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EDITORIAL

THE USE OF INFORMATION TECHNOLOGIES IN PROFESSIONAL TRAINING OF FUTURE DESIGN AND ART SPECIALISTS

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Abstract

Nowadays we pay special attention to the pedagogical technologies which integrate with some information and communication technologies. The last ones contribute to the formation of creative thinking, the ability to operate information using the development of communicative skills. They expand students' self-education. The article presents some arguments for the information technology and the state of implementation into the system of higher education while teaching design disciplines. The reasonable means of IT penetration, which are used in the education, allow us to realize the main rule of the humanitarian direction in the educational system. They are the transition from the memorizing process to the perception process as the result of mental development; from the purely associative, statistical model of knowledge to the dynamically structured systems of mental actions. The students have been forbidden to perform: a creative project "Interiors, restaurant window design", information project "Application of cross-media communication as a means of image developing of a modern higher education institution", design project "Fashion during the pandemic". The use of information educational environment, aimed at students' gaining experience in design, provides an opportunity to improve the process of forming design competence of the specialist.

Keywords

Information technologies – Design – Educational environment – Future specialists – Training

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Formulation of the problem

At the present stage, the system of higher education in Ukraine is one of the most important components of society. Today, the current state of innovative technologies introduction in education deserves special attention, which contributes to high-quality professional training in accordance with the requirements of European standards of higher education.

It is impossible to name another sphere of human activity that would develop so quickly and generate such a variety of approaches to the study of material as information technology - an inexhaustible, constantly renewable resource, the main intellectual value of society. But it is necessary to provide it with highly qualified specialists for their effective implementation in the educational process.

The field of design and art isn't an exception, which requires the use of modern information technologies - the creation of a system of effective provision of timely, reliable and comprehensive information and data of all socially significant human activities, conditions for operational, thorough and comprehensive analysis of processes and phenomena development, anticipation of the consequences of decisions which are being made.

The analysis of recent researches and publications of the problem

A significant contribution to the development and substantiation of the concepts of "learning technology", "new information technology of learning" was made by: V. Glushkov, A. Ershov, M. Shkil (conceptual states for the informatization of education), P. Halperin, B. Hershunsky, Y. Mashbyts (psychological and pedagogical problems), V. Bezpalko, N. Talyzina, P. Oliynyk (didactic and methodological problems) and others.

Over the last decade, many scientific studies have been conducted on the problem of introducing new information technologies into the educational process, among which should be noted the researches of M. Zhaldak, L. Konoshevsky (new information technologies in teacher training). Among foreign teachers we should note the contribution of R. Williams, D. Jonassen, G. Kedrovich, L. Clark, K. McLean, I. Starr, B. Hunter and others. In the general theoretical understanding of the problems that play a significant role in scientific research, the author relies on the conceptual research of Ukrainian and foreign scientists in the field of art O. Bodnar, O. Holubets, M. Selivachov, M. Stankevich, O. Solomchenko, B. Rybakov, Y. Lashchuk, R. Shmagalo, I. Goloda, M. Yakovlev and others.

One of the most effective factors that negatively affect the practical solution of the analyzed problem is the insufficient level of development of methodological systems of teaching various disciplines by means of information technology for students of design and art specialties. Under the methodical system of learning we understand the structure, the components of which are the goals, content, methods, forms and means of learning, which is characterized by specificity, which is manifested in the process of revealing the meaning of content and identifying relationships between system components[1].

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[1] O. I. Navrotskyi, Vyshha shkola Ukrayiny v umovax transformaciyi suspilstva: monograph (Kharkiv: Osnova, 2000).

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The purpose of the article

is to substantiate information technologies and the state of their implementation into the education system of higher education while teaching design disciplines.

To substantiate the means of informatization which are used in education, they allow to implement the main principles of the humanistic direction in the learning system: the transition from the process of memorization to the process; from a purely associative, statistical model of knowledge to dynamically structured systems of mental actions; from the focus on the average student to differentiated and individualized curricula; from external motivation of learning to internal volitional regulation.

The objectives of the article:

-to consider foreign and domestic experience in the use of information technology in teaching the basics of design;

-to clarify the meaning of "information technology", "educational environment";

-to analyze the types, directions of use of information technologies;

-to introduce methods and forms of information technology in teaching the basics of design.

