Chapter 6
The Training of the Digital Competence at the Postgraduate Level for a Knowledge–Based Economy

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ABSTRACT

The objective of the chapter is to describe the main digital competences to be developed at the post-graduate level based on the characteristics established by the knowledge economy. It is a priority to evaluate, analyze, and synthesize the information generated, in addition to communicating creatively and innovatively in a network environment. Thus, the postgraduate course has been constituted as a social community that develops innovation, scientific, and technological projects as a substantial activity in which information is a fundamental resource in the development of the generation of new knowledge. To achieve this, it is necessary to carry out an investigation that involves a set of relevant processes such as identifying the problems; planning the search for information; selection of information sources; information processing, organization, and storage; as well as the communication of results. The digital competence is defined as the set of capabilities focused on the use of ICT to obtain, store, organize, present, and exchange information.

INTRODUCTION

Education has a relevant place because it improves the economic competitiveness of countries, as well as contributes to political culture and citizen participation. The nations that have achieved better economic performance have the fundamental characteristic of having made a growing and sustained investment in the education of their population at all levels, especially at the higher level, as well as the development of their own systems of science, technology and innovation (Lomelí, 2019).

In turn, the World Economic Forum (WEF, 2017) identified various disruptive technological changes that are transforming social relationships between humans and objects. So, there has been the widespread use of the Internet, the absolute use of mobile devices both personally and organizationally, the population census through *big data*, the collection of taxes through *blockchain*, as well as incorporating artificial intelligence in organization meetings.

In this sense, the integration of technologies has allowed the manufacturing industry to be potentiated with fully integrated, automated and optimized production processes, giving significant results in improving operational efficiency and organizational performance. This situation has generated an impact that is affecting the various areas of the company, from production and organization to research and development, coupled with inventory control, management and customer service (Cardoso, Cortés & Cuevas, 2018).

Consequently, a world of continuous alterations is glimpsed, where science and technology are at the base of the economic competitiveness of countries, where innovation plays a strategic role in competition, for which they are forced to cover a series of requirements to successfully compete in an increasingly globalized economy, including high investments in both education and research. With regard to organizations and individuals, the acquisition of new qualities is required to adapt to the rapid changes in the context, which implies continuous or permanent training. As long as countries, organizations or individuals fail to meet these requirements, they take the risk of being excluded from the knowledge society and, with it, from globalized economic competition.

Based on the above, innovative technologies will integrate different scientific and technological disciplines. The key forces will come together in a fusion of technologies that is blurring the lines between the physical, digital and biological spheres, that is, artificial intelligence is going to match the reach of human intelligence and even surpass it due to the continuous acceleration of information technologies (Schwab, 2015).

Hence, artificial intelligence is defined as the simulation of human intelligence in a machine in order to solve problems (Sosa, 2007). For its part, the European Commission (2018) indicates that this term refers to systems that are capable of analyzing their environment and taking action in order to achieve specific objectives. Thus, it ranges from a computer program to a variety of hardware devices.

The objective of artificial intelligence is the development of conceptual models and programming strategies in physical machinery for the most efficient and complete reproduction possible of the scientific-technical tasks of an organization (Mira, 2008). Its relevance is to represent diverse knowledge about the tasks, the means and the users that participate to provide active support to the processes of an organization (Barros & Verdejo, 2001).

In this way, the fusion of technologies goes beyond the combination because it creates new markets and new growth opportunities for each participant in innovation. In addition, the use of the Internet will allow the interconnection of networks of physical devices, which will result in advanced connectivity of devices, systems and services with a variety of applications. Therefore, the interconnection of these

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