DOI: https://doi.org/10.46502/issn.1856-7576/2024.18.03.11
Cómo citar:
Molodovska, Y., Vainola, R., Lisnevska, N., Biriuk, L., Kostenko, L., & Bosyi, O. (2024). Use of interactive technologies in an innovative educational environment. *Revista Eduweb*, *18*(3), 134-156. https://doi.org/10.46502/issn.1856-7576/2024.18.03.11

Use of interactive technologies in an innovative educational environment

Uso de tecnologías interactivas en un entorno educativo innovador

Yuliia Molodovska
https://orcid.org/0009-0006-0042-2109
WoS Researcher ID: KSM-9231-2024
julia859999@gmail.com
Graduate Student of the Department of Pedagogy and Educational Management, Odesa Regional Academy of In-Service Education of the Odesa Regional Council, Ukraine.

Roman Vainola
https://orcid.org/0009-0003-5872-5194
WoS Researcher ID: KTI-0256-2024
dungeon.master3001997@gmail.com
Postgraduate Student of the Department of Primary Education and Innovative Pedagogy, Drahomanov Ukrainian State University, Ukraine.

Nataliia Lisnevska
https://orcid.org/0000-0001-7910-7932
WoS Researcher ID: HDO-4312-2022
lisnevsky.nv@gmail.com
Candidate of Pedagogical Sciences, Associate Professor, Associate Professor of the Department of Theory and Methodology of Preschool Education, Oleksandr Dovzhenko Hlukhiv National Pedagogical University, Ukraine.

Liudmyla Biriuk
https://orcid.org/0000-0003-4940-4228
WoS Researcher ID: EMI-9458-2022
biryuuk.51@gmail.com
Doctor of Pedagogical Science, Professor Primary Education Pedagogy and Psychology Department, Oleksandr Dovzhenko Hlukhiv National Pedagogical University, Ukraine.

Larysa Kostenko
https://orcid.org/0000-0003-2930-7404
WoS Researcher ID: GNM-8992-2022
shkoda44@ukr.net
Doctor of Pedagogical Sciences, Associate Professor of the Department of Pedagogy and Special Education, Volodymyr Vynnychenko Central Ukrainian State University, Ukraine.

Oleksandr Bosyi
https://orcid.org/0000-0002-8849-3932
WoS Researcher ID: IRZ-0341-2023
obosyi@cuspu.edu.ua
Postgraduate student of the Department of Pedagogy and Special Education, Volodymyr Vynnychenko Central Ukrainian State University, Ukraine.

Recibido: 02/08/24
Aceptado: 10/09/24

Abstract

The article analyzes the content and system of interactive technologies in an innovative educational environment, substantiates the components of interactive technology, and reveals the main pedagogical idea and main requirements in the mode of interactive technology for successful learning. Types of active methods in the mode of interactive technology are grouped and analyzed for successful learning and stimulation of the natural activity of students. Ways of creating an innovative educational environment in a higher education institution in the mode of interactive technology are shown. The most effective technologies that we recommend in the interactivity mode have been analyzed. The stages of development of interactive learning technology in the innovative educational environment of a higher school are shown. The impact of the active implementation of information and communication technologies, modern digital tools, and new technological means of learning on the possibilities of using interactive technologies in an innovative educational environment is proven. This is due to the need for innovative training of a generation of new specialists capable of competently and quickly applying the results of scientific and technical progress in professional and educational activities, in particular, the Internet, web technologies, smartphones, digital educational platforms, cloud services, electronic educational resources, artificial intelligence, and other modern devices.

Keywords: interactive technologies, interactive learning methods, innovative educational environment, the innovative position of a specialist, innovative activity.

Resumen

El artículo analiza el contenido y el sistema de las tecnologías interactivas en un entorno educativo innovador, fundamenta los componentes de la tecnología interactiva y revela la idea pedagógica principal y los principales requisitos en el modo de la tecnología interactiva para un aprendizaje exitoso. Se agrupan y analizan los tipos de métodos activos en la modalidad de tecnología interactiva para lograr un aprendizaje exitoso y estimular la actividad natural de los estudiantes. Se muestran formas de crear un entorno educativo innovador en una institución de educación superior mediante la tecnología interactiva. Se han analizado las tecnologías más efectivas que recomendamos en el modo interactividad. Se muestran las etapas de desarrollo de la tecnología de aprendizaje interactivo en el entorno educativo innovador de una escuela superior. Está comprobado el impacto de la implementación activa de tecnologías de la información y la comunicación, herramientas digitales modernas y nuevos medios tecnológicos de aprendizaje sobre las posibilidades de uso de tecnologías interactivas en un entorno educativo innovador. Esto se debe a la necesidad de una formación innovadora de una generación de nuevos especialistas capaces de aplicar de manera competente y rápida los resultados del progreso científico y técnico en actividades profesionales y educativas, en particular, Internet, tecnologías web, teléfonos inteligentes, plataformas educativas digitales, la nube. servicios, recursos educativos electrónicos, inteligencia artificial y otros dispositivos modernos.

Palabras clave: tecnologías interactivas, métodos de aprendizaje interactivos, entorno educativo innovador, posición innovadora de un especialista, actividad innovadora.

Introduction

New requirements for the content, organization of the learning process, and the entire educational environment shape modernity, changing the essence of education and its results. Interactive technologies make it possible to make the educational process more interesting and active, based on the personal expression of education seekers and teachers and their active interaction. This makes it possible to shift the emphasis on the development of innovative activities of education seekers and their ways of thinking from simple assimilation of information.

The leading idea of modern training of a creative and innovative personality is the promotion of the development of natural gifts, qualities, success, and intellectual capacity; formation of intellectual potential;

adjustment to further active, creatively conscious self-activity, which satisfies their aspirations for the manifestation of personal qualities, self-realization, meets the spiritual needs of a person. This creates an effective method for identifying and forming the student's creative potential and comprehensive personality development, which is possible only by creating a subject-subject model of learning in the educational process, where the main importance is given to the use of interactive learning methods (Yermolenko, 2022). Modern science is characterized by the search for interactive technologies, the creation of conditions for innovation aimed at the development and formation of a whole, free, creative, competitive personality capable of adaptation, socialization, and self-realization in society, and also creates conditions for revealing the essence of innovative approaches in the educational process and taking into account in their implementation of the main influential components.

Innovative pedagogical activity creates new norms of individually directed, personal, and creative activity of the teacher, associated with the refusal of learning from stereotypes, and develops pedagogical interactive technologies that are implemented in innovative educational activity. Nowadays, this is becoming especially important because the priority of the state policy of society is the optimization of professional training with an emphasis on the result, not on the evaluation of the learning process, not on the duration of learning, but on its quality (Kolisnyk-Humeniuk, 2018).

The variety of innovative technologies includes interactive technologies that involve the interaction of all participants in the educational process, which is carried out using methods that activate pedagogical communication as an equally active intersubjective interaction. Interactive technologies help to intensify independent creative and research work, which contributes to the development of student's creative abilities and cognitive activity.

The experience accumulated today in Ukraine and abroad proves that interactive learning technologies contribute to the intensification of the educational process and the activation of the educational and cognitive activities of students. This is manifested in the need to analyze educational information, creatively approach learning material and therefore make learning more accessible; independently find possible resources to solve problems; develop a strategy for achieving goals and plan specific actions; learn to formulate one's own opinion, express it correctly, prove one's point of view, argue and discuss; learn to listen to another person, respect an alternative opinion; simulate various social situations, enrich one's own social experience through inclusion in various life situations and experience them; learn to build constructive relationships in the group, determine one's place in it, avoid conflicts, resolve them, seek compromises, strive for dialogue; find a joint solution to the problem; to develop the skills of project activity, independent work, and the implementation of creative ideas.

The democratic development of Ukraine led to the restructuring of the system of primary, secondary, and higher education, the development of new programs to improve the conditions and learning outcomes of schoolchildren, and the professional training of teaching staff. In educational documents, emphasis is placed on the development of innovative educational technologies in the educational process to ensure the transition of education to a new, person-oriented paradigm.

