

Chapter 6

Chatbots in Education

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ABSTRACT

Chatbots are widely seen as a key aspect of the industrial revolution, having had a huge influence on education by enhancing its dynamism. Hence, the present chapter aims to provide a thorough perspective on the beneficial impacts of using chatbots in the field of education. It presents an overview of the origin and definition of chatbots, their significance, functions, attributes, educational applications, user interaction, different categories, and the development process of chatbots. The material provided in the current chapter is anticipated to enhance the worldwide knowledge of chatbots and their utilisation in the educational setting. Moreover, a prominent aspect of the present chapter is assisting decision-makers in acquiring a more profound comprehension of chatbots and utilising them in the field of education, since chatbots are anticipated to have a substantial influence on educational achievements.

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INTRODUCTION

Advanced technologies in various fields, such as artificial intelligence, 3D printing, and the Internet (Morrar et al., 2017), virtual reality and augmented reality (Gleason & Pan Algarra, 2022), robotics of all kinds, and nanotechnology, have contributed to the formation of the characteristics of the Fourth Industrial Revolution. There are also Big Data, machine language, and the Internet of Things (Grinshkun & Osipovskaya, 2020; Varma & Nair, 2022; Yusuf et al., 2020), and a number of concepts, such “digitization” and “automation,” emerged to describe the technology and operations of this revolution in a variety of disciplines (Mogas et al., 2022; Spoettl & Tütlys, 2020).

According to Fomunyan (2021), artificial intelligence is a key component of this revolution. The goal of artificial intelligence is to create computer systems and programmes that can execute activities and intellectual processes like those performed by humans, such as visual and auditory recognition, inference, decision-making, and prediction (Hwang & Tu, 2021). As a result, it may be used in a variety of sectors, including economics, industry, medicine, and education (Yang & Evans, 2019), through the capacity of its apps and services to perform various functions, such as self-service technologies, smart gadgets, service robots, and chatbots (Lv et al., 2022). According to research, the usage of artificial intelligence applications in education is rapidly increasing (Roos, 2018).

In this regard, chatbots are among the most popular artificial intelligence applications in education (Okonkwo & Ade-Ibijola, 2020). It allows for human-machine contact using natural language, with each interaction consisting of a sequence of conversational responds between the conversational agent and users (Arsovski et al., 2019). Chatbot skills have grown over time, shifting from basic and rudimentary chats to more intelligent and emotional discussions (Dari, 2020). Chatbots have various benefits when employed in education, including time and effort savings and adaptive learning support (Gupta & Chen, 2022), motivating participation (Okonkwo & Ade-Ibijola, 2020), availability, seeking aid, easy access (Al-Hafdi & AlNajdi, 2024b), and providing relevant feedback (Fidan & Gencel, 2022). Chatbots can contribute significantly to improving teaching at various educational levels (Al-Hafdi & AlNajdi, 2024a; Alsayed et al., 2024; Aravantinos et al., 2024; İpek et al., 2023). It can also be relied upon as an aid and support tool during educational emergencies (Karakose et al., 2023). In addition to being an effective tool in foreign language teaching (Athanassopoulos et al., 2023).

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