

**СЕКЦІЯ: ІНСТРУМЕНТИ, МЕТОДИ ДИСТАНЦІЙНОГО ТА
ЗМІШАНОГО НАВЧАННЯ В ЗАКЛАДАХ ОСВІТИ**

**PEDAGOGICAL DESIGN TEACHER'S VIRTUAL EDUCATIONAL
ENVIRONMENT**

Soia Olena Mykolaivna

Candidate of Sciences (Pedagogy), Senior Lecturer of the Department of Mathematics and Computer
Science,

Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University,
soya.o.m@gmail.com

Kosovets Olena Pavlivna

Candidate of Sciences (Pedagogy), Senior Lecturer of the Department of Mathematics and Computer
Science,

Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University,
helen.kosovets@gmail.com

In connection with the rapid development and comprehensive practical application of digital technologies in all spheres of human activity, the formation of an information society on this basis, new requirements are put forward for the educational environment of the teacher. Institutions of higher education are in search of new approaches to the organization of the educational process, learning technologies, ensuring educational mobility, universal access to educational and developmental content, communication, cooperation of participants in the educational process. The use of virtual educational technologies leads to savings on the purchase of software; access to resources regardless of location, operating system, types of computer equipment; increasing opportunities for organizing joint work and diverse communication; reduction of data storage and backup problems brings higher education to a new level of development. Virtual educational environments have a decisive advantage in the conditions of mixed or distance learning. Simultaneously with the wide distribution and development of digital technologies, there is a problem of pedagogical design of virtual educational environments, development of various models for optimal use of cloud services, such as Office 365, Google applications, etc., in ensuring educational mobility of all participants in the educational process. The key role here is played by great potential and competence, initiative and dedication, high professionalism, analytical, technically competent approach in working with promising innovative projects and non-standard tasks of scientific and pedagogical workers of the educational institution.

The modern socio-economic situation in the country is characterized by the fact that all areas of human life are rapidly developing thanks to the introduction of innovations and digital technologies. The participants of the educational process must be ready not only for the introduction of innovations in the field of providing educational services, but also directly for the creation of innovative processes, since the information society is based precisely on information and digital technologies, automation and robotics in the field of education in particular. Such personal qualities of a teacher acquire

special importance, which become professionally significant prerequisites for creating innovative conditions of learning, communication, cooperation, cooperation, which is reflected in the new requirements for a modern teacher, namely the ability to possess modern technologies of developmental education, to «see» the personalities of the student audience, to take into account to the educational process, age, individual characteristics of education seekers of various categories (gifted, deviant, with special educational needs, etc.), improve the learning environment, design a comfortable educational environment, organize classes in an activity paradigm, design work in groups, pairs, provide educational support (support) [1].

Presenting main material. Currently, a new virtual information space is developing, which determines the needs for new models of providing continuous access to data using various devices and modern digital technologies. These changes significantly affect the everyday life of ordinary citizens and the educational sector, in particular. In modern society, many information systems have been created that have different levels of automation, use different technical bases and have different purposes.

A modern of the information system interacts with other systems by sending and receiving information. It directs requests to information sources and receives the necessary data in return, while consumers themselves send requests to *the information system. The system processes them and provides answers to consumers.*

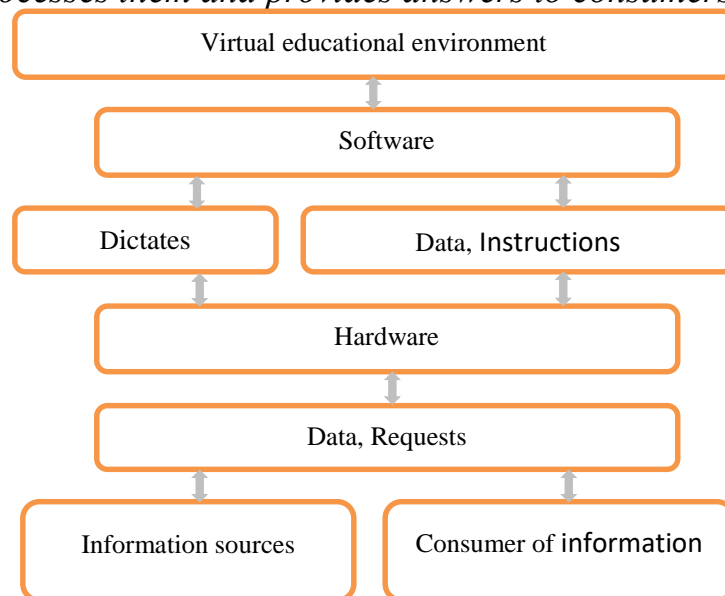


Fig. 1. The model of the information system

Presented in the fig. 1 model of the information system provides communication at various levels with other systems using mechanisms such as:

1) API (Application Programming Interface) is an interface that allows different systems to interact with each other. The API can be implemented through various protocols, such as REST, SOAP, XML-RPC, etc.;

2) data integration is a process that allows different systems to share data. Various data formats can be used for this, such as CSV, XML, JSON;

3) web services are software that provide functionality to other systems over the Internet. Web services can be implemented using various protocols, such as SOAP, REST, XML-RPC [3];

4) Message Queue is a mechanism that allows systems to exchange messages asynchronously. This can be useful in situations where systems cannot communicate directly due to network or availability issues;

5) ETL (Extract, Transform, Load) is a process that allows an information system to import data from other systems, transform it into the required format and load it into its database. This process can be automated using special tools.

