MODERN PEDAGOGICAL TECHNOLOGIES AND THEIR APPLICATION IN THE WORK OF TEACHERS OF A VOCATIONAL (VOCATIONAL-TECHNICAL) EDUCATION INSTITUTION

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Abstract. *The article theoretically substantiates and experimentally verified modern pedagogical technologies and their application in the work of teachers of professional (vocational and technical) education institutions. The main goal of an article is to perform an analysis of modern pedagogical technologies and their application in the work of teachers of the institution vocational and technical education. To achieve the goal, theoretical analysis of scientific works, synthesis, comparison, and generalization of approaches to the definition of theoretical aspects of modern pedagogical technologies and their application in the work of teachers of professional (vocational-technical) education institutions were used. It has been established that many learning technologies have been developed today, which prompts theoretical generalization, analysis, classification and selection of optimal methods of their use. The process of using traditional and introducing new (innovative) learning technologies proceeds spontaneously. In the procedure of their selection and implementation in the educational process, there are contradictions between: new goals of education and old ways of presenting and learning knowledge; growing volumes of information that need to be transferred to education seekers and the limited amount of study time; the urgent need for pedagogical innovations in the educational process and the insufficient development of the methodology of using new pedagogical technologies in education. The presence of these contradictions determines the need to study the effectiveness of using innovative pedagogical technologies. As a result of our research, it has been proven that the focus of attention of the pedagogical community is on vocational education institutions, which are designed to provide the labor market with qualified workers who are able to successfully work with the most modern production technologies. For this purpose, the regulatory and legal framework is dynamically updated: legal regulation of the functioning of the vocational education system, all its levels and subsystems, the activities of educational institutions of various types and forms of ownership, and the organization of various forms of education is ensured.*

Keywords: *modernization of the place of education; pedagogical technologies; education, training; educational process; pedagogical mastery; competence; foundations of professional education.*

JEL Classification: I23, I29

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Introduction. The modern development of technology and production is impossible without highly qualified workers trained by vocational education. Updating the content of training in educational institutions forms the basis of strategic tasks defined by the State National Program "Education" ("Ukraine of the XXI century"). This necessitates the implementation of the Concept of Vocational Education, the Laws of Ukraine "On Education", "On Vocational and Technical Education", the National Doctrine of Education Development in Ukraine, etc. The current stage of development of vocational and technical educational institutions is connected with the need to solve the problem of increasing the intellectual level of cognitive and creative potential of students. Finding means for the development of cognitive and creative abilities, increasing the effectiveness of education is a common problem for many countries.

Currently, a large number of learning technologies have been developed, which prompts theoretical generalization, analysis, classification and selection of optimal ones. The process of using traditional and introducing new (innovative) learning technologies proceeds spontaneously. In the procedure of their selection and implementation in the educational process, there are contradictions between: new goals of education and old ways of presenting and assimilating knowledge; the growing amount of information that needs to be conveyed to students and the limited amount of study time; the urgent need for pedagogical innovations in the educational process and insufficient development of the methodology of using new pedagogical technologies in education. The presence of these contradictions determines the need to study the effectiveness of using innovative pedagogical technologies.

Currently, the pedagogical public is in the center of attention: vocational education institutions are designed to provide the labor market with qualified workers who are able to work successfully with the most modern production technologies. For this purpose, the regulatory and legal framework is dynamically updated: legal regulation of the functioning of the vocational education system, all its levels and subsystems, the activities of educational institutions of various types and forms of ownership, and the organization of various forms of education is ensured. By the way, work on the draft of the new Law of Ukraine "On Vocational Training" has begun.

This Law will regulate public relations aimed at ensuring equal access rights to professional education for citizens, taking into account the needs of the labor market for qualified workers and middle-level specialists in the context of Ukraine's integration into the international economic and educational space.

