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Formation of students' language competencies through the use of innovative technologies

Формування мовних компетенцій студентів шляхом застосування інноваційних технологій

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Abstract

The article reveals the importance of podcasting; the most effective tasks for the formation of students' language competencies through the use of innovative technologies are singled out; the necessary preconceptions and main linguistic didactic tasks were identified for assimilation of knowledge and formation of linguistic competencies of students, the solution of which contributes to the introduction of information technologies of education into professional activity. The purpose of the study is to develop students' language competencies through the use of innovative technologies. The methodological foundations of the research are leading propositions of the theory of scientific knowledge; general scientific principles of historicism, systematicity, and scientificity; conceptual provisions of pedagogical, psychological, and sociological sciences; and ideas of the development of modern education. The results of

Анотація

У статті розкрито вагомість подкастингу; виокремлено найбільш дієві завдання для формування мовних компетенцій студентів шляхом застосування інноваційних технологій; виявлено необхідні передуми та основні лінгводидактичні завдання з метою засвоєння знань і формування мовних компетенцій студентів, вирішення яких сприяє впровадженню інформаційних технологій навчання в професійну діяльність. Метою дослідження є формування мовних компетенцій учнів шляхом використання інноваційних технологій. Методологічними засадами дослідження є: провідні положення теорії наукового пізнання; загальнонаукові принципи історизму, системності, науковості; концептуальні положення педагогічних, психологічних, соціологічних наук; ідеї розвитку сучасної освіти. В результатах статті показано роль графічного інтерфейсу у

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the article show the role of the graphical interface in the formation of language competencies of higher education students; the essence and principles are revealed; the need to introduce STEM technologies, gamification, and virtual whiteboards into the educational process is emphasized. Summarizing the results of the experimental study made it possible to conclude the effectiveness of the developed system of forming students' language competencies through the use of innovative technologies.

Keywords: language competencies, students, innovative technologies, podcasting technology, multimedia software, graphical interface, STEM technologies.

формуванні мовних компетенцій студентів вищої школи; розкрито сутність, принципи; наголошено на необхідності впровадження в освітній процес STEM-технологій, гейміфікації, віртуальної дошки. Узагальнення результатів експериментального дослідження дало змогу зробити висновок про ефективність розробленої системи формування мовних компетенцій учнів шляхом використання інноваційних технологій.

Ключові слова: мовні компетенції, студенти, інноваційні технології, технологія подкастингу, мультимедійні програмні засоби, графічний інтерфейс, STEM-технології.

Introduction

In today's society, rapid information-technological, cultural-educational, and socio-economic changes lead to an urgent need to train multi-disciplinary specialists who can first, in the conditions of intensive accumulation of factual information, effectively assimilate knowledge, and then use it competently and rationally. At the time – the formation of a professional, a comprehensively developed personality, who skillfully operates professional tools and strives for self-realization and professional growth, can use the learned theory in practical activities (Leshchenko & Zhovnir, 2020).

No educational technology can be considered universal. In modern conditions, the organization of the educational process requires a creative approach and a combination of various technologies to use each of them. That is why today's education is based on a creative combination of innovative and traditional forms, methods, means, and methods of learning. The teacher's ability to form students' language competencies through the use of innovative technologies, using various learning technologies, allows him to approach the organization of educational activities of students of higher education creatively, in specific conditions to choose exactly the learning technology that will ensure the assimilation of knowledge in the best way, will contribute to the formation of skills and abilities at a minimum expenditure of time and effort. In the process of forming students' language competencies through the use of innovative technologies, it is most appropriate to use such technologies, with the help of which students of higher education have a desire to achieve success and learn throughout their lives, develop their competence, act in the context of multicultural communication and globalization (Khrystych & Borysova, 2022).

The problem of forming students' linguistic competencies through the use of innovative technologies requires special attention. This leads to the search for new educational paradigms and concepts, principles, and approaches to the organization of the educational process, as well as methods, forms, and means of teaching students, the introduction of technological innovations that will contribute to the improvement of the quality of foreign language education. The organization of student education with the use of technological innovations will contribute to the formation of basic competencies, readiness to use technological innovations in future professional and pedagogical activities, and the development of universal social skills ("soft skills") at the European level.

Even though various aspects of professional training of teachers are constantly in the circle of scientific interests of scientists, insufficient attention is paid to the issue of the formation of language competencies of students through the use of innovative technologies. In addition, the relevance of the identified problem is enhanced by several contradictions between:

- A public order for the training of teachers capable of innovative activity in the educational process, and insufficient focus of higher education institutions on solving this problem;
- The objective need to train specialists for the use of innovative foreign language teaching technologies is not enough for its effective implementation in practice in institutions of higher education;
- The necessity of forming the readiness of specialists to use innovative foreign language teaching technologies and the lack of development of content-methodical provision of such training.

