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FORMATION AND DEVELOPMENT OF STUDENTS' INFORMATION AND COMMUNICATION COMPETENCE IN THE PROCESS OF LEARNING A FOREIGN LANGUAGE

The article explains and clarifies the concept of "a distance learning system". Much has been said in favour of distance education, and perhaps no less about the disadvantages of this form of education. The main advantages of distance learning are identified: distance learning has the possibility of flexible access to educational materials at any time and from any place, focus on collaborative learning technologies, covers a set of modern technologies that provide information delivery in an interactive mode through the use of information and communication tools from teachers or speakers to students, exchange of files of various formats. The obvious disadvantages of distance education include: the process of completing tasks tied to a specific interface, the creation of learning components of the educational environment that is available mainly to the teacher. This greatly complicates the joint work of the subjects of the learning process, i.e., there is no communication based on the network community. Operational cumbersomeness (load on the server of the educational institution and problems with system administration) is also important. The main reasons for the introduction of cloud technologies in education, their relevance and popularity, demand and usefulness are substantiated.

Keywords: information and communication competence; foreign language learning; information technologies; teaching aids; teaching methods.

Ref. 12.

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ФОРМУВАННЯ ТА РОЗВИТОК ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНОЇ КОМПЕТЕНТНОСТІ СТУДЕНТІВ У ПРОЦЕСІ ВИВЧЕННЯ ІНОЗЕМНОЇ МОВИ

У статті уточнено поняття "система дистанційного навчання". Багато сказано на користь дистанційної освіти, і, мабуть, не менше про недоліки подібної форми навчання. Визначені основні переваги дистанційного навчання: воно має можливість гнучкого доступу до навчальних матеріалів у будь-який час і з будь-якого місця, орієнтація на технології навчання у співпраці, охоплює сукупність сучасних технологій, які забезпечують доставку інформації в інтерактивному режимі за допомогою використання інформаційно-комунікаційних засобів від викладачів або спікерів до тих, хто навчається, обмін файлами різних форматів. До явних недоліків дистанційної освіти можна віднести: процес виконання завдань з прив'язкою до певного інтерфейсу, створення навчальних компонентів освітнього середовища, яке доступне переважно викладачеві. Це значно ускладнює спільну роботу суб'єктів процесу навчання, тобто, не передбачено комунікації з урахуванням мережного співтовариства., значення має операційна громіздкість (навантаження на сервер закладу освіти та проблеми з адміністрування систем). Обґрунтовано основні причини, що зумовлюють впровадження в освіту хмарних технологій, їх актуальність і популярність , затребуваність і корисність.

Ключові слова: інформаційно-комунікативна компетентність; вивчення іноземної мови; інформаційні технології; засоби навчання; методи навчання.

Statement of the problem. In the current conditions of education and pedagogy development, the issue of forming students' information and communication competence in the process of learning a foreign language using modern information technologies is an extremely important area of research, which is being developed by scientists from many countries.

The high level of relevance of the chosen topic is due to the fact that the productive and effective activity of

an educational institution depends on the formation of students' information and communication competence in the process of learning a foreign language. The study of the problem of forming students' information and communication competence in the process of learning a foreign language with the help of modern information technologies has become relevant due to the need and tasks of implementing the state policy in the field of education, which is aimed at ensuring an appropriate level of modernization of the quality of education, improving management methods, and is implemented in the modern system of education and pedagogy.

Today, global changes are taking place in the education system of our country, which require the latest approaches to the management of educational institutions. In addition, modern requirements for the management of educational institutions and the quality of the education system require a high level of professionalism from all participants in the educational process, and this is especially true for the process of learning a foreign language.

The social processes taking place in our country today have caused an urgent need to increase the level of competence of education and pedagogical workers who will be able to perform their duties productively in unpredictable conditions, especially in martial law.

Studying the scientific literature and legal acts, the works of scientists, which highlight the theoretical and practical aspects of the formation of students' informational and communicative competence in the process of learning a foreign language, we see that they do not sufficiently cover the issues of the formation of students' informational and communicative competence in accordance with educational standards.

