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Cloud Services in Educational Settings: A Must for Future Nursing Training

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Abstract

This paper presents research directions from both domestic and foreign scientists regarding the preparation of future nurses to work with cloud services. It also suggests possible ways of implementing these services in their future professional activities. Results from this paper constructively discusses the technical integration challenges of cloud environments with existing systems. It also explores in details, the performance of cloud services and the benefits of their use in modern medicine. This paper has implications for health, cloud services and software engineering.

Keywords: Cloud Services, Cloud, Nurse, Professional Activity, Training.

Introduction

Globally, each passing day increases the role of the cloud technologies. The advantages of using cloud services are very significant within contemporary higher educational institutions. Cloud services offer new approaches in the organization of the educational process, educational technology, provision of academic mobility, the full availability to developing educational content, communication and collaboration of teachers with students. Recently, there has been an increase in the interest of the teaching community about the changing learning environment. This is due to the fact that, they make education more affordable, mobile, providing a common and continuous access for all participants in the educational process to gain educational resources. Cloud computing services may be understood as a dynamically scalable way to enable an individual's computer to access other external information resources through the internet. In effect, data within this capacity are processed using remote network servers as the computer user simply interact with data. The network of interconnected remote servers is the purported "cloud" (Zhernovnikova, 2014; Zhernovnikova, 2015).

The feasibility and necessity of introducing ICT-based on the cloud technology in Ukraine began at the state level. This was reflected in the national project - "An Open WORLD" (2010-2014)

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and also central to "*the strategy in the development of an information society in the Ukraine, between 2013-2020*" [*this provides the formation of modern information infrastructure that is based on the cloud technology*]. The XXI Century requires from contemporary students, the ability to rethink their own system of professional knowledge and skills. This expectation takes into account the achievements of new educational technologies which are particularly important to their critical thinking skills [i.e. *the use of cognitive techniques and strategies that increase the likelihood of obtaining the desired end result*] (Hlazunova, 2014).

This trend leads researchers to study theoretical and methodological strategies / models for efficient use of cloud technology in modern educational process among both Ukrainian and foreign researchers. Though several work have been done on the use of cloud technologies in education in general, little is attention has been offered to the scope of training future nurses to work with cloud services. The purpose of the article is to explore how future nurses can be trained to work with cloud services.

Methods

The study was conducted as part of a comprehensive program at the Research Department for Theory and Methodology of Professional Education, Kharkiv National Pedagogical University [named after G. S. Skovorody].

The theme of this program was titled; "Improving the Effectiveness of the Educational Process in Secondary and Higher Education" [*LC number 200199004104*]. During the study the following methods were used:

1. Theoretical analysis of the sources of problems;
2. Examination of electronic educational resources;
3. Synthesis and evaluation of the results.

Results

Evidence from Ukraine

In the information world, almost anyone can access the internet, especially with the development of mobile tablets and a large number of other similar devices. Currently, developing a new world of information technology has a need for new models. This will provide continuous access to data using various modern information and communication technologies [*ICT*]. These changes greatly affect our daily lives and to prepare future nurse in particular.

Currently, technological challenges facing hospitals include few workers with service IT infrastructure, high financial burden for the promotion of computer technology park, the impossibility of rapid software updates and little support for information security in accordance with local requirements. The operation of cloud services need to use the internet and service providers such as Amazon, EMC, Google, IBM, Rackspace, Savvis, Verizon or Microsoft (Butler, 2013). Among health workers, the greatest popularity of cloud computing services however includes; Google Apps, Google Maps, Gmail, Google Docs, Amazon and Office 365 (Chen, n.d.; Leonov, 2012; Sidorova, n.d.).

The analysis of previous studies show that domestic scientists are doing a lot to implement cloud technologies in the educational system of Ukrainian universities. Their attention is mainly focused on how the use of cloud computing technologies affect the approaches, principles, and models establishing the information-educational environment of higher education. Consequently, the continuous improvement of information technology gives reason to assert that the information-educational environment, which operates in many universities, does not provide all the necessary range of educational services (Hlazunova, 2014).

Some groups differentiate research opportunities for the application of cloud technologies in professional educational activities. According to some studies, powerful technologies such as "*cloud computing*" that supports traditional forms of education is a new step in the development of education and cost-effective, efficient and flexible way to meet the needs of learners in acquiring new knowledge (Arkhipova, & Zaytseva, 2013; Lotyuk, 2013).

The key issues in the work of leading scientists on the use of cloud services and platforms in the educational process always give recognition to how to organize quality training of future specialists (Arkhipova, & Zaytseva, 2013). Specifically, the results of these investigations present the characteristics of online services based on cloud computing, e.g. providing Google Apps

Education Edition (Leonov, 2012). In addition, they describe examples of cloud platforms [e.g. *Google Apps Education Edition and Microsoft Live@edu education*]. They also offer the scheme of interaction between teachers and students in the cloud. These open opportunities include cloud storage [e.g. *Microsoft SkyDrive and Apple iCloud*], cloud services [e.g. *gantter, SageMath Cloud, "1C" and "BuhSoft"*].