Therefore, the objective need to solve the specified problem is insufficient theoretical and practical development, the need to overcome the mentioned contradictions determined the choice of the topic of the article.
The development of the formation of language competencies of students through the use of innovative technologies 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:

1. Analysis of the categorical apparatus of research and its importance for taking into account the system-technical and didactic factors of the formation of students' language competencies through the use of innovative technologies.
2. Podcasting technology is a promising means of learning.
3. The most effective tasks for the formation of language competencies of students are through the use of innovative technologies.
4. Multimedia software tools for the formation of language competencies of students.
5. Necessary prerequisites and main linguistic didactic tasks for assimilation of knowledge and formation of linguistic competencies of students through the use of innovative technologies, the solution of which is facilitated by the introduction of educational information technologies.
6. The role of the graphic interface in the formation of language competencies of students.
7. The essence, principles, and laws of usability. It is necessary to observe the principles and laws of usability.
8. Introduction of STEM technologies, gamification, and virtual blackboard in education to form students' language competencies.
9. An experimental study of the formation of students' language competencies through the use of innovative technologies.

The purpose of the study: the formation of students' language competencies through the use of innovative technologies.

Literature Review

Research by scientists, both theoretical and experimental, carried out in recent years, allows to implementation of a scientific approach to the interpretation and formulation of innovative and traditional learning technologies, as a means of forming students' language competencies through the use of innovative technologies in the education process.

The theoretical analysis of the problem shows that the implementation of innovative pedagogical technologies has been the subject of research by a wide range of scientists.

The historical and pedagogical understanding of the theory and practice of innovation processes in general educational institutions, which allows for objectively evaluating and creative use of the acquired innovative experience in modern conditions, is represented in the works of T. Leshchenko, & M. Zhovnir (2020). They are dedicated to the search for innovative approaches, and effective ways that can compete with traditional methods in providing educational information, and expanding and supplementing their register. The goal of such transformations is purposeful innovative training of future competitive specialists in various specialties. The value and necessity of systematic use of educational resources, innovative didactic methods, and forms of work, which will ensure quality training of future specialists, are substantiated. Scientists substantiated and showed the importance of podcasting technology.

Fundamental changes in the education system are brought about by the development of digital technologies. Scientists agree that the rapid use of digital technologies was influenced by an important factor, the COVID-19 crisis. In connection with the pandemic, the search for new learning technologies is emphasized by M. Simpioni Carraro, E. Ostemberg, & P. Kohls dos Santos (2020): "In conditions of cataclysms, when classroom work becomes impossible, innovative technologies for distance learning come to our aid". As noted by N. Khrystych, & O. Sklyarenko (2020), "determining the priority of the person and rethinking universal human values in the conditions of the Covid-19 pandemic requires the search for innovative approaches to the organization of the educational process, the introduction of innovative pedagogical technologies that will contribute to the solution of educational problems in the conditions of various forms of education".

The issue of the introduction of innovative technologies in the educational process in general and the teaching of foreign languages, in particular, was analyzed in scientific publications by K. Klymova (2010). The analysis of the student's speech qualities and the outline of the linguistic, philosophical, psychological, and pedagogical foundations of the problem made it possible to identify the optimal (innovative and traditional) methods, forms, means, and methods of learning and to introduce them into the educational process of the higher school. The developed sets of tasks are of interest because they are aimed at optimizing quasi-professional, developmental-educational, educational-cognitive activities. Practical aspects of the use of multimedia technologies were studied by A. Klymenko, N. Zakordonets, & I. Shymkiv (2017). In institutions of higher education in the process of teaching foreign languages, the feasibility of using Prezi, PowerPoint, and Google Slides has been shown.

The justification of the ways and methods of using various methods and innovative learning technologies and the formulation of general conceptual provisions regarding the organization of educational activities are presented in the studies of Makovii, M., Salnyk, I., Shlianchak, S., Lukianykhin, V., & Sanakuiev, M. (2022). The authors declare that the digitalization of education is an important element of the development of Ukrainian society because the skillful use of digital technologies expands the outlook and professional skills of participants in the educational process.

The issue of professional competence and innovative activity of teachers of higher education is relevant at the current stage. This significance arises primarily from the evolution of the perception of teachers as participants in the educational process. There is a growing belief that teachers do not only dominate the organization of the educational process but rather take on a role similar to that of administrators. The question of professional competence and innovative activity becomes key since the changing perception of the role of the teacher also changes the understanding of the specific qualities necessary for effective interaction with students. The purpose of this study Kutsak, L., Zaskalieta, S., Hamorak, H., Hreniuk, L., & Parshuk, S. (2023) is to clarify the components of professional competence and innovative professional activity in the context of teachers of higher education institutions.

