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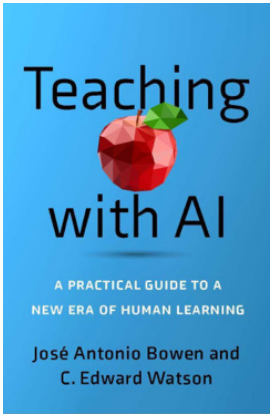
José Antonio Bowen and C. Edward Watson, T*eaching with AI: A Practical Guide to a New Era of Human Learning*, Johns Hopkins University Press, 2024; 270 pp.: ISBN: 978-142-144-922-7

Reviewed by Alenka Žerovnik[1]



Bowen and Watson's book provides a comprehensive and up-to-date understanding of the role of artificial intelligence (AI) in higher education today. The authors combine theoretical insights, empirical data and practical examples in a book aimed primarily at educators and education policy makers. The work encourages systematic, ethical and critical thinking about how AI can be integrated into curricula as a tool for collaboration rather than a threat. The present review discusses the book's main content points, as well as their validity and relevance in the Slovenian context.

This work is relevant in the Slovenian context as teacher education faculties face the challenge of preparing future teachers for the reality of classrooms where the presence of AI will be unavoidable. The authors present a balanced approach that advocates neither uncritical acceptance nor outright rejection of the technology, but rather encourages thoughtful collaboration with machine learning tools as partners in the learning process. Such an approach is crucial for preparing competent teachers who will be able to navigate the complex world of modern education.

Structurally, the book is divided into three interconnected sections: "Thinking with AI", "Teaching with AI" and "Learning with AI". The first part deals with a basic understanding of how large language models work and their impact on cognitive processes. The authors introduce key concepts such as "hallucinations" of AI, biases in algorithms, and the importance of a critical understanding of the limitations of modern machine learning systems.

The theoretical framework of the book is based on an interdisciplinary approach that combines insights from educational psychology, cognitive

1 Faculty of Education, University of Ljubljana, Slovenia; alenka.zerovnik@pef.uni-lj.si.

science and educational technology. The authors' approach to understanding AI goes beyond the technological perspective and includes humanistic aspects of education. Importantly, they emphasise that AI cannot replace key human characteristics such as empathy, creativity and ethical judgement. Instead, they propose a model of collaboration in which technology serves as a tool to enhance human capabilities. This approach is in line with recent research that emphasises the importance of triadic relationships between teachers, students and artificial intelligence.

The authors emphasise "prompt engineering" as a core competency for the future and a foundational competency for all disciplines. Their concept of AI literacy goes beyond technical skills to include problem solving, tool selection, critical evaluation and self-awareness in the use of AI. As a key professional competency, AI literacy should be embedded in all degree programmes to prepare graduates to articulate both their use of AI and the unique human value they themselves contribute. This is in line with current research that views AI literacy as a blend of technical knowledge, ethical judgement, reflection and practical skills.

The second part of the book focuses on practical applications for university teachers. The authors show how AI can serve as a tool for preparing teaching materials, designing discussion questions and creating personalised knowledge assessments. The research they refer to shows that the appropriate use of machine learning tools can increase academic staff productivity by 40%, while improving the quality of teaching. This information is particularly relevant for teacher training faculties where there is a need to optimise teacher training processes with limited resources. The findings on the potential of AI as a tool are also confirmed by student surveys, as the authors note that the use of AI is extremely widespread among students. Students often describe it as a "second brain" or "second teacher" that is always available. The authors point out that AI, when used thoughtfully, also has the potential to reduce educational inequalities, as it can provide personalised feedback, particularly for students who have limited access to mentoring, tutoring or academic support.

The authors address academic integrity in the age of AI by arguing for a shift from punitive measures to the design of "AI-resistant" assignments that promote critical thinking and creativity. Citing research, they note that 75% of US students (and 94% globally) admit to using AI even when it is prohibited. At the same time, 35% of students believe their professors do not know this, and 42% of professors doubt that students use AI at all. These results emphasise the need for the pragmatic, transparent integration of AI rather than attempts at total control.

In the rest of the book, the authors deal in detail with the question of how to design tasks that promote collaboration with artificial intelligence instead of preventing it. They introduce a "reverse engineering" method in which students analyse the responses of AI tools and identify shortcomings and opportunities for improvement. This approach encourages critical thinking and allows students to develop a deeper understanding of both the subject matter and the limitations of the technology. Research cited by the authors in the field of educational psychology confirms that such methods increase student engagement by 25% compared to traditional approaches. The authors also emphasise the importance of reflection and metacognitive processes in the use of AI, which are crucial for the development of student autonomy.

The authors highlight "AI literacy" as a key twenty-first-century competency that encompasses technical understanding, timely design, critical evaluation and ethical judgement. They argue that this competence should be integrated into all degree programmes, not just technical fields. This aligns with recent findings that view AI literacy as part of broader digital citizenship (Sperling et al., 2024). The authors emphasise that AI skills are dynamic and need to evolve with technological advances.

