potential to have a significant impact on education. It highlights the need for further research and understanding of the roles and responsibilities for integrating AI into learning environments and education systems. By addressing these issues, the book contributes to the ongoing discussions and debates regarding the use of artificial intelligence in education in many countries around the world. Furthermore, the book addresses ethical challenges, such as concerns about privacy, the bias of algorithms and the impact on human agency. By raising



SPI Vol. 27, 2024/1  
e-ISSN 2450-5366

these issues, the book contributes to the ongoing dialogue on the responsible implementation of AI in educational settings.

The collective work is theoretical and empirical in nature, runs to 354 pages and consists of a 13-page introduction, four thematic blocks and a ten-page summary written by an editorial team of three. Throughout the book we can see the contributions of some 60 authors. The first part of the monograph is devoted to the broad topic of exploring learning and wellbeing in life, and it consists of six articles. The second part of the book focusses on the use of artificial intelligence in games and simulations; four articles can be found there. The authors devoted the next part of the collective work to AI technologies for education and intelligent learning systems. You will find the contributions of several authors in the four papers here. The last, and in my opinion the most important, part of the whole book takes up the extremely important topic of AI and ethical challenges. In this section we can peruse four philosophical considerations.

The style of the book is clear, consistent and accessible. The authors effectively communicate complex concepts and ideas. The book also adheres to the standards of academic integrity by providing complete and numerous citations and references to support their claims. Another advantage of this work is its index, which allows the reader to find a phrase of interest in different parts of the book and to explore various aspects of the topic of interest. Only an English-language version has appeared on the market, but this publication's contribution is so important that a Polish translation will certainly be published soon.

The book's authors discuss a variety of research methods that address the future of artificial intelligence in education. One of the research methods mentioned is learning analytics, which uses AI to measure student performance during complex learning tasks and provides insight into the study of student activity. This method provides a deeper understanding of how students engage and focus on learning materials, which can help in designing more effective teaching methods. In addition, the authors discuss the use of classroom learning analysis as a research method. This includes analysing classroom interactions and instructional practices using AI-based technologies. By examining the effectiveness of different instructional strategies and identifying areas for improvement, this research method aims

to improve the quality of classroom instruction and student learning outcomes under normal teaching conditions in institutions for all age groups. AI can significantly improve and facilitate children's learning by piquing their curiosity and providing interactive experiences. The authors highlight the potential of artificial intelligence to personalise education and tailor recommendations to individual students, thereby optimising learning. Using an analysis of home learning, classroom learning and advances in AI-based learning technologies, the authors contribute to the understanding of how AI can be effectively integrated with educational requirements to improve learning outcomes and shape educational requirements and curricula.

In the book's introduction, the authors highlight the key advances of the last decade in the field of artificial intelligence. They deftly identify AI's profound impact on learning, indicating its evolution beyond traditional analytics to include interaction with natural language, emotion detection and speech recognition. The authors meticulously navigate the landscape of artificial intelligence in education, from orchestrating complex learning activities to augmenting human skills. Chief among the promising subject matter seems to be Hannele Niemi's call for an urgent examination of the ethical challenges posed by artificial intelligence in education, which seems to resonate throughout the book. Given the increasing pace of technological development, the authors rightly highlight the need for extensive research to understand the intricate implications of artificial intelligence for learning, making a compelling case for ethical considerations of its increasingly ubiquitous role in the educational sphere.

In part one, the authors investigate the revolutionary potential of artificial intelligence in education, focussing on both formal and informal environments. The articles in this section discuss novel ways that AI-based tools and environments can promote human learning by increasing student engagement, curiosity and positive social and emotional wellbeing. Explorations include how artificial intelligence assists instructors in diagnosing behavioural and learning issues, as well as providing useful insights into classroom dynamics through multimodal data collection. An exceedingly fascinating issue among the articles in this part appears to be the presentation of an automated scoring system for modelling student wellness, with a focus on real-time assessments. The study providing AI-based teacher

aides for behavioural diagnosis to improve classroom instruction through the merging of human and AI technology may be considered contentious.

In part two, the authors propose a cross-disciplinary and multi-method investigation into AI-supported games and simulation-based learning. The segment starts with an informative discussion with Professor James Lester about narrative-centred learning environments that can be creatively built as engaging learning games for students. Subsequent authors use narrative and metaphor theories to examine the function of characters and narrative threads in AI-based learning. The section examines the various metaphors that underpin AI-based learning, drawing on new materialist and posthumanist viewpoints. Another article worth reading explores the significance of artificial intelligence in improving clinical reasoning skills for health care professionals through game-based nursing education. The adaptive functionalities and customisation of simulation games are investigated, emphasising the possibility for meaningful learning experiences.

The following chapter focusses on novel methods that leverage AI technology to train professionals in virtual reality (VR). The articles discuss VR-based learning technology, contextual learning and the function of AI tutors in virtual learning environments. Automated scoring tools and e-books are offered to improve teaching and learning approaches. Shuanghong Jenny Niu, Xiaoqing Li and Jiutong Luo present a chapter on the Smart-Learning Partner (SLP) learning platform, explaining how AI technology enables personalised learning experiences for students through diagnostic feedback and assessments, real-time reports for teachers and informed decision-making by school administrators. This chapter discusses the influence of smart textbooks on student learning and potential difficulties in this changing educational landscape. It highlights the integration of AI technologies in different educational contexts, pushing the boundaries of traditional teaching methods and paving the way for personalised, effective learning experiences.

As I mentioned at the beginning, the breakthrough seems to be chapter four, where we find ethical considerations from both Chinese and European perspectives, shedding light on the multifaceted ethical challenges facing teachers, students and parents. The authors

examine the problem in depth, showing rising challenges such as fairness, openness, autonomy, location tracking, facial identification, automatic speech recognition and social media mining—emphasising the need to protect students’ data privacy. In an intriguing thought experiment, the authors contemplate the use of AI in education and propose remedies to the algorithms’ challenges regarding transparency and fairness.

In the book’s conclusion, the authors highlight the potential of AI as a powerful tool in education whilst emphasising the crucial role of ethics, which will be reflected in future research on the trajectory of AI-enhanced learning.

In terms of its contribution to the field of pedagogy, the book brings a fresh perspective to existing research, offering a comprehensive analysis of the potential benefits and challenges of artificial intelligence in shaping the future of learning. With its accessible style and interdisciplinary approach, the book has the potential to shape the future of learning and set the direction for further research in this rapidly evolving field. Certainly, the work of some 60 authors on this book has had the desired effect, and indeed fills an important post in understanding today’s world by exploring the topic of artificial intelligence in such a sensitive area: education.

#### ADDRESS FOR CORRESPONDENCE:

Andrzej Skupień  
University Ignatianum in Cracow  
Institute of Philosophy  
e-mail: [andrzej.skupien@interia.eu](mailto:andrzej.skupien@interia.eu)