Therefore, scientists, having researched to determine the ways of forming students' language competencies during the use of innovative technologies, proved the importance of cooperation and evaluation methods and singled out the factors preferred by students that contribute to the intensification of the teaching process in the context of mixed learning.

Most researchers, considering various aspects of the problem of the formation of student's language competencies through the use of innovative technologies, consider it necessary to use the latest information technologies in the educational process, note the need to increase the role of electronic teaching aids and focus attention on the combination of interactive teaching methods with the use of technical teaching aids (Internet networks, multimedia, computer)

The above obligates scientists and teachers, firstly, to consider the possibilities of developing new educational concepts, and innovative learning technologies to speed up the process of training specialists for innovative activities, which will to some extent contribute to the realization of the socio-economic and cultural development of society; secondly, to actualize scientific research aimed at theoretical substantiation and testing of new approaches, didactic models and systems for the use of technological innovations in the future professional and pedagogical activities of specialists.

Methodology

The methodological foundations of the research are leading propositions 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.

In the process of scientific research, the following research methods were used:

– ***Theoretical***: analysis, systematization, comparison of educational, scientific, and methodological literature on the subject of research, which allows to outline the directions of development of advanced progressive ideas in this field, to clarify the main issues of the research problem, the level of scientific

development; generalization of the formation of language competences of students through the use of innovative technologies in the educational environment of continuous education;

- ***Empirical***: survey, indirect and direct observation, questionnaires, and testing, which allows generalizing and systematizing statistical and analytical material; a pedagogical experiment to reveal the real state of formation of students' language competencies through the use of innovative technologies;
- ***Mathematical***: (mathematical analysis, processing of melons, ranking);
- ***Statistical***: for statistical digital processing, summarization of the results obtained during the experimental work.

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 determined, 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.

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

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 536 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.

During the experimental work, two groups of respondents were selected by random sampling and their equalization was carried out. This approach made it possible to form experimental and control groups and to measure the entry level of students' linguistic competence formation through the use of innovative technologies in future professional activities.

A pilot survey was conducted at the ascertainment stage, which showed that the majority of respondents (77.6%) had a positive attitude towards the introduction of innovative learning technologies into the educational process, but a small number of respondents (22.4%) were familiar with innovative technologies, their types and the essence of implementation in the educational process.

In the experimental group, we implemented a system of forming students' language competencies by using innovative technologies and started the formative stage of the experiment.

In the experimental group, several measures were implemented to implement the organizational and motivational component of the system, the content component, the procedural component, and the result-evaluation component.

The generalization of the results of the experimental study made it possible to conclude the effectiveness of the developed system of forming students' language competencies through the use of innovative technologies.

The statistical significance of the research results was determined using the Pearson chi-square test.

The research consisted of collecting data on the level of formation of students' language competencies by applying innovative technologies using research methods: testing, interviewing, and conversations.

The experiment was conducted at the National University of Life and Environmental Sciences of Ukraine, Pavlo Tychyna Uman State Pedagogical 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.

Results and Discussion

Analysis of the categorical apparatus of research and its importance for taking into account the system-technical and didactic factors of the formation of students' language competencies through the use of innovative technologies.

Nowadays, we are talking about the rapid formation of the network paradigm of digital and information and communication technologies. We take into account the fact that modern society and educational activities are gradually transforming into a new social structure that depends on the global digitalization of all relations and spheres. The formation of the information society and innovative human activity, in particular communication, is being technologized, promoting the formation of students' language competencies through the use of innovative technologies and didactically motivated transformation of Internet resources. Therefore, modern institutions of higher education gradually become a place for the introduction and creation of innovations, rational synthesis of means and resources, combination of practice and science to create a new scientific and educational field, and implementation of joint educational and scientific projects. The prospect of developing state-of-the-art educational programs and building personalized educational trajectories has appeared. The educational space increasingly uses non-traditional, along with traditional education, which can be explained by the growth of competencies for innovations that increase the effectiveness of the educational space and intensify the learning process. The variety, wealth, and constant search for effective new innovative technologies and means testify to the important role of the information space in the life of a modern person (Leshchenko & Zhovnir, 2020).

So, we are talking about the importance of digitalization of domestic educational services in general and the formation of students' language competencies through the use of innovative technologies, in particular. The dynamism of the introduction of innovative technologies into all spheres of life determines the constant improvement of educational activities. In modern education, the terms "innovative" and "innovation" refer to a certain aspect of the educational process and mean innovation. Innovative technologies embody developing original educational and educational goals, non-standard approaches, methods, and forms of education in the organization of educational activities of students of higher education (Kuchai et al., 2017). When studying an educational subject to achieve educational goals, the concept of "learning technology" includes in its content the sequence of actions of the student and the teacher, which involves the use of a certain set of means, forms, techniques, methods of learning to implement the content of the educational process. At the current stage of education development, programmed, problem-based, explanatory

illustrative, and differentiated learning are considered the most common traditional technologies (Khrystych & Borysova, 2022).

