

Editorial

# Special Issue on Innovations in the Field of Cloud Computing and Education

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We are currently in the Digital Society, a continuously evolving context supported by technology. Today, one of the most popular technologies is cloud computing. This paradigm facilitates users' access to many forms of virtual resources, providing them with a wide choice of tools and services to use at any moment in their daily life. As a result, cloud computing has been applied across very different contexts, such as entertainment, health care, military operations, security issues, business and finance, and human resources.

This Special Issue is focused on cloud computing applications for academic purposes: education and research. Therefore, it only addresses innovations in this field and does not include works related to the simple application of some tools. In particular, this Special Issue considers works related to the application of cloud computing in learning activities: educational approaches to learning about cloud computing, the use of cloud computing by institutions to provide educational services/platforms, and cloud computing and security in education.

The Special issue received a total of 25 contributions, of which 15 were accepted, concerning several of the previously listed topics. Rodríguez Lera et al. [1] presented a virtual desktop platform for delivering the laboratories of a programming course for a computer science bachelor's degree and evaluated its usability. Melesko and Ramanauskaite [2] proposed a formative assessment algorithm to facilitate learning personalization by balancing the number of tasks and increasing results reliability; the instrument is tested in a cloud computing course. Person et al. [3] developed a framework based on expert opinions to evaluate significant features and thus reinforce cloud-based systematic review tools. Naveed et al. [4] identified the service quality factors that affected students' acceptance of cloud e-learning systems and tested them in different Saudi Arabian universities. Margiené and Ramanauskaitė [5] described techniques to facilitate learning personalization and adaptation in eLearning contexts based on transformations from a competence tree-based structure to a graph-based automated e-evaluation structure. Sein-Echaluce et al. [6] found that visually representing students' cloud computing system interactions makes it possible to achieve workload homogeneity between teams and among team members. Vazquez-Ingelmo et al. [7] described a web service-based technological solution for dynamically tailoring dashboards independently of data context or data domain. Tobarra et al. [8] developed a cloud game-based educational platform, which makes gamification techniques easily applicable within different educational fields by defining a modular and flexible architecture. Amo et al. [9] proposed a cloudable modular data architecture system that simplifies data management in educational contexts, facilitating both data gathering and external access. Calatrava Arroyo et al. [10] presented a cloud-based educational resource that deploys and orchestrates a realistic software programming environment, validated in a real class environment. Alier et al. [11] proposed a software-as-a-service solution to support Moodle's scalability to deal with COVID-19-related challenges. Moltó et al. [12] used hands-on activities involving 420 online students to explore the application of an open-source data processing tool to a cloud computing course. Hussein Alghushami et al. [13] studied the adoption of cloud computing in least developed countries by analyzing the application of a



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cloud computing adoption model in the Republic of Yemen. Qasem et al. [14] studied the continuous use of cloud computing in higher education institutions by using a conceptual model-based instrument based and involving several decision-makers in the validation process. Scalera et al. [15] conducted a mapping review on the use of cloud computing for educational innovation that involved more than 940 works.

As shown by the works included in this Special Issue, adopting cloud computing in education can facilitate significant achievements within the field. However, in addition to the learning improvement opportunities offered by this technology, many challenges remain.

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