The development of interactive technologies in an innovative educational environment is currently an urgent issue of theory and teaching methods in the educational process. Based on this, we considered the following questions in the article:

- Content and system of interactive technologies in an innovative educational environment.
- Components of interactive technology, the main pedagogical idea, and the main requirements in the mode of interactive technology for successful learning.
- Types of active methods in the mode of interactive technology for successful learning.
- The use of interactions in the mode of interactive technology for successful learning and stimulating the natural activity of students.

- Creating an innovative educational environment of a higher education institution using interactive technology.
- Improving the quality of the educational process of the higher school in the mode of interactive technologies.
- Stages of development of interactive learning technology in an innovative educational environment of a higher school.
- The influence of the active implementation of information and communication technologies, modern digital tools, and new technological means of learning on the possibilities of using interactive technologies in an innovative educational environment.

Literature Review

Many world-class scientists have devoted their work to the problem of using interactive technologies in an innovative educational environment.

S. Sysoieva (2011) compiled her research into a teaching methodical guide for teachers of non-formal, formal, and informal education systems, for teachers of post-graduate education institutions and institutions of higher education, and for scientists who are interested in education problems. The scientist considered the concept of "interactivity", revealed its essence; built an andragogical model of interactive learning; considered the criteria for the effectiveness of interactive technologies in the field of education; singled out and showed the advantages of elements of interactive technologies – active forms and methods of learning; painted examples of the use of the case method; substantiated the importance of educational opportunities of common distance learning systems, made their comparative analysis.

O. Demyanchuk & I. Adamovych (2020) devoted their research to the study of the peculiarities of the theoretical foundations of the use of interactive technologies in the educational process of higher education institutions and their structure, in particular, in the context of innovative processes, the scientists revealed the content of interactive learning technologies and the organization of educational activities that take place with the help of interactive learning technologies in the environment of institutions of higher education, using interactive methods as a means of increasing the efficiency of the educational process of higher education.

The result of the author's research is the disclosure of the main classification characteristics of interactive technologies in the process of communication; the content and the essence of the process of their use are outlined; the development of practical aspects and theoretical foundations of the use of interactive technologies in the educational process is proposed; a brief analysis of the discovery and development of the problem by scientists is made. I. Khomyuk, V. Petruk, O. Holiuk, & V. Khomyuk (2020) revealed the main approaches and directions to innovative activity in the modern educational space and showed its conceptual foundations in pedagogical innovation; presented the practical aspects of the effective implementation of innovative modern technologies, which shows the orientation towards the implementation of an innovative approach in higher education. In the study of the importance of interactive learning technologies, scientists put the main emphasis on system-structural and problem-target methods, as well as the diagnostic method of processing and analyzing scientific works, generalization, comparison, systematization, and synthesis in the works of scientists.

The theoretical aspects of the development of educational interactive learning technologies were presented by L. Rebukha (2022), in particular, the foreign experience of the development of interactive learning technologies was analyzed, and the trends in the development of modern innovative technologies were considered. Methodological principles of interactive learning technologies are revealed. In the system of higher education, innovative learning technologies are characterized, in particular, interactive learning technologies, distance and media learning technologies, technologies of a personally oriented educational process, and technologies of creative personality formation as innovations in the educational process of a higher school.

This problem is also solved by I. Konovalchuk (2014) in his research, in particular, he examines the technological and theoretical foundations of the implementation of innovations in educational institutions by analyzing the problem in practice, and the theory of education determines the essential signs of the readiness of innovative educational institutions to implement and accept innovations, substantiates the algorithms of examination and the developed conceptual and content model of the technology of implementing innovations, monitoring, and designing innovations, highlights the competence characteristics of the teacher as a subject in innovative activity, reveals the stages of the experiment and shows the dynamics of the development of the phenomenon under study.

Scientists have proven that the introduction of interactive pedagogical technologies in institutions of higher education promotes the development of students' creativity, initiative, and creativity independence and creates conditions for subject-subject interaction in the professional training of future specialists.

The use of interactive technologies in an innovative educational environment is not sufficiently disclosed in scientific and practical research.

Analysis of scientific research and study of the modern state of the organization of the educational process testified to the presence of contradictions that require effective solutions, in particular, between:

- The need of modern society for the growth of creative potential, a person who can think creatively in non-standard situations, and improper development of practical mechanisms that affect the formation of creative skills;
- Acquired theoretical knowledge and inability to apply it in practical activities, various life situations, creatively analyze the problem;
- The need for interpersonal interaction of students, development of social skills of creative interaction, and traditionally organized educational space;
- The importance of using interactive technologies in the educational process, insufficient determination of their place in the system of other forms, methods, and means, and their role in achieving the goal of education.

The relevance of the specified problem, the insufficient level of its study in pedagogical theory and practice, and the need to overcome the identified contradictions determined the choice of the topic of the article.

The aim of the study. Show the importance of using interactive technologies in an innovative educational environment.

Methodology

The methodological principles of the research are leading provisions of the theory of scientific knowledge; general scientific principles of historicism, systematicity, and scientificity; conceptual provisions of pedagogical, psychological, and sociological sciences; ideas of experience based on the simultaneous study of pedagogical, socio-cultural and economic phenomena; philosophical and pedagogical ideas of the development of modern education.

Various methods were used to achieve the goal of the research, namely: theoretical: general scientific (synthesis, analysis, comparison, classification, generalization and systematization) – in order to clarify the essence of the basic concepts of the research; analysis (in psychological and pedagogical theory and in practice) of the state of the problem under investigation; substantiation of content-methodical provision of training of specialists for the use of interactive technologies in an innovative educational environment; empirical: diagnostic (interview, psychological-pedagogical observation, questionnaire, self-assessment methods) – to determine the readiness of specialists to use interactive technologies in an innovative educational environment; pedagogical experiment; summarizing one's own pedagogical experience – to check the effectiveness of content-methodical training of specialists for the use of interactive technologies

in an innovative educational environment; statistical (methods of mathematical statistics) – for analysis and processing, establishment of scientific reliability of quantitative and qualitative indicators of experimental research.

The implementation of the pedagogical experiment was carried out in three stages: preparatory, main, and final.

At the preparatory stage, the purpose and tasks of the research were defined, the experimental plan was developed, methods of measurement and processing of results were selected, control and experimental groups were selected, and their homogeneity was checked.

At the main stage, an experiment was conducted.

At the final stage, the results of the experiment were analyzed, their reliability was confirmed, and conclusions were drawn about the pedagogical effect of the experiment.

The reliability and validity of the obtained results and the objectivity of their evaluation were ensured by the methodological validity of the initial positions and the qualitative mechanism of the assessment of the quality under study, the use of a complex of complementary research methods, and the involvement of a group of respondents from a higher educational institution in the analysis of its results.

Research relies heavily on the accuracy and reliability of the data. In the framework of research work, the quality of data collection and analysis not only adds weight to the research but also contributes to the formation of sound conclusions, which is the key to academic success.

The following digital data collection tools were useful in the study:

- *Google Forms* – a simple tool for creating surveys that allows you to collect data from respondents, create different types of questions, and collect answers in spreadsheets.
- *SurveyMonkey* – a modern survey tool that offers a wide range of customization options and analytical tools for analyzing the collected data.
- *JSTOR, Google Scholar*, and other academic search engines provide access to scholarly articles, books, and other academic resources that may be useful for literature review and theoretical data collection.
- *Zotero* or *Mendeley* – bibliography management programs that help organize research materials, store references, and format bibliographies and citations according to different citation styles.
- *Microsoft Excel* or *Google Sheets* – spreadsheets are useful for organizing and analyzing collected data when working with quantitative data.
- *SPSS, R,* or *Python* for more advanced data analysis, statistical analysis, and processing of volumes of data.

When determining the sample of subjects, the general specificity of the research subject was taken into account. The total volume of the sample is 158 subjects. When forming the sample, the criteria of meaningfulness, representativeness, and equivalence were taken into account. The sample was formed by random selection using the technical procedure for calculating the selection step.

The experiment was conducted in Drahomanov Ukrainian State University, Oleksandr Dovzhenko Hlukhiv National Pedagogical University, Volodymyr Vynnychenko Central Ukrainian State University. The conduct of the experiment is permitted by the scientific councils of the universities in order not to violate ethical considerations in institutions of higher education.

