PSYCHOLOGICAL AND PEDAGOGICAL FEATURES
OF THE USE OF TECHNICAL MEANS IN THE EDUCATIONAL PROCESS
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The article highlights the psychological and pedagogical features of the use of technical means in the educational process. The issue of technical means of education, what they are used for, and psychological and pedagogical features of the use of technical means in the educational process are considered. Mostly, teachers do not hinder themselves either by pedagogically justified use of technical teaching aids, or by didactically competent preparation of educational visual aids. accordingly, the task arises to consider the question of appropriate and optimal use of technical means in modern conditions of higher educational institutions. Most often, computers are used as technical means of education. They can also be used to control knowledge. The advantages of computers as a means of learning, as well as the problems of computerization, are highlighted. The article describes the technique of using technical means during classes in higher educational institutions. The choice of the method of demonstration of visual material and the optimal time of its demonstration are described. The influence of technical tools of learning on the organization of the educational process is determined. Of great interest is the attitude of those who study with the help of technical means of learning, which depends on a number of reasons, and primarily on the pedagogical and scientific quality of these means, the teacher's ability to use them, the place and conditions of use. The contradiction between the interest of students in the tool and the result obtained when working with it is called the "shock effect". The use of technical means of learning in the educational process, especially modern computers and multimedia projectors, makes it possible to make the presented knowledge more accessible and understandable, and, accordingly, to form a positive motivation for learning and to overcome a number of difficulties associated with mastering knowledge. Conclusions are drawn from the work carried out and prospects for further research in this direction are outlined.

Keywords: training of future professional psychologists, use of technical means, information and computer technologies, educational process, formation of professional competence.

Карабітськова Н.О. "Психолого-педагогічні особливості використання технічних засобів у навчальному процесі"

У статті висвітлено психолого-педагогічні особливості використання технічних засобів у навчально-виховному процесі. Розглянуто питання технічних засобів навчання, для чого вони використовуються та психолого-педагогічні особливості використання технічних засобів у навчальному процесі. Здебільшого вчителі не дуже переймаються ні педагогічно виправданим використанням технічних засобів навчання, ні дидактично грамотною підготовкою навчальних засобів наочності. Відповідно, постає завдання – розглянути питання доцільного та оптимального використання технічних засобів у сучасних умовах вищих навчальних закладів. Найчастіше як технічний засіб навчання використовують комп'ютер. Також їх можна використовувати для контролю знань. Висвітлено переваги комп'ютера як засобу навчання, а також проблеми комп'ютеризації. У статті описано методику використання технічних засобів під час занять у вищих навчальних закладах. Описано вибір способу демонстрації наочного матеріалу та оптимальний час його демонстрації. Визначено вплив технічних засобів навчання на організацію навчального процесу. Значний інтерес викликає ставлення тих, хто навчається, за допомогою технічних засобів навчання, яке залежить від низки причин і насамперед від педагогічної та наукової якості цих засобів, уміння вчителя їх використовувати, місця та умов навчання, використання. Протиріччя між інтересом учнів до інструмента і результатом, отриманим при роботі з ним, називають «шоковим ефектом». Використання в навчальному процесі технічних засобів навчання, особливо сучасних комп'ютерів та мультимедійних проекторів, дає змогу зробити представлені знання більш доступними та

зрозумілими, а відповідно сформувати позитивну мотивацію до навчання та подолати низку труднощів. пов'язані з оволодінням знаннями. Зроблено висновки з проведеної роботи та окреслено перспективи подальших досліджень у цьому напрямку.

Ключові слова: підготовка майбутніх професійних психологів, використання технічних засобів, інформаційно-комп'ютерних технологій, навчальний процес, формування професійної компетентності.

Summary. The article describes the technique of using technical means during classes in higher educational institutions. The choice of the method of demonstration of visual material and the optimal time of its demonstration are described. The influence of technical tools of learning on the organization of the educational process is determined. Of great interest is the attitude of those who study with the help of technical means of learning, which depends on a number of reasons, and primarily on the pedagogical and scientific quality of these means, the teacher's ability to use them, the place and conditions of use. The advantages of computers as a means of learning, as well as the problems of computerization, are highlighted.