A number of resolutions of the Cabinet of Ministers of Ukraine regarding the modernization of the training of qualified workers were adopted, in particular: "On making changes to the Procedure for providing jobs for students, trainees of vocational training institutions for industrial training and industrial practice" (June 26, 2013 No. 503); "On Amendments to the Regulations on Vocational and Technical Educational Institutions" (No. 505 dated June 26, 2013); "On Amendments to the Regulations on Graduate Vocational and Technical Education" (June 26, 2013, No. 456).

Taking into account the realities of modernity, the degree of professional and technical education, opportunities for learning in various forms and types of professional training, new Standard Rules for admission to vocational and technical

educational institutions were approved and implemented (order of the Ministry of Education and Science of Ukraine dated May 14, 2013 No. 499, registered at the Ministry of Justice of Ukraine on May 29, 2013 under No. 823/23355). Let's briefly dwell on the aspects of the functioning of this educational field [3, p. 175].

Literature review. The issue of the functioning of the education system in Ukraine was highlighted in their works by: I. Kaleniuk, O. Makarova, V. Novikov. A number of works are devoted to the study of the competitiveness of graduates of vocational education institutions, in particular, by O. Grishnova, M. Krymova, V. Onikienko, M. Semikina, O. Tsymbala, as well as such foreign authors as S. Sotnikova, E. Maslov, S. Glazyrin and others Research by scientists provides an opportunity to systematize the development of the professional education system and analyze the processes of this period, in particular, identify a large number of problems in the educational system. At the same time, the issue of a detailed analysis of the problems and prospects for the development of professional technical education in Ukraine has not been investigated in detail and needs certain clarifications.

Aims. Perform an analysis of modern pedagogical technologies and their application in the work of teachers of the institution vocational and technical education.

Methodology. To achieve the goal, theoretical analysis of scientific works, synthesis, comparison and generalization of approaches to the definition of theoretical aspects of modern pedagogical technologies and their application in the work of teachers of professional (vocational-technical) education institutions were used.

Results. We define vocational and technical education as a component of the education system of Ukraine, which is a complex of pedagogical and organizational-management measures aimed at ensuring that citizens acquire knowledge, abilities and skills in their chosen field of professional activity, develop competence and professionalism, and educate general and professional culture.

It is important that the training of workers is carried out mainly at the expense of the state budget. Note that the placement of the state order is carried out on a competitive basis with the conclusion of a state contract with the executor of the order.

The quality of vocational education directly depends on the pedagogical skill of the teacher or master of industrial training, on their ability to implement a model of such pedagogical interaction that will help the graduate to work productively from the first months of work in the specialty. Updating the content of vocational education is directly related to the standardization of this educational field. It should be noted that the development of state standards of vocational and technical education solves a number of urgent tasks, in particular: the implementation of a unified state policy in the field of vocational and technical education; the formation of a unified educational space in Ukraine; ensuring equivalence of vocational education and recognition of qualifications and documents on vocational education in all regions and sectors of the economy; elimination of differences in the requirements for the training of qualified workers and junior specialists who are competitive on the labor market and in the terminology used in vocational education; creation of a regulatory framework for the functioning of qualification levels of vocational education in accordance with the National Framework of Qualifications [9, p. 123].

There are also problems restraining the development of vocational and technical education in Ukraine, inhibiting its dynamic entry into the European educational space. Yes, today there is practically no interaction between central and regional executive bodies, enterprises, institutions, organizations, and educational institutions in the formation of a state order for the training of workers. An equally important problem of vocational education, in particular with regard to the creation of effective conditions for the implementation of modern pedagogical technologies, is extremely insufficient material and technical support.

In addition, there is an urgent need to modernize the content and improve the quality of vocational education, which would meet the needs of employers. It is about the development of modern state standards of professional and technical education, which should focus on the results of training, on the purposeful formation of the professional competence of graduates, and the versatile development of personal qualities.

The relevance of this important issue is reinforced by the fact that no new professional standards have yet been developed, which should be the basis of the state standards of vocational education. These problems cannot be solved without the implementation of legal norms for the activities of all participants in the educational process. It is about the new edition of the Law of Ukraine "On Education", about the adoption of the Law of Ukraine "On Vocational Education" and other legal documents.

