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Artículos

Capabilities of Cloud Services and Webinars Effectiveness of Teaching Humanities Students

Capacidades para servicios en la nube y seminarios web en la eficacia de la enseñanza de los estudiantes de humanidades

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Abstract:

Considering the efficiency problems of the education of humanities students, it is impossible to ignore the use of cloud services as a phenomenon of the high-tech educational environment, which is formed both within the institution, and in the region of the education system of individual countries on a global scale. The article confirms the relevance of the use of the cloud and webinars, considering the characteristics of an environment oriented to new technologies. The level of application of cloud technologies and their main advantages and limitations to ensure interactivity in webinars were determined based on an expert survey.

Keywords: Educational services in the cloud, information and communication networks, webinar..

Resumen:

Teniendo en cuenta los problemas de eficiencia de la educación de los estudiantes de humanidades, es imposible ignorar el uso de servicios en la nube como un fenómeno del entorno educativo de alta tecnología, que se forma tanto dentro de la institución, como de la región y el sistema educativo de países individuales a escala global. El artículo confirma la relevancia del uso de la nube y seminarios web, considerando las características de un entorno orientado a las nuevas tecnologías. Sobre la base de una encuesta de expertos se determinó el nivel de aplicación de las tecnologías en la nube y sus principales ventajas y limitaciones para garantizar la interactividad en los seminarios web.

Palabras clave: servicios educativos en la nube, redes de información y comunicación, seminario web.

INTRODUCTION

The contemporary educational environment based on distance technologies can be interpreted as a virtual developed space, which has its structure, properties, principles of construction, interaction environment, and a system of interconnections and relationships. Today, three models of organizing the educational process based on distance technologies are used most widely. These are case-based, translational, and network models (Anderson, Dron: 2011; Troshin et al.: 2020; Pogodina et al.: 2019).

In the case-based model, two options are available: using a website for posting teaching materials, and without the use of the website. But without embedding a website, it is impossible to establish effective feedback from the learning process participants because the student, having received the material, studies it himself (Terekhova et al.: 2020; Dokholyan et al.: 2020). The advantages of this model include small funding, because the involvement of teachers is minimal, and the main burden falls on the technical staff, while communication with tutors takes place in the allotted time by organizing consulting. Although at that the main burden falls on the developers of cases, in this model it is possible to create a set of electronic educational resources using ready-made software products, websites, simulators, etc. For this model, it is necessary to train developers, constantly coordinate tutors, and encourage interaction between organizers and students to keep the training motivated (Barley: 1999).

A model based on the use of translational technology represents video transmission of recorded learning cases via the Internet. This model is similar to working with case technology, but the training materials are first recorded as video materials and then transmitted or distributed to students. This model also does not involve interactive communication with the tutor; therefore, its effectiveness is also relatively low (Passerini, Granger: 2000).

The model, based on using network technology is more time-consuming and expensive. To conduct training, the tutor himself must thoroughly master the features of using e-learning, the tools of the site, and learn how to create his course himself. In network technology, the tutor acts as an author, as well as an accompanying consultant, and a teacher. Communication between the student and the tutor on the site takes place constantly throughout the entire period of study. The student gets advice at any time, although independent work of students remains a basic mode of study, however, it is also possible to organize students' teamwork and paired work (Guri-Rosenblit: 2009).

At that, it is possible to integrate case and network technology, using various ways of interaction, for example, prepare some disciplines (or part of the course) as a case, while others –for online study.

A virtual university model can be considered the most productive model for higher education institutions. The model represents a portal with a branched structure, which includes an information part, a platform for learning and communication, the ability to interact with departments and their representatives, as well as with the library, the dean's office, the staff department, establishing feedback with the dean's office, etc. This model provides various options for online communication (conference, webinar) and distance learning (using e- courses, case studies, testing, etc.). All participants of the educational process have access to the virtual university, which allows quickly creating, and if necessary, changing the schedule for open attendance of classes, viewing video lectures and courses (Mohammadi: 2015).