Analysis of basic research and publications. The analysis of scientific and pedagogical literature demonstrates that in modern scientific works there is a theoretical foundation for the formation of students' informational and communicative competence in the process of learning a foreign language and their characteristics. The works of such scientists as R. Kravets (2013) [3], I. Honcharuk, N. Yurchuk (2018) [1], highlight the issue of the use of information technologies in the process of learning a foreign language by students of higher education institutions. The expediency of using information technologies is considered in the studies of R. Kravets (2017) [4]. The problems of the educational process, improvement of teaching methods, and the search for effective methods of improving students' knowledge are considered in the researches of I. Gunko [12]. However, it is necessary to note the insufficient number of publications devoted to the issue of the use of information technologies in the process of forming students' informational and communicative competence when learning a foreign language.

Forming the purpose of the article. The aim of the article is to specify the types and application of information technologies in the process of forming students' information and communication competence in learning a foreign language.

Presentation of the main material. One of the prerequisites for the application of information technologies in educational institutions is the use of modern computer technologies. Computer technologies have a contribution to make to the quality of teaching and learning, and the information society should take advantage of the possibilities of computer technologies, using them as innovative and experimental tools for the renewal of education. Computer technology has the potential to provide flexibility in the educational process that meets societal needs, as well as to reduce the cost of education and increase the internal and external returns of the education system.

Educational interaction in blended learning can be implemented on the basis of learning management systems (LMS) and Internet technologies.

Considering the first direction, let's clarify the concept of "distance learning system" (DSL). DSL is an information system on the basis of which the processes of planning, conducting and managing educational activities in an educational organization (for any form of education) are implemented. Examples of DSL are: "Moodle" (http://moodle.org/), "Sakai" (http://sakaiproject.org/) [1, 78–80; 4, 446–447].

The Moodle system is the main one in the process of implementing the system of means of information-competency formation in educational institutions. Such systems allow for active pedagogical interaction and represent a wide set of tools that provide opportunities for creating and placing educational courses in the system. Their advantages include a focus on collaborative learning technologies, ample opportunities for communication (messaging, chats, comments, etc.), file sharing in various formats, etc.

However, they are not without some drawbacks. First, teachers are often forced to work with a specific interface, within a certain logic of the environment. Secondly, the creation of learning components of the educational environment is available mainly to the teacher, which makes it difficult for the subjects of the learning process to work together, i.e., there is no communication with the network community. Thirdly, operational complexity (the load on the school's server and problems with system administration) is of some importance.

These problems accompany the development of the second area – the use of Internet technologies in the learning process. Internet technologies are understood as a fully automated environment in which the acquisition, further processing, storage, transfer and application of knowledge in the form of information is carried out with their subsequent impact on the object implemented on the Internet, and which includes machine and human (social) elements. Internet technologies are rapidly developing, since these are cloud technologies, which are considered the most rational in terms of the development

of the Unified Information Educational Environment [4, 446–447].

Cloud technologies are defined as: cloud services – a functionally complete set of services provided by a cloud technology provider that has its own interface and the ability to be modified in the course of operation without interrupting the work of users.

This is typical for cloud technologies:

– self-service on demand, i.e., the ability for users to use computing resources in the required amount without coordination with the provider (system administrator);

– pooling of resources, i.e. dynamic redistribution of capacities (information storage devices, RAM, network bandwidth, etc.), distribution of resources between several data processing centers allow the use of IT resources by various programs and users in an uncomplicated manner;

– universal network access, i.e. consumers receive cloud services regardless of the terminal device via the Internet from high-tech data processing centers;

– elasticity ("infinite" scalability) of services, which provides access to the system even at the "peak" of requests, the list of services can be expanded or contracted automatically, without additional interactions with the supplier;

– consumption accounting (payment by use) [2, 18–20; 9, 81–84].

Cloud technology deployment models and service models are presented in the following classification:

1. Deployment models:

– Private cloud (private cloud) – IT infrastructure that is controlled and operated for the benefit of one organization. Private cloud management is independent or outsourced. There are various options for hosting the infrastructure: on the organisation's premises, with an external provider, partly on the organisation's premises and partly with the provider.