During the experimental work, we created a program for the use of interactive technologies in an innovative educational environment of a higher school, where we involved all members of the teaching staff in the processes of change, which contributed to the realization of the main tasks of personality development.

Research and experimental work showed that the leading role in the implementation of innovations aimed at the formation of a creative personality and the development of its individuality is performed by the teacher at the level of an educational institution, under whose leadership it is necessary to carry out the process of innovative training of specialists to solve ways of using interactive technologies in an innovative modern professional environment. During the survey, the level of readiness of students of graduation courses and teachers of a higher education institution to use interactive technologies in an innovative educational environment of a higher school was studied. Respondents were allowed to single out several items of answers during the questionnaire.

The implementation of interactive technologies in the innovative space of a higher school forms the innovative position of a specialist and contributes to the readiness of future specialists for innovative activities during their lifetime.

To assess the homogeneity of experimental and control data, statistical processing was performed using MS Excel and SPSS (Statistical Package for Social Science).

Results and Discussion

Content and system of interactive technologies in an innovative educational environment.

Active learning is interactive because it allows it to teach its participants in cooperation. The experience of each participant, his knowledge, and the learning process, in this case, are extremely valuable.

"Interactive – means the ability to interact or be in the mode of conversation or dialogue with something (for example, a computer) or someone (a person). Therefore, interactive learning is, first of all, dialogic learning, during which the teacher and student interact" (Lalak, 2011).

The value for the teacher is that interactive learning allows him to rationally use class time and, at the same time, allows the student of higher education to express himself in the educational process and during independent work. Therefore, the use of modern interactive learning technologies – educational technologies in higher education classes will make classes innovative and meaningful, and the teacher, at the same time, easily involves students of higher education in the learning process (Yermolenko, 2022).

O. Pometun & L. Pyrozhenko (2004) note: "The essence of interactive learning is that the learning process takes place under the conditions of constant, active interaction of all students. This is co-learning, mutual learning (collective, group learning in cooperation)...". The essence of this definition suggests that interactive learning technology has:

- Clearly defined learning outcomes (personal value orientations, specific qualities, abilities, knowledge, skills);
- Elements (participants) of the technological chain (students, teacher, learning methods, active forms, means and sources of learning);
- Functions of each element;
- A plan for sequential inclusion of elements in the technological process (a plan for the educational process of a higher school);
- A manager who manages the learning process (a teacher taking into account the requests and needs of students of higher education). It is these components that form the system of human competitiveness to acquire the desired competencies by the student (Sysoieva, 2011).

Having analyzed the modern scientific achievements of researchers, we claim that interactive technology in an innovative educational environment can be interpreted as:

- Introduction of creative ideas, means and methods, methods, and professional actions of the future specialist in practical work, aimed at the entire educational process of the higher school, starting with the goal and ending with the expected results;
- The unification of methods, forms, and technologies of means (qualitatively new components of the educational system) aimed at a high-quality, innovative educational process, increasing its effectiveness.

The main interactive technologies in the innovative educational environment include person-oriented and project-based learning, technologies of individualization of the learning process, group learning activities, games, integrated research, networks, and multimedia learning technologies (Khomyuk et al., 2020).

Components of interactive technology, the main pedagogical idea, and the main requirements in the mode of interactive technology for successful learning.

Speaking about interactive technology in an innovative educational environment as a system, let's consider the main components it contains:

- Qualitative and quantitative clear, in the form of educational achievements of education seekers, the expected result of the innovative educational process is achieved with the help of clearly planned educational goals;
- Interactive methods, forms, and techniques, with the help of which the active activity of those seeking higher education is stimulated, and training is organized;
- Structured and specially selected training content;
- Adequacy to the forms, goals, means, and methods of education;
- Psychological, pedagogical, and organizational conditions for effective planning and implementation of interactive technologies in an innovative educational environment;
- Educational and mental procedures and actions in the form of a system of cognitive tasks to achieve the planned results.

The main pedagogical idea of using interactive technologies in an innovative educational environment is the actualization of basic knowledge, the activation of the mental activity of students of higher education, the provision of an opportunity to independently understand the meaning for the practical use of acquired knowledge, the cultivation of a positive attitude towards the subject, the individualization of the educational process.

Interactive learning technologies in an innovative educational environment provide for the organization of cooperative learning, when each member of the group makes a unique contribution to common achievements, turning into group individual tasks, the efforts of each member of the group are necessary for the success of the entire group. The skillful use of interactive technologies in an innovative educational environment makes it possible to change the forms of habitual activity, relieve nervous tension, and focus on the main problems that require priority attention.

Let's consider the main requirements in the mode of interactive technology for successful education of students in higher education:

1) Group members staying in close contact with each other – unmediated interaction;
2) Understanding by group members that it is a joint educational activity that benefits everyone – a positive relationship;
3) Students of higher education learn skills of interpersonal relations, which are important for successful and interesting work, for example, planning tasks and their distribution – development of teamwork skills;

4) Mastering the proposed material in the mode of interactive technology by each student of higher education for successful learning and at the same time being responsible for helping others, but not doing work for someone – individual responsibility;
5) It is necessary to allocate a special time during group work so that the group can evaluate how successfully it works in the mode of interactive technology – evaluation of work (Volkova, 2018).

Types of active methods in the mode of interactive technology for successful learning.

Introductory methods. Introductory methods in the mode of interactive technology make it possible to create an atmosphere of trust and goodwill for successful learning. The preliminary meeting takes place in the introductory part with the trainer, the tasks, and the purpose of the training, an introduction is made between the participants of education in the mode of interactive technology for successful training, the rules of the training, and a survey of their expectations. Introductory methods offer "warm-up" exercises (icebreaking), exercises that unite and adjust the group to cooperation and a friendly atmosphere. In the format of such exercises, acquaintance takes place, and expectations are gathered.

Key methods are those that offer a solution to the main problem of the training or class. It can be interactive lectures, discussions, role-playing games, brainstorming, "carousel", cases, etc. It is important to alternate different types of key methods during the main part of the training or class – for successful training, for each subsequent stage of work, select a new method in the mode of interactive technology appropriate to the task. It is worth highlighting the rights to problematization among the key methods. Their purpose is to emphasize the ambiguity and actualize the experience of the participants regarding this problem, the relevance of the solution, and the complexity of the problem to increase cognitive interest in the raised topic. Part of the problematization function is solved by the parallel recording on the flip chart and the collection of expectations from the participants of the training in the mode of interactive technology. It can also be experiments, business games, or cases that emphasize the problem and "expose" the problem.

The final methods combine the results into a general structure, sum up the training session in the mode of interactive technology, and help to highlight the main results of interactive work for successful training. At the final stage of the training or class in the mode of interactive technology for successful learning, the following occurs:

1. Participants analyze the role of interactive technologies: what benefited each of them in the session or training in the mode of interactive technology, what was lacking, and what seemed useful in the work of the entire training group;
2. Feedback from training participants to each other: what helps each of them in successful learning, effective communication, and what hinders working in the mode of interactive technology (what personal qualities, skills, etc.);
3. Ensuring that each participant and the group as a whole receive the main requirements in the mode of interactive technology to successfully learn individualized and generalized information about the possibilities of continuing and the effectiveness of such work, working out in practice the options for applying the obtained results (Sovhira et al., 2023).

Auxiliary methods – attention-enhancing techniques or energizers are used in cases of:

- Before moving from one stage to another or changing activities;
- When there is a need to increase the emotional tone and energy in the group or relieve tension;
- Mandatory – before starting work and after a break.

Auxiliary methods in the mode of interactive technology set up productive cooperation and unite for successful learning. There should not be many of them, but their use is mandatory if the effectiveness of the group's work decreases due to the monotony of tasks, lack of attention, fatigue, and intensive or long-term intellectual activity (Yermolenko, 2022).

The use of interactions in the mode of interactive technology for successful learning and stimulating the natural activity of students.

Learning is not only the content, thanks to which the participants of the educational process in the mode of interactive technology acquire knowledge and skills, but also the process that, with the aim of successful learning and stimulating the natural activity of students, can make this path easier for them. The use of interactive methods in the mode of interactive technology will be successful only when a correspondingly friendly atmosphere is created. Therefore, to successfully study and stimulate the natural activity of students, integration games are an integral element of every innovative class and training.