These mechanisms allow the information system to exchange data and functions with other systems, which makes it more flexible and integrated into the educational process.

The above-mentioned mechanisms and protocols of interaction of information systems make it possible to design such opportunities in the virtual educational environment of the teacher as:

1) LMS API (Application Programming Interface) – The learning management system API allows the teacher to integrate their own learning tools, such as video lessons, webquests, blogs, etc., with the LMS system. It allows the teacher to manage his course from one interface and get statistics of students' interaction with the educational material;

2) integration with social networks – this can be useful for building a community of teachers and students, as well as for collaboration and sharing of ideas. The teacher can create author blogs, pages in social networks or forums to talk about his achievements, offer new educational materials, ask questions or get feedback from students [2];

3) video conferences for conducting virtual meetings with students or employees, holding webinars, trainings, presentations, discussions;

4) messengers are useful for quick communication with students to provide answers to questions, additional instructions and quick consultations.

Designing a teacher's virtual educational environment is an innovative phenomenon and has not been fully explored by the scientific community. Its modeling procedure is based on the main stages and components of design, taking into account the features and mechanisms of the interaction of information systems, general scientific, specific approaches and principles, takes into account the needs of the teacher and the peculiarities of the education of students, the latest conditions for the application of didactics and teaching methods.

The features of the teacher's virtual educational environment are the design of architecture, activity, didactic, methodical components and the completion of seven stages of design: problem-educational; content-targeted; conceptual; component evaluation; design and modeling; experimental and correctional; evaluative and generalizing.

The design of the teacher's virtual educational environment involves the complex use of digital technologies by the participants of the educational process, therefore, at the modeling stage, there is a need to develop a model that takes into account the teacher's preferences, accessibility for the student, the policy of the educational institution, the prospects of building the system for a more visual and detailed presentation of innovations in the system higher education.

Conclusions. Pedagogical design, development of various models, options for using such an innovation as a teacher's virtual educational environment in the system of higher education helps the subjects of educational activity to create optimal conditions

for cooperation, communication and cooperation. It is fundamental in the comprehensive development of participants in the educational process. Provides ample opportunities for the realization of educational goals. Contributes to the orientation of the educational process to the formation of a competitive mobile graduate of a higher education institution – an individual who is ready and able to adapt in the rapidly changing world of digital technologies.

References

1. Bykov V. Yu. Mobile space and mobile-oriented environment of the Internet user: peculiarities of model presentation and educational application. *Information technologies in education*. 2013. № 17. P. 9–37. URL : http://ite.kspu.edu/webfm_send/736 (дата звернення: 02.04.2023).
2. Melnychuk Yu. E. Development of algorithms for creating web-oriented information systems. *Science and technology today*. Series: law, economy, pedagogy, technology, physical and mathematical sciences. 2023. № 2(16). P. 392–400. URL : <http://perspectives.pp.ua/index.php/nts/article/download/3828/3849> (дата звернення: 02.04.2023).
3. Shapovalov et al. Centralized information web-oriented educational environment of Ukraine. ACNSCI : CTE Workshop Proceedings, 2019. Vol. 6. P. 246–255.

ОРГАНІЗАЦІЯ ВІРТУАЛЬНИХ ТУРІВ ДО НАУКОВИХ ЦЕНТРІВ ТА МУЗЕЇВ В СИСТЕМІ ДИСТАНЦІЙНОГО НАВЧАННЯ ФІЗИКИ

Байда Анастасія Геннадіївна

магістрантка спеціальності 014.08 Середня освіта (Фізика),
Вінницький державний педагогічний університет імені Михайла Коцюбинського,
bayda_a@ukr.net

Заболотний Володимир Федорович

доктор педагогічних наук, професор, завідувач кафедри фізики і методики навчання фізики,
астрономії,
Вінницький державний педагогічний університет імені Михайла Коцюбинського,
Zabvlad@gmail.com

Природа дистанційного навчання змусила вчителів знайти нові способи залучення учнів через віддалений доступ. Віртуальні тури фізичними науковими центрами та музеями набувають популярності серед викладачів, оскільки вони дозволяють учням переглядати виставки та експерименти, не виходячи з дому. У цій статті ми розглянемо особливості організації віртуальних турів фізичними центрами та музеями для дистанційного навчання учнів та наведемо конкретні приклади музеїв та центрів, які успішно використовують цю форму навчання.

Віртуальний музей (ВМ) можна використовувати для проведення віртуальних екскурсій, конкурсів та заходів. Віртуальний музей – це тип веб-сайту, де предмети науки, мистецтва, історії можна спостерігати за колекціями та експонатами, і це дає можливість організації навчального процесу на спеціально розробленій платформі [1].

Іоанніс Паліокас розділяє віртуальні музеї на такі типи:

1. Художні колекції, такі як зображення, відео та історія об'єктів. Ці ВМ стосуються оцифрованих фотографій художніх ефектів, які супроводжуються короткими описами, критикою та іншою інформацією (стиль, матеріал і фізичні розміри).