The research methods

To solve the objectives of the article we have used some theoretical methods of analysis (retrospective, comparative) of psychological and pedagogical literature and generalization with classification of scientific data in philosophical, psychological and pedagogical, educational and methodical sources for clarification of a condition and theoretical substantiation of key concepts and categories of the research, training of future teachers to use information technology; *some empirical methods* – to study the state of application of information technology by future specialists we have used diagnostic (questionnaires, surveys, testing) to determine the results of success, the use of information technology in teaching design. For diagnosis, we have conducted a questionnaire among 72 teachers, the purpose of the questionnaire is to check the use of information technology in classes with students to determine the quality of education, the questionnaire contains questions such as: regular use of information technology, independence of creative tasks. The developed application belongs to the author.

The obtained results

Nowadays special attention in higher education is given to pedagogical technologies that integrate with information and communication technologies and contribute to the formation of a high level of development of students' skills, creative and creative thinking, develop information handling skills, use communication skills, expand students' self-education.

We agree with H. Selevko, who argues that computer learning technologies are only processes of preparation and transmission of information to the student's learning

object, the means of which is a computer. In our opinion, his classification of this technology is interesting: "according to the level of application – general pedagogical, according to the philosophical basis - adaptive and scientific – technocratic, according to the main factor of development - sociogenic and psychogenic, according to the concept of assimilation – associative and reflex, according to personal orientation structures – informational and operational, by the nature of the content – penetrating, suitable for any content, by organizational forms – individua and group, by the approach to the learner – cooperation, by the prevailing methods – informational, operational, dialogical, programmed learning"[2].

The use of information technology in the education system of higher education allows teachers to change the content, methods and organizational forms of learning. Informatization of the educational process contributes to the adaptation of the student as a future specialist to their professional activity, improves the quality of their training, provides an opportunity to navigate more freely in modern life in general and in the field of professional activity in particular[3]. Due to the involvement of various forms between the subjects of the educational process, it is necessary to solve problems: on the one hand, it is a wide range of teaching aids, and on the other – it puts the teacher in an awkward position, namely in choosing effective forms and teaching aids[4].

The current state of specialists' training in design and art necessitates the use of information (information and communication) technologies in the process of training (preparation) of a qualified specialist[5]. Many higher education institutions introduce disciplines using professionally oriented applications as electives. However, the current training of specialists, focused exclusively on the system of disciplinary knowledge, can not be considered satisfactory. In the process of teaching art it is necessary to form a knowledge base of a broadly intelligent student who has a scientific methodology of search and research, in the future, a mobile specialist capable of performing research and production tasks of different levels of complexity.

The information educational environment has several components of the structure: spatial-semantic component – the organization of space (interior design, spatial structure of the premises, etc.); symbolic space (various symbols – an emblem, some traditions, etc.); semantic-methodical component – semantic sphere (concepts of teaching and education, educational and training programs, curriculum, textbooks, visual aids, etc.).

At the same time, the informatization of education requires computer literacy from teachers and students, which allows us to consider it as a special part of the content of information technology. It is important to remember that information technology can be the main tool in the field of educational, teaching and creative activities of students, as well as further professional activities. The purpose of the use of video materials and other multimedia tools is to eliminate gaps in the clarity of teaching. Multimedia teaching aids are

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[2] G. K. Selevko, Sovremennye obrazovatel'nye tekhnologii: ucheb. posobie (Moscow: Narodnoe obrazovanie. 1998).

[3] O. A. Dubasenyuk; T. V. Semenyuk y O. Ye. Antonova, Profesijna pidgotovka majbutnogo vchytelya do pedagogichnoyi diyalnosti: Monograph (Zhytomyr: Zhytomyr state ped. un-ty, 2003).

[4] O. A. Permyakov y V. V. Morozov, Pedagogika: navch. posib (Kharkiv: Znannya, 2010).

[5] O. I. Navrotskyi, Vyshha shkola Ukrayiny v umovax transformaciyi suspilstva: monograph (Kharkiv: Osnova, 2000).

universal, as they should be used at different stages of the lesson: during motivation as a problem statement before learning new material; when explaining new material as illustrations; during the consolidation and generalization of knowledge; to assess academic achievement.

Among the huge variety of educational multimedia systems, we can single out the tools that are most effective in the classroom: computer simulators; automated training systems; educational films; multimedia presentations; video demonstration. Under multimedia technology, we understand the technology that outlines the order of development, operation and application of information processing tools of different modalities[6]. Information and communication technologies aim to provide as much information as possible through digital learning tools. Modern learning information and communication technologies include Internet technologies, multimedia software, office and specialized software, electronic manuals and textbooks, distance learning systems (computer-based learning systems). In modern education we use interactive, synchronous and asynchronous multimedia, namely: computer conferences, interactive television (ITV), video teleconferencing; distributed multimedia – WWW and Internet.

