# Use of Multimedia Technologies in Extra-Curricular Works in Order to Improve the Quality of Training of Future Specialists

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**Summary**
The article deals with the role of extra-curricular work by means of multimedia technologies in order to improve the quality of training of future specialists. An important condition for achieving high results in training specialists is the optimal combination of classroom and independent extra-curricular work of students by means of multimedia technologies. Very significant is the development of student independence, the formation of skills of independent search activity, the ability to take responsibility, independently solve a problem, find constructive solutions, a way out of a crisis situation, and so on. Extra-curricular work forms students' ability to master the techniques of analysis, synthesis, generalization, comparison; develops flexibility of thinking; opens up opportunities for the development and stabilization of positive learning motives to activate the process of mastering knowledge by means of multimedia technologies as a means of forming the personality of a highly qualified specialist. The concept of multimedia as one of the priority areas of Information Technology, which plays a particularly important role in the process of informatization of education, is revealed, and its advantages in education are shown. The advent of multimedia systems optimizes transformations in education, in many areas of professional activity, science, art, etc. The necessity of distance learning to improve the quality of training of future specialists using multimedia technologies in extra-curricular work is justified. The effectiveness of pedagogical support in the process of distance learning is achieved by the following conditions, which is revealed in the article. Various forms and types of extra-curricular work of students that are used in the modern practice of the educational environment of a higher education institution are described. Scientific and informational activity is considered a key area of information activity. The analysis of scientific and information activities in the field of education allows us to identify its main functions, which emphasize the growing role of scientific information in the education system, in particular, extra-curricular work using multimedia technologies. Operational, complete, accurate, targeted information that meets objective and subjective needs becomes an important link between the field of management, science and practice.

***Keywords:***
*multimedia technologies, informatization of education, extra-curricular work, training of specialists, distance learning, education, student.*

## 1. Introduction

Innovation is the main form of development of the educational industry. The introduction of innovative teaching technologies is rightly considered a priority direction in the evolution of education. The use of innovative learning technologies makes it possible to create a new information educational area that outlines grandiose prospects for educational activities, individualizes and differentiates the educational process, contributes to the modernization of the learning system and the creation of a competitive sphere.

The problem of implementing an innovative approach in education has always been relevant, because, despite new inventions and developments, there have always been no modernization processes in this area. When choosing teaching methods, preference has always been given to well-known, permanent, and proven traditional methods. However, recently there has been a rapid development of

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information and communication technologies in the educational sector. More and more teachers, although using outdated teaching methods, are striving for progress in the education system [15].

The key component in the innovative transformations that characterize modern education is the modernization of its content. Defining the vectors of modern education, scientists should take into account the general civilizational trends in the development of national educational systems in the XXI century, which, in particular, include the systematic improvement of the quality of education, its humanization, development based on the principles of continuity, the formation of a single educational space in Europe and the transition to innovative education.

As the latest guidelines of educational policy, these trends put forward a set of requirements for professional and personal qualities of a specialist and made it necessary to reorient education to the education of a new generation of professionals [6].

Today, more and more attention is being paid to the education of students in higher education institutions using multimedia technologies. This has become an important issue of our time. Every teacher wants to make the learning process interesting and exciting. Practical experience convinces us that one of the most important factors in learning is motivation, the lack of which among students in our time is a certain difficulty. Multimedia technologies in education are a new system of thinking, a new image of the world, it is a question of seeing the world, without which success in education will be minimal [29]. There is a need to develop an effective, high-quality system of training personnel of a new level, which is closely related to the improvement of the content of education and training, the introduction of media education in the pedagogical process, updating educational and methodological documentation, providing a technical base, the use of media education technologies in the training of pedagogical personnel, etc.

As for extra-curricular activities, it opens up great opportunities for self-realization. It provides for a fairly large degree of freedom, which ensures closer interpersonal informal communication between students, teachers, and the administration of higher education institutions, cultural and spiritual enrichment of the individual, development and deepening of tastes, and so on.

In general, extra-curricular works can be divided into professionally and socially oriented ones. The first category includes participation in scientific circles, student scientific societies, research projects, olympiads, and conferences. Such activities are of a professional nature, unite students of similar specialties, take place under the guidance or supervision of a teacher-curator and require considerable effort, consistency, purposefulness and motivation from students. Extra-curricular work of the second category is more general, educational in nature and can combine students of different specialties. This includes, for example, sports sections, theater and dance groups, excursions, visits to exhibitions and museums, and so on. For many, extra-curricular activities can start out a hobby, but later become the basis of a future career. In any case, teamwork skills, the ability to find a common language with others, and the makings of a leader will be useful in any industry. Also, participation in extra-curricular activities significantly reduces the risk of alcohol and drug addiction, teaches responsibility, and gives a sense of self - esteem [13].

