

Chapter 5

Artificial Intelligence in the DigiCraft Educational Program

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ABSTRACT

Artificial intelligence encompasses an area of knowledge devoted to the study and understanding of the nature of human intelligence and its simulations to create a new generation of intelligent machines. As one of the most promising technologies, it is destined to lead a revolution comparable to that caused by the internet. However, compared with other areas, and for different reasons, artificial intelligence has not yet become integrated into the educational world, although most experts believe that it will successfully contribute to the improvement of education. The aim of this chapter is to introduce an innovative teaching proposal to develop children's digital competence using artificial intelligence. This proposal is being developed through an educational program called DigiCraft, headed by the Vodafone Spain Foundation with the pedagogical assistance of the Educational Technology Research Group of the University of Salamanca (GITE-USAL). Its main purpose is to provide training in the digital skills required for full social inclusion.

INTRODUCTION

Artificial Intelligence (AI) is the simulation of human intelligence by means of machines, mainly computer systems, which consists of a set of computational techniques based on how humans use their nervous system and body to feel, learn and act (Harkut & Kasat, 2019). This technology is currently a highly topical issue and its future development looks very promising.

Based on the integration of methods and results drawn from learning sciences (psychology, neurosciences, education, linguistics, anthropology and sociology), the purpose of AIED is to create integrated,

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adaptative, personal, flexible, more intelligent and more effective learning environments that can supplement and optimize traditional education (Jiménez Builes et al., 2009; Renz & Hilbig, 2020).

The Vodafone Spain Foundation is a private non-profit research institution that is dependent on the Ministry of Education of Spain. Since 2019, this institution, assisted by the Educational Technology research Group of the University of Salamanca (GITE-USAL), is driving the development of an educational program called DigiCraft whose aim is to train children and youth (aged 6 to 12) in the digital skills that are required for full social inclusion.

The purpose of this chapter is to introduce how AI can be integrated into education using the DigiCraft program, which is aimed at the development of digital competence.

Accordingly, it presents the pedagogical design of certain AI activities.

ARTIFICIAL INTELLIGENCE IN EDUCATION

The first step is to conceptualize Artificial Intelligence (AI) and contextualized it in the area of education.

Artificial Intelligence

AI is currently one of the most promising technologies in terms of future expectations and, although it still requires further development, it is destined to bring about a revolution comparable to that generated by the Internet.

It covers a field of knowledge aimed at studying and understanding the nature of human intelligence and its simulations to create a new generation of intelligent machines that might be programmed to perform tasks that require human-specific behaviors such as inference, deduction and perception (Aldosari, 2020).

Its beginnings are marked by two milestones (Benítez et al., 2014):

1. 1950. Alan Mathison Turing, believed by researchers to have laid the foundation for AI (Prentzas, 2013), published an article entitled “Computing Machinery and Intelligence” (1950) where he proposes a test to check whether a device can display intelligent behavior. To do so, it should hold a conversation with a human without another person being able to tell who was who. Should this happen, the conclusion would be that the machine was thinking (Masters, 2019; Popenici & Kerr, 2017).
2. 1956. IA emerges as a research discipline during the Dartmouth Summer Research Project on Artificial Intelligence, a conference on theoretical computer science held at Dartmouth College (a private university located in Hanover, New Hampshire, USA).

Its interdisciplinary nature and the changes that its definition has undergone over time as the new technologies it includes have emerged or achieved independence becoming apps, algorithms, etc., make conceptualization a difficult task (León & Viña, 2017).

AI can be approached from a twofold perspective (Kose, 2014):

1. As a term used to describe the characteristics of computer systems or machines that attempt to simulate human intelligence behaviors.
2. As a field of computer science based on research and development of intelligent simulation systems.

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