The development of educational processes in modern society, the vast experience of pedagogical innovations of author schools and innovative teachers, the results of psychological and pedagogical research constantly require generalization and systematization [4, p. 65, 12-15].

One of the means of solving this problem is the technological approach, the application of the concept of "technology" to the sphere of education, to pedagogical processes [4, p. 65].

The term "pedagogical technology" literally means the teaching of pedagogical art, mastery.

Pedagogical (educational) technology is a system of functioning of all components of the pedagogical process, which is built on scientific education, programmed in time and space and leads to appropriate results.

The guide in any technology is a detailed definition of the final result and its precise achievement. And the prerequisites for the application of the term "technology" in relation to processes in the industrial or social sphere are their programming, delineation of the final properties of the intended product, the means of its creation, purposeful modeling of the conditions for their implementation, as well as the real functioning of these processes.

Main modern pedagogical technologies:

1. Informational and developmental, which involve the presentation of theoretical information by the teacher during a lecture or seminar session; organization of students' independent work on learning new knowledge from theoretical sources, instructions, computer teaching aids.

2. Activities aimed at training a professional capable of competently solving production tasks. These technologies provide for the analysis of production situations, the solution of situational production tasks, business games, modeling of professional activity in the educational process, the organization of professionally directed research and research work, etc.

3. Developmental, aimed at the professional development of a future specialist who is able to work creatively, independently determine methods and means of solving problematic production situations, etc. These technologies include problem-based learning, problem-based lectures, seminars, educational discussions, laboratory-practical work with elements of research, activities, and games.

4. Personally oriented, the purpose of which is the formation of an active, creative personality of the future specialist, capable of independently building and adjusting his educational and cognitive activities. These technologies include classroom (minor) and out-of-class independent activity of students, work according to an individual plan, research work, project method.

5. Technology of critical thinking. Critical thinking is the type of thinking that helps to be critical of any statements, not to take anything on faith without evidence, but at the same time to be open to new ideas and methods. Critical thinking is a necessary condition for freedom of choice, quality of forecast, responsibility for one's own decisions.

6. Design technology. The purpose of the technology is to stimulate students' interest in certain problems, which involves the possession of a certain amount of knowledge and, through project activities, which involve solving these problems, the ability to practically apply the acquired knowledge.

7. Game technologies. Play, along with work and study, is one of the main types of human activity, a strange phenomenon of our existence. By definition, a game is a type of activity in the conditions of situations aimed at the reproduction and assimilation of social experience, in which self-governance by behavior is formed and improved.

8. Technology of modular training the essence of modular training is that the student achieves specific goals of educational and cognitive activity completely independently (or with a certain amount of help). Learning is based on the formation of the thinking mechanism, and not on the exploitation of memory [7].

The following main components can be distinguished in any pedagogical technology:

– conceptual, which reflects the "ideology" of designing and implementing pedagogical technology;

– substantive and procedural, which reflects the goal (general and specific goals); content of educational material, methods and forms of education, upbringing, development of students; methods and forms of teacher's pedagogical activity; activity of the teacher in managing the educational process;

– a professional component that reflects the dependence of the success of the functioning and reproduction of the designed pedagogical technology on the level of

the teacher's pedagogical skills. Pedagogical technology must meet the main methodological requirements (technological criteria), namely:

– conceptuality (each pedagogical technology must be based on a corresponding scientific concept, covering philosophical, psychological, didactic and socio-pedagogical justification of the achievement of educational goals);

– systematicity (pedagogical technology must have all the signs of a system: logic of the process, interconnection of all its parts, integrity);

– controllability, which implies the possibility of diagnostic goal setting, planning, designing the learning process, step-by-step diagnostics, varying means and methods in order to correct results;

– efficiency (modern pedagogical technologies exist in competitive conditions and must be effective in terms of results and optimal costs, guarantee the achievement of the planned standard of education);

– reproducibility, which implies the possibility of using (repetition, reproduction) pedagogical technology in other educational institutions of the same type, by other subjects [6, p. 200].