An important condition for achieving high results in training specialists in higher education institutions is the optimal convergence of classroom and independent extra-curricular work of students. Special attention should be paid to independent extra-curricular activities, which is characterized by voluntary performance of tasks, lack of strict regulation in time, reducing the role of leadership on the part of the teacher and building their own educational trajectory, which is the key to the formation of a qualified specialist with a high level of self-actualization and ready for self-development and self-realization [19]. The pandemic has led to significant changes in the education sector of the entire planet, so in our time this position is impossible without the use of distance education.

**The purpose of the article:** to reveal the advantages of using multimedia technologies in extra-curricular work in order to improve the quality of training of future specialists.

## 2. Analysis of recent research and publications

The problem of organizing extra-curricular work in improving the quality of training of future specialists using multimedia technologies in extra-curricular activities was dealt with by scientists from different countries. Important are the results of scientific research: Palekha A. Astakhova S., Muller N. (2019), revealing the organization of independent extra-curricular work of future specialists in higher education institutions [19]; I. Batsurovskaya and A. Jalandinova [2], whose research considers the history of the development of open mass online courses in education, substantiates the concept of open education as the basis of the concept of development of mass online courses, outlines the prospects for their use and reveals their negative impact on the traditional learning system; M. Berezytskyi and V. Oleksyuk [3], who reveals the statistical analysis of the use of mass open online courses in the world educational space, in particular, the greatest popularity of platforms Coursera, Edx, Udemy, MIT OpenCourseWare та Udacity; H. Shalatska [24], where the question of the effectiveness of implementing mass open online courses in teaching English in a professional direction, where the possible integration of such courses into the curriculum through a special organization of independent work is described; Richards-Schuster K., RuffoloM., Hiltz B [23] emphasized the innovative use of MVOCS, which at the same time require

attracting various resources, investment in time, high-quality organizational support and awareness of the consequences of their passage by students; [28], where the strategy of using educational resources to improve the quality of teaching and increase the global reputation of Chinese educational institutions is justified. L. Kravtsova and G. Kravtsov note that multimedia is a set of hardware and software tools that allow you to use a PC to work with text, sound, graphics, animation and videos [14].

Kotiash, I., Shevchuk, I., Borysonok, M., Matviienko, I., Popov, M., Terekhov, V., Kuchai O. In the article light up substantiates the need for widespread use of information and communication technologies as an important factor in accelerating scientific and technological progress, automation and intensification of production, creation of new high-performance technologies, improving planning and management [11].

Shunkov, V., Shevtsova, O., Koval, V., Grygorenko, T., Yefymenko, L., Smolianko, Y., Kuchai, O. reveals the direction of development that is recognized as the main one in the course of reforms of educational systems in the leading countries of the world - the USA, Great Britain, Canada, Germany, France, etc. is singled out. The main task of the reform process is to train the staff needed by society in the right amount, in the minimum time and with minimal costs. The purpose of the application of multimedia technologies of education in higher education institutions is to prepare students for full-fledged life in the information society [25].

Kuchai, O., Skyba, K., Demchenko, A., Savchenko, N, Necheporuk, Y., & Rezvan, O. analyze the role of multimedia education in the formation of the information society. The information sphere is qualified both as a separate sector of the economy and as a factor in the modernization of education [16].

## 3. Research methods

To achieve this goal, the following research methods are used: theoretical (analysis of philosophical, pedagogical, psychological literature), which allows us to substantiate the initial provisions of the study; interpretative and analytical method, on the basis of which sources are studied using synthesis, analysis, systematization and generalization.

## 4. Results and discussion

According to the Megaencyclopedia of Cyril and Methodius, multimedia is "an electronic media containing several types of information (text, images, animation)" [18].

Multimedia is one of the priority areas of Information Technology, which plays a particularly important role in the process of informatization of education. The advent of multimedia systems optimizes transformations in education, in many areas of professional activity, science, art, etc. Despite their importance, there is still no unified view on the content and methods of media education.

The introduction of multimedia technologies in the educational process is one of the key aspects of informatization of education. Today, multimedia technologies are considered to be promising areas of information technology that are rapidly developing.