For the formation of language competencies of students of higher education, the problem of the realization of the linguistic personality emerges, which, in turn, involves the harmonious development of skills in the main types of speech activity – reading, listening, writing, and speaking. This is the student's ability to understand written and oral speech; in compliance with the requirements of speech etiquette, and maintain a dialogue; it is expedient and correct to analyze texts, to express one's opinions; to independently create in various spheres of communication, dialogical and monological expressions of various styles, genres, types, speech, especially educational and professional; use varieties of listening and reading; to improve and evaluate own speech activity. In the formation of language competencies of students, it is important and necessary to use innovative technologies, rational use of ICT, in particular, educational electronic resources, bold experiments of innovative teachers with multimedia educational technologies 2:0 and 3:0, which will become a productive addition to traditional alternative visualizations (Leshchenko & Zhovnir, 2020).

Having conducted a comparative analysis of classes using innovative technologies and traditional classes, we say that the choice of learning technology is one of the most difficult and important elements of a teacher's educational activity. When implementing it, the teacher should always proceed from the fact that each of the innovative technologies is focused on a certain range of didactic tasks and at the same time does not exclude an indirect solution and technical conditions (provision of Internet coverage, power of the electrical network, availability of information and communication tools for learning, creation of home conditions of a comfortable workplace of the student, etc.). Therefore, it is necessary to creatively and reasonably evaluate the possibilities of a specific innovative learning technology, know its weaknesses and strengths, and on this basis choose the optimal combination of innovative technologies according to a specific student, a specific institution of higher education, or a specific group. It should be noted that training with the correct use of innovative technologies is qualitatively superior to classical education (Okoye et al., 2023).

Communicative modern distance learning space, which is necessary nowadays, offers various platforms: Moodle, Microsoft Teams, CiscoWebEx, Google Meet, Google Classroom, Zoom, Google Hangouts, Kohoot, etc.

Students of higher education can use any resource (X, educational websites, blogs, YouTube, podcasts, mobile applications, bookmarks, etc.), which at the same time are means of developing motivational activity of the student and are means of learning. Students of higher education can present the studied material as a scribe presentation, PowerPoint presentation, "mind map", "case method", "brainstorming", "open microphone", competition with practical tasks with their further discussion, role play, etc. When choosing that modern innovative technology, the teacher must take into account system-technical and didactic factors:

1) *system engineering:*

- Software;
- Information and communication support;
- Hardware (computers, servers, network equipment, video conferencing equipment, etc.);
- High-quality electronic educational resources;
- In case of technical problems – service support;
- Technical capabilities of universal access to electronic educational resources;

2) *didactic:*

- Compliance with the goals of the educational process;
- The degree of difficulty of the educational material;
- Informational content;
- The level of intellectual and creative abilities of higher education students;
- Availability of training facilities;
- The level of basic language training of higher education applicants;
- The rationality of spending time (Khrystych & Borysova, 2022).

Podcasting technology is a promising means of learning.

In recent years, the terms "podcast" and "podcasting" have been used actively in the educational space. Podcasting is a modern multifaceted phenomenon that is at the stage of formation and development. The technological capabilities of the network became the prerequisite for its active development and emergence. The small number of generally accepted definitions and the discussed considerations of this phenomenon speak of the novelty and relevance of the problem of researching digital educational innovations (Collado-Ruano et al., 2020).

We consider the podcast to be one of the promising means of learning in the institution of higher education, as a regularly updated series of files that are published on the Internet at one address or a separate file, which makes it possible to implement the principles of individualization, communicative orientation, interactivity, authenticity, intensive use of the background knowledge of the acquirers higher education. We consider a podcast, the purpose of which is further repeated playback on modern gadgets – tablets, personal computers, smartphones, portable players, etc., to be a digital media file hosted on the Internet (Miotto et al., 2022).

The possibility of downloading and subscribing to the media files considered by educators indicates that it is thanks to the innovative education system that it is possible to apply the main principles of building a network of podcasts on the Internet. It is podcasts that help students develop their speaking skills; improve pronunciation skills; and make it possible to form the ability to perceive speech by ear. All this prepares future competitive specialists for professional communication. In addition, this innovation contributes to the selection of the necessary data from the information flow, the formation of skills in searching for the necessary information in various sources, their systematization, the transformation of a certain type of information into another (virtual to verbal) and vice versa, the selection of the main and basic information in the information message, and the definition of the presentation form information (Budnyk et al., 2022).

Podcasting technology actively helps in obtaining new information, mastering and operating the toolkit of student training, forming an adequate perception by the student of the higher axis of the content of the message, understanding the core goals of communications and the direction of the information flow, etc.

