Chapter 2
How Artificial Intelligence (AI) Can Support Developing Curriculums in Education and for Research

Farzad Safaeimanesh
School of Tourism and Culinary Arts, Final International University, Kyrenia, Cyprus

Nafiya Guden
School of Tourism and Culinary Arts, Final International University, Kyrenia, Cyprus

Shahrzad Safaeimanesh
Banking and Finance Department, Cyprus Science University, Kyrenia, Cyprus

ABSTRACT

Education is the power behind developing communities and nations, it is what shapes the economy as well as encourages peace in societies and ecological environments. Therefore, we cannot avoid the importance of education in developing humanity for the future. It is evident that Artificial Intelligence (AI) supports this power, enhancing it on the one hand, and making sharing knowledge more efficient in our busy lifestyles in this technological era, on the other. Throughout this chapter, we provide the audiences with the definition of AI, its types, and its importance in education and research along with the concerns and challenges. In addition, this chapter presents the agenda for researchers and educators on how to use generative

DOI: 10.4018/979-8-3693-0884-4.ch002

AI during their research processes and education systems to be sound and of course ethical by suggesting how and where AI can be helpful.

WHAT IS ARTIFICIAL INTELLIGENCE?

AI as a vast field of computer science makes machines appear to have human intelligence. More than 60 years ago, in 1956, for the first time, Prof. Dr. John McCarthy coined the term "artificial intelligence" (AI) (see Toosi et al. (2021) for historical development of AI). Before McCarthy coined the term AI, some other visionaries like Alan Turing explored and proposed the concept of intelligent machines to simulate human intelligence (Turing, 1950). In addition, the earlier philosophers and mathematicians influenced the AI's notion by researching the essence of human thought and computation (Frolov et al., 2021). Using trial and error to establish formal reasoning, he attempted to determine whether machines could learn in a similar manner as a young child. At first artificial intelligence research faced particular challenges such as language understanding and general problem-solving (Nilsson, 2009). However, prominent researchers like Herbert Simon (Simon, 1991) and Allen Newell (Newell, 1982) played a significant role in the development of artificial intelligence. Especially for the early AI-powered apps to mimic the decision-making aspects of humans (Newell & Simon, 1972). AI has mostly remained in university classes and top-secret labs since then. A few things over the past years have made AI the upcoming big thing. Every minute, enormous volumes of data are produced. Computers can now truly digest information more quickly because of improvements in processing speed. Accelerating AI development was beholden to the advent of big data and algorithm breakthroughs (Brynjolfsson & McAfee, 2014). The artificial intelligence of the future will be considerably more intelligent and less artificial. This evolution is beholden to neural network development and sophisticated machine-learning techniques, which have significantly increased the capabilities of artificial intelligence (LeCun, Bengio, & Hinton, 2015). There are several ways that AI might manifest. Over time, AI gets smarter with the help of machine learning that like any child also will learn by experience and store information. However, it is not prone to issues like distractions, sleep deprivation, information overload, and short-term memory loss, unlike humans. It is not a case of human versus machine, as was during the Industrial Revolution but rather it is humans and machines against the problem. This is a paradigm shift towards collab-