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TÍTULO: El uso de tecnologías pedagógicas y de información modernas en el proceso educativo para mejorar el potencial creativo de los estudiantes.

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RESUMEN: En pedagogía, inevitablemente surgen preguntas: "¿Qué enseñar?", "¿Por qué enseñar?", "¿Cómo enseñar?", pero al mismo tiempo, aparece otra: "¿Cómo enseñar efectivamente?". La capacitación se convierte en una apariencia de cierto proceso tecnológico con objetivos predeterminados y un resultado garantizado. Naturalmente, la educación no puede compararse completamente con la producción; sin embargo, el concepto de tecnologías pedagógicas apareció en la Pedagogía. A.S. Makarenko llamó al proceso pedagógico una "producción pedagógica" especialmente organizada, y planteó los problemas de desarrollar una

“técnica pedagógica”.

PALABRAS CLAVES: tecnologías de aprendizaje, tecnologías tradicionales, tecnologías orientadas al alumno, tecnologías de la información, educación.

TITLE: The use of modern pedagogical and information technologies in the educational process to enhance the creative potential of students.

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ABSTRACT: In pedagogy, questions inevitably arise: “What to teach?”, “Why teach?”, “How to teach?”, but at the same time, another one appears: “How to teach effectively?” Training turns into a semblance of a certain technological process with predetermined goals and a guaranteed result. Naturally, education cannot be completely likened to production. Nevertheless, the concept of pedagogical technologies appeared in pedagogy. A.S. Makarenko called the pedagogical process a specially organized “pedagogical production”, posed the problems of developing a “pedagogical technique”.

KEY WORDS: learning technologies, traditional technologies, learner-oriented technologies, information technologies, education.

INTRODUCTION.

Learning technologies - traditional and learner-oriented.

Traditional pedagogical technologies have their positive aspects, for example, the clear organization of the educational process, the systematic nature of teaching, the impact of the teacher's personality on students in the process of communication in the lesson. Widely used visual aids, tables, technical training aids are also of great importance.

Traditional technologies have been tested over the years and make it possible to solve numerous problems that were posed by the industrial society of the late XIX - mid-XX century. In this historical period, the tasks of informing, educating students, and organizing their reproductive activities were relevant. This allowed for a relatively short period to educate a generation of literate people with certain knowledge and skills necessary to engage each educated individual in the process of mass production.

Industrial society needed a huge number of skilled workers and engineers who own modern technology. Naturally, during this period, education solved quite definite problems (and solved them, it should be noted, very successfully) (Tashkeyeva, Abykanova, Sariyeva, Sadirbekova, & Marhabaeva, 2016).

At present, society has already changed its priorities, the concept of post-industrial society (information society) has arisen, it is more interested in ensuring that its citizens can independently, actively act, make decisions, flexibly adapt to changing living conditions.

The modern information society poses for all types of educational institutions and, above all, for the school the task of training graduates who are capable of:

- Navigate in changing life situations, independently gaining the necessary knowledge, applying them in practice to solve a variety of emerging problems, so that throughout life you can find your place in it.
- Independently think critically, see emerging problems and look for ways to rationally solve them using modern technologies; clearly understand where and how the knowledge they acquire can be applied; be able to generate new ideas, think creatively.
- Competently work with information (to collect the facts necessary to solve a particular problem, analyze them, make the necessary generalizations, compare with similar or alternative solutions, establish statistical and logical patterns, draw reasoned conclusions, apply the gained experience to identify and solve new problems).
- Be sociable, contact in various social groups, be able to work together in various fields, in various situations, preventing or skillfully getting out of any conflict situations.
- Independently work on the development of one's morality, intellect, and cultural level (Sabirova, Koishigulova, Shugayeva, Faleeva, Mukhtarov, Rizuanova & Abdrakhmanova, 2019).

With the traditional approach to education, it is very difficult to educate a person who satisfies these requirements. Under the current conditions, the emergence of a variety of learner-oriented technologies has become natural.

DEVELOPMENT.

Learner-oriented training is designed to provide the necessary conditions for the development of the individual abilities of a student.