There are quite enough models for organizing the educational process using distance learning technologies at universities. At that, the efficiency of the chosen model will depend on many factors, namely, the effectiveness of interaction of teacher and student, developed teaching materials and methods of their delivery, the feedback, and the definition of a set of tools for creating personal learning environments.

The technical implementation of these models should be based on cloud services, which provide additional advantages for distance support of knowledge acquisition for users (Sultan: 2010; Pardeshi: 2014; Odeh et al.: 2017).

In recent years, cloud computing technology has served the basis for further development of means and services of information and communication networks (ICN). This technology is used for the subject-technological organization of information educational space, ordering processes of accumulation and storage of various subject collections of electronic educational resources, whose access and functionality significantly increase (Truong et al.: 2012; Isil: 2014).

Vouk M. (2008) explains the term of cloud computing as software and hardware which is available to the user via the Internet as a service that provides a convenient interface for distance access to computing resources (programs and data). Lin A. and N. Chen (2012) interpret the concept of cloud computing technologies, referring to the concept of a virtual network platform. According to this concept, due to a special user interface supported by system software for network configuration, network virtual ICT objects are formed in adaptive ICNs.

These objects, network virtual platforms, are a situational component of the logical network infrastructure of the ICN with a temporary open flexible architecture, which in its structure and time of existence corresponds to the personalized needs of the user (individual and group), while their formation and use are supported by cloud-based technologies (Armbrust et al.: 2010; Tsvetkov et al.: 2020; Emelyanov et al.: 2019).

According to researchers (Sasikala, Prema: 2010; Sabi et al.: 2016; Pivneva et al.: 2019), consideration of the concept of the cloud-oriented educational and scientific environment of higher education institution requires special attention. The latter is an ICT environment of higher education institution, in which certain didactic functions, as well as some fundamentally important functions of scientific research, suggest appropriate coordinated and integrated use of cloud computing services and technologies. This is necessary to reduce the risks when searching for the best solutions to provide informational support of the educational environment, as well as to bring it in line with the current level of science and technology development.

According to P. Thomas (2011), cloud services are designed to make application software, data storage space, and computing power available to the user via the Internet. Cloud services are used to provide users with electronic educational resources that make up the content of a cloud-based environment, as well as to ensure the creation and delivery of educational services.

Cloud services make it possible to diversify the form of delivering educational material, make the learningprocess interesting, improve the quality of acquiring knowledge, and get timely help and advice. Cloud services have many tools that make it much easier to conduct classes (Ercan: 2010). One of these tools is services that allow conducting online webinar-based classes. This type of training not only allows the teacher to combine multimedia resources (text, graphics, audio, and video materials) but also to discuss and explain the training material in real-time mode (Bora, Ahmed: 2013).

The purpose of the present study is to analyze the possibilities of using cloud services and webinars to improve the effectiveness of teaching students in the humanities.

The research hypothesis is formulated as follows: organizing webinars using cloud services contributes to increasing interest in obtaining knowledge; the method of conducting such classes has real educational prospects.

Based on the results of the study, it can be concluded that the goal set in the study has been achieved.

METHODOLOGY

To solve the tasks set in the work, general scientific methods were used:

a) theoretical methods included analysis of peer-reviewed scientific sources on the research problem to determine the development status of the issue concerning formation and development of a cloud-oriented educational environment of higher education institutions, and a generalization of domestic and foreign experience in the use of cloud services and technologies in higher education institutions;

b) empirical methods included an expert online survey of participants of the educational and scientificenvironment of higher education institutions to determine the level of application of cloud

technologies in theimplementation of the educational process, the main advantages of webinars, and restrictions arising at their use, as well as methods to ensure interactivity of the webinar.

The survey was attended by 40 experts including research and teaching staff who somehow associated their activities with the issues of using cloud services and conducting webinars, i.e. it can be assumed that these were people well familiar with the latest trends in technological development, working mainly at well equipped educational institutions, and focused on the use of modern ICT.

