QR – Issue   **QR – Article**

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CLOUDY TECHNOLOGIES IN EDUCATION

Abstract: *Introduction. A Cloudy technology is a data processing in which computer resources and capacities are provided to the user as Internet service.*

Materials and methods. The essence of Cloudy technologies consists in providing the users of hosting of remote access to services, computing resources and applications on the Internet. The hosting is a service in placement of the equipment of the client in the territory of the provider, at the same time his connection to communication channels with a high capacity is provided. Development of this sphere of hosting is carried out in connection with the need for the software and digital services which could be operated from within, but which would be at the same time more economical and effective.

Results. In comparison with a traditional approach cloud services allow to operate larger infrastructures, to serve various groups of users within one cloud and also they mean complete dependence from a provider of cloud services.

Discussion. When granting a cloud service the payment type "payment for use" is used. Usually, a minute or use hour of resources is accepted as a unit of measure of operating time. While assessing the volumes of data the megabyte of the stored information is accepted as a unit of measure. In this case, the user pays for that volume of resources which in reality was used by him during a certain period of time. Besides, a Cloudy technology gives to the user an opportunity if necessary to lift or lower the maximum limits of the allocated resources, using thus elasticity given service.

Conclusion. The user of cloud services doesn't have a need to care for infrastructure which provides operability of the services provided to him. All tasks of control, elimination of disrepair, expansion of infrastructure and so forth are undertaken by the service providers.

Key words: *information technologies, mobile gadgets, Cloudy technologies, cloudy technologies, platforms, services, tendencies, electronic education, electronic educational resources.*

Language: *English*

Citation: Zhoranova, N. (2019). Cloudy technologies in education. *ISJ Theoretical & Applied Science, 04 (72),* 347-351.

Soi: http://s-o-i.org/1.1/TAS-04-72-43   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.04.72.43

Introduction

The world changes. And it changes quicker than we consider. Information technologies are one of the most powerful catalysts of world changes today.

The world in 2016 considerably differs from the world in 2006, and especially, in 1996. But nevertheless, the world of 2020 will be even less similar today. Development of the high-speed Internet, a mobile covering and devices, continuous reduction in cost and multifunctionality of gadgets significantly change our life day by day, and by 2020 and it will absolutely establish domination in our lives.

Materials and methods

Main predictable tendencies of 2020:

Tendency 1. The world in clouds

Cloudy technologies are a remote Internet space for storage and access to data and also for carrying out various calculations. By 2020 physical data storage and acquisition of computing power will lose that role which is allocated to them now. The data will become not only more convenient to store "far off", but it will be also inexpensive and safe. And calculations will be made so quickly that the technologies will allow. When the issue of safe data storage is resolved, not only business but also individuals will pass the data storage in clouds.

Tendency 2. World of general mobilization

At the moment more and more users are connected to the Internet by means of mobile gadgets,

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than by means of stationary computers. By 2020 mobile devices will let not only notice the computer but also will become the first tool almost in all spheres of people's activity. Today already an e-mail, the presentations, documents, photo and video, cards, high-speed Internet and other services are entirely built-in in mobile devices. To 2020 mobile devices will replace printers, projectors, payment service systems, identity cards, and other documents. The advantages are obvious: gadgets don't take many places; they are light, convenient in use and multifunctional. Now already smartphones are used instead of expensive specialized devices, and in the near future, it will become a norm [1].

Tendency 3. The world on a palm

The Smartphone wins the place as the main working tool, all necessary information contains in clouds, and the need for classical office gradually disappears. And it is the saved hours of the way from home to office, preservation of the physical and mental state and an opportunity to work practically at any place. Now already in many cities, there are working clusters: a cafe, co - working centers and etc. The mass of workers works far off where it is convenient for them to be. The workers' sense of responsibility must grow, and the main thing for the employer is to be sure of it. There are also advantages for the business (fewer expenses on office buildings, parking, public utility payments), and for the employees (the flexible hours which are adjusted on getting results).

Tendency 4. World of devices, but not of people

In the future, you won't need to have many people around. Instead, ask a question, and the system will provide you with all the necessary information. Instead of the ordinary trainer in fitness club today you can already use the electronic trainer. By 2020 the majority of traditional branches will successfully replace the devices and virtual systems without a loss of quality.

When will all these innovations come? Whether it is worth waiting for 2020 or will change occur even earlier? They have already occurred yesterday and therefore if you don't want to lag behind all these modern technologies, then it is necessary to start to prepare for them right now.

IT-industry doesn't stand idle on the place, therefore, it is important to join this wave now that in further it will be possible to move to a progressive future. In this preparation, it is necessary not to forget about an education system that will direct first of all the novice users to the high modern technologies [2].

Now, at a high-speed information technology development, the system of education has had a list of the purposes, for the achievement of them it is necessary to use these technologies. As only by means of the introduction of IT getting effective management and the functioning of an education system will be possible.

Modern conditions show that automated data collection, processing, and storage are useful not only to financial and economic management in an education system. IT is even more often a kernel for managing the educational process and provides it with the support. All higher educational institutions (HEIs) possess their own websites on the Internet. It gives the chance to publish information which tells about the HEI, to keep in contact with students, teachers, scholars, employers and all, who are interested in the activities of HEIs .

