

Chapter 126

From Ground to Cloud: The School on the Cloud

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ABSTRACT

As technology has become an agent of immense change, it has forced upon the education system Cloud Computing, which in the form of School on the Cloud will have significant future ripple effects. In moving from ground (present conditions) to Cloud (future conditions), there is a need to examine the educational enhancements and the future ramifications of this technology. The description of these effects represents the goal of this chapter, by reviewing the major aspects of the future of Cloud Based Education and by presenting the approach and the results of a foresight exercise, which have led to the development of a series of future scenarios related to the future roles of the major education stakeholders.

INTRODUCTION

Cloud Computing is a major technological breakthrough with a huge potential for education. Through Cloud Computing, high specification state-of-the-art software technologies can be accessed at any time and any place (Cheng et al., 2012). Cloud Computing provides powerful software and massive computing resources where and when needed, allowing learners to interact productively with their teachers and with each other in both formal and informal education situations, and to become creators and developers of knowledge.

The results of several Cloud based education projects (Donert & Bonanou, 2014; Malmierca, 2015; Lazaro et al., 2016) indicate that these objectives can be easily achieved in the new school, the School on the Cloud. The reason is that as learning becomes increasingly digital, online access becomes the necessary vehicle for the emerging Cloud-based developments (Donert, 2013). The new School on the Cloud provides an approach that aligns with the way we should think, share, learn and collaborate as it is determined by the network information approach that is limited nowadays, but will increase in the future and determines many aspects of our activities, including education. The new School on the Cloud can offer an opportunity to transform the role of education stakeholders, as they help young people to

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access any learning at any place and any time from any teacher with the right expertise, but within an identity determined framework.

As a result, the need to thoroughly examine and evaluate the interface between education and Cloud Computing, by exploring how teaching and learning should respond to new ICT developments, in the form of Cloud Computing, as well as by examining how education will be transformed in the immediate future, in the form of the School on the Cloud, were major concerns for many ICT experts and educators. Some of them had an opportunity to discuss these issues. These discussions resulted in a proposal which was submitted and approved, creating the School on Cloud: connecting education to the Cloud for digital citizenship network, led by the Doukas School in Athens.

The work presented in this chapter is part of this project and more specific the work of one of its Working Groups named i-Future, charged with examining “Future scenarios for Education on the Cloud”. The group’s aim was to present and evaluate the issues that underline the reality of the pedagogical system and the role Cloud Computing will play in the future. Based on that work, this chapter in addition to the introduction (Section 1), a necessary review of the major dimensions of Cloud based Education (Section 2) and the conclusion (Section 6), presents an examination of future needs and opportunities under various educational conditions based on an extensive bibliographical work as well as the suggestions of participating experts (Section 3). This extensive examination and analysis provided the data to apply a foresight exercise (Section 4), which in turn led to scenarios that were formulated as appropriate narrations (storytelling) of future educational classroom conditions, learners’ activities and tools as well as school operation, in response to the use of Cloud Computing (Section 5).

CLOUD BASED EDUCATION: MAJOR COMPONENTS

Cloud Computing

In order to appreciate the role of cloud computing, its concepts need to be fully understood. There seems to be many definitions of cloud computing around. However, despite the many definitions and the various terms suggested by many computer experts and Cloud users, the concept of Cloud Computing can be described as an ICT technology that can be fully determined in a three dimensional space consisting of the characteristics axis (Koutsopoulos & Kotsanis 2014), the type of service axis and the form of deployment axis, axes that can become an integral part of education. Cloud Computing possesses (Mell & Grance, 2011):

1st Axis – Five Essential Characteristics: On demand service, Network access, Resource pooling, Rapid elasticity and Measured service, that can provide ubiquitous, rapid, convenient and with minimal management effort or service provider interaction,

2nd Axis – Three Forms of Services: Infrastructure/IaaS, Platform/PaaS and Software/SaaS, that can be deployed in...

3rd Axis – Four Fundamental Types of Cloud Frameworks: Private, Community, Public and Hybrid.

Experience and the literature (IBM 2013; Gaytos, 2012; Sultan, 2010) shows that there is a range of resources and services available to education via Cloud Computing, whether they concern infrastruc-

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