It should be noted that at the moment various types of personality-oriented technologies are used, both more or less universal and private subject (technology of early and intensive literacy, a system of phased education in physics, technology for teaching mathematics based on problem solving,

etc.) or highly specialized (“school-park”, agricultural school and others), or alternative (involving comprehensive education, training without rigorous programs and textbooks, the project method and immersion methods, students' invaluable creative activity).

Learner-oriented technologies based on the revitalization of students and improving the effectiveness of the learning process.

Learner-oriented learning involves the use of various forms and methods of organization of educational activity, allowing to reveal the subjective experience of students.

At the same time, the teacher faces new tasks:

- Creating an atmosphere of interest for each student in the work of the class.
- Encouraging students to make statements, use various methods of completing assignments without fear of mistakes, get the wrong answer, etc.
- The use of didactic material during the lesson, allowing the student to choose the most important type and form of educational content.
- Assessment of the student’s activity not only by the result (right or wrong) but also by the process of its achievement.
- Encouraging the student’s desire to find his way of working (solving a problem), to analyze the methods of work of other students during the lesson, to choose and master the most rational.
- The creation of pedagogical situations of communication in the lesson, allowing each student to show initiative, independence, selectivity in ways of working.
- The creation of an environment for the student’s natural expression.

Among the various areas of new pedagogical technologies, in my opinion, the most appropriate to the set goals and the most universal are training in cooperation, the project method, game technology and a differentiated approach to learning.

These areas belong to the so-called humanistic approach in psychology and education, the main distinguishing feature of which is special attention to the individuality of a person, his personality, a clear orientation to the conscious development of independent critical thinking (Kirilova & Volik 2008).

Learning in collaboration.

In technologies based on the collective method of training, training is carried out by communicating in dynamic or static pairs, dynamic or variation groups, when everyone teaches everyone, special attention is paid to the options for organizing students' jobs and the training tools used. The advantages of this technology are as follows:

• Skills of mental activity are developed; the work of memory is included.

• Gained experience and knowledge are updated.

• Each student has the opportunity to work at an individual pace.

• Increased responsibility for the result of teamwork.

• Skills of logical thinking, consistent presentation of material are improved.

Differentiated Learning Approach.

The principle of a differentiated educational process as well as possible contributes to the implementation of the personal development of students and confirms the essence and goals of general secondary education.

The main task of the differentiated organization of educational activity is to reveal individuality, help it develop, settle down, manifest, gain selectivity and resistance to social influences. Differentiated learning is reduced to the identification and maximum development of the abilities of each student. Significantly, the application of a differentiated approach at various stages of the

educational process is ultimately aimed at mastering by all students a certain program minimum of knowledge, skills (Kebritchi & Hirumi, 2008).

The differentiated organization of educational activity, on the one hand, considers the level of mental development, psychological characteristics of students, and the abstract-logical type of thinking. On the other hand, individual needs of the individual, their capabilities and interests in a particular educational field are considered.

A differentiated learning process is the widespread use of various forms, teaching methods and the organization of educational activities based on the results of psychological and pedagogical diagnostics of educational opportunities, inclinations, and abilities of students.

Gaming technology.

The game is perhaps the most ancient method of training. With the advent of human society, the problem of teaching children vital and socially significant techniques and skills has also appeared. With the development of civilization, games change, many objects and social subjects of games change.

In contrast to the game, in general, pedagogical games have an essential feature - a clearly defined goal of training and the corresponding pedagogical result, educational and cognitive orientation.

The game form of classes is created using game techniques and situations that allow you to activate the cognitive activity of students.

When planning a game, the didactic goal becomes a game task, the training activity is subject to the rules of the game, the training material is used as a means of playing, a competition element is introduced into the training activity, which translates the didactic task into a game one, and the successful completion of the didactic task is associated with the game result.

Project-based learning.

The project method is not fundamentally new in world pedagogy. It arose at the very beginning of the 20th century. Of course, over time, the idea of the project method has undergone some evolution. Born from the idea of free education, the method is now becoming an integrated component of a fully developed and structured education system. But its essence remains the same - to stimulate the interest of children in certain problems, which require the possession of a certain amount of knowledge and provide for the solution of these problems through project activities, the ability to practically apply the knowledge gained, and the development of critical thinking.