Sources and components of new pedagogical technologies: social transformation and new pedagogical thinking; social, pedagogical, psychological sciences; modern advanced pedagogical experience; historical Ukrainian and foreign experience (acquired by previous generations); folk pedagogy.

Modern pedagogical technologies and their application in the work of teachers of professional (vocational and technical) education institutions refer to innovative methods and technologies of learning, which are increasingly being introduced into the educational process in vocational and technical educational institutions. These technologies are designed to enhance the learning experience, improve student engagement, and better prepare students for the demands of today's workforce.

Based on the results of the conducted research, the main modern pedagogical technologies that can be used by teachers of professional (vocational and technical) education institutions were systematized (Table 1).

The application of modern pedagogical technologies in vocational education not only enhances educational outcomes but also ensures that students are adept at using technological tools, making them better prepared for modern work environments. Teachers play a pivotal role in this transformation, acting as facilitators who integrate technology into their teaching practices to enrich the learning experience and outcomes for their students.

Thus, the learning technology involves the management of the didactic process, which includes the organization of the student's activities and control over these activities. These processes continuously interact: the result of control affects the content of management actions, that is, it involves further organization of activities in the interests of achieving goals determined on the basis of educational standards.

Table 1. The main modern pedagogical technologies that can be used by teachers of professional (vocational and technical) education institutions

Tools	Classification	Description
Integration of Digital Tools	Learning Management Systems (LMS)	Platforms like Moodle, Blackboard, and Canvas allow teachers to create, manage, and distribute educational content digitally, facilitating a more organized and accessible learning environment
	Simulation and Virtual Reality (VR)	These technologies provide students with the opportunity to engage in realistic job simulations, enhancing their practical skills without the constraints of physical and material resources
Collaborative Learning Technologies	Cloud-based Collaboration Tools	Tools like Google Workspace and Microsoft Teams enable students to work together on projects and assignments, fostering teamwork skills crucial for the workplace
	Interactive Whiteboards and Smart Classrooms	These improve the interactivity of classroom sessions, allowing for dynamic presentations, real-time collaboration, and immediate feedback
Adaptive Learning Technologies	Artificial Intelligence (AI)	AI can tailor educational experiences to individual learning paces and styles, providing personalized tasks and feedback that address specific educational needs
	Big Data and Analytics	These can help teachers track progress and adapt teaching strategies based on detailed data about student engagement and achievement
Mobile Learning	Smartphones and Tablet Apps	Mobile devices can be used to access educational materials and complete assignments, making learning more flexible and accessible from anywhere at any time
	Augmented Reality (AR) Apps	AR adds a layer of interactive, visual information to the real world, enhancing practical learning experiences like mechanical repairs or architecture
Flipped Classroom Models	Video Lectures and Online Content	Teachers can provide lectures in video format to be watched outside class, allowing classroom time to be used for discussion, practical applications, and individualized tutoring
Professional Development for Teachers	Continuous Learning	Institutions must provide ongoing training for teachers to keep them updated on the latest educational technologies and methodologies
	Workshops and Certification	Regular workshops and additional qualifications in modern pedagogical technologies ensure that teachers are proficient in both using these tools and integrating them into their teaching
Assessment Technologies	E-assessments and Feedback Tools	Digital assessments can provide immediate feedback to students, allow for a wider range of testing formats, and make it easier to track progress over time

Source: systematized by the author

So, we can conclude that technology is an objective process of education evolution. Any modern pedagogical technology is a synthesis of the achievements of pedagogical science and practice, a combination of traditional elements of past experience and what was born of social progress, humanization and democratization of society. Its source and components: social transformations and new pedagogical thinking; pedagogical, psychological and social sciences; advanced pedagogical experience; Ukrainian and foreign experience of the past; ethnopedagogy. No technology is universal, so each of them requires the development of its own technological approach to its use in specific situations. The structure and content of innovative pedagogical technologies are designed taking into account the fact that the effectiveness of training in a professional educational institution is determined by the level of qualifications of teachers and their value orientations [1].