In the mode of interactive technology, for successful learning, it is necessary to use interactions, which determine the interactivity of the educational process and are aimed at stimulating the natural activity of students, namely:

- ***Emotional*** – is implemented in the formation of self-confidence, the appearance of emotional tension, and experiences;
- ***Mental*** – is reflected in the generation of ideas, the intensity of logical thinking, designing, revealing creative imagination, constructing, expressing assumptions, research, modeling, performing analytical and synthetic operations, concentration, observation, attention;
- ***Activity in practical independent activity*** – as a result – when performing professional functions, and first in the conditions of training;
- ***Social*** – consists of the exchange of opinions, personal attitude to facts, imitation of the performance of social roles, in own conclusions and judgments, based on critical thinking attitude to activities and phenomena, in the formation of communicative competence, humanistic values.

All the mentioned factors in the mode of interactive technology to reveal the natural activity of the individual encourage students to form a professional mentality, self-determination, personal development, social identification, and personalization, which is of particular significance for specialists who are constantly in interpersonal interaction with clients in the process of professional activity.

Interactive learning, which has an integrative character, incorporates elements of innovation based on enhanced interpersonal interaction aimed at successful learning and stimulation of the natural activity of students, activation of independent, educational, cognitive, and communicative activity, characterizes it as an innovative process in higher education and determines the main direction pedagogical transformations (Kozmenko et al., 2022).

Creating an innovative educational environment of a higher education institution using interactive technology.

Innovative updating of the educational system in the mode of interactive technology ensures the growth of personal potential as teachers and students of higher education promote the expression of individuality and self-improvement. In the mode of interactive technology, the teacher must possess teaching methods, know his subject, orient himself in modern social and political life, and have knowledge in related scientific fields. Taking into account the specifics of educational activity, the specifics of the professional training system of competitive specialists, the content of teacher training for innovative pedagogical activity, the specifics of becoming a teacher as a subject of innovative activity, the creation of an innovative educational environment of a higher education institution for successful teaching students and stimulating their natural activity. Such an educational environment of a higher school should be built with the help of forming the image of "I am a future competitive specialist", on the assimilation of innovative professional activity of the individual, on self-knowledge as an individual, the ability of the individual in professional activity, understanding of the intellectual and spiritual foundations of success. The growth of the personal potential of the higher school teacher will ensure successful learning and stimulation of the natural activity of students in the mode of interactive technology, innovative renewal of the entire educational system, and will contribute to the self-improvement of all participants in the educational process.

Innovative learning in the mode of interactive technology in higher education encourages students in all types of educational activities to an active position, initiative, development of abilities, creative approach, associative thinking; involves the independent creation, acquisition, construction of competencies, skills, and knowledge, which significantly increases the success of education and stimulation of the natural activity of students, the effectiveness of professional training; increases the need for self-improvement and artistic and creative self-realization; engages students in creativity; reveals natural data laid down by nature; develops creative activity; produces aesthetic taste; forms artistic thinking.

Innovative learning in the mode of interactive technology contributes to the formation of the ability to independently analyze and evaluate information, a more conscious and significantly deeper understanding of the essence of what is learned, to defend one's point of view with arguments, formulate conclusions, respect an alternative opinion, listen to others, build constructive relationships with its members and determine one's place in the team, work in a team. This makes it possible for all participants of the educational process to realize the idea of cooperation, contributes to providing an atmosphere of psychological comfort, and teaches them constructive interaction. The organization of such training in the mode of interactive technology involves the systematic application of specific technologies, methods that implement successful training, and stimulation of the natural activity of students with the help of these approaches (Yakymenko et al., 2023).

We recommend the following most effective technologies in the interactivity mode, with the aim of successful learning and stimulating the natural activity of students:

- Project-based, which involves individual, independent, and group activities of higher education seekers;
- Development of student's critical thinking, which in the mode of interactive technology helps to stimulate students' natural activity;
- Cooperative learning – grouping of students into small groups with a common educational goal;
- Situational learning – involves students' comprehension of a real-life situation in the mode of interactive technology;
- An educational process using discussions and debates;
- Game, embodied in the mode of interactive technology in various didactic games.

Using role-playing games and modeling life situations based on the analysis of the relevant situation and circumstances, students come to a joint solution of problems. Interactive learning with the aim of competitiveness and stimulation of the natural activity of students contributes to the creation of an atmosphere of cooperation and interaction, the development of values, and the formation of a complex of skills and abilities (Marrero-Sánchez & Vergara-Romero, 2023).

The organization of innovative learning in the mode of interactive technology with the aim of successful learning and stimulating the natural activity of students is significantly more difficult than the traditional one, but its educational results are significantly higher. The successful implementation of the use of interactive technologies in an innovative educational environment requires systematic work, during which it is necessary to:

- To relieve the burden and focus on the professional direction of specialists, review the content of education with the implementation of the use of interactive technologies in an innovative educational environment in the conditions of innovative learning;
- Implement a set of measures for the use of interactive technologies regarding the lack of alternatives to innovative learning in an innovative educational environment to reorient pedagogical consciousness;
- To develop didactic and methodical provision of interactive technologies in an innovative educational environment, implementing ideas in a new generation of textbooks and manuals;

- Review the content in educational institutions and the focus of training on the use of interactive technologies in an innovative educational environment, as well as in the system of postgraduate education to form the readiness of teachers to work in an innovative educational environment;
- To introduce a system of incentives for teachers who use interactive technologies in an innovative educational environment and implement innovative learning ideas in their practical activities.

It is important that the nature of innovations, in particular, the use of interactive technologies in an innovative educational environment, reflects the needs of students, the training of specialists, and social requirements, taking into account the specifics of a specific institution of higher education. The innovative activity itself through the use of interactive technologies in the innovative educational environment of a higher school requires proper organizational work: analysis and practical verification of interactive methods by competent experts, which are used during the educational process: collection, accumulation, use, systematization and processing of information about innovations; determination of the mechanism of practical implementation of innovative processes and their resource justification; development of provisions, programs, projects regarding the definition of the control system and implementation of innovative processes, their evaluation according to the specified criteria.

Describing the content of innovation and the ways of using interactive technologies in the innovative educational environment of a higher school, it is necessary to take into account the basic managerial actions, which include the functions of coordination, forecasting, analysis, organization and planning, and control. All these processes need to be updated through the use of interactive technologies for the scientific and methodological support of student training in an innovative educational environment of a higher school then the indicator of the quality of innovation will be an increase in the effectiveness of educational activities through the use of interactive technologies of an innovative educational environment of a higher school.

The innovative function of university education based on images of innovative activity ensures the disclosure of creative possibilities of the socio-cultural mechanism through the use of interactive technologies in the innovative educational environment of a higher school and the development of new types of behavior of students of higher education.

The training of future specialists through the use of interactive technologies in the innovative educational environment of a higher school should be considered as a system that is holistic and is built on competence, phenomenological, cultural, systemic, innovative, axiological, personally oriented, contextual, humanistic, acmeological, creative approaches, organic combination of innovative and traditional methods, forms, means of education.

In the training of future specialists, in connection with the transition to the competence approach, there is a need to change the forms, technologies, and methods of conducting classes, which allows avoiding the consequences of inconsistency in education, which do not ensure the practical and effective preparation of specialists. This activates the use of interactive technologies in the innovative educational environment of the higher school, which means fundamental changes in the educational process. The conceptual principles of training future specialists through the use of interactive technologies in the innovative educational environment of a higher school is a dynamic, complex system of theoretical, methodical, and methodological measures aimed at improving the values, content, and norms of a specialist's professional activity (Drozich et al., 2023).

When creating an innovative educational environment of a higher education institution in the mode of interactive technology, innovative processes in the education system are implemented as purposeful changes in conditions, goals, means, content, forms of activity, methods that are characterized by a high potential for increasing the efficiency of activities, the novelty in certain areas. In this context, the higher school implements new learning technologies, including project methods, computer and distance learning, and interactive methods.

The leading conceptual idea of training future specialists in the mode of interactive technology of an innovative educational environment of a higher education institution is based on the premise that the professional training of a future specialist should be directed in an innovative educational environment to the formation of the ability for subject-subject interaction in the direction of formation individual readiness for innovative activity (Kolisnyk-Humeniuk, 2018).