This is a comprehensive teaching method that allows you to build the learning process based on the interests of students, enabling the student to show independence in the planning, organization, and control of their educational and cognitive activities, the results of which should be “tangible”, that is, if this is a theoretical problem, then its concrete solution, if practical - a concrete result, ready for implementation. The project method is based on the development of cognitive, creative interests of students, the ability to independently construct their knowledge, the ability to navigate in the information space, the development of critical thinking. The project method is always focused on the independent activities of students such as individual, pair, group, which students perform for a certain period. This method is organically combined with the teaching method in collaboration, the problematic and research method of teaching (Vlasova, Kirilova, & Masalimova, 2015).

Thus, the aforementioned technologies make it possible to achieve the solution of the main problem such as the development of cognitive skills of students, the ability to independently construct their knowledge, navigate the information space, and develop critical and creative thinking.

Information technology as a means of enhancing cognitive activity and the creative potential of students.

The rapid development of computer technology and the expansion of its functional capabilities make it possible to widely use computers at all stages of the educational process: during lectures, practical and laboratory exercises, during self-training and for monitoring and self-monitoring the degree of mastering of educational material. The use of computer technology has greatly expanded the capabilities of the lecture experiment, allowing you to simulate various processes and phenomena, full-scale demonstration of which in laboratory conditions is technically very difficult or simply impossible (Ivshina, 2006).

Great opportunities are contained in the use of computers in teaching physics. The effectiveness of the use of computers in the educational process depends on many factors, including the level of the technology itself, and the quality of the training programs used, and the teaching methodology used by the teacher. Physics is an experimental science, it is always taught, accompanied by a demonstration experiment.

In a modern office of physics (as, indeed, in any other office of natural-scientific specialization), not only various installations and devices for conducting demonstration experiments should be used, but also computer technology with a multimedia projector or a demonstration screen. Unfortunately, not every school has such an opportunity, however, the computerization of schools is accelerating, the fleet of computers is being replenished, and shortly, equipping classrooms with personal computers will become quite real.

As for the new information technologies, first of all, Internet technologies, there appeared problems associated with the widely used abstract work of students. To avoid “downloading” material from the Internet or using the existing database of ready-made abstracts on various storage media, the topics of the abstract are formulated so that the student at least uses various sources, choosing from

there material that is appropriate for the proposed topic. The use of training programs, Internet resources, and electronic encyclopedias can be of great benefit to expand the horizons of students, to obtain additional material beyond the scope of the textbook (Wang, Wang, Ma, & Liang, 2009).

Internet technology is not so important for the lesson. Rather, they help both the teacher and the student in studying a topic, providing extensive educational or methodological material. During the lesson, it is advisable to use a computer, as already indicated, to enhance the cognitive activity of students. Of course, if each of the students will be able to use a personal computer during the lesson and, moreover, have access to the resources of the World Wide Web, then new techniques and methods of work in the lesson will be required. But at the present stage, not all schools can "boast" the presence of at least one computer and a VCR in the physics office (chemistry, biology, etc.).

At present, there is already a significant list of all kinds of training programs, in addition to which are accompanied by methodological material necessary for the teacher. Naturally, each program has its drawbacks, but the fact of their existence indicates that they are in demand and have undoubted value.

A variety of illustrative material, multimedia, and interactive models take the learning process to a whole new level. The psychological factor cannot be discounted: it is much more interesting for a modern child to perceive information in this form than with the help of outdated diagrams and tables. When using a computer in a lesson, the information is not a static, unannounced picture, but dynamic video and sound, which significantly increases the efficiency of mastering the material (Ivanova, 2016).

Interactive elements of training programs allow you to switch from passive learning to active learning, since students get the opportunity to independently model phenomena and processes, perceive information in a non-linear fashion, returning, if necessary, to a fragment, with a repetition of a virtual experiment with the same or other initial parameters.

As one of the forms of training that stimulate students to be creative, we can offer the creation by one student or group of students of a multimedia presentation that accompanies the study of a course topic.

Here, each student has the opportunity to independently choose the form of presentation of the material, layout, and design of the slides. Besides, he can use all available multimedia tools to make the material the most spectacular.

Undoubtedly, in a modern school, a computer does not solve all problems; it remains only a multifunctional technical training tool. No less important are modern pedagogical technologies and innovations in the learning process, which make it possible not only to “invest” in each student a certain amount of knowledge but, first of all, to create conditions for the manifestation of cognitive activity of students.

