

## Features of the introduction of innovative technologies in the professional training of Teachers

### Características da introdução de tecnologias inovadoras na formação profissional de professores

### Características de la introducción de tecnologías innovadoras en la formación profesional de profesores

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#### ABSTRACT

The main purpose is to determine the main aspects and features of the implementation of innovations in the professional training of teachers. Now all over the modern world standards, technologies of vocational education and training of specialists are being revised, updated. Indeed, the reform of professional pedagogical education requires the approval of fundamental pedagogical education, the harmonization of methodological, didactic and psychological knowledge, which will allow a specialist to fully realize the humanitarian, cultural functions of education, master innovative technologies of teaching and upbringing. The formation of a new education provides for natural processes of the development of pedagogical practice, a purposeful control effect on the training system, retraining of pedagogical personnel, significant adjustments to the content, style of activity of pedagogical institutions, future teachers, that is, the transition of the educational system to functioning on a new basis. The current state of the training of future teachers in higher educational institutions dictates the need to look for new ways to improve the quality of their theoretical training, the ability to independent creative work, and professional self-development. The methodological training of future teachers should be based on modern teaching technologies, which graduates should have flawlessly. Based on the results of the study, the key features of the implementation of innovations in the professional training of teachers were identified.

**Keywords:** Innovation. Innovative approach. Pedagogy. Professional training. Teachers.

## RESUMO

O objetivo principal é determinar os principais aspectos e características da implementação de inovações na formação profissional de professores. Agora em todos os padrões mundiais modernos, tecnologias de educação profissional e formação de especialistas estão sendo revisadas, atualizadas. Com efeito, a reforma da formação pedagógica profissional requer a aprovação da formação pedagógica fundamental, a harmonização dos saberes metodológicos, didáticos e psicológicos, que permitirão ao especialista realizar plenamente as funções humanitárias e culturais da educação, dominar tecnologias inovadoras de ensino e formação. A formação de uma nova educação proporciona processos naturais de desenvolvimento da prática pedagógica, um efeito de controle intencional sobre o sistema de formação, reciclagem do pessoal pedagógico, ajustes significativos no conteúdo, estilo de atividade das instituições pedagógicas, futuros professores, ou seja, a transição do sistema educacional para um novo funcionamento. O estado atual da formação de futuros professores em instituições de ensino superior dita a necessidade de buscar novas maneiras de melhorar a qualidade de sua formação teórica, a capacidade de trabalho criativo independente e o autodesenvolvimento profissional. A formação metodológica dos futuros professores deve ser baseada em tecnologias de ensino modernas, que os graduados devem ter na perfeição. Com base nos resultados do estudo, foram identificadas as principais características da implementação de inovações na formação profissional de professores.

**Palavras-chave:** Abordagem inovadora. Formação profissional. Inovação. Pedagogia. Professores.

## RESUMEN

El objetivo principal es determinar los principales aspectos y características de la implementación de innovaciones en la formación profesional de los docentes. Ahora, en todos los estándares mundiales modernos, se están revisando y actualizando las tecnologías de la educación profesional y la formación de especialistas. De hecho, la reforma de la educación pedagógica profesional requiere la aprobación de la educación pedagógica fundamental, la armonización de los conocimientos metodológicos, didáticos y psicológicos, lo que permitirá a un especialista realizar plenamente las funciones humanitarias y culturales de la educación, dominar tecnologías innovadoras de enseñanza y educación. La formación de una nueva educación proporciona procesos naturales de desarrollo de la práctica pedagógica, un efecto de control intencionado en el sistema de capacitación, reciclaje del personal pedagógico, ajustes significativos en el contenido, estilo de actividad de las instituciones pedagógicas, futuros maestros, es decir, la transición del sistema educativo para que funcione sobre una nueva base. El estado actual de la formación de los futuros docentes en las instituciones de educación superior dicta la necesidad de buscar nuevas formas de mejorar la calidad de su formación teórica, la capacidad para el trabajo creativo independiente y el autodesarrollo profesional. La formación metodológica de los futuros profesores debe basarse en tecnologías de enseñanza modernas, que los graduados deben tener a la perfección. Con base en los resultados del estudio, se identificaron las características clave de la implementación de innovaciones en la formación profesional de docentes.