– Public cloud. IT infrastructure for simultaneous use of the provided services by many companies. The responsibility for managing and maintaining such a cloud lies with its owner. The owner is usually a commercial, academic or governmental organisation.

– Community cloud. The use of possible resources by a community of consumers who share common principles (mission, regulations), both on the part of the consumer and the external provider. Such cloud infrastructure can be managed by the organisations themselves or by a third party.

– A hybrid cloud is a combination of several cloud structures associated with certain data transmission technologies. It is used if the internal IT infrastructure of the educational institution is not able to cope with the current tasks [9, 81–84].

2. Services provided by technology:

Infrastructure as a Service (IaaS). The main components of IaaS:

– hardware (these include servers, databases for storing all data, network equipment, and client systems);

– system software and operating systems (including resource management, virtualisation and automation tools);

– connecting software. An example is the two main products of Amazon: EC2 (Elastic Compute Cloud) and S3 (Simple Storage Service).

– Platform as a Service (PaaS). An integrated platform for further development, support of web applications, testing in the form of services [10, 103].

Control over the cloud infrastructure, except for user-developed applications, rests with the cloud provider. Examples of platforms: AppEngine by Google; Cloud Sites, Cloud Files and Cloud Servers by Mosso; Windows Azure by Microsoft.

Software as a Service (SaaS). A model that allows an end-user to use application software, most commonly through an Internet browser. Priklady: Google Apps, MobileMe (Apple), Azure (Microsoft) and LotusLive (IBM).

Workplace as a Service (WaaS). Applications as a Service (AaaS). Data as a Service (DaaS) Hardware as a Service (HaaS).

The relevance of using new information technologies in education is dictated primarily by pedagogical needs to improve learning outcomes. The competence orientation of the learning process, where practical skills are increasingly important, along with the increased dynamics of the educational process, the significant increase in the role of distance education technologies, and the global transition of information resources to the virtual environment, encourages higher education institutions to adopt innovative models of activity.

Among the reasons for the introduction of such a direction as cloud technologies into education, at least the following can be noted:

– significant financial investments in the purchase and maintenance of hardware and software products;

– often difficult adaptation of ready-made software products to the teaching process, and, as a result, only fragmentary use of them;

– the need to develop the information environment of educational institutions [3, 113; 4, 446–447; 12, 77–79].

Currently, educational institutions are most actively using SaaS services. For example, Google (Google Apps for Education Edition) and Microsoft (Microsoft Live @edu) offer free server-based solutions for integrated communications and collaboration among educational stakeholders.

Another option for using cloud services is to partially move learning management systems to the cloud (if it is not possible to secure the purchase of hardware or software).

Researchers on the implementation of cloud technologies in education identify the following groups of

advantages of their use, which correlate with the reasons for their implementation:

– economic group. Cloud services provided to users are free of charge or conditionally free of charge. The cost of licensed software is reduced. It is possible to use the space of institutions more efficiently;

– technical and technological group. These services have minimal hardware and software requirements. The services can be accessed using a web browser with an Internet connection. Most cloud services do not require special knowledge when using them or require minimal support;

– didactic group. The range of such tools is quite wide, they provide educational interaction [5, 136–140; 6, 189–190; 7, 210–211; 8, 28–31; 12, 77–79].

Like other information technologies, cloud technologies have educational functions and opportunities. Identifying the didactic potential of cloud technologies, let's consider possible applications in the educational process. Cloud operating systems and remote desktops, as well as cloud storage services accessed through a browser, can be used in the training process. Based on a cloud-based operating system (Web OS), it is possible to maintain documentation in educational institutions (software packages are integrated into it), prepare projects, etc., the process looks like your own computer without the Internet. Examples of free cloud operating systems that can be used in the learning process: Zero PC (http://zeropc.com/), CloudMe and CloudTop (http://cloudme.com), Glide OS (http://glidesociety.com), AstraNOS (http://astranos.org), Joli OS (http://jolicloud.com), etc. [9, 81–84; 10, 103].

