

Chapter 14

Artificial Intelligence in Higher Education: A New Horizon

Fatima Al Husseiny

 <https://orcid.org/0000-0001-8547-6929>

Lebanese International University, Lebanon

ABSTRACT

Artificial intelligence (AI) can address some of the most significant issues facing education today, innovate teaching and learning methods, and eventually quicken the fulfillment of SDG 4. However, these quick technological advancements carry with them several challenges that have thus far surpassed regulatory structures and policy discussions. The Education 2030 Agenda can be achieved with the help of AI technologies. AI has already been used in education, especially in various tools and assessment platforms that aid skill development. The goal is that as AI educational solutions continue to develop, they will help close gaps in learning and teaching and free up schools and teachers to accomplish more than before. To provide teachers the time and freedom to teach understanding and adaptability—uniquely human talents where computers would struggle—while AI can promote efficiency, personalization, and streamline administrative procedures. This chapter presents challenges and opportunities related to AI use in education and ends with recommendations.

INTRODUCTION

Artificial intelligence (AI) applications in education are expanding and have drawn much interest in recent years. The 2018 Horizon study (Educause, 2018) highlights AI and adaptive learning technologies as significant educational technology advancements, with two to three years of adoption. Horizon Report 2019 Higher Education Edition (Educause, 2019) predicts that AI applications related to teaching are expected to increase even more significantly. Still, experts anticipate AI in Education to grow by 43% between 2018 and 2022. There is little question that AI technology is inextricably related to the future of higher education, according to Contact North, an influential Canadian non-profit online learning group

DOI: 10.4018/978-1-6684-6937-8.ch014

(Contact North,2018). The German Research Centre for Artificial Intelligence¹ (DFKI) and other non-profit public-private partnerships have made significant investments. Likely, this wave of interest will soon substantially impact higher education institutions (Popenici & Kerr, 2017). Google, for example, recently acquired European AI startup Deep Mind for \$400 million.

Additionally, the Netherlands' Technical University of Eindhoven recently announced that it would establish an Artificial Intelligence Systems Institute with 50 new professorships for AI instruction and study. The 20th annual AIED conference is being organized this year by the International AIED Society (IAIED), founded in 1997 and published in the International Journal of AI in Education (IJAIED). On a larger scale, educators have only recently begun investigating the potential educational opportunities that AI applications provide for assisting students across the student life cycle. The development of AI applications in higher education introduces new ethical considerations and risks despite the enormous benefits that AI may provide to help teaching and learning. Though the field of artificial intelligence (AI) has its roots in computer science and engineering, it has also been heavily influenced by other academic fields like philosophy, cognitive science, neurology, and economics. There is limited consensus among AI researchers on a single definition and understanding of AI and intelligence in general due to the interdisciplinary nature of the discipline (Tegmark,2018).

This chapter discusses the recent trends in AI and education and challenges facing teachers and learners and ends with a recommendation section and a conclusion.

BACKGROUND

When John McCarthy organized a two-month workshop at Dartmouth College in the United States in the 1950s, artificial intelligence (AI) was born. McCarthy used the term “artificial intelligence” for the first time in the workshop proposal in 1956 (Russel & Norvig, 2010): The hypothesis that every facet of learning or any other characteristic of intelligence can, in theory, be so succinctly stated that a computer could be created to replicate. It is the foundation upon which the study [of artificial intelligence] is to proceed. The broad definition of artificial intelligence offered by Baker and Smith (2019) is: “Computers that do cognitive functions, often associated with human minds, particularly learning and problem-solving.” They clarify that “AI” does not refer to a specific technology. It serves as a general phrase to describe various tools and techniques, including algorithms, neural networks, data mining, and machine learning. AI and machine learning are frequently used interchangeably. Machine learning is an artificial intelligence (AI) technique for supervised and unsupervised categorization and profiling. Machine learning is a branch of artificial intelligence, according to Popenici and Kerr (2017), that entails “software capable of recognizing patterns, making predictions, and applying newly discovered patterns to circumstances that were not included or covered by their initial design”. AI is based on rational agents, which may be defined as anything that can perceive its environment through sensors and act on it through actuators (Russel & Norvig,2010).

Experts in the field distinguish between limited and general AI or weak and strong AI (Russel & Norvig, 2010).The philosophical dilemma of whether machines will ever be able to genuinely think or even develop consciousness, as opposed to just imitating thought and behaving rationally, continues. Such powerful or all-encompassing AI is unlikely to exist anytime soon. As a result, a critical question arises, what potential uses for AI in Education, specifically higher education, are there given this grasp of technology?

19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/artificial-intelligence-in-higher-education/318070

Related Content

Importance of Interface Agent Characteristics from End-User Perspective

Alexander Serenko (2006). *International Journal of Intelligent Information Technologies* (pp. 49-60).

www.irma-international.org/article/importance-interface-agent-characteristics-end/2401

An Efficient Coronary Disease Diagnosis System Using Dual-Phase Multi-Objective Optimization and Embedded Feature Selection

Priyatharshini R. and Chitrakala S. (2017). *International Journal of Intelligent Information Technologies* (pp. 15-36).

www.irma-international.org/article/an-efficient-coronary-disease-diagnosis-system-using-dual-phase-multi-objective-optimization-and-embedded-feature-selection/181873

Can Serious Games and AI Rejuvenate Museums?

Michel Plaisent, Jean-Marie Lafortune, Lili Zheng, Pascal Ndinga, Daniel Tomiuk, Sylvester Cortes, Agnès Czubinski and Prosper Bernard (2024). *AI Innovations for Travel and Tourism* (pp. 82-103).

www.irma-international.org/chapter/can-serious-games-and-ai-rejuvenate-museums/349038

Artificial Intelligence in Human Resource Practices With Challenges and Future Directions

Himani Saini and Preeti Tarkar (2022). *Handbook of Research on Innovative Management Using AI in Industry 5.0* (pp. 222-230).

www.irma-international.org/chapter/artificial-intelligence-in-human-resource-practices-with-challenges-and-future-directions/291472

Creating a Comprehensive Agent-Oriented Methodology: Using Method Engineering and the OPEN Metamodel

Brian Henderson-Sellers (2008). *Intelligent Information Technologies: Concepts, Methodologies, Tools, and Applications* (pp. 469-490).

www.irma-international.org/chapter/creating-comprehensive-agent-oriented-methodology/24297