Automation has affected also the processes of licensing and accreditation. It gives a chance to provide reporting documents in a convenient form and transparency of the adoption of resolutions by the relevant departments. Along with it, a remote education has got abroad distribution which provides with the knowledge acquisition at any place and at any convenient time. Therefore the concept "Virtual University" has been created from all this.

The importance of electronic education for educational institutions has promptly increased. Cloudy technologies give the educational institutions modern opportunities for providing with the dynamic and topical applications, based on Internet technologies for electronic education. Cloudy technologies provide consumers and state educational standards with a high -level service. This technology has an impact on architecture, existing services, and stages of introduction of training courses. Cloudy technologies bear new risks, but also an opportunity for educational institutions and learners to provide and get modern services, at the same time spending minimal finance.

It significantly changes the existing model Virtual Learning Environment (VLE, virtual educational platform), delivered as the set of tools for electronic education introduced and served by IT educational institution services. And also it will significantly change the learning management system LMS (from English Learning Management System). For which it won't be necessary to create materials, all materials will be already created by the suppliers of Cloudy technologies, it will only be necessary to be registered and make the necessary tuning. [3].

For educational institutions, the increasing filling by information and the functionality of managing platforms of the virtual educational environment (VLE) called differently as learning management systems (LMS) have a great meaning. There is no main definition of VLE-systems, because in the process of their introduction in world network they fill up the opportunities and apply modern resources in the form of blogs, etc.

VLE-systems have a low potential of creation and preservation of content generated by the users. All of them try to bypass those restrictions which the systems have during the work. Therefore they use the platforms which are in network and having a free basis

of using. Grouping all instruments available free, they create the very tool which is necessary for the learners. But all platforms have one common peculiarity - it is giving the content and instruments of training to the groups of students studying a course at a certain period of time and being in different corners of the world.

Many educational institutions consider the development of educational content and its distribution on the Internet by a threat of market position. But there are also advantages in the form of collaboration between trainees and teachers. The very environment is closed from strangers to all this that blocks the access to "uninvited" guests. In addition to it, there is a control of the educational process as a form of data on the access to systems for pupils. Thus, there is a possibility of increasing the level of quality of the educational process, given by the services and content and also the level of experience and mastering the materials by students [4].

The choice of programs of remote education in the market of the educational software is big, they are presented by elementary HTML pages, and platforms with wide functionality. One of the main requirements given to means of the organization of remote education is a probability of simultaneous managing the educational process and quality control of the gained knowledge. The choice of the program providing for remote education is implemented according to applications, the purposes, and tasks of customers of a program providing.

The main criteria of the choice of remote education software are [5]:

1. Functionality: the existence of necessary options, among which chats, forums, managing the courses, the analysis of pupils' activity, etc.

2. Stability: level of stability of the platform at various modes of loading, depending on the level of the users' activity.

3. Friendly interface: one of the main parameters affecting the quality of the educational process.

4. The convenient and simple interface of administration and updating the content.

5. Price: it is formed of the cost of the platform and the cost of its maintenance.

6. Modularity: the educational course can consist of several blocks (modules) of a training material which if necessary can be included in the structure of other courses.

7. Scalability: the platform must have an opportunity to extend not only at an increasing number of pupils but also as an introduction of new courses.

8. Multimedia: the technical capacity of the platform must give a chance of application as instruments of training text and graphics files, video and audio, animation, 3D graphics, etc.

9. Level of technical support.

The task purpose is to consider the platforms and services of electronic education for educational institutions.

Depending on the main destination all platforms of remote education can be divided conditionally into:

• Box services (both free ready decisions, and paid);

• Services with certain rent payment for their use;

• Platforms for holding various webinars and conferences [6].

Discussion

We will review examples of some platforms below.

Moodle

It is developed by the Australian programmers and is one of popular in the world including Russia. About 20 million people are the users of the platform, and the number of courses comes to 3 million. The ready box decision is presented, it is free and it can be downloaded freely on the Internet, payment is made for additional services and the place for file storage.

IBM Lotus (Workplace Collaborative Learning, WCL)

Working out of the IBMCompany. Universal, reliable, flexible and easily scalable platform for the organization of remote electronic education, managing the educational resources and materials. It can be used while increasing the qualifications in the big companies and also in educational institutions.

Share knowledge

Working out of Competentum Company. It presents a free box decision. The main advantage of the platform is the possibility of the independent organization of the whole distance learning, from the development of courses, preparation and carrying out till managing the lessons and control of the level of listeners' knowledge. Text and multimedia files are used in training. Teachers can give out to pupils a task with restriction of delivery time, the beginning and completion of tasks and etc. Assessment of learners 'knowledge level is implemented by means of electronic tests. [7].

Web Tutor

The program is developed by the Russian producer of the software Web Soft. The platform of complex automation of business processes connected with a selection, assessment, testing and training of personnel, systematization, and storage of knowledge and also with the organization of corporate communications and interrelations between the employees. If the module has the approach allowing organizing easily customized systems on the basis of a set the program modules the functions of which depend on the aims set for the customer. The platform is available both on the Internet and in the Intranet network.