**Palabras clave:** Docentes. Enfoque innovador. Formación profesional. Innovación. Pedagogía.

## INTRODUCTION

The formation of the readiness of future teachers for professional innovation is possible subject to the introduction of such methodological skills as gnostic (systematic collection of information of methodological and analytical content, interpretation of educational and methodological processes, analysis of cause-and-effect relationships between them, orientation in the didactic and methodological contexts of modern education, impartial perception of new methodological knowledge and experience for making the right decision, substantiation and implementation of a methodological idea through the prism of one's own methodological views and

one's own attitude, identifying variability in determining ways of solving methodological problems, tasks and situations, analyzing the effectiveness of the forms, methods, means used); creatively reflexive (free use of methodological knowledge and skills, creative and independent fulfillment of tasks of the methodological direction, creative rethinking of methodological material, expressing one's methodological thoughts, ideas, suggestions, implementing one's own style of methodological activity, creative implementation of educational and methodological products and creating one's own products, independent acquisition of new methodological knowledge and experience as a factor of professional self-realization and self-development, mastering methodological skills, independent analysis, adequate assessment and self-assessment of didactic-methodological situations, effective implementation of methodological reflection).

If earlier pedagogical higher educational institutions were focused on the transfer of knowledge and the formation of skills for the performance of professional duties, then in the context of the introduction of new state standards of primary education, the Concept of a new Ukrainian school, the most important direction for improving vocational training is the widespread introduction of modern information technologies (including and distance), modeling methods, design technologies, interactive teaching methods and the like. It should also be noted that the role of the teacher and the applicant for higher education has changed. Today, the teacher must orient the student on the independent search for information, teach him to see certain patterns in it, analyze and comprehend it, turning it into his own knowledge, shift the emphasis on the independent work of students, on mastering the methods of self-education using the teacher's advice and new opportunities provided by the information society. Also new opportunities are provided by contextual learning, the implementation of which depends on the goals and objectives of the lesson, the conditions under which it is implemented, the preferences of the teacher and applicants for education, on the expediency of combining various methods, should be aimed at forming the professional competence of future primary school teachers, which will allow them to successfully carry out further professional activities.

A future specialist, during the years of study at a university of higher education, must acquire research abilities, see the prospects for the development of the science that he is studying. Research work contributes to the improvement of the entire educational process, improves the qualifications and skills of scientists and teachers. The effectiveness of teaching activities is determined by his research work with students, the ability to capture applicants with his creativity and attract them to science, to form curiosity and desire for knowledge among applicants. Under such conditions, applicants willingly participate in the discussion of scientific problems that the departments organize, take an active part in competitions of scientific works, scientific and practical conferences of different levels. Zdobuvach of higher education must master such functions as the motivational function of goal-setting, ideological, instrumental, communicative, cultural and innovative. We emphasize that the content of vocational education contains a set of knowledge, skills and abilities, the possession of which allows you to work with the chosen type of profession.

The spread of innovative processes in the educational space of a higher education institution has become a significant driving factor in the formation of new mechanisms for vocational training and the creation of a quality management system for education, contains the development of innovative techniques, processes and resources, represented by organizational, administrative and regulatory documents; various kinds of procedures to control the quality of professional training of applicants and the main activities of the institution of higher education.

Modernization of the system of higher pedagogical education in Ukraine requires updating the activities of higher pedagogical institutions, taking into account European experience and providing professional training for specialists who can perform pedagogical activities in the modern conditions of the existence of primary education. Modern requirements of society regarding a significant improvement in the professional training of graduates of higher pedagogical educational

institutions as highly professional specialists capable of effective pedagogical activity, determine the emergence of new approaches, forms and methods of implementing the process of their training. Indeed, the level of professional training of a primary school teacher, his high professionalism, his willingness to work creatively, improve himself, introduce new approaches to organizing and implementing the educational process in primary educational institutions, depends on a properly structured educational process. At the same time, the growth of requirements for the professional training of teachers requires a qualitatively new theoretical and methodological provision of student youth with knowledge not only of the basics of science, but also of new pedagogical achievements, educational technologies in a higher pedagogical educational institution.