RESULTS

When the experts were asked the question: "What types of activities do you use cloud services for?" the results were distributed as follows (the options were not mutually exclusive) (Table 1).

Possible answer	%*
Organizing educational cooperation	82.5%
Managing and delivering training resources	75%
Holding web conferences and webinars	70%
Educational and professional communities	67.5%
Office applications	62.5%
Electronic libraries	60%
The data exchange and storage	35%
Electronic document management	50%

Note: compiled based on an expert survey; * – percentage of expert mentions

The survey results show that cloud services are widely used in educational institutions, including organizing webinars.

According to one respondent, "webinars become much more effective due to the use of cloud-based platforms, they can be joined by a significant number of users, access can be organized from any device, and webinars can be deployed in the corporate network or the corresponding software can be used as a service, which makes them much more accessible to the wide audience".

Although this type of training is promising and effective, however, as noted by the majority of experts (70%), today it is used just by a few users. According to one expert interviewed, webinar users can be divided into two categories. The first category includes teachers who have IT education, and can easily master the features of using software and hardware for conducting webinars on their own. The second category includes humanitarian teachers who do not have sufficient knowledge in information technologies but have the opportunity to get free help from a technical specialist to conduct webinars at his assistance.

As noted by another expert, "today many teachers would like to conduct webinars, but their qualifications and lack of support staff do not allow them to carry out such activities." Thus, today, the issue of using webinars in teaching practice is relevant, on the one hand, while problematic, on the other hand, because only a small percentage of teachers actively use webinars, while most do not even know what it is.

According to experts surveyed, the webinar has gained popularity due to several advantages (Table 2).

Table 2. Main advantages of webinars

No	Advantage	Characterization	%*
1	Minor material costs	No payment is needed for the rent of the hall, equipment, food, printed materials, and transportation costs. This is especially true for conferences, seminars, and round tables organized by higher education institutions. The only expense for such an event may be paid for providing access to the Internet	90%
2	Time saving	The ability to organize distance training does not provide for the arrival and attendance of participants at the event. One can listen to the speaker either from home or at work	85%
3	Maximal coverage and availability	Depending on the platform and technical capabilities, the webinar can be held for an unlimited number of participants from different parts of the country and the world	80%
4	Interactive interaction of participants	Just like a normal seminar, participants can communicate with the host and other listeners via chat (most often), or via video communication, when the administrator switches roles and turns the listener into the host and vice versa	75%
5	Access to web resources	The opportunity for the presenter to provide and for the students to access any source of web resources during the webinar	72.5%
6	Ability to save a webinar	The webinar can be recorded and saved in the appropriate video format. The recorded webinar can be stored on any web resource, for example, in a blog, or traditional drive, and provided on demand. A series of webinars of the appropriate subject or area allow creating an electronic video course	60%

Note: compiled based on an expert survey; * – percentage of expert mentions

Despite the effectiveness and ease of use of the webinar, the experts considered it appropriate to indicate some limitations and difficulties that may occur during holding online classes (Table 3).

Table 3. Restrictions when using webinars

No	Restrictions	Characterization	%*
1	Lack of contact and emotional bond	The fact that the audience is physically present is essential in the discussion process because the teacher needs to see the audience's emotions and respond to maintain the audience's attention. Moreover, some people have difficulties regarding the auditory perception of information or from a monitor screen	85%
2	The complexity in holding the practical training	Practical training is difficult to conduct because the presenter cannot track at what stage of the task execution is a particular participant, and what difficulties arise during the execution of the task; listeners sometimes find it difficult to explain what they are doing wrong. Therefore, webinars are usually used for seminars, prevailed by discussion, conversation, and narrative	82.5%
3	It is difficult to upbringing participants	For example, to increase the motivation to study in a particular student, it is necessary to work with their personal qualities. Within the framework of a webinar, this is difficult to implement, and sometimes quite impossible	75%
4	Need for appropriate technical equipment	To fully participate in the webinar, listeners, in addition to the computer, must have technical means such as headphones, a microphone (if two-way video discussion is provided), and an Internet connection. The lack of proper equipment makes it impossible to participate in the webinar	70%

Note: compiled based on an expert survey; * – percentage of expert mentions

As can be seen, these restrictions are not a significant barrier to webinars. Some of them can be resolved in advance and avoided. For example, educational work with participants can be carried out during in-person sessions; conducting practical training, although difficult but can still be carried out if it is properly thought out, and all possible mistakes are foreseen before the implementation of practical tasks.