Prometheus

Development of the Russian producer of a program providing "Virtual technologies in

education". It fulfills the role of a ready-made (box) product or at the customers' request, the training system under the customer's requirements is sold according to the system Saas. The platform possesses architecture in the form of modules and, accordingly, it has a wide potential for widening and updating the platform.

It is possible to draw a conclusion that there are two approaches to presenting electronic education: VLE and the educational environment created from a set of Websites. But there is also the third approach, which can destroy both existed with its potential.

Table 1. Comparison of electronic learning platforms

Platform / Function	IBM Lotus	Moodle	Web Tutor	Share knowledge	Prome Theus
registration of learners, opportunities of personalization and delimitation of rights on access to educational materials	+	+	+	+	+
creation and conducting the on-line courses	+	+	+	+	+
introduction of computing and statistics on learning	+	+	+	+	+
control and assessment of knowledge level	+	+	+	+	
questionnaires and creating the questions	+	+			
opportunities of integration with other information systems	+	+			+
Price	+	+	+	+	+

Two companies Goog1e and Microsoft began to offer services for employees of educational institutions and students. These services replace or supplement functions of institute systems, such as e-mail, instant messaging, making calendar plans; creation and storage of personal documents, providing general access to them, creating the Websites. Services of Google Apps for educational institutions and "Microsoft Live@edu" include the extensive choice of instruments which can be adjusted according to the user's need [8].

Google Apps provides with a set of the Google services, but available in the domain edu. The post service Gmail, the cloudy storage Drive, services on creating the tables, documents, presentations, and sites (Sheets, Docs, Slides, and Sites). However, the product is directed to cover the whole institution, the registration of corporate account on the responsible person. Inside of this account the users' accounts with different rights of access.

Microsoft Office 365 for the educational institutions allows us to use all possibilities of "cloudy" service, helping to economize the time and money, also it increases the learners' and teachers' capacity. With the help of the suggestions Windows Azure in education, the teachers get a chance to include in their educational process one of the more innovative and quick developed technologies both in the theoretical and the practical chapters. At the same, time these systems are placed at the external supplier of services, in a called "computing cloud" or just "cloud".

Results

So, what is "cloud" (cloud) and "cloud computing" (cloud computing)? Cloud computing is a model of providing remote access to dividing computing resources which are physically distributed on many remote devices forming a so-called cloud (cloud) [9].

The main characteristics of cloud computing which distinguish them from other types of computing (internet resources);

1. The user himself establishes the necessary quantity of resources for work, whether it will be a number of servers, time of their work, the volume of data storage. At the same time, he doesn't interact with the service suppliers.

2. All provided services and capacities are available at any place of the globe, irrespective of platforms at which the user works.

3. All resources divided physically, are united in a whole by means of program platforms, hiding all this from users, providing access to any of their quantity.

4. The convenient scalability the provided resources provide the users at any time to reduce or increase power consumption.

5. Payment is made only for what has been really used, but not for the whole service in general.

If the model of providing the distributed and divided configured computing resources corresponds to the above requirements, then it is cloudy computing.

Cloudy technologies provide users with various information technologies as services available on the Internet. [10].

Models of expansion of Cloudy technologies that is cloudy technologies:

Private cloud (a private cloud) - the infrastructure intended for use of Cloudy technologies on the scale of one organization.

Community cloud (a cloud of the community) – cloudy infrastructure which is intended for exceptional use of cloud computing with a certain community of consumers from the organizations which solve common problems.

Public cloud (a public cloud) - the infrastructure intended for the free use of Cloudy technologies by a wide public.

A hybrid cloud (a hybrid cloud) is a combination of various cloudy infrastructures (private, public or communities) remaining unique objects, but connected with themselves by the standardized or private technologies which provide a possibility of data exchange and applications.

Service models of Cloudy technologies or cloud computing:

Software as a Service (SaaS) - the software as a service. The service is available for the user in the form of web forms and applications which are developed at a service provider. Users can control at the same time not only the choice of hardware platforms and infrastructure but also the choice of concrete software and also his control.

Platform as a Service (PaaS) - the platform as a service. The user gets access to a certain infrastructure which is already adjusted to equipment rooms and the software. The user can't operate infrastructure configurations but operates the developed applications on a platform.

Infrastructure as a Service (IaaS) - infrastructure as a service. The user completely himself forms infrastructure which is necessary for him. That is he uses a service of outsourcing or rent of capacities. The user doesn't operate the main infrastructure of a cloud, but he manages the operating systems, storage and developed by him applications [11].

Conclusion

The use of "Cloudy technologies" is included in the educational process with delay and hasn't found a wide use yet. Though modern students also read about "Cloudy technologies", and some also use individually among them in their own activity. However, the earlier teachers and other users begin to apply cloud services in the work, the earlier they will buy an effective tool for creating the personal trajectory of learning, the more effective and more interesting they will be able to make the training process.

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