Improving the quality of the educational process of the higher school in the mode of interactive technologies.

Interactive technologies, which are developing and emerged on the border of methodology, general innovation, history, and theory, belong to the system of scientific, general, and pedagogical knowledge and are aimed at ensuring the formation of a holistic creative personality, the effectiveness of the learning process, the formation of creative qualities and various methods of creative activity, with to increase the level of professional skill and professional competence. The conditions for the manifestation of creativity are the presence of a creative process, a creative personality, and a creative environment (Budnyk et al., 2022). The use of interactive technologies in an innovative educational environment has a great influence on the personality. In particular, we consider the following to be effective for the manifestation of personal creativity:

- Communication technology – consists of a collective discussion of the problem facilitated discussion with the help of leading questions. The technology of communication is aimed at the development of future specialists' ability to think, carefully observe, and understand the ambiguity of images;
- The technology of creating an "aesthetic field", the basis of which is the relationship between the individualization of education and the aestheticization of the personality, is the unity of the scientific and artistic activity of the future specialist, which makes it possible to improve the creative-active, emotional-sensual, cognitive-worldview spheres of the personality;
- The technology of forming the aesthetic culture of a person as a future specialist, aimed at the formation of an individual's ability to a holistic emotional-sensual and synthetic understanding and perception of objective reality, enables the sequence of implementation of techniques, forms of organization, methods, means, professional activity, as an object and sphere of aesthetic knowledge; acquisition of aesthetic experience; development of the desire for self-expression and creative self-realization in various activities;
- Art therapy – therapeutic technology performs the function of removing mental barriers in education;
- Improvisational technology is used to activate creative abilities and motivate the student to professional creative activity;
- The technology of developing the aesthetic worldview of future specialists represents a holistic process that includes the organization of the entire learning process, formulation of educational goals, provision of conditions for the formation of specific skills and knowledge aimed at achieving competitiveness;
- The technology of developing the creative abilities of future specialists creates an educational space for the student so that he becomes a subject of individuality, self-development and self-improvement, creative activity, and uniqueness;
- The technology of training a future specialist for the organization of creative activity, which is an algorithmized, ordered system of interrelated tasks, goals, techniques, content, forms, and methods of organizing creative activity, forms a system of skills, abilities, and knowledge that make it possible to effectively organize creative activities that contribute to the development of the desire for self-expression and creative self-realization in various types of creative activity (Balalaieva et al., 2023).

The leading feature of these technologies is the focus on the humanization of education and a deep awareness of the "uniqueness of humanity as the highest form of a person's aesthetic attitude to the world; affects the inner world of the individual, awakens the perception of beauty, stimulates the development of imaginative thinking, associative memory, and artistic imagination; creates ample opportunities for the development of interest" (Kolisnyk-Humeniuk, 2018).

Effective interactive technologies in an innovative educational environment include working out discussion questions, for example: "Scale of opinions", "Continuum", "PRESS method", "Change position", "Take a position", and others. Discussion technologies ensure that students of higher education practice the skills that contribute to human development:

- Listen and, at the same time, hear the opinions of others;
- Clearly express and defend one's opinion;
- To logically argue and substantiate one's position.

Technologies for working out debatable issues contribute to the development of a person's critical and creative thinking, the expansion of the cultural worldview, and the motivation to study students of higher education (Demyanchuk & Adamovych, 2020).

The use of interactive technologies in institutions of higher education during classes promotes the activation of thinking, attention, perception, imagination, creative abilities, memory, and cognitive interests, which ensures the active development of the cognitive interest of the individual is a priority goal of the educational process and increases the success of studies, ensures physiological, intellectual full development of a person. So, we are sure that the use of interactive technologies in higher education helps to form a new style of team relations in future specialists when the transfer of information goes from everyone to everyone and not from one person to many (Kolisnyk-Humeniuk, 2018).

Stages of development of interactive learning technology in an innovative educational environment of a higher school.

The development of interactive learning technology in the educational process of a higher school takes place in the following stages:

1. The preparatory stage provides forecasting and planning of results where the student has the opportunity to obtain information about the term of study, expectations, study goals, experience, needs, educational opportunities; determine learning outcomes, personality qualities, skills, specific knowledge, skills, advancement in competence; shows the sequence and content of the presentation of the educational material, its required volume; distributes educational material to educational modules; formulates and defines learning outcomes in the form of formed competencies for each educational module; carries out in each educational module the selection of active methods, forms, technologies, methods, and methods of learning in such a way that they ensure the development of the student's relevant competencies.
2. The implementation stage creates conditions for organizing the functioning of the technological chain. The planned number of lessons at this stage is carried out consistently according to the following structure: the message of the educational problem, the topics, as a rule, go beyond the boundaries of one subject (it is often necessary to involve the skills to solve a real problem, knowledge of phenomena, concepts related to different educational disciplines), which requires the student to have practical knowledge of the appropriate scientific breadth. When setting an educational problem, it is necessary to take into account the previous training and experience of students to know the gaps in their knowledge. Consideration of educational problems that arise from the experience and needs of students themselves has the greatest effect on student education. At this stage, it is necessary to foresee the didactic workload of students at the expense of organization of activities by elements and as a whole (demonstration, explanation); organization with constant feedback of independent practice and a positive assessment of the teacher, organization of practice in simplified conditions of the student's skills. At this stage, there is a need to transition to productive, exploratory educational activities, during which active methods and forms of learning are used: solving specific problems in small groups, analyzing problem situations, simulation modeling, discussions, business games, etc., and the organization of activity analysis becomes important of the student by the group and the teacher, as well as self-analysis by the student of his own activity during training. In this process, the self-analysis and analysis procedure is aimed at evaluating the competencies acquired by students

(planned in this educational module as a learning outcome). Adjustments are being made to the technological chain – a further learning process; quality deviations from the desired level of professional competencies obtained by students are analyzed, and corrections are made in the learning process (Knysh et al., 2023).

Let's consider how the technological chain functions. By the technological card (plan), the leader of the educational process introduces certain elements at the scheduled time (learning aids, students, himself, etc.), which, according to their functions, begin to perform certain actions. The transition from one stage of the lesson to another, or one operation to another, or the execution of planned actions is controlled and coordinated by the head of the educational process. The head of the educational process receives, sends, and processes information, which allows him during the educational process to know what is happening at each stage of the technological chain and makes it possible to make timely corrections if necessary. Each action of each element is aimed at obtaining the planned result, which in its totality forms the final result in the educational process. With the results obtained, the students move on to the next lesson or the next operation, where, in the process of incorporating the technology, their competence begins to "increase" again.

When organizing training based on interactive technologies in an innovative educational environment, each participant in the educational process performs certain functions since there can be no redundant elements in the technological chain. In interactive technology in an innovative educational environment, all actions are subject to a goal, and each element is important and aimed at achieving the planned result. In addition to active participants in the educational process (students, teacher), "passive" elements in the technological chain (methods, methods, means, sources of learning) are involved, which perform their functions. In the educational process, there is a systematic organization of the interaction of all elements within the limits of interactive technology, which guarantees the achievement of the set learning goals in an innovative educational environment.

3. The stage of summarizing the results of the training includes the analysis of the achievement of the training goals with the help of the inclusion of interactive technology in the innovative educational environment. At this stage, the most important thing for the student is the analysis of the level of relevance of the acquired skills and knowledge, which allows you to effectively use the acquired knowledge in professional activities and your life (Sysoieva, 2011).

The influence of the active implementation of information and communication technologies, modern digital tools, and new technological means of learning on the possibilities of using interactive technologies in an innovative educational environment.

The active implementation of information and communication technologies in all spheres of human activity, in the innovative educational environment, and in the entire process of computerization of modern society requires updating approaches and fundamental changes to the training of competitive personnel. This is due to the need for innovative training of a generation of new specialists capable of competently and quickly applying the results of scientific and technical progress in professional and educational activities, in particular, the Internet, web technologies, smartphones, digital educational platforms, cloud services, electronic educational resources, artificial intelligence and other modern devices (Shetelya et al., 2023).

The use of interactive technologies in an innovative educational environment is implemented with the help of computer-centric unique learning technologies – these are case technologies, network technologies, etc. The key features of innovative learning are the use of various means for the exchange of educational information; the provision of two-way communication between the participants of the educational process, etc.