## **METHODOLOGY**

The main purpose is to determine the main aspects and features of the implementation of innovations in the professional training of teachers. For this, a number of methods were applied, which form the research methodology. The study was carried out using the following theoretical methods: systems analysis and synthesis, induction and deduction, comparison, classification, generalization and systematization, idealization and abstraction.

## **RESULTS AND DISCUSSION**

The content of the process of preparing a teacher for innovative activities requires studying the stages of the process, determining which of its parts have internal integrity, and which - relative independence; analysis of the results of achieving intermediate goals that affect the goal of the entire process; providing feedback in determining the effectiveness of teacher training for innovative activities.

However, the inclusion of a teacher in the innovation process often occurs spontaneously, without taking into account his professional and personal readiness for innovative activities. In addition, pedagogical innovations, like any other innovations, give rise to problems associated with the need to combine innovative programs with state education and training programs, the coexistence of various pedagogical concepts ( ).

One of the urgent tasks of modern subject methodology is the reorientation of the teacher to the systematic implementation of educational technologies. Important in this context is the combination of various types of educational technologies, the direction of the teacher to the formation of the skills of searching, collecting and analyzing information, as well as the implementation of research activities and problem solving.

The dominant qualities of training an innovative teacher at the initial stage are success, cognitive activity, discipline, organization and initiative; on the average - independence, initiative as an ability for scientific work; on the final - success and creative activity, and on the professional - organization, cognitive and creative activity.

Innovation in education is understood as a purposeful process of partial changes leading to modifications of the goal, content, methods, forms of education and upbringing, adaptation of the learning process to new requirements. They are an essential active element in the development of education in general, the implementation of specific tasks in the educational process. They are expressed in the tendencies of accumulation and modification of initiatives and innovations in the educational space; cause certain changes in the field of education. On the basis of innovative pedagogical activity, a complex process of transition from the paradigm of the cognitive-educational to the humanistic system of education is carried out. In this regard, the emphasis is placed primarily on the functions of education: whether we like it or not, the value orientations have been changed, it is necessary to change and develop the forms, methods, technologies of the educational process.

Thus, innovations do not arise by themselves, they are the result of scientific research, advanced pedagogical experience of individual teachers and entire teams.

In the professional literature, the following stages of the functioning of pedagogical innovations are determined: acquaintance of a person with pedagogical innovations; the emergence of interest; estimates; approbation; ultimate perception. It has been established that any pedagogical technology must meet the basic methodological requirements (criteria of manufacturability), including: conceptuality, consistency, control capability, efficiency, reproducibility, visualization. There are two types of innovative processes in the field of education. The first type is innovations that occur largely spontaneously, without exact reference to the need itself or without full awareness of the entire system of conditions, means and ways of implementing the innovation process. Innovations of this kind are not always associated with the completeness of scientific existence, most often they occur on an empirical basis, under the influence of situational requirements (Aleksieienko-Lemovska, 2019; Denisova et. al., 2021).

The second type of innovations is innovations in the education system, which are the product of purposeful, interdisciplinary team activity. This type of innovation includes the activities of experimental sites, author's schools and the introduction of innovative educational projects.

So, in pedagogical science, innovative activity is understood as purposeful pedagogical activity based on the comprehension (reflection) of one's own practical experience through comparison and study, change and development of the educational process in order to achieve better results, to obtain new knowledge. Each teacher should work to ensure that the educational process becomes focused on the student as the main subject of the educational process, and modern innovations in the education system will help the teacher in this.

In a modern informatized society, it provides an opportunity for every student to access the global Internet, the role of a teacher from a simple "translator of knowledge" turns into a "interpreter of experience" and "translator of meaning". The teacher must develop the initiative, creative search and independence of the student in decision-making with an attitude of cooperation and dialogue. Today, the essence of the problem is that teachers are not always able to apply innovative teaching methods in the educational process. This is due, in our opinion, mainly to the reluctance to spend additional time on their preparation and implementation in the educational process, without fully realizing the benefits of this and the effectiveness, which may be due to the low level of qualifications, underestimation of innovative advantages (when they are skillfully added to educational modules) and with the creative passivity of individual teachers (Kolodii et. al., 2021; Kotyk et. al., 2021).