The webinar is conducted using the appropriate software, which allows organizing training activities between geographically remote users in real-time mode. Such activities can be organized both in the webspace of the Internet and in the corporate cloud environment of the university.

DISCUSSION

The number of universities using cloud technologies is growing every year. Not all organizations move completely to the cloud at once, but today more and more universities use at once several cloud environments, depending on the tasks set. Also, contemporary virtual devices contribute to the increasing penetration of the idea of BYOD (Bring Your Own Device) – the organization of the user's workplace, where he uses his own devices to work with the university resources. For example, the user can come with a home laptop, connect to a Wi-Fi network, and start working with e-courses. This idea has long been popular due to the desire of people to work with familiar devices. As for hardware, even smartphones can be used as terminal devices. Even today, vendors are offering virtual mobile infrastructure (VMI), where the user's mobile phone is used as a thin client, and the operating system runs on a remote server (Kondratiev et al.: 2020; Galustov et al.: 2019; Winter et al.: 2019). Thus, users receive corporate cloud services, for which the demand is growing due to current trends (Boja et al.: 2013).

Generally, according to researchers (Tuncay: 2010), the university's e-learning system, which is implemented on a cloud platform, consists of the following components:

1. data center for e-learning courses – the electronic library, and cloud (resource sharing);
2. distance learning – applications (services) for remote work, including using smartphones;
3. in-class learning which is held through webinars.

Experts note that while the technical component of the webinar depends entirely on the competence of the network administrator, the pedagogical component depends on the teacher who plans to conduct classes. Even though the process of conducting a webinar seems quite simple, it is worth noting that the levels of conducting a webinar can be quite different. To achieve a high level of webinars, the teacher needs to spend a lot of time and effort to think through all aspects of conducting such a class, plan their actions and anticipate the actions of listeners, as well as prepare possible questions and answers to them. Today, certain organizations are exclusively engaged in organizing webinars and providing assistance in their conduct. However, having the appropriate tools and pedagogical skills, the lecturer can organize such a lesson himself.

According to experts (65% of respondents), an important pedagogical component in organizing and conducting webinars is ensuring interactivity and constant interaction with participants, their communication in real-time mode. The choice of these features is determined by the selection of the appropriate software (webinar-oriented platforms) which will be used to hold webinars.

The interactivity of the webinar can be provided by various methods: an online survey of participants, visualization of the discussion, the ability to take notes during the webinar and ask questions, file sharing, and recording and distributing the content of the webinar (Table 4).

Table 4. Methods for ensuring interactivity of the webinar

No	Methods	The description of the method
1	The online survey of participants	In the beginning, during, and after the webinar, the organizer can conduct an online survey, during which all participants must provide an answer to one or several questions. An online survey can be conducted to update the basic knowledge on the topic, summarize the material, and motivate participants to actively participate as listeners. The survey settings can be configured so that the results are hidden from the participants or, conversely, are open. But in any case, the identification of responses with the names of participants is only available to the organizer. Therefore, if a participant gives an incorrect answer and the results are public, only the organizer can see the name of the participant who gave the wrong answer.
2	Visualizing a discussion using a presentation, demonstration of the computer desktop and applications	During the webinar, the organizer can visualize their lecture using presentations, images of their desktop, and work in certain applications. Similarly, participants also have the opportunity to visualize their responses (report during the webinar to all participants). An important point is the ability to ensure constant interaction using the virtual board. For example, during a presentation, the speaker may ask participants to make some notation on certain slides, such as notations on a geographical map, diagrams, models, tables, drawings, etc. Visualization of the webinar can be performed using the Whiteboard, which allows participants to share a part of the screen where slides, images, diagrams, or tables can also be placed. In this case, all participants' actions are automatically updated and can only be identified by the webinar organizer.
3	Note-taking of the webinar content	During the webinar, each participant can use pre-prepared notes, for example, in the Microsoft OneNote environment, or take these notes directly. It is also possible to make these notes simultaneously by all participants, whose actions will be automatically updated and will be available online for common use.
4	Exchanging files while working together	Sometimes, during a webinar, it is needed to distribute several files to participants. The *Attachment* module allows doing this quickly and marking certain permission levels for viewing and editing.
5	Recording the webinar	The webinar organizer can record the webinar in .mp4 format that makes it easy enough to view its content using most players, and post it on the Internet at any time for restudying the material or analyzing the lesson