The improvement of the educational process in institutions of higher education has led to the emergence of new technological means of learning, in particular, tablets, dynamic visualization technologies, smart

boards, mobile devices, MOOCs (Massive Open Online Courses), laptops, virtual laboratories, etc. In higher education, the use of distance learning platforms is becoming more and more common and popular. Innovative technologies bring learning to a new, fundamental, high-quality level of education (Plakhotnik et al., 2023).

We emphasize the expediency of using augmented and virtual reality applications in an innovative educational environment. Let's consider the applications of augmented and virtual reality, which should be supported in the process of project training of future specialists (Kovalenko et al., 2021):

1. ***Google Expeditions*** is a tool for the educational process that allows you to explore objects in augmented reality and travel through the virtual world. The application contains modes of research at the level of atoms of objects, the study of historical monuments, etc. The teacher becomes a guide in Google Expeditions, who "walks" with a group of higher education students on a video excursion, showing objects of augmented reality. This technology serves for the detailed study of individual subjects and allows the use of special tools.
2. ***EON-XR*** is a virtual or augmented reality program designed for learning in a practical environment. In the mode of virtual reality, classes can be held both in groups and individually, providing all the requirements of an innovative educational environment. Using the EON Reality library of over 1 million pieces of digital data on their phones, computers, tablets, and headsets, EON-XR enables users to quickly create engaging content.

Modernity requires humanity to master the basic forms of online communication: forums, meetings, blogs, chats, e-mails, etc. The innovative educational environment of the higher school is no exception.

Mobile communication services (Viber), instant messaging services, and social networks allow you to create communities and chats, private groups for discussing tasks, questions, topics, and information. Video conferences can be held via Skype, Zoom, Google Meet, or Microsoft Teams. The advantage of applications is the possibility of use for group and individual work, installation, and use on laptops, computers, smartphones, and tablets (Stratan-Artyshkova et al., 2022).

With the Zoom platform, you can send meeting IDs and links, organize recurring and new scheduled meetings, use chats and waiting rooms for individual work, use screen demonstrations, meeting recording functions, and interactive whiteboards.

Let's emphasize the importance of the platform for innovative learning – Google Drive, cloud storage for saving and searching for various types of files (lectures, presentations, laboratory instructions, popular science films, electronic versions of methodical and scientific literature, self-produced screencasts, etc.).

Let's consider the Google tools that are important for working in the innovative educational environment of a higher school, namely the Google Classroom Learning Management System, which allows you to evaluate and publish assignments, create audiences, communicate with students, distribute and store educational materials, and post announcements. The teacher can see who continues to work on the task and who has completed it and read the comments and questions of students.

The Google Classroom mobile application allows teachers and students to create charts or graphs without an Internet connection and provides access to assignments in offline mode in the Google Classroom mobile application.

In an innovative educational environment, the following functions can be used using Google Apps:

- Communication of students from any place with each other – formation of channels of live information;
- Organization for work on the project of an innovative information space for all participants, where access to information is provided in a free form;
- Ensuring comfort and convenience in using programs;

- Provision of access to information for project participants;
- Ensuring the security of cloud storage of documents;
- Provision for joint work on shared access documents;
- Active networking (creation of conditions for teamwork) of all project participants;
- For discussion and problem solving – creation of temporary groups at a time convenient for group members;
- Timely notification of events and availability of plans;
- Quick feedback (Sulym et al., 2023).

Personalized search in an innovative educational environment is provided by Google programs:

- ***Google Search*** allows you to instantly find interesting news, get answers to questions, get information about important updates;
- ***Google News***, taking into account the interests of the user, provides a selection of information and helps to learn about events around the world.

Google applications also relate to the organization of work in an innovative educational environment:

- ***Google Disc*** allows you to place files of various types (has data storage): graphics, text, audio, video, photos, presentations, etc.;
- ***Google Sheets*** allows you to visualize and analyze data.
- ***Google Slides*** has many fonts, themes, animations, embedded videos, and other tools; it is possible to view and edit presentations on innovative devices – tablet, phone, and computer even without an Internet connection;
- ***Google Calendar*** is a service for planning events, meetings, and affairs, which allows you to plan your time and allocate it effectively, which is important for a modern person (Rebukha, 2022).

Experimental research.

A key point in the innovative educational environment of training specialists to solve ways of using interactive technologies to modernize the professional activity of specialists is the rejection of usual stereotypes and mastering of methods of innovative activity and ineffective methods of professional activity. The use of the latest approaches without the individual's desire for change, without reorientation to an innovative approach, will not give the expected results since modern society is characterized by the rapid development of fine and high technologies, in particular in the field of education.

During the experimental work, we created a program for the use of interactive technologies in an innovative educational environment of a higher school, where we involved all members of the teaching staff in the processes of change, which contributed to the realization of the main tasks of personality development. The unification of future specialists around a common goal gave special importance to joint creative work, increased the motivation of their activities, and united the collective to innovative activities in a team with the transition to the reformist positions of reform participants from narrow-profile views on their professional training.

Research and experimental work showed that the leading role in the implementation of innovations aimed at the formation of a creative personality and the development of its individuality is performed by the teacher at the level of an educational institution, under whose leadership it is necessary to carry out the process of innovative training of specialists to solve ways of using interactive technologies in innovative modern professional environment Modern education faces the problem of forming a specialist as a bearer of innovative culture. Such requirements require changes in the system of professional activity of the higher school.

At all stages of experimental work on a scientific and methodological problem, an experimental group of students led by teachers worked creatively. The main requirements that applied to the members of the experimental group of the higher school were creativity, personal interest, voluntariness, and the ability to change the situation. It was the members of the experimental group who developed and selected materials (questionnaires, questionnaires, tests, etc.) for internal monitoring, conducted a systematic analysis of the situation, and implemented strategies for local and modular changes in the program of using interactive technologies in the innovative educational environment of the higher school.

The next step is the transition to the practical actions of evaluating educational results from the theoretical analysis of the problems of improving the quality of education.

Discussion of the results of the pedagogical experiment

We have implemented the methodology of using interactive technologies in the innovative educational environment of a higher school, analyzing and studying the conditions for the formation of an innovative teacher culture. This technique consisted of several questionnaires and tests because it is necessary to have information to monitor all aspects of the educational process:

- To have an idea about the interests and abilities of students, the level of satisfaction with education, the use of interactive technologies in the innovative educational environment of a higher school, and the level of knowledge of higher education students;
- To know the level of professional skill, the state of teaching in the innovative educational environment of the higher school, self-esteem, work efficiency, and the level of methodical culture of the future specialist;
- Have information about yourself: analyze your limitations and evaluate the development of research skills and analytical skills.

158 respondents were diagnosed. During the survey, the level of readiness of students of graduation courses and teachers of a higher education institution to use interactive technologies in an innovative educational environment of a higher school was studied. Respondents were allowed to single out several items of answers during the questionnaire.

The result of involving respondents in the use of interactive technologies in the innovative educational environment of a higher school is, according to the respondents:

- Development of professional qualities of future specialists (83%);
- Enrichment of future specialists with professional knowledge (72.4%);
- Personality development of the future specialist (59%);
- Acquisition of a modern, innovative style of personal thinking (46.2%);
- The dynamics of academic achievements of students (32.1%);
- The success rate of graduates of higher education institutions (31.9%).
- Needs in pedagogical creativity of the future specialist (28.7%),
- Needs for publication of one's methodical assets (9.3%).

Questionnaire questions were offered to EC and CG respondents. The following answers were received. In response to the question "*Are you interested in experiments and innovations in professional activity?*" got the following results:

- 91% of respondents said "yes"
- 9% of respondents said "no".

