

ПЕДАГОГИКА ВА ПСИХОЛОГИЯДА ИННОВАЦИЯЛАР ИННОВАЦИИ В ПЕДАГОГИКЕ И ПСИХОЛОГИИ INNOVATIONS IN PEDAGOGY AND PSYCHOLOGY

THE ROLE OF INNOVATIVE TECHNOLOGIES IN THE EDUCATION SYSTEM

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ANNOTATION

This article discusses the main aspects of the development of higher education in 2017-2021. Modern features of the use of information and communication technologies and the introduction of e-learning in the learning process, as well as methods and ways of using and integrating cloud technologies in this process. Cloud technology is an online data storage and processing system that provides simultaneous interdisciplinary training and organization of online learning platforms on a single platform.

Key words: education system, innovative technologies, information and communication technologies in education, e-learning, cloud technologies, cloud technologies in the educational process.

РОЛЬ ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ В СИСТЕМЕ ОБРАЗОВАНИЯ

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АННОТАЦИЯ

В данной статье рассматриваются основные аспекты развития высшего образования в 2017-2021 гг. Современные особенности использования информационных и коммуникационных технологий и внедрения электронного обучения в учебный процесс, а также методы и способы использования и интеграции облачных технологий в этот процесс. Облачные технологии - это онлайн-система хранения и обработки данных, обеспечивающая одновременное междисциплинарное обучение и организацию онлайн-платформ обучения на одной платформе.

Ключевые слова: Система образования, инновационные технологии, информационно-коммуникационные технологии в образовании, электронное обучение, облачные технологии, облачные технологии в образовательном процессе.

TA'LIM TIZIMIDA INNOVATSION TEXNOLOGIYALARNING ROLI

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ANNOTASIYA

Ushbu maqolada 2017-2021 yillarda oliy ta'lim tizimining rivojlantirishning asosiy jihatlari muhokama qilinadi. Ta'lim berish jarayonida axborot-kommunikatsiya texnologiyalaridan foydalanish va elektron ta'limni joriy qilishning hozirgi xususiyatlari hamda bu jarayonda bulutli texnologiyalardan foydalanish va integratsiyalash usullari taklif qilindi va xarakterlandi. Bulutli texnologiya taqsimlangan ma'lumotlarni saqlash va qayta ishlash tizimlaridan tashkil topib, bir vaqtda juda ko'plab o'quv materiallaridan tashkil topgan onlayn ma'naviy ta'lim tizimini tashkillashtirish, butun ta'lim faoliyatini yagona platformada tashkillashtirish imkonini beradi.

Kalit so'zlar: Ta'lim tizimi, innovatsion texnologiyalar, ta'limda axborot-kommunikatsiya texnologiyalari, elektron ta'lim, bulutli texnologiyalar, o'quv jarayonida bulutli texnologiyalar.

By the Decree of the President of the Republic of Uzbekistan "On measures for the further development of the higher education system" dated April 20, 2017, PQ-2909 adopted the resolution "Integrated development of the higher education system for 2017-2021". developed a program and developed a comprehensive plan of measures to strengthen and modernize the material and technical base of higher educational institutions for 2017-2021, equipping them with modern educational and scientific laboratories, modern information and communication technologies. The gradual development of the system requires individualization of the educational process, curriculum change in accordance with the socio-economic development of the educational process, the need to improve the forms of organization of the educational process, and the need to create it on the basis of new pedagogical and innovative technologies [1].

Today it is necessary to develop a theoretical basis for the introduction of educational information technologies and their practical implementation, and therefore it is necessary to reach a qualitatively new level of educational and informational support. based on the use of cloud computing is technology. The organization of an online storage and processing system and the simultaneous organization of an online learning system with a wide range of educational materials allows you to organize all educational activities on a single platform.

Cloud technology is a software and hardware solution that facilitates access to network information.

Cloud technologies are a special environment for information technologies intended for remote launch of massive and stored information resources.