Note: compiled based on an expert survey

When discussing the results of the present study, the experts noted the need to comply with the requirements for the effective organization of webinars (Table 5).

Table 5. Requirements for effective webinar organization

No	Work stage	Requirements for webinar organizer
1	Before the webinar starts	• define the purpose and objectives of the webinar; • develop visual didactic tools (presentations, images, diagrams, etc.); • create an event in the calendar and distribute a webinar link to the participants; • create questionnaires and upload developed visual didactic materials; • using the link, login to the webinar web room 10 minutes before the start and provide answers to organizational questions which participants may have
2	During the webinar	• in the case of a video, make sure that the image and the general background behind the organizer is aesthetic, as well as extraneous noise is absent; • support and stimulate the activity of discussion in participants in the chat window, as well as voice discussion, surveys, visualizations to all participants on the screen every 5-10 minutes; • after completing the webinar, conduct a final survey and make generalizations with visualization of 1-2 slides; • inform participants on the address of the recorded webinar; • the total duration of the webinar should not exceed one hour.

Note: compiled based on an expert survey

According to one expert interviewed, "the webinar will be successful if it uses new facts, offers to discuss problematic issues and real-life situations."

In the course of further discussion, the experts have noted that it is important to prepare a presentation carefully and have a clear plan and the speaking notes in front of the presenter's eyes. When organizing a discussion of the main topic of the webinar, it is also important to prepare a discussion scenario, prescribe it in advance, and familiarize students. Students should also learn how to ask questions and participate in the discussion, following a specific scenario and the order of speeches in the discussion. When using a presentation, the teacher should offer problematic issues after every five slides that would provoke discussion and allow the teacher to have feedback from students. Besides, questions require students to focus on the topic and maintain mental activity. The questions should not be too complicated, and the answers and comments should take not more than one-two minutes. When presenting the main lecture, it is advisable to transfer all students to the status of listeners and not pay attention to what is being written in the chat. Specialtime should be provided for questions that may appear in the chat. This should be stated out in the rules of the webinar, depending on its purpose, tasks, and roles assigned to its participants.

CONCLUSION

Thus, despite the wide variety of ICT tools used in education, and the multivariate construction of the educational environment of the university, from the teachers' standpoint, learning systems built using cloud services become increasingly significant. While the traditional educational process management systems represent a vertical educational technology that reflects the traditional learning model in a contemporary educational environment, the use of cloud services implements the horizontal educational technology of joint activities of the network community. Thus, along with the information and educational environment of the university, the teacher gets the opportunity to build their subject-oriented information environment, which most corresponds to the tasks of studying a certain discipline. At that, this technology allows using new methods of teaching, interacting with students, and managing educational activities, including holding webinars.

Webinar technology provides powerful functionality for the implementation of distance learning and has significant didactic capabilities. Almost all types of classroom activities that are peculiar to traditional education can be implemented through webinars. Certainly, this form of training organization can significantly improve and upgrade the educational process.

Thus, the research results have confirmed the hypothesis that the organization of webinars using cloud services contributes to increasing interest in acquiring knowledge, and the technique of conducting such classes has real educational prospects.

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