Thus, in modern teaching, innovative technologies (and methods) can be distinguished both with the use of technical means and without them. Indeed, in the context of universal informatization and the chosen course for building an "information society", when information is updated as soon as possible and its volume exceeds the physiological possibilities of mastering, it is simply impossible to do without the technical component of the learning process. However, innovative technologies based on pedagogical and psychological innovations, without the use of technical means, are more economical for the university, ergonomic (due to their effect on the body if the work and rest regime is not observed) for individual users (students and teachers) in comparison with technical means. Of course, at the initial stage of the development of an innovative approach, with a low readiness of the economy to create an information society, they, in fact, should have priority (Kozak et. al., 2020).

Innovative teaching methods are based on the use of the latest achievements of science and information technologies in education and contribute to improving the quality of education by developing students' creativity and independence. These include, first of all, such methods as problem-based and projected learning, research methods, training forms that provide for the

actualization and development of the existing potential (Neizhpapa et. al., 2021; Torkestani et. al., 2020).

So, in our opinion, it is imperative to create conditions for the implementation of innovative educational projects, programs and the implementation of their results into practice. This requires advanced professional education, a shift in emphasis from the training of narrow-profile specialists to multilateral, student-centered learning based on an innovative approach, which is essentially synergistic. At the same time, an important role is assigned to improving the quality of education through the use of innovative teaching methods and technologies. The greatest effect for students can be achieved with their complex and systematic use in the educational process (Onyshkiv et. al., 2021; Udovychenko et. al., 2021).

It is generally recognized by scientists that the axiological imperative of modern domestic pedagogical education is innovation. We are talking about an innovative approach to educational practice, about the innovative activity of a teacher, about innovative socio-pedagogical projects, about the competitiveness of the personality of an innovative specialist, and the like.

Modernization of the system of higher pedagogical education in Ukraine requires updating the activities of higher pedagogical institutions, taking into account European experience and providing professional training for specialists who can perform pedagogical activities in the modern conditions of the existence of primary education. Modern requirements of society regarding a significant improvement in the professional training of graduates of higher pedagogical educational institutions as highly professional specialists capable of effective pedagogical activity, determine the emergence of new approaches, forms and methods of implementing the process of their training. Indeed, the level of professional training of a primary school teacher, his high professionalism, his willingness to work creatively, improve himself, introduce new approaches to organizing and implementing the educational process in primary educational institutions, depends on a properly structured educational process. At the same time, the growth of requirements for the professional training of teachers requires a qualitatively new theoretical and methodological provision of student youth with knowledge not only of the basics of science, but also of new pedagogical achievements, educational technologies in a higher pedagogical educational institution.

The formation of a new education provides for natural processes of the development of pedagogical practice, a purposeful control effect on the training system, retraining of pedagogical personnel, significant adjustments to the content, style of activity of pedagogical institutions, future teachers, that is, the transition of the educational system to functioning on a new basis (Shahbazian & Beheshtifar, 2020; Taytelieva et. al., 2021; Tolmachev et. al., 2021).

Dissatisfaction with the quality of education in real practice, awareness of the need to reform the work of educational pedagogical institutions determine the need to update professional training, the style of professional activity of the future primary school teacher. Particularly significant is the formation of his competence, personal and professional qualities, the ability to live and work in an innovative mode: to accept and understand new things, to master an innovative situation. Professionalization of a teacher and his entry into an innovative mode of work are impossible without creative self-recognition in which the leading role is played by his attitude towards self-improvement, self-education, self-development, without which it is impossible to ensure a new quality of education. In our opinion, the professional training of the future primary school teacher undoubtedly needs innovation, because we are witnessing constant reforms in the field of primary education.

Innovations are classified by:

- the object of influence (pedagogical, socio-psychological, organizational and managerial).