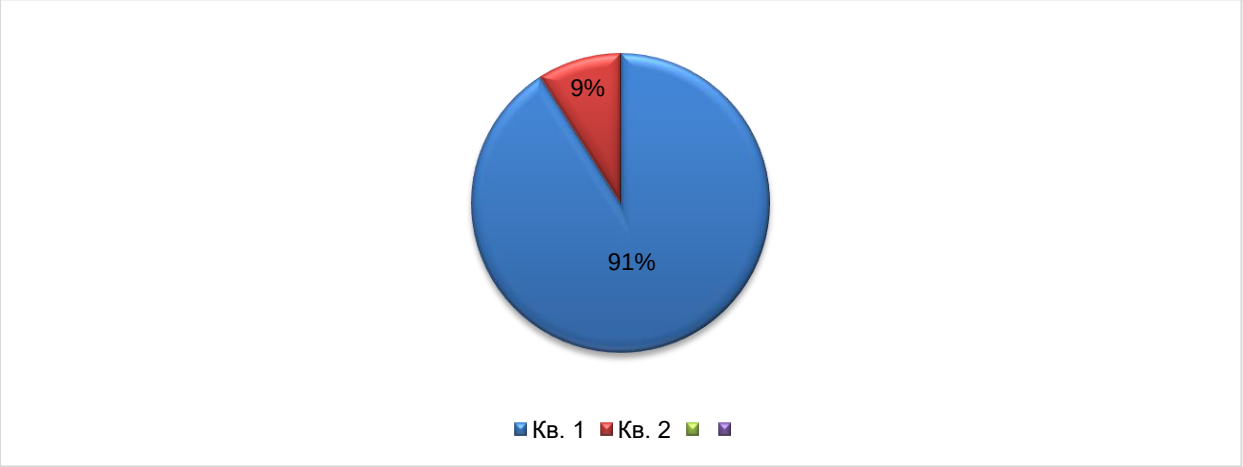

Fig. 1. Results answer to the question "Are you interested in experiments and innovations in professional activity?"

This means that a small part of specialists do not have personal sustainable motivation.

The answers to the question "*How often do you use interactive technologies in your work during the year?*" were distributed as follows:

- 19% of respondents will use interactive technologies in their work – 150-180 times during the year;
- 55% of respondents – 100–150 times during the year;
- 26% of respondents used interactive technologies in their work 80–100 times a year.

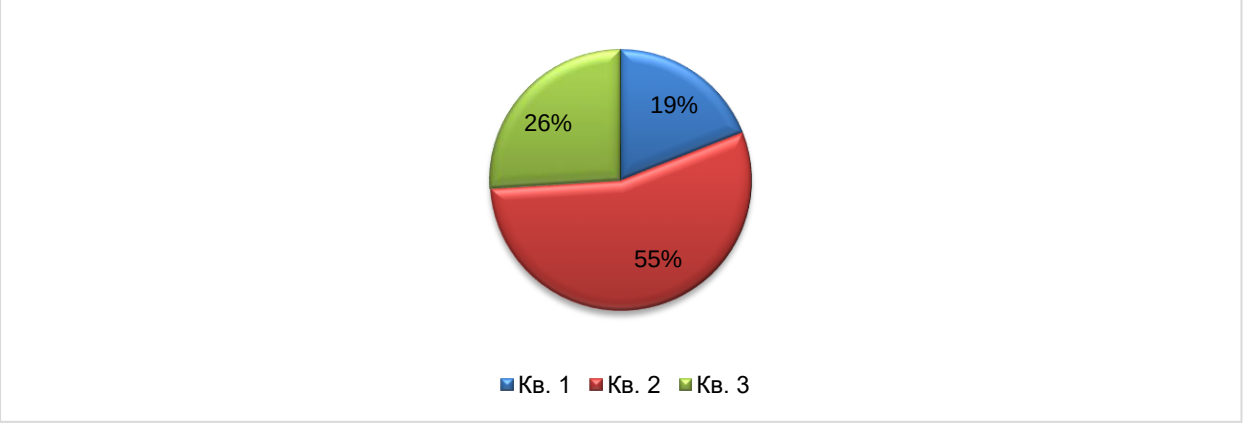

Fig. 2. Results answer to the question "*How often do you use interactive technologies in your work during the year?*"

The answers to the questions indicate the readiness of specialists for innovative activities.

The next question was – "*What is attractive to you about innovative activity, in particular, interactive technologies?*"

The respondents chose the following answer options to the question:

- 78% – develops a person's interest in studying the material;
- 65% – the opportunity to implement new forms of work and methods.

The next question: "*Name the main reasons that inhibit the introduction of new interactive technologies*." The following answers were received.

- 89% lack of time;
- 35% oversaturation of the material;
- 26% have imperfect computer skills;
- 21% poor financial support;
- 14% psychological unpreparedness of students to perceive information;
- 8% conservatism in education.

The next question: "*Name the main internal contradictions that inhibit the use of interactive technologies in the innovative educational environment of a higher school?*"

Respondents consider the following to be the main internal contradictions:

- 37% – lack of confidence in a positive result;
- 21% – uncertainty as to whether I will be able to be successful in experimental or innovative work;
- 19% – there is no certainty that the new will be better than the old;
- 11% – no one pays attention to the additional loss of strength and time to work in a new way;
- 30% of respondents did not answer.

We see that the respondents are aware of the goals and meaning of innovative activities, but not every respondent can confidently engage in innovative activities.

Answers to the question "*Choose innovative diagnostic techniques that you are fluent in?*" were important. The answers were distributed as follows:

- 85% – desire to learn new things when using interactive technologies;
- 71% – desire to experiment when using interactive technologies;
- 65% – creativity;
- 42% – previous experience in the implementation of interactive technologies in the innovative space of a higher school.

To the question "*What do you consider the main component of success?*" school teachers answered as follows:

- 85% – self-confidence in self-improvement throughout life;
- 79% – use of interactive technologies in an innovative environment;
- 59% – creativity, perseverance, innovativeness;
- 39% – searching for and introducing novelty into a professional career.

We see that only persistent, innovative, creative individuals can be carriers of innovations, capable of self-development, reflection, self-actualization, professional self-improvement, and self-confidence.

The implementation of interactive technologies in the innovative space of a higher school forms the innovative position of a specialist and contributes to the readiness of future specialists for innovative activities during their lifetime.

The last question for the perspective of our activity was as follows: "What innovative technologies, interactive technologies, or methods would you like to master in more detail for your professional work?".

Among those named were: "Project activity", "Cloud technologies", "Methods of critical thinking", etc. The conducted analysis of the study claims that the respondents consider themselves motivated to innovative activity, participate in it.

For us to be able to show the importance of the use of interactive technologies in an innovative educational environment, we conducted a study that revealed the essence of the concept of "interactivity", found out the criteria for the effectiveness of interactive technologies in the educational field, singled out and showed the advantages of the elements of interactive technologies, proposed the development of practical aspects of use in the educational process of interactive technologies.

The conclusions we obtained during the research are relevant for the field of research because modern science is characterized by the search for interactive technologies, the creation of conditions – innovations aimed at the development and formation of a complete, free, creative, competitive personality, capable of adaptation, socialization, self-realization in society, and also creates conditions for revealing the essence of innovative approaches in the educational process. New requirements for the content, organization of the learning process, and the entire educational environment shape modernity, changing the essence of education and its results. Interactive technologies make it possible to make the educational process more interesting and active, based on the personal expression of education seekers and teachers and their active interaction.

Recommendations on research results.

Taking into account the results of the research, we concluded that future specialists must comply with the requirements for their competitiveness, namely:

- To determine the criteria for the effectiveness of innovative professional methods, the use of interactive technologies to modernize the training of future specialists, which reflects an activity approach;
- Choose interactive methods that are optimal for lifelong learning;
- Take into account the high efficiency of interactive interaction in practice;
- Use only interactive technologies that will meet the tasks and set goals for the personal development of future specialists;
- Subject to the availability and systematic use of interactive technologies;
- Take into account the developmental nature of interactive methods.

It is these directions in the conditions of interactive learning that determine the strategy of building a modern system of professional training of specialists and creating a complex of optimal conditions for self-realization and self-development of students.

Conclusions

The content and system of interactive technologies in an innovative educational environment are analyzed, the components of interactive technology are justified, and the main pedagogical idea and the main requirements in the mode of interactive technology for successful learning are revealed.

In the article, we show the importance of using interactive technologies in an innovative educational environment. Research and experimental work showed that the leading role in the implementation of innovations aimed at the formation of a creative personality and the development of its individuality is performed by the teacher at the level of an educational institution, under whose leadership it is necessary to carry out the process of innovative training of specialists to solve ways of using interactive technologies in an innovative modern professional environment.