The rational and systematic use of educational records by a speech teacher will ensure the ability of those who have obtained a higher position to differentiate the secondary and the main in what they have heard, to divide the text into meaningful parts, to clearly define the topic of the message, to establish content parallels and logical connections, to outline the main idea of the message (Kuznetsova et al., 2023).

The development of auditory receptive skills of working with grammatical, phonetic, and lexical material will be strengthened by well-chosen podcasts, and most importantly, they will contribute to the ability to understand what is listened to.

The teacher, in the process of working with podcasts, should take into account the duration of the recording, and the pace of its reading by the author. Inconsistency with the specified level of language proficiency will significantly reduce the educational benefit of the technology used or reduce its effectiveness.

Information-rich short messages lasting up to 5 minutes, and discussions of certain issues lasting up to 30 minutes are the material of podcasts. Podcasts are accompanied by messages, links to articles, or text that contain their transcript or are tangential to the podcast topic.

The task of the teacher is to develop a system of innovative tasks and exercises for the podcast, which correlates with the level of mastery of the language studied by students of higher Ossetia.

Ranked work with the podcast is justified.

For the first set of exercises (preparation for listening to the material), tasks are offered that involve a preliminary discussion of the topic, working out active grammatical constructions, new vocabulary, etc., which will ensure monitoring of listening skills.

For the second set of exercises, it is worth appealing to the tasks (after listening to the files) that determine the level of mastery of grammatical constructions and processed verbal material.

The most effective tasks for the formation of language competencies of students are through the use of innovative technologies.

We consider the following to be the most effective tasks for the formation of student's language competencies through the use of innovative technologies:

- Insert the missing words in the sentences after listening to the podcast;
- Write down the most used phrases and words in the podcast after listening to the podcast;
- After listening to the podcast, say what definitions it presents for the suggested phrases;
- Find the equivalent of certain words after listening to a podcast, in a parallel column, and others.

Creative tasks and exercises for the development of monologic and dialogic writing, speech, the ability to discuss, etc. are methodologically motivated and important for the formation of students' language competencies through the use of innovative technologies. The exercises of the post-text stage of the formation of students' language competencies through the use of innovative technologies are primarily aimed at the development of communication skills. Students can be asked to answer a question, complete a sentence, choose a statement that is incorrect or correct, choose illustrations for a podcast, match parts of a sentence, choose subheadings or a heading from the options provided, write a simple outline, take a multiple choice test, and more.

Podcasting technology can be used actively and productively, alternately or in parallel with common means of communication (chat, blog, forum, social networks, e-mail, etc.) both in extracurricular activities and in the educational process (Leshchenko & Zhovnir, 2020).

Tasks performed in classes at institutions of higher education using innovative technologies have the following advantages:

- Enable students of higher education to use all resources for acquiring knowledge;
- Provide positive motivation in the learning process;
- Diversify the forms of classes;
- Provide new opportunities for the formation of linguistic and professional skills, activate the process of mental processing of information;
- Develop the skills of independent work of students of higher education;
- Optimize the ratio of independent work and classroom work;
- Provide conditions for the automation of monitoring, correction, and assessment of knowledge of higher education students (Shuliak et al., 2022).

Multimedia software tools for the formation of language competencies of students.

To form students' linguistic competencies through the use of innovative technologies, primarily, it was carried out by using the possibilities of multimedia tools. Multimedia software made it possible to visualize abstract information and simulate complex real processes and situations due to the integration of graphic, text, sound, and video information.

In solving the problem of forming students' language competencies through the use of innovative technologies, a promising and effective approach to student training is the development of electronic educational aids, which provide various references to tables, applications, tutorials, schemes; graphic and textual material is accompanied by audio and video materials, which optimizes and facilitates the process of performing and understanding textbook tasks (Yemelyanova et al., 2023).

For the introduction of multimedia tools in the learning process, it is necessary to use appropriate technical support. For this purpose, based on the Moodle virtual learning environment, the e-learning system was used. A platform was created, which was used as a tool and a means of learning for solving professional tasks focused on innovative technologies of collaborative learning, and with the help of which, in the process of jointly solving educational tasks, training and mutual exchange of knowledge was organized.

The platform allowed:

- It is convenient to present the entire educational course of the discipline;
- Providing students with higher education with educational aids in electronic format;
- Execution at a high level and in an interesting format of independent work;
- Innovative presentation of organizational material;
- Use of hyperlinks, audio materials, and visual aids;
- Implementation of qualified monitoring;
- Obtaining grades and recording them in the electronic journal (Lukyanova & Nikiforova, 2019).

Necessary prerequisites and main linguistic didactic tasks for assimilation of knowledge and formation of linguistic competencies of students through the use of innovative technologies, the solution of which is facilitated by the introduction of educational information technologies.