Virtual desktops look and function virtually identical to traditional desktops, but programs and files are located on a server rather than on a local computer. You connect to the remote desktop via the Internet using a secure channel. A remote desktop can include an operating system, office software, archivers, anti-virus software, utilities, etc. Cloud desktops are usually provided for a fee by various companies. A simpler option for using cloud technologies in the management of an educational institution is to work with cloud storage.

Thus, we can and do point out the following advantages of using common cloud storage in student learning:

– file exchange can be carried out in different directions: student to student, university to student, teacher to student;

– virtually no training is required to work with cloud storage;

– supports various file types and the ability to publish them to the Internet;

– simultaneous work with several files and folders is possible;

– the data on your local computer is automatically updated when you update online;

– when several users work simultaneously, file updates affect all users [11, 158–161].

The specification of the advantages of using cloud technologies for the teacher and student is as follows:

1. For teachers:

– the ability to easily structure and securely store educational information and literature;

– the ability to store regulatory and organisational information (programmes, guidelines, consultation hours, tasks, questions, etc.) and distribute it online;

– control of tasks performed by students, adding comments;

– the possibility of individualizing students' education.

2. For students:

– constant access to educational resources according to the course;

– the absence of "clogging" of educational resources for the course due to the teacher's recommendations;

– absence of software compatibility problems and the need to purchase software products, including for individual training;

– constant access to your files and works.

The possibilities of using cloud technologies in the learning process based on Google Apps Education Edition services are based on the following factors:

– exchange of information and documents between students and teachers, including checking assignments, consulting on projects and essays;

– performing practical tasks on processing various information objects (text, tables, diagrams) and joint group projects;

– discussion of educational issues in real time [1, 78–80].

Therefore, the use of cloud technologies provides an opportunity to increase the communicativeness and interactivity of the collective work of students; gives them a choice of a convenient time and place of study; control of knowledge in the form of the Internet; online lectures and seminars, the possibility of recording them and viewing them later; presenting educational materials in various forms (graphic, sound, animated); organization of lists of links to useful sources; virtual defense of reports, abstracts, coursework; providing video instructions.

It is important to use cloud technologies in practice-oriented learning using cloud technologies (Google Drive) as part of extracurricular independent work or joint projects in groups [12, 77–79].

So, the didactic capabilities of cloud technologies:

– the ability to store a large amount of data in various formats (audio, video, graphics, text, databases) and simplify the publication of materials, posting them online for quick access by both students and teachers;

– interactivity and continuity of the educational process even in conditions of temporal and geographical separation of subjects of education;

– group orientation (corporate) – the ability to organise joint work of a large team (teachers and students);

– innovation and modifiability – expanding the scope of existing forms and methods of teaching and control,

rapid incorporation of created products into learning, stimulating independent activity and reducing the cycle of obtaining a specific result;

– meta-subjectivity – the ability to integrate academic disciplines and generate universal meta-knowledge;

– informality and friendliness – an opportunity to pay attention to students' interests, their worldview and organise personality-oriented learning;

– development of critical thinking – improving the skills of comprehensive assessment and comparison of information received;

– immersing students in an environment where discussion is mandatory;

– development of decentralised models – participants in joint activities are not required to be present at the same time, etc.

Thus, it can be noted that cloud technologies have didactic properties inherent in the technologies of presentation, transmission and organisation of the educational process and implement didactic functions:

– educational function (information and reference, cognitive, i.e. studying and consolidating new material, self-education, getting acquainted with different points of view, obtaining information, etc);

– developmental function (development of searching mental activity techniques, analysis, synthesis, abstraction, etc.; creative abilities);

– educational function (personal and moral qualities);

– motivating function (justification of the usefulness and necessity of studying a particular field through an adapted story);

– individualisation and differentiation of the learning process (providing tasks of varying difficulty in classroom and independent study);

– control function (objectification, feedback, self-control);

– corrective function (for example, provision of consultations based on information technologies, training opportunities);

– diagnostic function (informing the teacher about learning results, including the most frequent mistakes);

– automation of management processes (registration, storage of data on subjects of training) and processing of the results of training activities;

– modeling, simulation of real processes and phenomena;

– self-presentation function.