In the early 90s of the 20th century, many foreign researchers noted the active development of multimedia. According to scientists, by the mid-90s of the 20th century, the use of multimedia as a didactic tool acquired obvious advantages in comparison with traditional information tools both in the classroom and in independent extra-curricular work of future specialists [15]. According to D. Gayeski, multimedia consists of interactive communication systems that are launched by a computer and are able to create, store, transmit and play video (text, graphic) and audio information [7].

According to G. Gurevich, multimedia is a new informative technology, that is, a set of techniques, methods of producing, processing, storing, transmitting audiovisual information based on the use of CDs" [8]. The authors of the "dictionary of foreign words" interpret multimedia as a term for defining computer technology that allows you to flexibly manage the flow of various information – texts, graphic images, music, video images (for example, it makes it possible to simultaneously work with text and listen to music using a personal computer) [5]. In the dictionary "professional education", the term "multimedia" is described as an information technology that combines various types of information in one software product: texts, illustrations, audio and video information [22].

Taking into account the analysis of the specifics of the use of multimedia in the educational process as one of the information screen tools along with educational television and video, the concept can be interpreted as an aesthetically organized visual form of presentation of educational content, where there is an integration of two information streams (sound and visual) that perform peculiar tasks.

The purpose of independent extra-curricular work of future specialists has a practical orientation, provides for the assimilation of a certain amount of educational material using multimedia technologies in order to improve the quality of training of future specialists, the formation of their speech skills. In addition, it is important to develop the student's independence, develop skills of independent search activity, the ability to take responsibility, independently solve a problem, find constructive solutions, a way out of a crisis situation, etc. [19]. To improve the quality of training of future specialists with the help of multimedia technologies in extra-curricular work as a competitive, creative, motivated to self-education during the life of a specialist, there is a need to increase the volume

of independent extra-curricular activities. Along with the increase in its volume, the volume of educational material is also growing, which, according to the curriculum, is submitted for independent study.

To improve the quality of training of future specialists with the help of multimedia technologies in extra-curricular work, distance learning is available. In modern conditions, there is a need to obtain higher education remotely, which is caused by the need to study on-the-job, get education for people with disabilities and those who are abroad or in places of deprivation of liberty. This opportunity is provided by distance learning, which is carried out thanks to information and educational technologies and communication systems, especially for effective foreign language education.

The methodological basis for working on distance learning requires maximum involvement of students, future specialists, in active learning, which increases their motivation to carry out professional training by means of distance learning; speed of feedback, systematic consultations, creation of a special forum for communication between the teacher and students; large interaction between students, pupils and the teacher, which contributes to the satisfaction of students from learning.

The effectiveness of pedagogical support in the process of distance learning is achieved by the following conditions: the presence of students' computer literacy, taking into account the psychological patterns of perception, memory, attention and age characteristics of students, their individual and personal characteristics, the creation of psychological comfort, which includes the ability of the teacher to dialogue by means of information technologies, to find an individual approach to students, the implementation of a specially organized self-control of students and systematic control of the teacher over the generalization of knowledge provided for in the development of appropriate educational programs, students' possession of skills of independent work, ensuring effective interaction of all components of the distance learning system.

Such targeted work will help educational institutions not only overcome the effects of COVID-19, but also introduce more sustainable and flexible approaches in future educational activities aimed at supporting learning continuity and operational sustainability in higher education, through measures to expand the digitalization of the sector [17].

Today, digital technologies are evolving at such a rate that equipment often becomes obsolete even before it is put into production. Software is also unstable: new developments and competitive products are ahead of existing technical means. At this time, users only learn about the capabilities of previous resources, not to mention the full development of their potential.

Education at all stages of its development is constantly looking for ways to improve the effectiveness of learning. Describing this issue in the current period, it is worth focusing on the relationship between the methods of mastering educational material and the ability of students to reproduce the mastered information after a certain time period. Now learning using computer technologies is becoming a new educational standard, where information is presented in a logical sequence, computer training systems have powerful functions for the implementation of the educational process. Modern approaches to the use of computers in the educational process with students are based on two innovative technologies, namely: multimedia technologies and the internet system [15].

The main principles of organizing independent work of future specialists in higher education institutions of Ukraine are the principles of student activity, individualization of training, availability of educational material, clarity and certainty of tasks, visibility, systematicity and consistency in the formation of skills of independent work, consciousness and independence of learning, connection with life [19].

Independent extra-curricular work with the help of multimedia technologies forms students' ability to master the techniques of analysis, synthesis, generalization, comparison; develops flexibility of thinking; opens up opportunities for the development and stabilization of positive motives of students to activate the process of mastering new knowledge as a means of forming the personality of a highly qualified specialist, contributing to the development of his professional competence.

