

Review of the Book "Integrating Artificial Intelligence in Education: Enhancing Teaching Practices for Future Learning"

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Abstract

This paper provides an in-depth review of the book "Integrating Artificial Intelligence in Education: Enhancing Teaching Practices for Future Learning". The review highlights that this book serves as a comprehensive resource, meticulously examining the implications of AI across different educational levels, from early childhood education to higher education. The book explores the practical applications of AI in enhancing teaching methods and learning outcomes and delves into ethical considerations related to its use in educational settings. Additionally, the book presents recommendations for leveraging AI effectively in the future of education. However, the review also identifies certain shortcomings within the book. One notable criticism is that it tends to overemphasize technical details, which may lead to a disconnect for readers who seek practical guidance. Furthermore, the review points out that some chapters lack sufficient real-world examples, making it challenging for educators to fully grasp how to implement the discussed concepts in their classrooms. Notably, the book encompasses a range of perspectives by including insights from both teachers and students, thereby enriching the discussion on the role of AI in education. By presenting diverse viewpoints, the book offers a more holistic understanding of how AI can be integrated into educational practices, highlighting opportunities and challenges ahead. While the book is a valuable resource, it could benefit from a more balanced approach that prioritizes actionable insights alongside technical discussions.

Keywords: Digital Communication, Education, AI, Teaching Practices, Future Learning.

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INTRODUCTION

"Integrating Artificial Intelligence in Education: Enhancing Teaching Practices for Future Learning" is a book edited by Queiros, Cruz, and Mascarenhas. It consists of four sections and twelve chapters and was published by IGI Global in 2024. This significant work explores the multifaceted impact of artificial intelligence on education. Within this context, the book offers a wealth of information, from current practices and ethical considerations to practical examples and future projections.

The book's most significant aspect is its authorial team, which comprises educators, researchers, policymakers, and technologists specializing in artificial intelligence and education. This diverse collaboration enables a comprehensive and nuanced exploration of the subject from various perspectives.

Sections and Chapters of the Book

The book covers the foundations, tools, and applications of artificial intelligence in education in four sections:

Section 1: Foundations of AI in Education

This section focuses on the issues underpinning the integration of AI in education.

Chapter 1 discusses the current applications and benefits of AI in education while also addressing the ethical aspects of this technology. The authors suggest steps to overcome ethical concerns.

Chapter 2 explores primary school teachers' attitudes towards AI. A survey of 200 primary school teachers in Ankara revealed that their attitudes differed according to their age, gender, computer skills, and experience using AI. This chapter emphasizes the importance of understanding teachers' perspectives to integrate AI in primary education successfully.

Chapter 3 addresses pre-service preschool teachers' experiences with AI and, based on the literature in this field, examines AI integration, AI literacy, AI in early childhood, and the role of teachers in using AI. Interviews and a literature review provide a detailed analysis of how pre-service teachers use AI tools in their educational process. Furthermore, recommendations are made regarding the ethical use of AI in educational settings and teacher preparation.

Section 2: AI Tools and Applications in Educational Settings

This section provides concrete examples and areas of application of AI in education.

Chapter 4 explores developing and implementing a custom MyGPT called 'PedaBuddy' in higher education as a case study. It discusses the basic principles behind generative AI tools and their potential to improve teaching-learning experiences. By detailing the configuration process and practical applications of PedaBuddy, the advantages and challenges related to the use of AI-driven tools in higher education are presented.

Chapter 5 discusses the transformative potential of Natural Language Processing (NLP) in higher education. It outlines how NLP can support and even automate tasks such as essay evaluation and material creation and enhance personalized learning through intelligent tutoring systems. It also emphasizes that NLP requires attention to ethics, privacy, and equity issues.

Chapter 6 focuses on the learning environment in the 21st century, where artificial intelligence and metadata store technologies are reshaping educational systems. It emphasizes that

education needs to be restructured to consider individual learning characteristics and the potential of AI-powered learning assistants in the form of meta-humans. The importance of selecting appropriate AI algorithms and linking them to individual differences to create personalized learning experiences is discussed.

Section 3: Designing AI-Enhanced Learning Environments

This section offers practical approaches to how AI can make learning environments more effective and efficient.

Chapter 7 discusses the development of an AI-based learning system for teaching biology. It discusses the advantages of AI in education, such as personalized learning programs and reduced teacher workload, and describes the system's design and development process in detail. The knowledge acquisition, representation, and evaluation phases are also described, showing how AI can improve student learning.

Chapter 8 discusses AI's revolutionary shift in educational assessment. It outlines how AI-driven systems can automate tasks such as item creation and feedback provision and enable teachers to focus on individualized instruction. On the other hand, the potential of intelligent curricula to personalize learning experiences is highlighted. Issues such as algorithmic bias and privacy are also highlighted.

Chapter 9 emphasizes the impact of digital learning systems, especially on students aged 6-12, and focuses on students' cognitive and emotional engagement. In the context of technological transformation, the importance of creating a holistic learning environment that considers the psychological and behavioral aspects of learning is addressed. Through a predictive analysis of student behavior, it is argued that educational systems must be carefully designed to integrate technological advances and support young learners' cognitive and emotional development.

Section 4: AI's Role in Teacher Training and Language Learning

This section examines how AI can contribute to teachers' professional development and language learning processes.

Chapter 10 details a pilot study focusing on the use of chatbots in higher education. The authors provide an overview of the history of AI in education and describe the research objectives, questions, and methodology. Through questionnaires and focus group interviews, insights were collected from students and faculty members about their experiences with AI. The chapter emphasizes the importance of informed professional development for faculty and ethics training for students.