The results of pedagogical innovations are qualitative changes in the teaching and upbringing of the younger generation. The introduction of innovations in the socio-psychological direction contributes to the improvement of the microclimate in the educational environment, forms a high level of

culture between the subjects of the educational process. Organizational and managerial innovations ensure the introduction of modern forms and methods of management that contribute to overcoming the stereotypes of a conservative leadership style, form new partnerships;

- the level of distribution (system-methodological and local-technological). The diffusion of innovations of the system-methodological level are introduced within the framework of the general system. The local technological level of innovation presupposes the testing of personality-oriented innovative methodological systems at individual educational objects;

- the innovative potential of the new (radical, modification, combinatorial). Radically new ideas are those that are introduced on the basis of radically new means (information and computer technologies, programming, etc.). Modification is called innovation aimed at improving the content, forms, methods of the educational process, the organization of education. Combinatorial innovations are called modernized innovations - educational and pedagogical traditions adapted to the new socio-cultural environment.

Thus, it can be argued that pedagogical innovations are the result of a creative search for original, non-standard solutions to pedagogical problems.

The problem of introducing innovative pedagogical technologies into the modern educational system does not lose its relevance due to the constant growth of requirements for graduates of higher educational institutions, based on the purposeful formation of key and subject competencies, which include practical skills, skills and readiness to implement them. Long-term practice shows that training using traditional technologies does not allow developing the key, basic competencies of a specific academic discipline. Therefore, a decisive restructuring of the educational process is needed.

In today's educational paradigm of higher education, the problem of introducing innovative pedagogical technologies into the educational process is urgent. Therefore, a modern teacher must know both theoretical innovative approaches in the education system and practical technologies that can be used not only in the educational process of higher education, but also in the teacher's professional activity. Practice shows that in the context of reforming the education system and the attitude of new requirements to the professional training of a teacher, it is fundamentally important to teach students not only pedagogy or teaching methods of discipline, but also to develop the ability to cooperate, interact, constantly study, work in a team, collectively make decisions, quickly establish contacts and communication, the ability to make a presentation and self-presentation, form an image, quickly rebuild in connection with the changing requirements of the modern world.

Innovative pedagogical technologies that deserve special attention in the process of methodological training of future teachers and effectively influence the formation of methodological competence include technologies that we define by the type of organization and management of students' cognitive activity:

- integration technologies that ensure the integration of rhizo-subject and rhizomystets knowledge and skills or various types of activity into a single didactic system at the level of integrated courses, modules, topics, and individual educational problems. A striking example can be art technologies: music therapy, bibliotherapy, video therapy, drama therapy, game therapy, and the like;

- game technologies aimed at the game (innovative-imitation) form of interaction between the teacher and students, activates the cognitive capabilities of applicants for education, fully demonstrates their abilities, awakens interest and stimulates mental activity. The following types of this technology are used in the pedagogical process: business, theatrical, role-playing, computer games, simulation exercises, game design, etc. ;

- computer or the latest information technologies, involving the use of the whole variety of modern information processing tools, as well as electronic computers with all peripheral equipment (printers, devices for editing and reproducing graphic and sound information). They are

implemented with the help of information, training, developmental, controlling and other types of educational programs;

- dialogue or interactive technologies implemented in a communicative environment, associated with the expansion of the space of cooperation and co-creation at the level of subject-subject relations: "student - teacher", "student - student", "teacher - author", "student - author" and others ...

The effective organizational forms of such technology include group, pair and frontal, and the most common methodological techniques are "a circle of ideas", "synthesis of thoughts", "brainstorming", "microphone", "treasure hunt", "position loans", "pre-method", "intellectual carousel", "unfinished sentence", "mosaic of thoughts", "lecture visualization", "lecture for two", discussion and the like. - training technologies, which provide for a system of activities aimed at working out a certain algorithm of actions and ways of solving typical problems in the educational process. Such technologies are implemented in the form of testing, psychological training of intellectual development, the solution of training exercises, and also often combine discussion and play forms: communication trainings, collective solution of creative problems, work in pairs, and the like. Taking into account the rapid computerization of the educational process, let us dwell in more detail on computer technologies. There are several reasons for this choice. Firstly, computer technologies are widely used in the practical work of teachers, therefore, there is a need to develop skills in future language specialists related to the use of information and communication technologies in the educational process. Secondly, recently, new information technologies have been actively developed and introduced into the process of professional training of future teachers.

In our opinion, taking into account the modern reform of higher education, innovations in higher pedagogical educational institutions should cover all of its activities. They can be divided into organizational, content and technological innovations.