The use of information technology to implement the goals of educational technology.

The technology of training in collaboration can be largely implemented in group work using a computer and other technical means. Training programs and computer models, virtual laboratory work, creating multimedia presentations are the best suited for collaboration between couples or groups of students. At the same time, the participants in the work can perform both tasks of the same type, mutually controlling or replacing each other, as well as individual stages of the overall work (Zagvyazinsky & Atakhanov, 2001).

When completing assignments in pairs or groups, the same level of proficiency in technical means is not required; in the process of joint work, the practical skills of the “weaker” students in this regard are improved.

All members of the working group are interested in the overall result, so mutual learning is inevitable not only in the subject of the project but also in the efficient use of computer technology and related information technologies.

Training in cooperation with the use of information and communication technologies does not require the direct presence of group members, work can be done remotely, with the transfer of materials and mutual communication using Internet services. It also raises the activities of individual members of the group to a qualitatively new level, making it possible to attract those who for one reason or another are deprived of the opportunity to directly participate in the work of the group (Abykanova, Yelezhanova, Mailybayeva, Sadirbekova, Turmukhanova & Kabiden, 2019a; Abykanova, Sariyeva, Bekalay, Syrbayeva, Rustemova & Maatkerimov, 2019b).

A differentiated approach to learning can also be implemented using modern information technologies and multimedia projects. The teacher formulates the theme of the project considering the individual interests and capabilities of the child, encouraging him to creative work. In this case, the student has the opportunity to realize his creative potential by independently choosing the form of presentation of the material, the method and sequence of its presentation. In my practice, there are many examples of how a student who showed very mediocre knowledge created independently and confidently presented self-prepared high-level material in the lesson, often beyond the school curriculum. Confident computer skills allowed such a student to increase his self-esteem and, besides, expand his horizons and gain new knowledge.

Computer testing, like any testing, also makes it possible to individualize and differentiate tasks by tiered questions. Besides, tests on the computer allow you to return to unresolved issues and do the “correction of errors”.

Computer simulation of the experiment allows each student to complete the task in a rhythm convenient for him, to change the conditions of the experiment in his way, and to study the process independently of other students. It also contributes to the development of research skills, encourages a creative search for patterns in any process or phenomenon.

The training programs provide almost limitless possibilities for both the teacher and the student because they contain well-organized information. The abundance of illustrations, animations and video clips, hypertext presentation of the material, sound accompaniment, the ability to test knowledge in the form of testing, problematic questions and tasks enable the student to choose not only a convenient pace and form of perception of the material but also allow them to broaden their horizons and deepen their knowledge.

In training programs, the idea of the game was originally implemented. The sound and graphic design of most programs (interface) allow the child to perceive them as “games”. A lot of game situations and tasks encountered in such a program make the learning process as exciting as possible. With great interest, children collect a kind of mosaic, each element of which is a state on the political map of the world, under the guidance of a virtual teacher, conduct experiments in chemistry and physics. In the English program, you can “eavesdrop” on the dialogue of tea utensils in the buffet, practice the pronunciation of new words.

Training programs provide opportunities for computer simulation of experiments and experiments in a game form. You can construct an atom yourself, you can see how weightlessness arises in a moving elevator, how a Brownian particle moves. In the eyes of the child, a diffusion process takes place, a plant develops from the seed, industry, and infrastructure of the city develop, etc. Also, if something did not work out, you can repeat it all over again. It is interesting, for example, to assemble an electric circuit, choosing the necessary elements from virtual boxes. And if the light

bulb “burns out”, you can throw it into the “bin” (also virtual) and take another one with different characteristics.

Testing with a computer is also much more attractive to a student than a traditional test or test. Firstly, the student is not directly connected with the teacher, he communicates primarily with the machine. Secondly, tests can also be presented while playing. If the answer is incorrect in a row, the student can hear a funny sound or see the disapproving shake of the head of some funny hero. And if the test is successfully passed, the student will be given a virtual laurel wreath, fanfares will sound in his honor and a salute will flash in the sky. Naturally, such testing will not cause student stress or negative emotions.