Taking into account the specifics of professional and practical training and the proposals of customers of labor personnel, the educational institution in certain cases can combine the terms of passing industrial practice from the grades belonging to the first attestation level of vocational and technical educational institutions (in accordance with the resolution of the Cabinet of Ministers of Ukraine dated September 11, 2007 r. No. 1117 "On Approval of the State List of Professions for the Training of Skilled Workers in Vocational and Technical Educational Institutions").

Technological professional-theoretical and professional-practical training is carried out during the entire period of study, starting from the first year, in parallel with other types of training and study of subjects of the general education cycle. From 25 to 45 hours are allocated to subjects freely chosen by students of a vocational and technical educational institution once per full course, based on the duration of the study period. Elective subjects are determined by the educational institution within the limits of the maximum permissible educational load, taking into account the interests and needs of students, the level of educational and methodological and personnel support, as well as taking into account the profile of the professions for which training is carried out in the vocational and technical educational institution. The vocational and technical educational institution independently determines the procedure for the implementation of the typical basic structure by dividing the study time between semesters [8, p. 232].

According to the proposals of the customers of labor personnel, in accordance with changes in equipment, technologies, labor organization in production and in the service sector, the educational institution develops a variable component of the content of professional and technical education. In accordance with paragraph 2 of the "Regulations on Degree Vocational and Technical Education", approved by the Resolution of the Cabinet of Ministers of Ukraine dated June 3, 1999 No. 956, the vocational and technical educational institution determines the list of additional educational subjects and introduces them to the work curricula. In addition, additional educational topics can be introduced to the work training programs.

Discussion. A modern skilled worker must be comprehensively developed, technically educated, cultured; have high professional skills. It is worth agreeing that the use of technologies ensures the quality of knowledge, the effectiveness of the organization of the pedagogical process, contributes to the improvement of

independent work of students, the transformation of acquired knowledge into qualifying skills and abilities, and the formation of professional competence of future qualified workers.

Systematic involvement of students in educational and professional activities by means of information and communication technologies is used in the Chernihiv vocational training center. They include:

– computer simulators used for preliminary practice of skills in handling dangerous substances or devices;

– automated educational systems, which are based on multimedia technologies and are currently one of the most effective means of learning, because the combined use of computer graphics, animation, live video, sound, and other media components provides a unique opportunity to make the subject being studied as visual as possible, and therefore understandable and accessible;

– educational films that provide an opportunity to reproduce the situations of the future profession in the form of real special filming using three-dimensional computer graphics;

– multimedia presentations, which are one of the most functional and effective tools during lectures, seminars, scientific conferences, etc.;

– electronic manuals that enable students to acquire modern knowledge, in particular, in self-education activities. Unfortunately, today there is an urgent need for textbooks and training manuals on professional topics, and therefore modern electronic manuals successfully complement the existing system of training tools [2].

Therefore, the following should be included among the priority directions of the development of educational and professional activities of future qualified workers by means of information and communication technologies in professional education: creation of new computer classes; formation of advanced training and professional training programs; pedagogical, administrative and engineering-technical personnel in the field of information technologies; updating and development of new electronic educational materials; creation of an electronic library of educational materials and ensuring free access of students to the educational resources placed in it; provision of pedagogical workers with new multimedia and informational means; reorganization of the service department and organization of its effective activity [10, p. 41].

Instead, in order to develop the intellectual potential of future qualified workers, pedagogical workers use, in addition to information and communication technologies, tools established in pedagogical practice.

Summarizing the above, we note that in the modern practice of training qualified workers, personal development pedagogical technologies are widely used. For this, pedagogical workers use a complex of tools, techniques and methods of educational work aimed at the comprehensive development of the personality of students, despite the fact that their actions are not always systematic in nature.