The implementation of interactive technologies in the innovative space of a higher school forms the innovative position of a specialist and contributes to the readiness of future specialists for innovative activities during their lifetime.

The perspective of further research is the study of such issues as the study and implementation of foreign experience in the use of modern interactive learning technologies.

The practical significance of the research lies in the improvement of the educational process aimed at the formation of creative skills through the use of interactive technologies: creating products of creative activity; problematic vision; for the development of imagination and fantasy; thinking activity; original, non-standard ideas.

The content and results of the experimental research can be used by teachers to improve the educational process of training future teachers for the use of interactive pedagogical technologies in their professional activities.

The main contribution of the research to the field of innovative education is the expediency of using interactive pedagogical technologies in the educational process of higher education institutions.

Recommendations regarding the use of interactive technologies in professional activities are defined: this is constant professional self-development and self-improvement in the conditions of research of advanced progressive achievements in the field of new technologies, as well as the introduction of new innovative technologies and teaching methods; participation in international and all-Ukrainian projects, training to improve professional qualifications; use of innovative methods and information and communication technologies, forms of training organization in professional and teaching activities; encouraging students of higher education to engage in scientific research, to participate in various projects and training aimed at professional development.

Bibliographic References

Balalaieva, O., Mochan, T., Hryhorenko, T., Andreikova, I., Paltseva, V., & Podkovyroff, N. (2023). Innovative pedagogical technologies – the most important resource in modernizing the training of a modern specialist. *Amazonia Investiga, 12*(63), 67-76. https://doi.org/10.34069/AI/2023.63.03.6

Budnyk, O., Rembierz, M., Arbeláez-Encarnación, T. F., Rojas-Bahamón, M. J., Arbeláez-Campillo, D. F., Chinchoy, A., & Matveieva, N. (2022). Formation of tolerance in the inclusive environment of an educational institution. *Amazonia Investiga, 11*(56), 305-319. https://doi.org/10.34069/AI/2022.56.08.29

Demyanchuk, O., & Adamovych, I. (2020). Theoretical basis of using interactive technologies in the educational process. *Scientific Bulletin of Uzhhorod University. Series: «Pedagogy. Social Work», 1*(46), 160-163. https://doi.org/10.24144/2524-0609.2020.46.160-163

Drozich, I., Drobin, A., Skrypka, I., Mamchych, O., Mykhailenko, O., & Kurach, M. (2023). The role of education in the innovative society. *Amazonia Investiga, 12*(64), 45-56. https://doi.org/10.34069/AI/2023.64.04.4

Khomyuk, I. V., Petruk, V. A., Holiuk, O. A., & Khomyuk, V. V. (2020). *Innovative technologies in the educational process*: Monograph. Vinnytsia: VNTU. https://ir.lib.vntu.edu.ua/bitstream/handle/123456789/33832/Інноваційні%20технології%20в%20освітньому%20процеci.pdf?sequence=3&isAllowed=y

Knysh, I., Budanova, O., Vakulenko, S., Syrotina, O., & Popychenko, S. (2023). Innovative educational technologies as a way of higher education enhancement. *Amazonia Investiga, 12*(68), 21-32. https://doi.org/10.34069/AI/2023.68.08.2

Kolisnyk-Humeniuk, Yu. I. (2018). *Methodical instructions for studying the module "Innovative and interactive learning technologies"*. Lviv: LNNTSPO. https://acortar.link/C7LpGc

Konovalchuk, I. I. (2014). *Theory and technology of implementing innovations in general educational institutions: Monograph*. Zhytomyr: Publication of ZhDU named after I. Franko. https://core.ac.uk/download/pdf/187726599.pdf

Kovalenko, V. V., Marienko, M. V., & Sukhikh, A. S. (2021). Use of augmented and virtual reality tools in a general secondary education institution in the context of blended learning. *Information Technologies and Learning Tools, 86*(6), 70-86. https://doi.org/10.33407/itlt.v86i6.4664

Kozmenko, O., Popovych, I., Arbeláez-Campillo, D.F., Rojas-Bahamón, M.J., & Volchenko, L. (2022). Structural and functional model of the successful person training in USA colleges and universities. *Amazonia Investiga, 11*(55), 143-155. https://doi.org/10.34069/AI/2022.55.07.15

Lalak, N. V. (2011). Interactive model of student learning: Problems and prospects. Scientific Bulletin of the Uzhhorod National University: Series "Pedagogy. *Social Work: A Collection of Scientific Works of ZOIPPO, (1)*27, 69-70. http://nbuv.gov.ua/UJRN/Nvuuped_2011_20_27

Marrero-Sánchez, O., & Vergara-Romero, A. (2023). Digital competence of the university student. A systematic and bibliographic update. *Amazonia Investiga, 12*(67), 9-18. https://doi.org/10.34069/AI/2023.67.07.1

Plakhotnik, O., Zlatnikov, V., Strazhnikova, I., Bidyuk, N., Shkodyn, A., & Kuchai, O. (2023). Use of information technologies for quality training of future specialists. *Amazonia Investiga, 12*(65), 49-58. https://doi.org/10.34069/AI/2023.65.05.5

Pometun, O. I., & Pyrozhenko, L. V. (2004). *A modern lesson. Interactive learning technologies: Science and method manual*. Kyiv: A.S.K. Publishing House. https://pedagogika.ucoz.ua/knygy/Suchasnyj_urok.pdf

Rebukha, L. Z. (2022). *Innovative learning technologies in the conditions of modernization of modern education:* A monograph. Ternopil: ZUNU. http://dspace.wunu.edu.ua/bitstream/316497/48105/3/монографія_Інноваційні%20технології%20навчання%20в%20умовах%20модернізації%20сучасної%20освіти.pdf

Shetelya, N., Oseredchuk, O., Cherkasov, V., Kravchuk, O., Yarova, L., & Kuchai, O. (2023). Competency approach in preparing professionals in an innovative educational environment in higher education. *Revista Conrado, 19*(S3), 298-307. https://conrado.ucf.edu.cu/index.php/conrado/article/view/3512

Sovhira, S., Dushechkina, N., Balokha, A., Borysenko, N., & Ieresko, O. (2023). Ecologization of education in the innovative space of higher education. *Amazonia Investiga, 12*(67), 115-126. https://doi.org/10.34069/AI/2023.67.07.11

Stratan-Artyshkova, T., Kozak, Kh., Syrotina, O., Lisnevska, N., Sichkar, S., Pertsov, O., & Kuchai, O. (2022). Formation of New Approaches to the Use of Information Technology and Search for Innovative Methods of Training Specialists within the Pan-European Educational Space. *International Journal of Computer Science and Network Security, 22*(8), 97-104. https://doi.org/10.22937/IJCSNS.2022.22.8.13

Sulym, V., Melnykov, A., Popov, M., Vechirko, O., & Malets, D. (2023). Improving education through implementation of information technologies into the educational process. *Amazonia Investiga, 12*(68), 281-293. https://doi.org/10.34069/AI/2023.68.08.26

Sysoieva, S. O. (2011). *Interactive technologies for teaching adults: Educational methodical guide*. Kyiv: VD "EKMO". https://elibrary.kubg.edu.ua/id/eprint/7101/1/СВІТЛАНА%20СИСОЄВА%20%20ІНТЕРАКТИВНІ%20ТЕХНОЛОГІЇ%20%20НАВЧАННЯ%20ДОРОСЛИХ.pdf

Volkova, N. P. (2018). *Interactive learning technologies in higher education: Educational and methodological manual*. Dnipro: Alfred Nobel University. https://www.pedagogic-master.com.ua/2022/Volkova_1.pdf

Yakymenko, S., Vasiutina T., Nefodov, D., Pankiv, L., Stryzhakov, A., & Denysiuk, M. (2023). Main directions of innovative transformations in higher education. *Amazonia Investiga, 12*(63), 31-41. https://doi.org/10.34069/AI/2023.63.03.3

Yermolenko, A. (2022). *Interactive learning technologies: Electronic training course*. Bila Tserkva: BINPO. https://lib.iitta.gov.ua/id/eprint/731177/1/Інтерактивні%20технології%20навчання_ЕНК.pdf