Preparation of the teacher[7] for classes with the use of computer technology and work during the lesson has the following stages:

− creating a psychological atmosphere of the lesson during the organizational stage, in which the success of educational activities is achieved;

− assessment of basic knowledge of students during the check of independent work;

− announcement of the topic and tasks of the lesson (multimedia presentation) to the students;

− acquaintance with new information took place during the stage of mastering new knowledge;

− information "Collection of didactic materials", express - summary;
− multimedia presentation;

− acquaintance with material and technical equipment;

− work with a natural sample;

− summarizing;

− informing the students about independent work, instructing about its implementation.

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[6] L. O. Savchenko, Vykorystannya multymedijnyx zasobiv navchannya v pidgotovci majbutnix uchyteliv texnologij, In: Matetials of scient.-practical seminar "Training of specialists in engineering and pedagogical specialties: experience, problems, prospects", Ternopil, April 18, 2013
[7] L. O. Savchenko, Vykorystannya multymedijnyx zasobiv….

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The students were forbidden to perform: creative project "Interior design of restaurant windows", information project "Application of cross-media communication as a means of developing the image of a modern higher education institution", design project "Fashion during the pandemic". The work on the design project consists of three main stages: *planning stage* (taking measurements of the existing configuration of the walls; studying the features of the design object; zoning; development of planning solutions), *stylistic stage* (3D modeling; development of 3D and color -actured variants of the artistic decision), *technological stage* (development of the plan, execution of sketch drawings of designs, technological sequence).

We can use some forms of work while forming the artistic and professional skills of future specialists in design and art by means of information technology: multimedia lecture, multimedia portfolio, reference visual synopsis, "Virtual Museum". The leading didactic tool is a multimedia presentation – a set of logically connected slides.

Here are some examples. Exercise 1. Web-quest, the organization of students' performance of problematic artistic and professional tasks with the use of Internet information resources. Legend of the Mysterious Supper. There is a legend in the history of painting. The master found the naturalist for the role of Christ in the church choir. According to legend, the young man impressed Leonardo with his spirituality. The role of Judas was more difficult. Three years passed, the work was completed, only the profile of Judas remained unprepared. Customers hurried the artist to complete the painting. How is Judas depicted and how did the legend end?

Exercise 2. Even today, many of Da Vinci's records remain undeciphered. Reading difficulties are due to many reasons – in the author's illegible handwriting, the manner of recording aurally (sometimes the master divided the word into syllables, sometimes he wrote two words together), mirror recording (Leonardo wrote from right to left). Use the Internet resource to find out what inventions are in Leonardo Da Vinci's diaries.

Exercise 3. Create a multimedia portfolio, a structured collection of electronic resources (Fashion style) on the topic "Fashion in a pandemic."

Art and creative workshop – creation of a design project with the subsequent presentation of products of activity by exposition, installation, performance with use of graphic editors.

The design project "Image of a modern teacher of fine arts". An image occurs when the subject of the image becomes a public figure and the objects of the image appear. The object perceives not only the appearance of a person, but also his personal, social, professional traits. The image is a multifaceted concept that means attention management, way of personal and professional self-presentation, way of social programming of human behavior, social reflex, social role, system of social adaptation, generalized essence of "I", way of achieving pragmatic goals, way of self-improvement and personal development, form of public self-expression, universal mechanism of social self-identification.

Therefore, any information presented in online publications, blogs, video platforms requires buttons with which you can share materials on social networks, send to friends by e-mail, record and download information. Cross media communication covers different platforms. Users move from one topic to another on the unlimited expanses of the Internet,

responding to it and creating new content in comments or forums, which indicates the new possibilities of cross-media and expands the idea of traditional mass media communication. Cross-media communication changes approaches to finding, processing and disseminating information, with its help the media creates new ways of interacting with the audience. In order to determine the use of information technology in the field of design, a visual analysis of students' creative work in the disciplines "Artistic Processing of Materials" and "Computer Graphics and CAD" was conducted.