Chapters 11 and 12 address the role of AI in second language acquisition, with a particular focus on English language learning among students in Portugal. The study emphasizes the importance of treating learners as active participants in shaping learning environments and allowing their perspectives to influence educational practices. Data was collected through an online survey targeting secondary school students from public schools in Portugal. Although AI is just emerging in Portuguese schools, students generally viewed AI-powered tools positively for learning English and everyday tasks. Importantly, they did not feel that AI jeopardized the role of the teacher and recognized the irreplaceable value of empathy and human connection. The study also recommends further research on students' perceptions of AI in education.

Importance of the Book and Contributions to the Literature

The book can be considered a comprehensive resource that addresses the impact and potential of artificial intelligence in education. The importance and contributions of the book can be listed as follows:

- *Examining Artificial Intelligence Applications in Different Educational Fields:* The book provides examples of how artificial intelligence can be used at different levels of education, from primary to higher education. For example, Chapter 2 examines primary school teachers' attitudes towards AI, while Chapter 4 discusses developing and implementing a unique MyGPT application called "PedaBuddy" in higher education. This diversity makes the book appealing to readers in different educational fields.
- *Providing Practical Information on Artificial Intelligence Tools and Applications:* The book provides practical information on how educators and researchers can use AI tools and applications. For example, Chapter 11 lists AI platforms and tools for language learning and highlights their features, applications, benefits, and limitations. This information is a valuable guide for those interested in using AI in education.
- *Addressing Ethical Issues in AI Integration:* The book does not ignore the ethical dimensions of using AI in education. Chapter 1 addresses the ethical challenges and opportunities of AI in education and suggests steps that can be taken to address these challenges. This perspective emphasizes the importance of using AI ethically and responsibly.
- *Inclusion of Student and Teacher Perspectives:* The book examines the role of AI in education from both student and teacher perspectives. For example, Chapter 10 describes a pilot study on using chatbots in higher education, including students and faculty members' views on their experiences with AI. This approach is essential to understanding the impact of AI integration on all stakeholders.
- *Providing Ideas for Designing Future Learning Environments:* The book offers ideas on how AI and metadata store technologies can shape future learning environments. Chapter 6 discusses the potential to deliver learning experiences tailored to individual learning characteristics and the development of AI-powered learning assistants in the form of meta-humans. These insights are essential for developing future strategies in education.

In this context, the book is an essential resource that explores the impact and potential of AI in education. The book significantly contributes to education by addressing AI applications at different educational levels, providing practical information about AI tools and applications, highlighting ethical issues, and providing ideas for designing future learning environments.

Aspects for Improvement

The book sheds light on an essential topic by addressing the potential of artificial intelligence in education and the challenges it may face. The book's strengths are that it presents different perspectives from many authors and offers rich content. However, some aspects of the book may be open to criticism for improvement:

- *Too much focus on technological details:* The book sometimes focuses too much on technical details when discussing the applications of AI in education. This can make some chapters challenging to understand for readers who are not experts in AI. For example, in Chapter 7, while describing the design and development stages of the AI-

based learning system used in biology teaching, technical details such as MATLAB may confuse readers unfamiliar with the subject.

- *Limited Application Examples in Some Chapters:* While the book discusses different uses of artificial intelligence in education, some chapters may not provide enough practical examples. For example, while Chapter 6 describes how AI and metadata storage technologies can reshape education systems, concrete application examples of these technologies are limited.
- *Giving More Space to the Perspective of Educators:* While the book discusses different aspects of AI's role in education, it could have included more educators' perspectives. For example, the challenges teachers may face when using AI tools, how these tools can be integrated with pedagogical approaches, and the role of AI in teacher education could have been addressed in more detail.
- *Impact of Cultural Differences:* Although the book covers the impact of AI in education in general, it could have focused more on the effect of cultural differences on AI applications. AI integration can take place in different ways in different countries and education systems, and addressing these differences would have broadened the book's scope.
- *Clarifying Future Directions:* The book makes some predictions about AI in education, but it would have been helpful to make these predictions more precise and concrete. For example, the book could have elaborated in more detail on how the role of teachers will change as AI becomes widespread in education systems, how learning environments will be transformed, and what new issues related to AI ethics might arise.

In conclusion, although the book is an essential resource in AI and education, it could be enriched with a more comprehensive and critical perspective, considering the points mentioned in the previous paragraphs.

CONCLUSION

“Integrating Artificial Intelligence in Education: Enhancing Teaching Practices for Future Learning” is a vital resource that explores the impact and potential of artificial intelligence in education. The book makes significant contributions to the field of education by addressing the application of AI at different educational levels, from primary to higher education, providing practical information about AI tools and applications, highlighting ethical issues, and providing ideas for designing future learning environments. However, there are some areas for improvement in the book. For example, the book sometimes focuses too much on technical details when discussing the applications of AI in education. For readers who are not experts in artificial intelligence, this may make some chapters difficult to understand. Another criticism is that some parts of the book do not provide enough practical examples when discussing different uses of AI in education. As a result, the book can be used as an essential resource in artificial intelligence and education. Still, it also has the potential to be further developed and enriched in some points.

Statement of Researchers

Researcher's contribution rate statement: Since the study has a single author, the entire contribution belongs to the author.

Conflict statement: The author declares that he/she has no conflict of interest.

REFERENCES

Queiros, R., Cruz, M., & Mascarenhas, D. (Eds.) (2024). *Integrating artificial intelligence in education: Enhancing teaching practices for future learning*. IGI Global. DOI: 10.4018/979-8-3693-3944-2

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