Organizational - those that occur in the organization of the educational and educational process. For effective management of innovative pedagogical activities in educational institutions, it is necessary to develop and implement an appropriate regulatory and methodological framework.

The content of the innovation is changes in the content of professional training of specialists (new educational and professional programs: introduction of new disciplines, courses, integration of academic subjects, development of methodological support, etc.).

Technological innovations - the introduction of new forms and methods of teaching, assessment systems (testing, ratings), the use of modern information technologies (multimedia training, computer modeling, the Internet, etc.).

As you know, the professional training of future primary school teachers is carried out through the theoretical and practical stages. In our opinion, effective forms and methods at the theoretical stage of preparing students can be lecturing on basic notes in the form of texts, tables, diagrams using multimedia technologies. The main forms and methods of organizing the activities of future primary school teachers during practical training can be pedagogical trainings, business professionally oriented games, interactive exercises ("brainstorming", "circle of ideas", "debates", "press", "openwork saw" and etc.), work in small groups, collective creative work, dialogical communication, etc. The use of such effective forms and methods of teaching will allow the future primary school teacher to master well the disciplines of the psychological and pedagogical cycle, professional teaching methods (methods of teaching professional disciplines: Ukrainian language, literary reading, mathematics, natural science, labor training, art work, fine arts, physical culture, music education); know the content and organization of education in primary school, programs and textbooks, the formation and management of various groups of schoolchildren, the requirements for protecting the health of primary schoolchildren; know the basics of general theoretical disciplines in the amount necessary for solving scientific, pedagogical and organizational and managerial tasks; be able to use state documents on the training and education of primary



schoolchildren; be able to apply the knowledge gained in practical work, master the methods of pedagogical research, introduce research results into practical activities; respect the dignity of the child, protect her from any form of violence, promote a healthy lifestyle; build their activities on the basis of goodwill, through cooperation, trust, in close contact with all participants in the pedagogical process; possess communication and organizational skills, a sense of tact, be a highly cultured person; be able to organize their activities in accordance with professional tasks, to determine its priority areas in a particular institution; determine the area of their own professional competence in solving professional problems; to adapt the peculiarities of the organization of professional activity to the needs of various spheres of public life.

So, the foregoing allows us to assert that, taking into account the modern reforms of higher education, there is a need for innovative approaches in the professional training of future specialists, including future primary school teachers. Innovations should take place in all areas of higher pedagogical educational activities (organizational, substantive, technological). Only this approach will contribute to the quality training of future primary school teachers. We are convinced that the modern reform of both higher and primary education determines the relevance of the problem of high-quality professional training of future primary school teachers, requires new research.

## CONCLUSION

The entry of mankind into a new modernity, into the era of global peace, in which the interconnections and interdependence of states, nations, peoples are constantly expanding, the planetary information space, the market economy is intensively forming, the need for continuous education, education is growing during the life of every member of society, every specialist, any profile. Continuing education in accordance with the requirements of the Bologna Convention should provide high-quality training for specialists of all educational and qualification levels. Modern innovative pedagogical technologies contribute to improving the quality of vocational training. The phenomenon of innovation is of particular importance for education and educational theory and practice, in which training programs are implemented not only for specialists, but also for citizens. Innovative processes, the modernization of the training of specialists has to go beyond the limits of the pedagogical disciplines themselves, specific didactic-pedagogical research and be based on a large number of diverse disciplines involved. Innovation is always creativity, a challenge to the old, it is a personal position.

Updating the education system in the context of the intellectual, cultural, spiritual, social, economic development of society and the state requires the preparation of a new generation of specialists capable of effective innovation in the modern information society.

The dynamic development of modern pedagogical science is characterized by the search for fundamental approaches to the construction of the educational process, which is reflected in educational documents, which indicate that the goal of education and upbringing should be a professionally competent, proactive, creative citizen endowed with a sense of duty and responsibility to society. able to adapt to the modern world, the characteristic features of which are an increase in the role of the individual, the intellectualization of his activities in the context of rapid changes in technology and technology, the continuous growth of the volume of information and the replenishment of knowledge, the constant expansion and deepening of the spheres of scientific research.

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