The expected outcome of the cloud education system in education, namely:

- informatization of scientific fields;
- intellectual educational activities;
- intensification of integration processes;

The introduction of a cloud-based Internet education system will improve the infrastructure of education and its management.

- bringing together teachers, programmers and related professionals in the distance learning and e-learning community;
- segregation of duties between teachers;
- Ensure the improvement of the educational process and control the effectiveness of teaching activities.

Cloud computing is used as the official cloud computing segment in the information technology industry. This symbol is used for various web resources and a basic web architecture that is common to the Internet, and is now used to define the boundaries of the cloud environment.

Cloud computing - the model allows you to conveniently and simultaneously share the same type of network with customized computing resources (for example, networks, servers, databases, e-learning resources, applications and services), but also minimizes operational and offers free access.

This cloud model consists of 5 main characteristics, 3 service models and 4 presentation models.

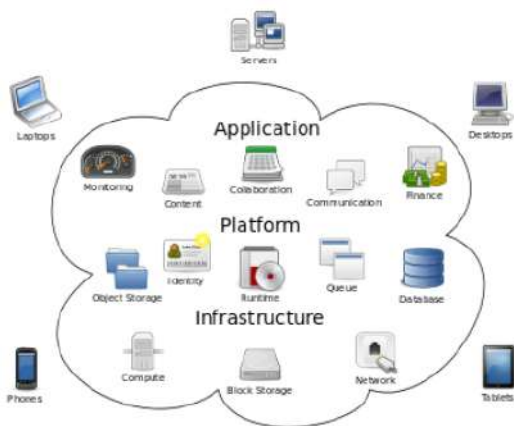


Figure 1. Cloud Computing.

There are other types of calculations (Internet resources).

1. Request self service. The user must save server time, space for data storage and, if necessary, automatically in an order not related to the service provider, calculate and change the calculation power independently.

2. Wide network access. Accountability opportunities are available in the industry through standardized mechanisms with a long distance. Provides broad access to a wide range of thin client platforms (terminal equipment).

3. Consolidation of resources. A large number of users will be able to share resources by converting computing resources into a single pool.

4. Fast elasticity of resources. Depending on the needs of the user, cloud services can be expanded, quickly provided and reduced.

5. Settlement services (actual consumption of accounting resources and the use of payment services). [2]. Complete systems optimize and control the use of resources, measuring some degree of abstraction depending on the type of service.

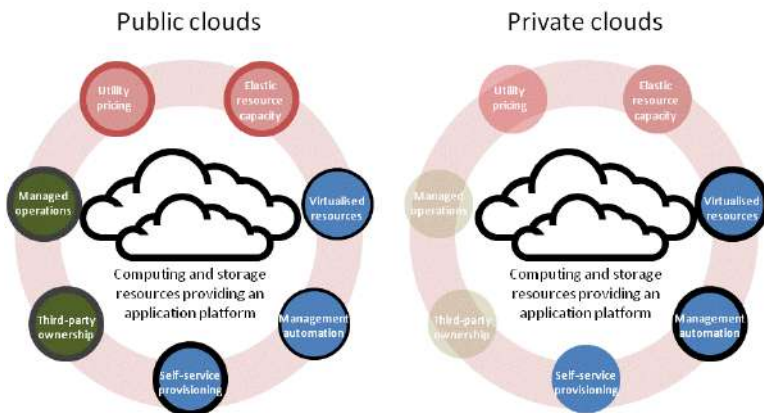


Figure 2. Presentation of models.

- Private cloud - this infrastructure is used by a single organization when implementing cloud computing.
- Community cloud - this infrastructure can be used only by a cloud computing group (section).
- Public cloud - this infrastructure has wide public access to cloud computing services.
- Hybrid cloud (hybrid cloud) - this includes all infrastructure deployment models (private, collective, public).