Formulation of the problem. The training of qualified personnel in higher educational institutions today requires the use of appropriate approaches, methods and ways of organizing and implementing the educational process, which must meet world standards. In particular, taking into account the wide distribution of modern computers in the educational process, the task of didactically justified their use by teachers during classes and teaching various educational disciplines arises. However, despite the fact that now it is almost impossible to find teachers who do not know how to use a computer. There are few examples of their appropriate and justified use in the educational process. Mostly, teachers do not hinder themselves either by pedagogically justified use of technical teaching aids, or by didactically competent preparation of educational visual aids. accordingly, the task arises to consider the question of appropriate and optimal use of technical means in modern conditions of higher educational institutions. This circumstance determines the relevance and expediency of this study.

The purpose of the work:

- to highlight the psychological and pedagogical features of the use of technical means in the educational process.

- consider the psychological and pedagogical features of the use of technical means in the educational process;

- highlight the methodology of using technical means during classes at higher educational institutions;

- draw conclusions from the work carried out and outline prospects for further research in this direction.

- this work was carried out in line with a number of previous studies on the formation of professional competence of future professional psychologists, and is their continuation.

Highlighting previously unsolved parts of the overall problem. Despite the fact that the main approaches to the use of technical means in the educational process are sufficiently covered in the available scientific literature on this topic, information about how it is appropriate, on rational grounds, to use them in the training of modern specialists, in particular, students of higher educational institutions , nor a description of the experience of such work, was not found. This circumstance forces us to conduct an independent study.

Presentation of the main research material. The conducted research consisted in clarifying the psychological and pedagogical features of the expedient use of technical means in the educational process. It is known that one of the important features of modern education is the use of technical means designed to improve the conditions of pedagogical work, increase visibility in education. It was established that only 15% of information is remembered with auditory perception, 25% with visual perception, and 65% with simultaneous auditory and visual perception. More than 85% of people, especially young people, have mainly visual memory. only 4-5% of the active memory is used by a person. That is, the use of technical means in the educational process is not an end in itself, but aims to increase the number of channels of information perception.

The concept of technical teaching aids includes certain teaching aids and corresponding technical devices designed for their implementation in the educational process. TECHNICAL TOOLS OF LEARNING are a set of tools of a general didactic nature, consisting of an information base and equipment. They include didactic materials and technical devices used for information transfer, learning and knowledge control. The rational use of technical means of education increases visibility, respectively, and the speed of perception of educational

information, without reducing the quality of its assimilation. This allows you to increase the amount of material taught and raise the level of knowledge of those who study.

With the help of technical training tools, it is most appropriate to solve the following tasks:

- increasing the effectiveness of the learning process;

- providing information about the studied phenomenon, process, object - accessible and interesting;

- expansion of opportunities to penetrate into various areas of scientific knowledge;

– speeding up the transmission of educational information;

- providing assistance to the teacher in intensifying the learning process by reducing the time for disclosure, presentation of complex phenomena, construction of graphs, schemes, etc.;

- increasing visibility, ensuring better, deeper learning of the subject, development of cognitive activity of those who study.

The use of technical teaching aids improves the didactic conditions of the learning process, expands the didactic toolkit, with the help of which the teacher manages the process of knowledge acquisition, strengthens the informativeness of learning. One of the main prerequisites for the success of their application is the appropriate conditions for the organization of the educational process, the skills and abilities of those who teach. Based on this, a modern teacher must possess the entire arsenal of technical teaching tools and apply them methodically and competently in the educational process. Therefore, the task of developing skills in creating didactic materials and their application becomes of primary importance.

Important, in view of the fulfillment of the assigned tasks, is the issue of the use of information and technical means of education. In particular, the use of audio aids is appropriate in such educational situations when:

- there is no need to illustrate the story, but instead it is necessary to convey various sounds, noises (for example, typical for this equipment or when it malfunctions);

when there is a need to use the possibilities of language means of expression in order to increase the emotional impact on those who study; when the story involves engaging the learners' imaginations.

The use of slides is advisable when it is necessary to use visual aids such as:

- perform the role of illustration to the teacher's story:

- due to the complexity of the visual material, they cannot be produced in the course of the presentation; is not a system of static images that explain the dynamics of the phenomena or object being studied;

- do not require reproduction in the notebooks of students.

The use of slide films is advisable in such educational situations, when a large number of interconnected, well-executed images (drawings or photographs) that illustrate individual phases of the phenomenon or certain aspects of the object being studied are necessary to explain the educational material. At the same time, as in the case of the slide, long work on studying the image is not expected.

The use of dynamic means is appropriate in those cases when the educational material:

– is fundamentally important for understanding the phenomenon or event being studied;

- contains material that is difficult to learn:

– requires observation of the process in dynamics;

– related to the study of historical, documentary materials;

- requires the teaching of unique attitudes.