Levels	Showings
High	The students know different kinds of the design. They do graphic tasks of connecting different types of art in modern design like an expert.
Medium	There is some experience using the design in creative projects, but there is no detailed and deep elements in the works of computer graphic.
Low	The students have no active experience in the sphere of art and design. They do not show any wish to use computer graphic in their creative projects.

Table 1
Determining the levels and indicators of creative work of students in the disciplines "Artistic processing of materials" and "Computer graphics and CAD"

The results of the creative projects of the students are given in the Table 2:

Control group			Experimental group		
Level	Number of students	%	Level	Number of students	%
high	2	12	sufficient	3	21
medium	4	25	medium	4	29
low	10	63	low	7	50

Table 2
Results of the analysis of creative works of students

In general, the analysis of students' creative work leads to the conclusion that students are not entirely interested in design by means of computer graphics. This can be seen in the creative work of students who do not use computer graphics.

Teachers of Kryvyi Rih State Pedagogical University support the importance of using computer graphics in the educational process, but also point out the difficulties that arise. The results of the survey are presented in Table 3.

Academic disciplines	Lack of educational computer programs	Insufficient number of working places	Lack of computer skills (tablets, multimedia, laptops)	Teachers' lack of privity to use the method of using computer graphics in the educational process
"Art history"	23,4	24	32,2	20,4
"Computer graphics and CAD"	24,1	27,9	22	26
"Composition"	25,4	17,3	32,3	25

Table 3
The difficulties that appear while using computer graphics in educational process (in percentage of the respondents)

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Analyzing the data in the table, we can say that the largest percentage of difficulties associated with the use of computer graphics is in students with insufficient skills and abilities to work on a computer: "Art History" (32.2%), Computer graphics and CAD "(22%)," Composition "(32.3%). Teachers also expressed the opinion that the lack of computer software complicates the process of training future specialists in design and art. This confirms the opinion that the use of computer software is necessary in the study of not only the disciplines of the professional cycle, but also art history.

In the course of the ascertaining experiment the character of motives and needs of students in self-improvement of own personality was studied. It was found that about 34.2% of students understand the importance of using information technology based on the use of computers; 31.6% of students recognize the need for such an organization of the educational process, but say their own lack of competence in working with computer technology; 19.2% of students express uncertainty about the effectiveness of such an organization of the educational process; 15% consider it a "matter of the distant future".

Thus, the data collected during the ascertaining experiment and their analysis confirmed that the didactic possibilities of information technologies are not fully used.

The research shows that the subject "Computer Graphics and CAD" is an effective source of visualization of material in the communication of educational information. The visualization of educational material in the form of a sequence of slides using an electronic projector allows you to: save time (about 23%); draw attention to the reported information; increase the level of perception and assimilation of the material (by 38%); reduce the degree of forgetfulness (up to 8%); re-remind about educational information in order to consolidate; demonstrate the material in the form of individual frames.

The development of a lesson with the use of information technology is possible only in the presence of a certain electronic resource, or pedagogical software, or your own presentation, or materials from the Internet. Thus, when preparing an educational episode (frame) and considering it as a didactic unit, the developer must have a clear idea of what educational goal he is pursuing, how he will achieve the goal. Having mastered the PowerPoint presentation program, the future teacher becomes the director of his lesson.

The conclusion

The information technology is an important factor in high school; it becomes a necessary tool for a specialist in any specialty. The main task of high school is to produce specialists who in their professional activities are able to effectively use such tools for independent cognitive activity as a personal computer, computer networks and modern information technology. An analysis of the scientific literature and Internet sources showed that to date, numerous studies have been conducted on the use of information technology during the educational process in higher education. The use of electronic textbooks facilitates self-processing of information. With the help of information technology practically implement the methodological and theoretical foundations of the formation of readiness for professional activity of specialists in various fields. The essence of interactive learning is that the learning process takes place under conditions of constant, active interaction of all students. It is co-learning, mutual learning (collective, group, collaborative learning), where the student and the teacher are equal, equal subjects of learning. The use of multimedia technology can increase the intensity and efficiency of the learning process; creates

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conditions for self-education allowing the transition to continuing education; in combination with telecommunication technologies solves the problem of access to new sources of various content and form of information. Analysis of the results of a number of studies on the impact of visibility on the speed of information perception has identified the benefits of multimedia learning tools based on auditory and visual perception of information that provide accessible, fast and effective learning through multichannel information.

Further research in higher education requires the introduction of highly qualified specialists to ensure a quality level of teaching, in which the main goal is the development of creative abilities, creative thinking and cognitive interests.

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