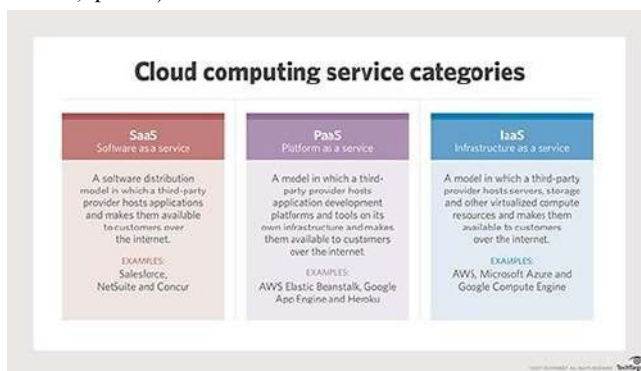


Figure 3. Service models.

1. SaaS (software as a service) - providing cloud-based software.
2. PaaS (platform as a service) - creation of a platform for user operation using software languages and provider tools.
3. IaaS (Infrastructure as a Service) - the provision of intermediary services that can store and process user-created programs.[2]

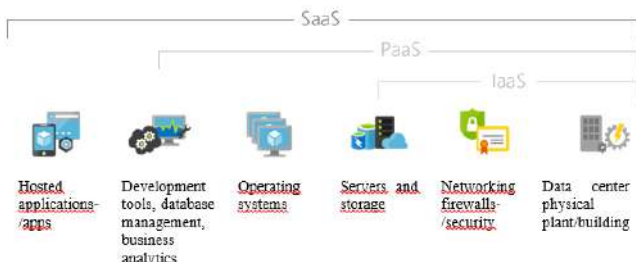


Figure 4. Classification of Cloud Computing.

As a special environment for the distribution of applications to remote information resources, a virtual educational Internet system is used, in which there are separate clouds accessible via the Internet.

While the Internet provides access to many information resources, cloud technologies provide access to personal information resources.

Cloud learning services have the following advantages over other methods:

- Easy to connect and easy to connect;
- low cost and availability of the platform;
- high security;
- reliability;
- Simple system flexibility for a network platform;

There are also a number of flaws in cloud computing. The main thing is that you need to connect to a permanent network.

There are a number of advantages of cloud computing systems:

- The subscriber device does not require special software, only an Internet connection is required;
- All educational and training software systems on one platform;
- Log in from anywhere on the Internet;
- There are no problems with online loading and unloading;
- The entire university can turn it into an electronic university and manage it online.

Today, many developments have been made in the organization of the education system based on cloud computing technologies.

The following system model describes the organization and management of the education system on a single platform based on cloud computing.



Figure 5. Cloud Internet Education System.

Many cloud servers have been created around the world to organize a cloud platform. For example, Yandex Disk Drive and Google Disk can be an example for popular cloud computing. These cloud servers allow you to host, save and manage information from anywhere in the world.

Today, there are many Internet systems for organizing cloud services.

Most commonly used systems:

- Box.net;
- Dropbox.com;
- Diigo.com;
- Smartsheet.com;
- Microsoft Office 365.

A comparative analysis of the capabilities of these and other cloud systems is given in the table below.

Title	Free zone, GB	Details encryption	method Support operating systems	Internet connectivity options	batch processing	Number of computers
Dropbox	2	SSL, AES 256	Windows, Mac OS, Linux, Android, iOS	available	Not available	∞
Spider Oak	2	RSA 2048, AES 256	Windows, Mac OS, Linux, Android, iOS	available	Not available	∞
MS Sky Drive	7	SSL, AES 128	Windows, Mac OS, Linux, Android, iOS	available	available	∞
Box.com	5	SSL, AES 256	Windows, Mac OS, Linux, Android, iOS	available	available	∞
Wuala	5	AES 256, RSA 2048, SHA-256	Windows, Mac OS, Linux, Android, iOS	available	Not available	∞
Adrive	50	SSL	Windows, Mac OS, Linux, Android, iOS	available	available	1
Yandeks. Disk	10	-	Windows, Mac OS, Linux, Android, iOS	available	Not available	∞

The cloud service Dropbox is organized on the basis of the site <https://www.dropbox.com>, which organizes and transmits information in the following sequence: it will be increased.