However, most often computers are used as technical means of education, which should be classified as universal devices due to their wide capabilities. The computer can be used both as an information tool, as a tool for learning and controlling knowledge, and as an auxiliary tool. The introduction of computers into the educational process makes it possible to increase the effectiveness of education, improve accounting and assessment of knowledge, provide new opportunities for the teacher to help individual students and open up new opportunities for self-education.

Information capabilities of computers. Modern computers make it possible to display static images, as well as series of images - slide films, which are created for educational purposes. The computer can be used as a visual aid when explaining new material. For example, in mathematics classes there is an opportunity to present formulas in the form of graphs; multimedia applications allow you to receive a moving image and sound. When connected to a data transmission network, the information capabilities of computers become unlimited.

Computers as a tool for learning. Wide capabilities of computers for information processing make them suitable for various uses in

the field of education. Computers are suitable for use in such areas as linguistics and mathematics, history and natural sciences, vocational training, music and visual arts, etc. Computers open up new opportunities in the development of thinking skills and the ability to solve problems, create conditions for active learning. With their help, you can make the conduct of classes, exercises, control tests, as well as the record of success more effective. This relieves teachers and allows them to devote more time to individual classes. Computers can make classes more interesting and compelling, and a large flow of information easily accessible. The learning process can be made more creative and interesting; in general, the possibilities of using computers for learning are practically limitless.

The computer as a means of knowledge control. The main principle of operation of technical control means is to compare this answer with the reference value stored in the machine's memory. As a rule, not the answers themselves, but certain of their parameters or codes are compared. the number of the entered answer is usually compared with the coded number of the correct answer. Despite the structural differences of specific technical means of control, they all have the same purpose, general principles of construction and operation, as well as similar blocks and elements.

Computer psychodiagnostics in the educational process. The vast majority of students are particularly interested in performing various tests. They are used to identify the acquired level of knowledge, abilities and skills, to determine the individual and psychological characteristics of those who study. When working with students, tests are mainly used by the teacher as a means of psychodiagnosis; as well as for finding methods of individual work with students.

Advantages of computers as teaching aids. One of the advantages of computers is flexibility; which makes it possible to use them in various fields and implement various teaching methods. You can make the learning process more active, give it the character of research, provide material taking into account the individual characteristics of those who study, teach different subjects. Computers are capable of more than simply improving the effectiveness of existing teaching methods: they open up new possibilities for learning. Another advantage is that they can be programmed to respond to the learner's actions. unlike books, television programs or movies, the computer can give an immediate response to the action, repeat, explain the task, go to more difficult

material if the previous one has been mastered. i.e., they make it possible to individualize the learning process. The advantage of computers also lies in the fact that they are absolutely objective, do not get nervous, do not experience disappointment when faced with difficult students and are able to provide the necessary explanations of the educational material for any length of time.

Problems of computerization of education. Computerization creates many problems of a psychological, didactic and methodological nature. One of the most acute is that currently available educational programs are not aimed at forming those personal qualities that ensure the training of specialists with creative potential who are able to pose and solve problems independently. These programs are compiled, as a rule, without taking into account didactic principles, psychological and physiological characteristics of those who study.

Psychological-pedagogical research and the experience of using computers in the educational process forces us to approach the assessment of computerization of education with all seriousness. in particular, there is concern about the exaggeration of their pedagogical capabilities. Excessive individualization of learning, focus on excessive algorithmization of mental activity, transfer of the functions of choosing optimal decision options to the computer, formation of ill-founded confidence in the limitless capabilities of computers in those who study, bordering on the rejection of independent efforts to achieve those or other goals - all this requires a sober and realistic assessment of the undesirable consequences of computerization.

It is equally important to consider the method of using technical teaching aids in the educational process. Method of application TECHNICAL TOOLS OF LEARNING are a set of rules, methods and techniques that ensure the achievement of the best results in the perception and assimilation of educational material. It allows you to answer the question: which visual material to demonstrate with the help of technical teaching aids, with which technical aids to present it, when, in what way and for what time.

General questions of the application technique TECHNICAL TOOLS OF LEARNING. The moment of presentation of visual material and the duration of its demonstration are the main factors that ensure the effectiveness of the use of visual aids.

Regarding the justification of the moment of submission of visual material, the following

should be noted. The deepest trace in the consciousness of those who study remains with the simultaneous effect on all organs of perception. Based on this provision, each specific visual material should be shown only at the moment when the teacher approached his presentation. Premature demonstration of the material is unacceptable, as it distracts the attention of those who study and reduces the effectiveness of the lesson.

