CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 04 ISSUE 04 Pages: 40-43
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013) (2023: 7. 266)
OCLC – 1242041055
Publisher: Master Journals

Journal Website: https://masterjournals.com/index.php/crjp

Research Article

MECHANISMS OF PROFESSIONAL COMPETENCE DEVELOPMENT OF FUTURE TEACHERS BASED ON THE USE OF CLOUD TECHNOLOGIES

Submission Date: April 10, 2023, **Accepted Date:** April 15, 2023,
Published Date: April 21, 2023
Crossref doi: https://doi.org/10.37547/pedagogics-crjp-04-04-08

Muhabbat Ataxanovna Tayirova
Tashkent State University Of Economics Under The Tashkent Economics And Industry Technical School, Uzbekistan

ABSTRACT

The Internet provides various services for storing information for the modern user. These services, in turn, affect education, open many opportunities for improvement and activation of the educational process, stimulate the emergence of new teaching methods.

KEYWORDS

Cloud technologies, information system, private cloud, public cloud, hybrid cloud.

INTRODUCTION

The use of new technologies in education leads to an increase in the volume of information, and therefore new requirements are placed on its storage. This is primarily related to the classification of information, protection against unauthorized access to it, and continuous monitoring of stored data [1]. These services, in turn, affect education, open many opportunities for improvement and activation of the educational process, stimulate the emergence of new teaching methods.

The essence of the concept of "cloud" technologies is to provide end users with dynamic remote access to services, computing resources and applications (including operating and information systems, server programs, etc.) via the Internet or corporate network. The growth of the hosting industry and the need for massive use of public resources have led to the need for software and digital services that can be managed internally, but are more cost-effective and efficient due to economies of scale. In this study, the possibilities of using cloud computing technology in the educational

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process of higher education institutions were analyzed.

There are many options for defining what "cloud computing" is (cloud technologies, cloud computing). Cloud computing, literally translates from English to cloud computing. "Cloud computing" is a model for providing convenient, on-demand network access to a shared set of configurable computing resources (eg, networks, servers, data warehouses). This model focuses on increasing the availability of computing resources and combines five main features: three service models and four deployment models" [2].

Cloud computing technologies have great potential, because all modern computer products constantly increase the requirements for the technical equipment of the user's computer, which inevitably leads to significant upgrade costs. Thus, this technology makes it possible to solve the problem of excessive demands on the resources of end-user applications.

This type of educational process organization has advantages and disadvantages. Advantages over traditional virtualization include:

1) Economic efficiency - reduction of infrastructure costs, as well as reduction of the price of used software;
2) Flexibility – it will be possible to study and perform tasks anywhere in the world, not just in the building of an educational institution. For fast and easy access to information, it is enough to connect to the global Internet network;
3) Expansion of computing resources - users have the opportunity to use any computing power and size. And the payment is made only for the consumed resources, which means that the university does not lose anything during the downtime;
4) Reliability of data storage. On the servers of large cloud providers, all data is copied several times. If one of them fails, user data will be available from the other;
5) The use of cloud computing increases the lifetime of the existing infrastructure. The life of computers is extended because computing processes are performed on the server side;
6) Availability - "clouds" are available to everyone and can be accessed from a client or browser anywhere there is an Internet or network;
7) Low prices - reducing maintenance costs (using virtualization technologies), paying only for the online version of the software (allows you to save on the purchase and licensing of software), renting the "cloud", developing technical tools for computing systems;
8) Security - a high level of security with a competent organization, but with a careless attitude, the effect can be the opposite;
9) Large computing power - the user can use all the computing power available in the "cloud";
10) Flexibility of the learning process: the ability to use Windows and Linux OS, as well as any other software, including different versions of the same product;

With all its advantages, cloud technologies have a number of serious disadvantages:

1) Permanent connection to the network - to work with the "cloud" you need a permanent connection to the network;

2) Software - only software in the "cloud" is available to the user, and the user cannot customize the applications for himself;

3) Privacy - currently there is no technology that ensures 100% privacy of data;

4) Reliability – loss of data in the cloud means it cannot be recovered.

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The main obstacle to the use of cloud technologies is the need for a high-speed Internet connection. Also, the disadvantages of cloud computing include the limited functionality of software when working with them over the Internet.

Cloud technology can be connected not only to the use of virtualized information products, but also for remote data storage, a separate computing unit for processing specific requests, a resource allocation system, a data bank, and other information technology tools built on the basis of gradation.

Classification of the conceptual model of "Cloud":

The public cloud is an IT infrastructure used by many companies and services. At the same time, users cannot manage and maintain this "cloud", all responsibility for these problems belongs to the "cloud" owner.

These types of clouds offer an easy and inexpensive way to set up websites or business systems that are not available in other types of clouds. Examples: online services Amazon EC2 and Simple Storage Service (S3), Google Apps/Docs, Salesforce.com, Microsoft Office Web.

A private cloud is a secure IT infrastructure managed and managed by a single company. The infrastructure itself can be located in the company itself or in an external operator, or partly in the operator and partly in the company.

A hybrid "cloud" is an IT infrastructure that uses the best features of public and private types of "cloud". This type is mainly used when the organization has seasonal activity periods. These are. Part of the private cloud capacity is transferred to the public cloud if it is unable to perform current tasks. In addition, access to the company's resources is organized through the public "cloud".

Currently, creating and building a private "cloud" by providing infrastructure as a service is more popular and in demand. This cloud technology is called IaaS (Infrastructure as a Service). The main task for the user of a private "cloud" built using the "cloud" IaaS technology is a series of requests in the following form: the amount of RAM, the number of processors and the required data storage capacity, various network devices and interfaces, as well as the one who manages the "cloud" service choosing the main operating system [3].

A private "cloud" can work in two projections, which must be strictly distinguished from each other. The first private cloud model is open. In this case, the private "cloud" does not lie on the servers of the enterprise. Access to it can be obtained through a local network or wireless Internet, from the enterprise itself, and remotely through the Internet. In this case, you can connect to the private corporate "cloud" under any account through mobile devices, home computers, laptops and tablets.

The second type is a closed private cloud. This type of cloud technology is completely (or partially) isolated from external access to the Internet. The issue of security falls directly on the company's employees and system administrators because an attack from the outside is completely excluded.

In private cloud environments, more companies are using Microsoft virtualization technologies to host back-end applications such as Microsoft SQL Server, Microsoft Exchange, and Microsoft office SharePoint Server, as well as packaged and customized business applications.

There are many information systems, each of which performs a task or a set of tasks assigned to it. The corporate information system is an information system, which is a set of components describing

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various aspects of the object's information activity during the implementation of management functions within the framework of its information model only at the corporate level.

Working with an information system in the cloud consists of constant access to servers that receive large streams of data from all users at the same time, needing to process, store, change and return data to working machines. With virtualization, the working capacity of one server is distributed among all users to ensure the same load and continuous use of the Internet server.

Installing servers running cloud software allow you to keep your information system, business tools and various software under complete monitoring and control. In the corporate cloud, regular procedures for copying and backing up data are implemented, which reduces the risk of data loss.

Thus, cloud technologies are one of the popular and actively developing areas of the modern information world. Cloud computing technology is an innovative technology that integrates IT resources of various hardware platforms and provides access to the user through a local network or the global Internet. The use of cloud technologies by educational institutions is a promising direction that allows for reducing the additional costs to increase the efficiency of the educational process.

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