

Chapter 127

Projecting the Future of Cloud Computing in Education: A Foresight Study Using the Delphi Method

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ABSTRACT

Technological advances have provided the opportunity to create entirely new learning environments. A major technological breakthrough that has sparked innovation to most human activities and has a huge potential to radically transform education is cloud computing. This chapter reports on a Delphi study focused on the current and future impact of Cloud computing and its applications on education. It first provides a background to the study through an overview of the Delphi technique. Next, it describes how Delphi was applied in two-round investigation aimed at collecting and systematically classifying the views and knowledge of three groups of stakeholders ('experts') concerning the future of Cloud computing in education. The chapter then presents the major findings from the two rounds of the study. It ends with drawing of conclusions and recommendations regarding how to move ahead with the use of Cloud computing in education in European countries and beyond.

INTRODUCTION

Cloud computing has been a major technological breakthrough with a significant potential for education. Indeed, as Microsoft (2012) has declared "With Cloud computing in education, you get powerful software and massive computing resources where and when you need them (and we may add in any way you desire, in order to apply new educational approaches). Cloud services can be used to combine on-demand computing and storage, familiar experience with on-demand scalability and online services for anywhere, anytime access to powerful web-based tools." As a result, Cloud computing has become a very

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popular and powerful educational trend (Joshi, 2015) and has been increasingly and widely used in the field of education (Shi et al., 2014). It is projected that this trend will continue, with cloud technologies playing an even more vital and powerful role in the educational field in years to come.

Although Cloud computing is undoubtedly shaping, changing and enabling new ways of accessing, understanding and creating knowledge (Koutsopoulos & Sotiriou, 2015), and is already an integral part of modern life, precise predictions about its future uses in education are impossible due to the high degree of uncertainty involved in technology forecasting. Still, foresight methods can be employed to provide some insights regarding the probable importance and implications of various factors, trends, and events related to the emerging technology under study.

A range of foresight methods are available, allowing key stakeholders to share a vision and extend the depth of knowledge base for decision-making, so as to organize long term thinking (Facer & Sandford, 2010). Such methods include: Delphi method, expert panels, brainstorming, mindmapping, “six thinking hats”, scenario analysis and building, SWOT analysis, critical technologies, relevance trees, etc. These methods combine critical thinking, debate and effort to shape the future using participatory processes. They are by nature complex, composite and highly collaborative processes. No “one-single” way to organize an exercise or apply one of these methods exists. The exact mix of method(s) to be used in a study is highly dependent upon access to relevant expertise and on the nature of the issue researched.

In this chapter, we describe some of the findings of a foresight study conducted within School on Cloud (SoC), an ICT network funded by the European Union Lifelong Learning program (Ref. No: 543221-LLP-1-2013-1-GR-KA3- KA3NW) that focuses on the current and future impact of the Cloud and its applications on education. The Network explores the new dynamic ways to educate that align with how we think, share, learn and collaborate outside of the classroom, across various education sectors. SoC consists of 57 European partners from 18 countries, distributed widely across Europe and includes most types of educational stakeholders, and all sectors of education (universities and teacher training departments, NGOs, schools, SMEs, research institutes, adult education and VET providers, a European professional association, a library). Most of the partners are leaders in their educational sectors. In an effort to provide rich insights regarding the possible future of cloud computing in education, SoC conducted a thorough foresight study that employed a triangulation of research methods: Delphi, Six Thinking Hats, and Brainstorming. Here, we focus on describing the context and main insights gained from applying the Delphi method, a foresight technique for collating expert opinion where little evidence exists (DeVilliers et al., 2005).

BACKGROUND

Delphi Definition and Historical Background

Foresight studies such as the one of the SoC network, which are related to the future of education, have two main objectives: (i) map how learning processes are expected to change in the future, based on expert knowledge of current and future trends; and (ii) develop a vision for the future of education, in the form of education strategies, in order to explore their potential implications and to ensure that future teaching and learning contribute in fulfilling societal needs. To achieve these objectives, researchers need to follow a well-defined process consisting of a series of logical phases (Gnatzy et. al., 2011; Nowack et al., 2011). Deciding on the methodology to be used in a foresight exercise is crucial.

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