A. Bondarenko understands multimedia as:

- combined presentation of information in various forms – text, audio, video, graphic, animated, etc.;
- a technology that describes the procedure for developing, operating, and using various types of information processing tools;
- a product made on the basis of multimedia technologies;
- multimedia program;
- computer hardware (the presence of audio and video cards in the computer, which can be used to play audio and video information, the presence of a CD-ROM Drive-a CD reader, as well as a joystick and other special equipment);
- a special generalizing type of information that combines both traditional static visual information (text, graphics) and dynamic information of various types (language, music, video fragments, animation, etc.) [4].

The term "multimedia" is used in three meanings:

- as a new approach to the existence and preservation of various types of information;
- as equipment that allows you to operate with various information;
- how the software product was created with benchmarks (menu system, cross-references) [1].

The term multimedia is understood as a computer didactic tool that, presenting the content of educational

material in an aesthetically organized interactive form using two modalities (sound and visual), makes possible the effective course of perceptual-mnemic processes, helps to implement the main didactic principles and contributes to the achievement of both pedagogical learning goals and development goals, the formation of an individual learning. According to the scientist, information in multimedia programs is transmitted using three means – graphics, audio and video, while the computer allows you to achieve maximum information content of both individual elements of the visual series and their totality. Thanks to computer graphics, it becomes possible to maximize the aesthetic laws of form structuring, create images that make up the integration of scientific (content) and aesthetic (form) components, the perception of which improves the quality of material assimilation.

Based on the features of the structural components of pedagogical activity and taking into account the specifics of the technological stages of preparing the future specialist for its implementation, we believe that the main form of extra-curricular work on the formation of professional competence of the future specialist should be educational research and research work of students using multimedia technologies. There is no doubt that the educational, research and development activities of future specialists with the help of multimedia technologies are the most important means of improving the quality of training and education of specialists who are able to develop and creatively implement the latest technologies in practice. We agree with L. Petrichenko that research work as a component of extra-curricular work is aimed at deepening the motivation of creative professional and pedagogical activities of students, contributes to the deepening of theoretical knowledge of students about pedagogical activities, the development of creative thinking of students, arming students with research skills to carry out this activity, the development of professional and communication skills [21].

Training and experimental works and research work of students with the help of multimedia technologies is closely interrelated, since it occurs in the process of classroom and extra-curricular work of a future specialist. This connection can be traced in the context of a rational relationship between different content of student scientific works (theoretical, laboratory and methodological research, etc.), various organizational forms of activity (laboratories, individual classes, conferences). In educational, research classroom and extra-curricular work with the help of multimedia technologies, it is necessary to take into account the methodology of gradual involvement of students in such activities: from simple to complex, from preparing an abstract to conducting independent research. The main thing is not to forget about improving the professional orientation of the most scientific research work of students. Involving students in such forms of educational, research and development work is one of the most effective methods of developing their ability to work independently, which becomes a necessary and mandatory element of learning [10].

It is with the help of educational extra-curricular work with the help of multimedia technologies that students can be introduced to outstanding works of musical, visual, and architectural art. Experience shows that students are always willing to translate the lyrics of modern songs, participate in competitions for the best translation and performance of songs and poems.

If educational extra-curricular work is a kind of continuation of classroom classes, then it must meet certain requirements for achieving maximum results and motivating students. Extra-curricular activities are based on the possession of skills and abilities that are created directly in the classroom, so it is important that students use them simultaneously, thus improving and developing them in accordance with the conditions and features of educational extra-curricular work. Thus, this type of work can have a positive impact on students' learning activities [29].

In the modern practice of the educational environment of higher education institutions, various forms and types of extra-curricular work of students are used. According to the number of participants, for example, they are divided into individual, group and mass. Organization and participation in extra-curricular activities is a type of student activity that is most often used in the extra-curricular work of universities, which includes the publication of wall newspapers, the work of clubs and interest circles, debates, tournaments and competitions, olympiads, various intellectual games and quizzes, evenings, KVN and many other varieties. Conferences, research projects, round tables, conducting pedagogical research, etc. can be attributed to research extra-curricular work. An important aspect in improving the effectiveness of moral education of students, in particular the formation of their respect for the individual, is the involvement of students in the preparation and conduct of such extra-curricular activities aimed at the formation of moral and ethical qualities of the personality of future specialists. The necessary conditions for this are the corresponding topic of humanistic orientation, which should permeate each type of activity, fixing humanistic principles in the minds of students, in particular respect for the individual, students' acquisition of ethical norms and rules of behavior using multimedia technologies, and so on. Of course, the practical purpose of such events is to master students' professional competence. An example of this type of extra-curricular work of students can be a circle with the help of multimedia technologies, the task of which is not only to acquire communication skills, but also to foster humanism, assimilation of moral values, ideals, cultural traditions, ethical norms, formation of aesthetic tastes, creating an atmosphere of emotional security, respect for

the individual and love for it, realization of the creative potential of students [20].