The necessary prerequisites for the assimilation of knowledge and the formation of language competencies of students through the use of innovative technologies include:

- A positive attitude to the process of forming students' language competencies through the use of innovative technologies (high pace of educational work, constant attention, interest in the subject);
- Processes of sensory direct familiarization with the material (interactive learning technologies, schematic visualization);
- The process of thinking (comprehension and understanding of the material, activation of abstract and concrete, artistic and conceptual perception, thinking);
- Retention of acquired information and memorization, the ability to reproduce material with the detection of individual speech abilities.

These prerequisites encourage active speech activity, and assimilation of students' linguistic theory; contribute to the emergence of learning motives, and ensure the development of linguistic personality. The introduction of educational information technologies significantly contributes to the realization of prerequisites (Correa Cruz et al., 2017).

Student youth today feel free to use the Internet, armed with the most modern mobile communication devices that combine the functionality of a personal computer and a mobile phone, and easily navigate various search programs. Therefore, a necessary condition for the formation of language competencies of students in higher education at the current stage is the use of various means of modern information and communication technologies in classes.

We define the necessary linguistic and didactic tasks, for the solution of which it is important to introduce information technologies into the process of forming students' language competencies:

1) Increasing the motivation to learn the language;
2) Increasing students' activity in the process of language learning;
3) Formation of stable motivation of cognitive activity with the aim of formation of language competencies of students;
4) Development of student's abilities and readiness for independent education;
5) Formation and development of skills and abilities in all types of speech activity;
6) Intensification of the educational process;
7) Helping students develop self-esteem;
8) Individualization of education to form students' language competencies (Borysenko et al., 2022).

Language learning with the use of information technologies includes:

- Electronic encyclopedias and dictionaries, text computer editors;
- Professionally-oriented language material;
- Language learning tools (programs and online applications) aimed at studying pronunciation, phonetics, vocabulary, sentence analysis, and grammar;

- An online environment for the formation of language competencies of students through communication between students of higher education and with the teacher through social networks, e-mail, video conferences, etc.);
- Game forms of education (Romanukha et al., 2019).

The role of the graphic interface in the formation of language competencies of students.

Using a smartphone or a computer, a student processes large volumes of information through the graphic interface of the screen and can no longer imagine his activity in another mode. Over time, a person transfers the laws of information circulation and the principles of work in the information environment to his being. The projection of the graphic interface becomes for the student a code for understanding the work of the educational environment, a code for understanding any information in the world (Puhach et al., 2021).

Reasons for the rapid spread of graphical interface principles:

- Schematism;
- Semiotic coding of information;
- Clustering of information placement.

A graphical interface is a type of interface that contains more complex structured information and in which interface elements (menus, buttons, lists) are presented in the form of graphic images.

The advantages of the graphical interface in:

- Friendliness and versatility in terms of updating,
- Ease of information perception;
- Systematization of information,
- The possibilities of choice, taking into account the psychological characteristics of the student of higher education, a wide palette of symbols, and color gamut.

The essence, principles, and laws of usability. It is necessary to observe the principles and laws of usability.

Consider the following provisions:

1) The learner uses the product for greater productivity;
2) Usability means the need to focus precisely on the user who seeks to perform tasks and decides for himself whether the product is of high quality.

Usability focuses on creating only high-quality user experience and begins with a philosophy – the belief that the project presented to the user of the educational space meets his needs. Certain methods and technology are needed to achieve the real goal of usability, which chooses the right methods to solve the problem, takes into account the circle of people who use the product and answers questions about their goals and needs (Hepp et al., 2015). Usability is a multi-component concept and is associated with five features:

1) Efficiency,
2) Learning ability,
3) Satisfaction,
4) Memorization,
5) Errors.

So, usability, a measurable characteristic that is present in all products to varying degrees, describes ways of effective interaction of the user with the product.

Introduction of STEM technologies, gamification, and virtual blackboard in education to form students' language competencies.

Formation of a competitive specialist, one of its most productive ways is the implementation of STEM technologies in education to form students' language competencies. This educational approach involves active use of the latest technologies, integration of various sciences, and movement from practice to theory. It is appropriate to use specially created tools during the study of individual disciplines in the educational process of a higher school (Tkachenko, 2015). An example could be GeoGebra, a user-friendly and feature-rich math visualization program that has “become the leading provider of dynamic mathematics software used to support science, technology, engineering, and mathematics (STEM) education and innovation in teaching and learning around the world” (Pabon Gomez et al., 2023). Students of higher education have the opportunity to review the projects of others and develop their resources.

We have the opportunity to use basic programs that are available on smartphones during STEM classes. To perform exercises in rhetoric, you will need a calculator (it will be needed in various statistical calculations), a timer and a voice recorder, and a camera (for capturing information in the form of video and photos, etc.); can become a convenient draft of notes in the phone (during the development of projects, creative group work, etc.).