The project method is fully implemented in multimedia presentations and other computer projects. As mentioned above, such projects can be carried out using information technology (here, by the way, the Internet can provide invaluable assistance). Quick access to a variety of information, the use of all multimedia features allows you to realize the most daring and unexpected ideas. If the student owns not only the basic means of working with information but also more complex programs, then, in this case, it is possible to create truly unique projects.

Great opportunities for using the project method are provided by computer modeling. Here we are talking about the fact that the development of a computer model of a process or phenomenon is itself a type of projective activity. If the student knows programming techniques, then, in this case, he has the opportunity to penetrate deeply not only into the essence of the phenomenon but also into his mathematical model, which then needs to be embodied in a visual image. In my practice, there are examples of the development of such projects - modeling of diffusion, Brownian particle motion, ballistic motion. One of the students independently created a cycle of virtual laboratory work at the 8th-grade physics course.

Work on the project encourages the student not only to study in-depth any topic of the course but also to master new programs and software products, use the latest information and communication technologies. Undoubtedly, many tasks of personality-oriented learning are solved here.

Thus, modern pedagogical technologies in combination with modern information technologies can significantly increase the effectiveness of the educational process, solve the educational institution's tasks of educating a comprehensively developed, creatively free person.

The use of modern educational technology in the learning process. Basic educational OS technologies.

Today, there are more than a hundred educational technologies proposed for use, which encourages the theoretical generalization, analysis, and classification of these innovations, the selection of the best.

Modern concepts of primary education proceed from the priority of the goal of upbringing and development of the personality of a primary school student based on the formation of educational activities. It is necessary to create such conditions that each student can fully realize himself, his characteristics, become a true subject of learning, willing and able to learn. Any class consists of students with unequal development and degree of preparedness, different attitudes towards learning and different interests.

Often, the teacher is forced to conduct training concerning the average level of development and training of children. This inevitably leads to the fact that the "strong" students are artificially restrained in their development, lose interest in learning, and the "weak" are doomed to chronic lag. Those who belong to the middle are also very different, with different interests and inclinations, with different characteristics of perception, thinking, memory. Therefore, it is necessary that each student work to the best of his ability, feel self-confidence, feel the joy of academic work,

consciously and firmly assimilate program material, move forward in development. For this, the educational process must be built based on the principle of an individual approach.

A teacher who keeps up with the times is psychologically and technically ready to use information technology in teaching today. Any stage of the lesson can be revived by the introduction of new technical means.

The teacher is a creative profession. The inclusion of ICT in the educational process allows the teacher to organize various forms of educational and cognitive activities in the classroom, to make active and focused independent work of students.

ICT can be considered as a means of access to educational information, providing the ability to search, collect and work with a source, including on the Internet, as well as a means of delivery and storage of information. The use of ICT in the educational process can improve the quality of educational material and enhance educational effects.

One of the results of training and education in the first-stage school should be the children's readiness to master modern computer technologies and the ability to update the information received with their help for further self-education. To achieve these goals, it becomes necessary for the teacher to use information and communication technologies in the educational process.

The use of ICT in various lessons in school allows you to:

• Develop the ability of students to navigate the information flows of the world.

• Master the practical ways of working with information.

• Develop skills that allow the exchange of information using modern technical means.

• Intensify the cognitive activity of students.

• Conduct lessons at a high aesthetic level.

- Individually approach the student using multilevel tasks.

CONCLUSIONS.

An innovative search for new tools leads educators to understand that we need activity, group, game, role, practice-oriented, problem, reflective and other forms of teaching/learning.

The leading place among such methods found in the arsenal of the world and domestic pedagogical practice today belongs to the project method. The project method is based on the idea of the orientation of the educational and cognitive activity of schoolchildren on the result that is obtained when solving a particular practically or theoretically significant problem.

The external result can be seen, comprehended, applied in real practice. The internal result - the experience of the activity - becomes the invaluable asset of the student, combining knowledge and skills, competencies and values. It remains the teacher's difficult task to choose problems for projects, and these problems can only be taken from the surrounding reality, from life.

With the active use of ICT in school, the general goals of education are more successfully achieved, communication competencies are more easily formed such as the ability to collect facts, compare them, organize, express their thoughts on paper and verbally, logically reason, listen and understand oral and written speech, discover what something new, make choices and make decisions, increasing interest in the subjects studied.

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