Multimedia tools are a set of resources that enrich the content of training and have a developing creative potential.

Thanks to its multi-environment capabilities, multimedia technologies are used in all spheres of people's activity. The following areas of application of multimedia technologies are outlined:

- interactive learning;
- information kiosks;
- automated sales promotion tools;
- demo floppy disks;
- electronic brochures;
- interactive presentations;
- interactive Internet, etc. [9].

Scientific and informational activity is considered a key area of information activity [27]. The analysis of scientific and informational activities in the field of education allows us to distinguish the following functions:

- documentary and factual information, which is implemented by the search system, identifying and systematizing the necessary data and facts contained in the relevant sources, and bringing them to a certain category of specialists. They become the basis for obtaining new knowledge and theoretical generalizations;

- analytical and predictive, which directs the system of scientific and pedagogical information to study the flow of scientific and pedagogical literature and identify priority trends and ideas;

- integrative, which acts as a link between the sphere of management, science and practice. This connection is carried out by promptly and purposefully communicating information about the achievements of science, practice and management to various categories of specialists in the field of pedagogy and education;

- differential – the opposite of integrative, aimed at the selectivity of information in accordance with objective and subjective information needs that are formed in the course of activity;

- transformational, designed to concentrate the necessary and important data for the educational sphere from various branches of knowledge. This is due to the fact that the subject of pedagogical science is characterized by versatility, active position of subjects – teachers and teaching collectives, complexity, etc. In this regard, the achievements of various sciences in pedagogy and education are transformed more intensively compared to other branches of knowledge.

No less important are such functions as advanced, invariant-synthesizing, pragmatic, which contributes both to the introduction of new scientific ideas into practice, and to the use of the results of innovative and best practices.

The above functions highlight the growing role of scientific information in the education system, in particular, extra-curricular work using multimedia technologies. Operational, complete, accurate, targeted information that meets objective and subjective needs becomes an important link between the field of management, science and practice.

## Conclusions

UNESCO experts, based on discussions and a comparison of different views, concluded that there is a need for fundamental changes not only in the secondary characteristics of education (methods, means, forms of practice, etc.), but also in the entire paradigm. The main reason for this "paradigm renewal" is the change in the goals of European education of the XXI century [26]. Therefore, let's generalize that the content of extra-curricular work is determined by the general content of student youth education, which provides for mental, moral, labor, aesthetic, preventive, gender and civic education. Extra-curricular work using multimedia technologies is an important part of gaining knowledge. It deepens students' knowledge, expands their horizons, and gives them the opportunity to learn more about the country, its literature, culture, and attractions. Thus, it contributes to the activation of cognitive activity.

The purpose of extra-curricular activities with the help of multimedia technologies, along with the same practical, general education and educational goals that the classroom form of education has, is the possibility of applying knowledge in real life. The organization of extra-curricular work using multimedia technologies, as well as the construction of classes, is based on general didactic principles and specific methodological principles that determine the content, forms, types and methods of their implementation. The main organizational principles of extra-curricular work using multimedia technologies are the principle of communicative activity, the principle of connecting learning with life, as well as the principle of interdisciplinary connections [12].

Information activity is an integral part of all spheres of public life. It has certain goals and objectives, for the implementation of which there are specific methods and tools that contribute to obtaining the necessary results. In Ukraine, there are special information institutions that make up a system for providing users with documentary information of universal, industry-specific, problem-related content. Conditions are also being created for obtaining special professional education in this area – training specialists to work in information departments. At the same time, information structures are formed as organic components of many institutions, organizations, and firms. Information activities cover all branches of science, education, production, as well as economics, politics, culture, technology, natural science, etc. Therefore, it is not only a separate function of society, but also an integral element of human life.

Due to the fact that multimedia technologies have a powerful educational potential, a specialist should be ready to perform educational, guardianship, orientation, coordination functions, love their profession, actively and constantly improve their professional competencies, demonstrate openness to progress and creativity.

Therefore, we have shown the advantages of multimedia technologies that play an important role in the perception of scientific concepts and terms, the learning process, and in shaping students' attitude to learning in extra-curricular activities in order to improve the quality of training of future specialists.

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