

## Chapter 54

# Google's Applications for Undergraduate University Courses: Tools for Sharing, Communication, and Collaboration

**Despo Ktoridou**

*University of Nicosia, Cyprus*

**Nikleia Eteokleous**

*Frederick University, Cyprus*

**Ioanna Dionysiou**

*University of Nicosia, Cyprus*

### **ABSTRACT**

*Following technology's evolution and society's needs and demands, the current study examines the integration of cloud computing with higher education. The study uses cloud computing, and specifically Google applications, to enable students and faculty to communicate and collaborate, aiming at the same time to develop a student-centered learning (SCL) environment, where students have an active role and take responsibility of their own learning. A case study approach was employed in three undergraduate courses using qualitative data through online activity observations as well as focus groups with the students and lecturer. To achieve the above, outcome and process evaluation were conducted. The primary conclusion is that Google applications facilitated the development of a SCL environment. Specifically, the SCL cloud environment enhanced students' motivation and responsibility towards learning, built student-teacher relationships, promoted active learning, and finally, achieved the development of critical thinking and problem solving skills.*

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## **INTRODUCTION**

Recognizing the shift towards a technology-oriented, interconnected, and complex environment, educators continuously seek ways to bring into the classroom current technological advances to facilitate students to work together, socialize and learn more effectively (Eteokleous & Ktoridou, 2011). Services of the Web 2.0 family regularly enroll millions of people, offering them innovative communication, collaboration, and sharing opportunities. The global, high-tech and rapidly evolving information society calls for the Web 2.0 tools integration in our lives not only for personal and professional purposes, but also for educational purposes. In particular, Web 2.0 service providers offer free IT solutions that educational institutions can use to bring communication and collaboration tools to the entire academic community. Academic institutions could take advantage of the Web 2.0 tools in order to successfully complement their infrastructures and technology assets in an attempt to appropriately prepare students for the IT-oriented society. In addition to the technological exposure, students need to develop a range of higher-order skills in an attempt to be properly prepared for the complex and demanding society. Student-centered learning (SCL) environments aim to develop these skills and expose students in processes that help them take responsibility of their own learning, thus becoming active participants in the teaching and learning process. Additionally, SCL helps educators motivate their students by enhancing and promoting their classroom involvement and participation. Higher education institutions should try to shift the focus of learning from lecturer to students and use online tools to deliver the advanced technology students need.

The current study aims to examine the development of student-centered learning environment through cloud computing technology. In particular, the study incorporates Google Applications (Google Apps) as educational tools in undergraduate courses and examines how

student-centered learning environment can be developed in a higher-education level setting. It investigates the following parameters: student and educator role, student involvement in the teaching and learning process, and knowledge acquisition and higher order skills development. To achieve the above, a qualitative approach was deployed, where in-classroom and online activity observations (lecturer and researchers notes), as well as focus groups were used as data collection methods. Students from three undergraduate courses served as the target subjects of the study: MGT 370 Management of Innovation and Technology (Fall 2010, Spring 2011), MIS 151 Business Software Applications (Fall 2010, Spring 2011) and COMP 150 Microcomputer Applications (Spring 2010).

## **BACKGROUND**

This section briefly discusses the essential background information on student centered learning. It then proceeds with an introduction to cloud computing technology as well as its role in the education arena. Finally, there is a brief introduction to Google Applications.

### **Student-Centered Learning**

Student-centered learning (SCL) is a widely used term in education literature. A SCL environment is focused on the students' needs, abilities, interests, and their learning styles. It requires students to be active and not only participate but also contribute to their own learning. It allows students to discover learning processes from an autonomous point of view, promoting subject, self, and social learning. It is suggested that a properly designed and implemented student-centered environment strengthens student motivation towards learning, promotes peer communication, builds student-teacher relationships, promotes discovery/active learning and responsibility for ones' own learning, and achieves greater retention of knowledge and

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