A modern teacher must do many things: know how to use multimedia teaching aids, be able to find educational materials in telecommunication networks, know how to present the content of educational subjects with the help of multimedia technologies. The position of the management of the educational institution plays an important role

in this process. If the manager himself does not feel the need for these technologies, takes a passive position of non-interference, then a very large percentage of ped workers will not be involved in this process. But mastering a computer does not mean being ready to use it in the educational process [11, p. 9].

For this, it is necessary: to have an idea of the possibilities of practical implementation of training in specific conditions; use of multimedia technologies; to know the method of application of information and computer technologies. projects that can be considered: creation of a didactic manual using PowerPoint, creation of a thematic catalog of Internet resources, creation of electronic educational and methodological complexes using the software product Microsoft Office Front Page, creation of electronic tests using the mytest x and "testorium" programs, project method and Microsoft Publisher bulletins, development of extracurricular activities using Internet resources. that is, it is necessary to show what is possible with the help of information and computer technologies, what elements of the lesson they can replace, what lessons can be constructed with their help. as long as the teacher or master does not know how to use all this, it is not proven that he is ready to fully apply information and computer technologies. this also takes time, you need "non-inert" teachers who will spend their time, try, who must be stimulated and noticed by the management [5].

It is worth emphasizing that the teacher is ready to fully use information and computer technologies if he: knows how to use technical means of information and computer technologies; knows multimedia and hypertext technologies, understands the advantages of hypertext and hypermedia, didactic possibilities of the Internet (as well as its disadvantages); can use educational electronic publications (textbooks, reference books, knowledge control programs) - understands didactic features of modern communication technologies: forums, blogs, chats; owns the method of applying all this in a specific educational element.

The use of computer information technologies is of great importance. First, the use of presentations can provide clarity, which contributes to a comprehensive perception and better memorization of the material. The second advantage of multimedia presentations is the speed and convenience of reproduction of all the latest production technologies, modern equipment, tools and materials through photos, graphics, drawings and so on. In this way, students better perceive and remember the presented information, thanks to the use of information and communication technologies. As a result, we achieve the main goal of training - a comprehensively developed personality, a specialist who is able to develop and improve his skills in the conditions of the modern labor market and be a sought-after qualified specialist. The implementation of innovative technologies through information and computer technologies in the work practice of the school is of crucial importance in improving the quality of students' acquisition of professional knowledge.

Conclusions. Today, pedagogical science offers a complex of means of pedagogical technologies and shows ways of their practical application. Pedagogical technologies of computer informatization of education, technologies of intensive, personally-oriented, personally-active and anticipatory training, etc., are being popularized today.

"Pedagogical technology" is a systematic method of creation, application and determination of the entire process of teaching and assimilation of knowledge, taking into account technical and human resources and their interaction, which considers the optimization of forms of education as its task.

Pedagogical technology is a complex, integrative process that includes people, ideas, means and ways of organizing activities to analyze problems and plan, provide, evaluate and manage solutions to problems related to all aspects of knowledge acquisition.

The teacher's awareness of the peculiarities of pedagogical technologies ensures the effective use of modern technologies of education and training in the educational process. One of the promising technologies today is "contextual learning", which requires you to build connections between a specific meaning and its use. The teacher and/or master of industrial training in such a model is an excellent organizer: he must organize the educational and cognitive activities of students in accordance with the situation, understand everyone, and contribute to the creation of the most optimal trajectory of the professional development of each student. Assumptions and tasks are proposed taking into account the future specialty of students, it is oriented in the choice of specific material and the handicap of its presentation, which develops its design, constructive and organizational components of professional pedagogical competence. Of particular importance in innovative education are project-organized technologies for training robots in a team, which contribute to the development of project, organizational and communicative competencies in all participants of the educational process.

Therefore, innovative educational technologies, according to our hypothesis, transform the teacher, the master of industrial training into an organizer, consultant and assistant who creates the necessary conditions for the active cognitive activity of students.

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