Conclusions from this study and prospects for further research in this direction. Considering the didactic functions of cloud technologies in relation to the main forms of education, we can note a significant focus of their implementation on practical classes and self-study of students (increasing the share of independent work of students – up to 60% of the total teaching load, practice-oriented training).

In addition to the highlighted advantages, it is necessary to mention possible difficulties in the application of cloud technologies. It is necessary to take into account possible problems: technical (lack of or low Internet speed), competence and motivational (difficulties for teachers and lack of understanding of the feasibility of using such services), content (mismatch between educational needs and the content of resources), methodological and organisational. This also includes limitations of the functional properties of the software (compared to local analogues), the lack of a regulatory framework for the use of cloud technologies in education in general. Being tied to a service provider is also a risk.

So, in the educational process, it is possible to use cloud technologies, this is due to groups of advantages (economic, technical-technological and didactic).

The improvement of the learning process by means of cloud technologies is based on their didactic capabilities (the possibility of storing a large amount of data in various formats, simplifying the publication of materials, placing them on the network; group orientation; innovativeness and modification; metasubjectivity; informality and friendliness; the opportunity to develop critical thinking; decentralised models), their didactic functions (educational, information and reference, cognitive, developing, nurturing, motivating, functions of individualisation and differentiation of the learning process, controlling, correcting, diagnostic, self-presentation), taking into account possible motivational, methodological and organisational factors).

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Андрій Гедзик, *викладач кафедри професійної освіти та технологій за профілями Уманського державного педагогічного університету імені Павла Тичини*

ФОРМУВАННЯ КОМПЕТЕНТНОСТЕЙ З ІНФОРМАЦІЙНОЇ БЕЗПЕКИ ПІД ЧАС ПІДГОТОВКИ МАЙБУТНІХ ПЕДАГОГІВ ПРОФЕСІЙНОГО НАВЧАННЯ

У статті обговорюється важливість формування компетентностей з інформаційної безпеки серед майбутніх педагогів професійного навчання. Висвітлено необхідність науково-методичного забезпечення педагогічного супроводу щодо інформаційної безпеки та наголошено на суперечностях у цьому питанні. Зазначається, що формування компетентностей пов'язане зі складністю соціалізації у реальному та віртуальному середовищах, а також вимагає побудови довірливих відносин між педагогом і студентом.

Ключові слова: *інформаційна безпека; інформація; фахова підготовка майбутніх педагогів професійного навчання; компетентність; компоненти інформаційної безпеки.*

Табл. 1. Літ. 10.

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DEVELOPMENT OF COMPETENCIES IN INFORMATION SECURITY DURING THE TRAINING OF FUTURE PROFESSIONAL EDUCATORS

This research delves into the critical aspect of cultivating competencies in information security among prospective educators specializing in professional training. It underscores the imperative need for comprehensive scientific and methodological support to guide pedagogical practices related to information security, shedding light on the inherent complexities and contradictions in this domain. The study posits that the development of competencies is intricately tied to the challenges presented by socialization in both real-world and virtual environments, necessitating the establishment of trusting and collaborative relationships between educators and students. The article puts forth specific recommendations aimed at ensuring the effective formation of competencies in information security. These include the execution of creative tasks, the incorporation of group-based methodologies, and a detailed analysis of individual outcomes. Furthermore, it accentuates the significance of integrating four key components into the competency formation process: knowledge-based understanding, activity-driven creativity, spiritual-moral grounding, and reflective insights.

A pivotal proposal within the article revolves around involving students actively in projects centered on the creation of digital products as a foundational element in shaping their competency in information security. This practical engagement is considered pivotal for enhancing their practical skills and fostering a nuanced comprehension of the pivotal role played by information security in contemporary society. In conclusion, the study emphasizes the paramount importance of actively engaging future educators in professional training in projects that not only enhance their skill sets but also deepen their understanding of the critical relevance of information security in the rapidly evolving landscape of the modern world.

Keywords: *information security; information; professional training of future educators; competency; components of information security.*