Direct inclusion and binary lectures with students and teachers of other institutions of higher education, online lectures from another city or even country, during the presentation of the material a comment of a narrow-profile specialist – are gaining popularity in higher education and "in such cases, one cannot do without Skype. Currently, educational publications accompany separate sections or fragments of text with QR codes, which require a code scanner to work with" (Romanukha et al., 2019).

Computer games remain the most popular way of acquiring knowledge, recreation, and formation language skills for students – gamification of education, which, to diversify the educational process and increase the interest and activity of students, consists in the use of various game elements.

Let's name the most effective specific characteristics of computer games that attract students to the educational process:

1) Interesting design, which is typical for games;
2) Transparency of progress, unexpected rewards, accrual of bonuses;
3) Level structure, gradual transition from simple to complex, possibility to improve the result at any time and rework the game block;
4) Win-win nature of educational games;Construction of tasks to activate complex and associative thinking;
5) Conditional competition;
6) Shade of entertainment.

The game space is quite comfortable for students, it helps stimulate creativity, does not cause them questions and difficulties, increases general interest, and encourages complex thinking (Tkachenko, 2015). One of the forms of work with students in higher education is the use of a virtual whiteboard – created for placing images, notes, visual materials, and comments and working with them in "live" mode. The most popular platforms are WikiWall, Padlet, Educreations, and Scrumblr. The virtual board can become a structural core, and not just a tool for presenting information, a component of the lesson. You can offer students to pick practical examples from the theoretical material and place on the board any theoretical material in various information formats: videos, photos, audio tables, diagrams, links, etc., which makes it possible to work with one board during the lesson, gradually changing and adding components (Atencio et al., 2021).

An experimental study of the formation of students' language competencies through the use of innovative technologies.

During the experimental work, two groups of respondents were selected by random sampling and their equalization was carried out. This approach made it possible to form experimental and control groups and to measure the entry level of students' linguistic competence formation through the use of innovative technologies in future professional activities.

A pilot survey was conducted at the ascertainment stage, which showed that the majority of respondents (77.6%) had a positive attitude towards the introduction of innovative learning technologies into the educational process, but a small number of respondents (22.4%) were familiar with innovative technologies, their types and the essence of implementation in the educational process.

In the experimental group, we implemented a system of forming students' language competencies by using innovative technologies and started the formative stage of the experiment.

In the experimental group, several measures were implemented to implement the ***organizational and motivational component*** of the system, aimed at stimulating the respondents' interest in the formation of students' language competencies and the practical significance of innovative learning technologies; formation of the need for the introduction of innovative experience; comparison of motives with aspirations, etc., and appropriate material and technical support for the implementation of innovative technologies in the educational sector is provided.

The didactic system of forming students' language competencies through the use of innovative technologies provided for the implementation of a ***content component*** that contributed to providing future specialists with a system of knowledge and revealed the essence of innovative learning technologies, their types, didactic opportunities, etc.

The ***procedural component*** ensured the involvement of students in the creation of innovative projects, the procedural component of the formation of students' linguistic competencies through the use of innovative technologies, the familiarization of future specialists with the experience of implementing innovative educational technologies, the inclusion of respondents in research activities, etc.

The ***result-evaluation component*** of the system contributed to the development and definition of diagnostic procedures for correction and evaluation of the educational process.

The formative stage of the experiment made it possible to identify positive dynamics for the future activity of the formation of students' language competencies through the use of innovative technologies. As a result, it made it possible to form students' readiness to use technological innovations.

EG respondents showed a high level – 31.62% and a sufficient level – 53.01%.

The CG respondents showed, respectively: a high level – 5.58% and a sufficient level – 7.44%.

The generalization of the results of the experimental study made it possible to conclude the effectiveness of the developed system of forming students' language competencies through the use of innovative technologies.

The statistical significance of the research results was determined using the Pearson chi-square test.

The research consisted of collecting data on the level of formation of students' language competencies by applying innovative technologies using research methods: testing, interviewing, and conversations.

The experiment was conducted in higher pedagogical educational institutions and included a total of 536 respondents of the educational and qualification levels "bachelor" and "master".

The results of diagnosing the qualities of the formation of students' linguistic competencies through the application of innovative technologies of master's students indicate that during the years of study, students in higher education institutions have gained experience in the use of literary norms of the modern language in pedagogical discourse, experience in professional communication. Master's degree students have developed abilities for thorough scientific research, and creative personal qualities. According to the data of testing, interviews, and conversations, none of the master's students showed a low level of formation of students' language competencies through the use of innovative technologies, compared to undergraduate students, where we observe – 6.7%.

And the quality of knowledge, abilities, and skills of masters was 73.3%, and their success rate was 100% (compared to future bachelors – 65.8% and 93.3%, respectively).

So, the final stage of monitoring made it possible not only to diagnose but also to correct the process of forming students' language competencies through the use of innovative technologies.