To build a system of training students in their study subjects, a private cloud offers the university a space to place electronic textbooks [e.g. theoretical material and applied problems]. via a computer system called Moodle (Lotyuk, 2013). Based on the analysis, we note that the use of cloud technology in the preparation of future nurses will provide an opportunity to shape the future of education and form a mobile network with patients too. A detailed analysis of the concept of "*cloud-oriented learning environment*" shows its components, objects, technological support and the level of interaction within its environment (Svyrydenko, 2012).

On the prospects of using cloud services like Microsoft Office 365, Svyrydenko (2012) used it to design the educational process for high schools. According to her, learning is not limited to walls. Hence, working with educational materials is possible from any location or device with access to the internet; contributing to its transformation and availability. The science and technology for designing information space based on Microsoft Office 365 to improve the quality of education and infrastructure optimization strategies is applicable to the effective training of future nurses to the profession. An example of practical implementation of clouds for formation of remote monitoring among graduates was done among medical schools in Ukraine using ICT skills in practice. A teacher survey was organized afterwards with the use of a specially designed portal (*www: //testpovider.com - an example of a hybrid cloud*) created on Windows Azur (Khmil', 2015; Morze, & Kuz'mins'ka, 2011). This technology provides a quality solution to the problem of 'informatization' of high school in the presence of minimal material resources. The most appropriate part of this technology is the use of Google services. The use of cloud computing encourages students to advance towards the development of IT-technologies, creating in them a high information culture, based on their interest in the World Wide Web.

On the possibility of using cloud technologies in the development of logical thinking and memory of nursing students, the TouchDevelop is very vital. This technology uses electronic educational resources [*games*] in the form of Mind Stick to enhance attention span. Professional nursing teachers can organize "*virtual teachers' room*", "*virtual instructional design*", "*subject virtual communities*" using Microsoft Office 365. This can help the form associations to deal with issues regarding methodology in higher education.

Evidence from foreign countries

Several examples of the use of cloud services are evident in several countries. The Czech Republic-based Office 365 for example, is a web portal designed for learning. Teachers using this network form "*partnership in education*" to develop joint programs for cooperation with innovative universities. The cloud service Office 365 portal offers online and off-line courses, in addition to webinars for all schools in the Czech Republic. The portal allows foreign registration and publication of information, monitors the status and end the course. Despite this, each school has its own innovative sub-site, which publishes educational materials (www.icstic.cz).

In Hobart [Australia], high school learning environment is created through Facebook, Twitter, Google Apps, Hotmail and Gmail. This enables students receive counseling tasks for independent study and other information. Teachers placed objectives and class agenda online for their class. Additionally, students can see the recording sessions at any time and enhance their knowledge.

Despite this, the teaching personnel together with students participate in discussions and dialogues with the use of the media using this interactive platform of online learning with instant feedback. A useful tool is the "electronic portfolio", which contain details of student participation in different types of educational activities throughout the year. Activities such as active participation in debates about the data displayed in the blog, etc. (Sidorova, n.d.).

Israel for example, implemented a cloud-oriented learning environment called "TeacherTube". This was modeled after the YouTube to offer participant students studying at home, the ability to use video services (http://www.teachertube.com). Cloud computing is a relatively new concept aimed at the future development and delivery of computer resources to

primary and basic education in South Africa, especially in schools most affected by the digital divide. The sponsors believe that teachers and students in South Africa have the necessary technology and skills to bridge the digital divide in high school. The project will set the vector of development for the rest of the African continent (Le Roux, & Evans, 2011).

Cloud computing is used largely for organizing online training. One of the first examples of cloud computing in education was the creation of Khan Academy- YouTube videos to explore various disciplines. Using YouTube as a service, Khan Academy does not have to worry about the design, hosting or supporting video servers. Consequently, more emphases should be placed on educational content. Lacking the necessary funds to pay for infrastructure and working professionals to maintain video servers, schools instead may offer tutorials and educational materials created for charge. As noted by David Egts, chief architect of the state sector of the American IT company «RED HAT» [NC, USA], the education development accelerated open cloud computing is an important part in the evolution of online learning (go.nmc.org/Accel). In Egypt, the Ministry of Education recently began deploying Office365 for 1.7 million students and implemented communication and cooperation on a new platform. Office365 was chosen as a long-term holistic solution that can provide economic, efficient platform for distance learning to cover 470 learning establishments in Egypt (www.pill-network.com).

Conclusion

The article examines various cloud service providers that can be useful for the preparation of future nurses. Google, and Microsoft are widely used worldwide for educational purposes to meet common and different educational, and developmental needs of students in higher education. Previous studies in the area suggest the following relevant issues; (a) the formation of a cloud-based learning [*information-educational, academic, educational, scientific-educational*] at institutions of higher education to study various subjects; (b) organization of students through virtual communities by means of cloud services [e.g. *Microsoft Office 365*] to enhance the professional activities of health workers; and (c) the use of cloud services platforms and during the training sessions of future nurses to ensure quality training. The use of cloud services makes significant investments through the; (a) procurement and systematic updating of software, (b) process of computer equipment fleet updates, and (c) energy saving capacities. Cloud services allow teachers to conduct classes by means of new innovative forms. At the reaper time, these technologies require further study and clarification.

Conflicts of interest statement

The authors declare that they do not have any conflict of interest.

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