The unity of showing and telling is another principle of using technical teaching aids. Educational information is presented by the teacher in a certain logical sequence, combining oral narration with visual aids. At the same time, the choice of the moment of presentation of the visual material is determined by the logic of its construction and the teacher's idea. depending on the purpose of the demonstration, you can present the material at the beginning of the lesson, during the presentation, or at the end.

Choosing a way to display visual material. The method of demonstrating visual material depends on the purpose of its study, its content and character. Depending on the purpose of studying the educational material, visual forms are determined and figurative information is prepared. Presentation and perception of simple static material does not cause difficulties, it can be drawn on the board or presented on the screen from a slide. When submitting complex graphic material, a number of difficulties arise, as they have to be recreated on the board each time. making complex drawings on slides makes the work of the teacher easier, but makes the work of students more difficult. Therefore, the teacher must create a drawing during classes by elements, gradually increasing it with the image of details.

Optimum time for demonstration of visual material. The optimal duration of the demonstration of visual material is the next principle of using technical teaching aids. Based on this principle, you can determine the total permissible number of illustrations that can be presented in a lecture. As practice shows, it ranges from 12 to 18 and depends on the complexity and importance of the material.

Like film fragments, video fragments designed to summarize the study of a topic, program section or course as a whole can last 10-25 minutes, since the educational material shown in them is mostly known to students and it is not necessary to keep any records.

The influence of TECHNICAL TOOLS OF LEARNING on the organization of the educational process. Of considerable interest is the attitude of those who study with the help of technical means of education, which depends on a number of reasons, and primarily on the pedagogical and scientific quality of these means, the ability of the teacher to use them, the place and conditions of use. The attitude of learners to certain tools also depends on how often they are used. If some tool is used in class for the first time or very rarely, students are excited, show great interest in the very fact of using this or that tool. This stage, as a rule, is characterized by a benevolent attitude of those who study to the tool and a desire to work with it. However, at the same time, due to excessive excitement caused by the novelty of the tool, students do not perceive the content well, and the pedagogical efficiency in such situations turns out to be low. Such a contradiction between the interest of students in the tool and the result obtained when working with it is called the "shock effect". If one or another type of screen and sound means is used very rarely, each fact of its use turns into an extraordinary event for students and again creates nervous excitement that interferes with the perception of educational material. Therefore, the infrequent use of screen and sound aids in the educational process does not bring the necessary pedagogical effect. But frequent use of the same type of means can lead to a loss of interest in it. In conclusion, regarding the role and capabilities of technical teaching aids in the educational process, it can be stated that they are:

- increase the visibility of learning, provide illustrations of the teacher's explanation;

– are used when other visual aids are less expressive;

- they convey new knowledge to those who study, in some cases they provide more complete and accurate information about the phenomena and objects being studied than other means, which makes it possible to improve the quality of education;

– make it possible to connect theoretical knowledge with life and thus are a means of forming the worldview of those who study;

- help the teacher to develop skills; for example, they allow you to focus on the most important thing, which helps to develop such a skill as observation, which is so necessary in the conditions of scientific and practical activity;

- most fully satisfy the interests of those who study in the field of science, art, culture, social life, i.e. satisfy their natural curiosity;

- increase the effectiveness of training and significantly increase its pace; reduction of the

time spent on learning the educational material comes at the expense of transferring functions to the technology, which it performs more qualitatively than the teacher does;

– they release the teacher from a large volume of routine work, which allows more time to be allocated to the creative side of activity, etc.

The conducted research gives reasons to draw the following conclusions:

1. The review of scientific publications on the selected topic made it possible to state that in the works of scientists there are necessary developments that provide information about technical means of education and the peculiarities of their use in the educational process and allow to properly substantiate the methodology of their use. 2. The use of technical teaching aids in the educational process, especially modern computers and multimedia projectors, makes it possible to make the presented knowledge more accessible and understandable, and, accordingly, to form a positive motivation for learning and to overcome a number of difficulties associated with mastering knowledge.

3. The introduction of technical means of learning into the educational process in higher educational institutions requires the availability of a pedagogically justified method of their application, the observance of which allows to raise the interest in studying educational disciplines among students, and therefore has a positive effect on the process of forming their professional competence.

In the future, it is planned to conduct a study of the effectiveness of the complex application of technical means in the educational process in the preparation of future professional psychologists.

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