We agree with the opinion of K. Klymova (2010) that the strategy for the development of higher education "presupposes the improvement of the quality of professional knowledge of students as tomorrow's specialists, competitive on the labor market and adapted to the modern conditions of the globalized space". Graduates of universities in which a high level of students' linguistic competencies have been formed through the use of innovative technologies have a significant advantage in employment and are in demand in the labor market.

We have found out that scientists have proven the importance of cooperation and assessment methods and have singled out the factors preferred by students that contribute to the intensification of the educational process in the context of modern learning. Scientists consider it necessary to use the latest information technologies in the educational process, note the need to increase the role of electronic learning tools, and focus attention on the combination of interactive teaching methods with the use of technical learning tools (Internet, multimedia, computer networks). The theories and conclusions presented in the reviewed literature, both theoretical and experimental, made it possible to implement a scientific approach to the means of forming students' language competencies through the use of innovative technologies in the education process.

We have revealed the significance of podcasting technology for the educational process; the most effective tasks for the formation of students' language competences through the use of innovative technologies are singled out; the essence of multimedia software tools for the formation of students' language competences is revealed; the necessary preconceptions and main linguistic didactic tasks were identified for the purpose of assimilation of knowledge and formation of language competences of students of various specialties through the use of innovative technologies, the solution of which contributes to the introduction of information technologies of education into professional activity; the role of the graphic interface in the formation of language competences of students of the higher school is shown; the essence, principles, laws of usability are disclosed; the need to introduce STEM-technologies, gamification, virtual blackboard into the educational process with the aim of forming language competences of students of higher education institutions is emphasized.

The generalized results of our experimental study are related to the problem presented in the introduction. After all, education today is based on a creative combination of innovative and traditional forms, methods, means, and methods of learning. And by applying various learning technologies, the future specialist, of any specialty, will be able to approach the organization of professional activities creatively, in specific conditions, and choose exactly the technology that will ensure the assimilation of knowledge, throughout life, the best and will contribute to the formation of skills and abilities with minimal expenditure of time and effort, which makes him a multidisciplinary specialist.

In the process of forming students' linguistic competencies through the use of innovative technologies, educators, by the forms of education, have to experiment with innovative communication means of education, radically changing the forms and methods, methods and methods of interaction of higher education students with the informational content of the educational component. This approach makes it possible to conclude the effectiveness of the developed system of forming students' language competencies, which is necessary for every person, that is, intended for the education of multidisciplinary specialists who prepare institutions of higher education through the use of innovative technologies, which was planned for the study.

The practical significance of the research results is: in the application of theoretical provisions and conclusions to future ways of using technological innovations in the process of learning foreign languages; in the implementation of several measures related to the implementation of the organizational and motivational component of the system, aimed at stimulating the interest of respondents in the formation of language competences of students and the practical significance of innovative learning technologies; in the implementation of various components that contributed to providing future specialists with a system of knowledge and revealed the essence of innovative learning technologies, their types, didactic possibilities, etc.

The results can be used in the process of professional training of future foreign language teachers in higher education institutions, for the preparation of scientific and methodological support for the use of ICT by students of various specialties in higher education, in the self-educational activities of students and teachers of higher education institutions

Conclusions

An analysis of the categorical apparatus of the study was made and its importance for taking into account the system-technical and didactic factors of the formation of students' language competencies through the use of innovative technologies was shown.

The significance of podcasting technology for the educational process is revealed; the most effective tasks for the formation of students' language competencies through the use of innovative technologies are singled out; the essence of multimedia software tools for the formation of students' language competencies is revealed; the necessary preconceptions and main linguistic didactic tasks were identified for assimilation of knowledge and formation of students' linguistic competences through the use of innovative technologies, the solution of which contributes to the introduction of educational information technologies into professional activity; the role of the graphic interface in the formation of student's language competences is shown; the essence, principles, laws of usability are disclosed; the need to introduce STEM-technologies, gamification, virtual blackboard into the educational process to form students' language competences is emphasized.

During the experimental work, two groups of respondents were selected by random sampling and their equalization was carried out. This approach made it possible to form experimental and control groups and to measure the entry level of students' linguistic competence formation through the use of innovative technologies in future professional activities.

In the experimental group, we implemented a system of forming students' language competencies by using innovative technologies and started the formative stage of the experiment.

In the experimental group, several measures were implemented to implement the organizational and motivational component of the system, the content component, the procedural component, and the result-evaluation component.

The generalization of the results of the experimental study made it possible to conclude the effectiveness of the developed system of forming students' language competencies through the use of innovative technologies.

The statistical significance of the research results was determined using the Pearson chi-square test. The research consisted of collecting data on the level of formation of students' language competencies by applying innovative technologies using research methods: testing, interviewing, and conversations.

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