1. Membership. The user logs in to the web interface.

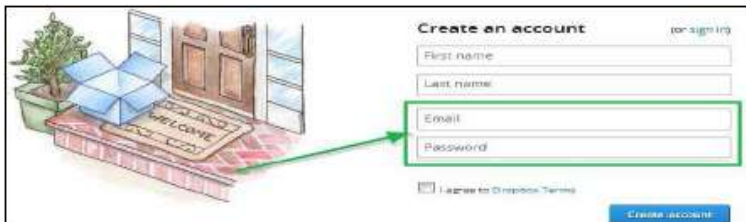


Figure 6."Registration of the Dropbox service.

2. Work with the Dropbox system through Web Interys. When you register, the following window will appear on the site.

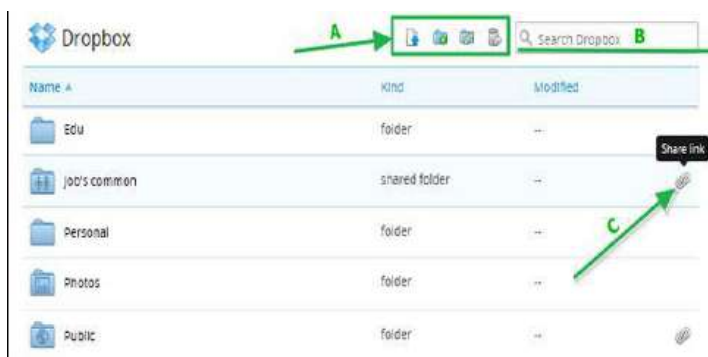


Figure 7.Web interface service "Dropbox".

Using this window, you can:

- create new folders;
- upload new files;
- creating or adding new directories;
- organization of general communication;
- Edit and delete files.

Thus, the above-mentioned systems will provide not only training, but also the organization of various systems based on cloud computing technology.

Among the many sources of e-learning in cloud computing are the following:

- Authoring tools;
- Effective use of virtual learning systems; LMS (Learning Management Systems);
- CMS (content management system) controls the internal content management system.

Recently, cloud technology companies and academic institutions have shown interest. Cloud technologies with a complex structure provide a single computing resource within the network connection to external servers (web services). The advantage is that it is connected to the Internet. Access to data and applications is possible at any time and at any time using any device.

This feature eliminates the costs and complexity associated with the integration and maintenance of the information infrastructure. All technologies can be physical or virtual. This is a reliable computing resource that can share common resources. This characteristic of all popular technologies was developed as a successful business model.

The main aspects of cloud technologies are:

1. Basic service: the consumer does not know the complexity of the basic infrastructure. It can be accessed by the management interface to facilitate the needs of the consumer for each service. It includes the ability to hide the details of the implementation of the interface and the technology for solving consumer problems. ,

2. Resistance: You can decline the service request up or down.

3. Stability: for each copy at a low price. ability to add or delete resources

4. General Information: The basic infrastructure is distributed among users of software or platform services and provides access to the same number of consumers who use unused documents to simultaneously serve several clients.

5. Internet services. Services can be viewed using Internet formats and protocols such as URL, HTTP, TCP IP and web technologies.

In addition, cloud computing technologies can be used to provide corporate and community-based learning and to use computer technologies to provide common learning methods.

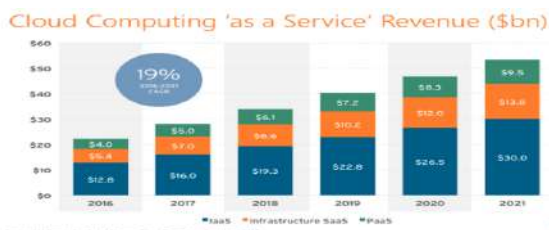


Figure 8. Predictions for cloud computing revenues to 2021 from 451 Research.

Cloud technologies have many advantages compared to e-learning, providing infrastructure, platform and educational services through object virtualization, centralized storage and monitoring of access to cloud service data. To succeed in e-learning, he uses a well-metric system to measure the effectiveness of e-learning cloud solutions at universities.

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