The third part of the book is the most ambitious and innovative, focusing on the design of new types of tasks and assessments that require human effort. The authors propose a shift from preventing fraud to promoting assignments that exceed the capabilities of current AI. The concept of so-called "C-level work prohibition" (average work) presents the provocative premise that all student work should be of higher quality than what AI is capable of producing. Such an approach requires a fundamental redefinition of learning goals and values in higher education. The proposal draws on research showing that current AI systems produce average C-level work (in the context of the US grading system), which means that we need to demand higher standards from students. This section also provides practical guidelines for developing rubrics for grading papers that consider the use of AI in student work. Zawacki-Richter et al. (2019) point out that most research on AI in higher education comes from technological disciplines and focuses primarily on data models and predictive algorithms, while pedagogical, ethical and theoretical dimensions remain under-researched. This gap points to the need for in-depth research into teaching and assessment methods that emphasise metacognition, creativity and other human aspects of learning.

The methodological work is based on a comprehensive analysis of the latest research in the field of educational psychology and educational technology. The authors systematically incorporate empirical findings on the effectiveness

of different approaches to integrating AI into education. Their analysis includes more than 200 studies published between 2022 and 2024. They also emphasise the importance of qualitative research that uncovers more complex aspects of the impact of technology on pedagogical processes.

In the context of teacher education, it is particularly important to systematically address the different types of artificial intelligence and their applications in the teaching process. The authors clearly explain the difference between generative models, which create new content, and predictive models, which analyse patterns and use them to predict outcomes. Generative tools raise questions about authorship, bias and the spread of misinformation, while predictive tools, if not properly designed or controlled, can contribute to existing inequalities. Such a systematic approach enables future teachers to not only master the technical aspects of AI tools but also to develop critical thinking about their capabilities and limitations so that they can integrate them into the classroom in thoughtful ways.

The authors also take a critical look at ethical issues related to the use of AI in education, devoting particular attention to data protection, the bias of algorithms and the possible manipulation of learners. Their ethical approach is based on four basic principles: transparency, learner autonomy, fairness and accountability. They propose establishing ethical guidelines for the use of AI in education that cover both technical and pedagogical aspects, and highlight the need to develop ethical awareness among educators as part of regular professional development. One particularly problematic aspect is the unequal access to advanced AI technologies. Although the authors mention the potential of AI for reducing educational inequalities, the fact remains that high-quality machine learning systems require enormous financial resources. Free versions of tools such as ChatGPT 3.5 are significantly less powerful than advanced versions, which may deepen the existing differences between privileged and less privileged students. The authors propose the establishment of national programmes to ensure equal access to high-quality AI tools in education. This topic is particularly relevant in the European context, where different countries have large differences in digital infrastructure.

A critical analysis of the work shows both the advantages and the limitations of the approaches presented. The authors may be too optimistic in their assessment of the willingness of teachers to fundamentally change their practice. The implementation of the proposed solutions requires considerable investment in teacher training and technological infrastructure, which is a challenge for many educational institutions, including in the Slovenian educational context. There is also the issue of cultural differences in the acceptance

of technology, which the authors address only superficially. Studies from Asian contexts show different patterns of technology acceptance than those in Western Europe or North America.

Although the authors recognise numerous opportunities for the use of AI in educational processes, they do not claim that such use can be understood as an improvement in all cases. On the contrary, at several points in the book they emphasise the need to develop a critical understanding of AI tools, their capabilities and their limitations. Some studies (which the authors do not mention) point to the possible negative effects of over-reliance on technology, particularly with regard to the development of critical thinking and creativity. Nor should we overlook the possibility of educators relying too much on technological solutions and neglecting the fundamental pedagogical principles and human relationships that remain essential to quality education.

Despite some of the challenges or shortcomings highlighted, the work represents a valuable contribution to understanding the role of AI in education today. It does, however, require critical reading and adaptation to the local context. The authors' suggestions are particularly useful in environments with a well-developed technological infrastructure and a high level of digital literacy among learners and teachers. However, in contexts with limited resources or cultural resistance to technology, a more cautious and gradual implementation of the suggested approaches will be required. Faculties of education need to consider the different contexts in which their graduates will be working.

The book is nonetheless an important resource for the development of programmes that prepare future teachers appropriately for the realities of the twenty-first century. The practical examples of prompts and tasks provided by the authors allow for direct implementation in pedagogical practice, while the theoretical framework provides a deeper understanding of the long-term impact of technological change on education. It is important that teacher education faculties approach the integration of these insights systematically and critically, and ensure that their teaching staff is adequately prepared. This work provides an excellent starting point for the development of curricula that include AI skills as a core competency. The authors also emphasise the need for continuous evaluation and adaptation of pedagogical approaches, which is particularly important in a rapidly changing technological environment.

The authors convincingly show that the integration of AI into education is not just a technical issue but requires a comprehensive pedagogical, ethical and social approach. Their work is a valuable contribution to the literature and an indispensable resource for those preparing educators for the challenges of education today. By linking current technological developments with a

nuanced understanding of pedagogical realities and ethical responsibilities, the book provides timely guidance, even if its application requires critical reflection and adaptation to local contexts.

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