

IMPLEMENTATION WAYS OF EDUCATIONAL TECHNOLOGIES ON HIGHER EDUCATION

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ANNOTATION

Today the system of modern higher education is away from traditional teaching methods or monotonous classes and tries to incorporate real-life activities into students' education. It is also connected with fundamental changes in educational technologies such as informative and communicative ones, the aim of which is to educate future specialists in real situations and develop certain skills that provide significant opportunities to modernize teaching at universities. The aim of this research is to substantiate the concept of "educational technology" and methodological features of its development theoretically. To study how university lecturers work with educational technologies today to assess real opportunities to analyse basic implementation ways to incorporate educational technologies into modern higher education. On the basis of the content-analysis of the scientific literature, the notion of "educational technology" was defined and the methodological features of educational technology development at the university level were substantiated. The general implementation methods of educational technologies in higher education were analysed. The structure of the pedagogical system at a modern university and the peculiarities of educational technologies development are described. Lecturers' readiness to incorporate the new pedagogical technologies into higher education was studied. The research was conducted via a methodological approach based on empirical and theoretical methods to achieve the aim and tasks of this research. First, the theoretical base includes scientific methods such as studying, analysis, generalization, comparing sources of data in the same category and induction or deduction. Second, the current problem was studied via an empirical method such as a questionnaire, on the basis of which, a sociological survey was formed to test initial theoretical principles of the current issues. The author concluded that the subject of "educational technologies" should be included in a university curricula.

Keywords: higher education, educational technology, teaching methods, university.

Introduction

Topicality. Nowadays there are still issues to incorporate educational technologies into higher education that require urgent solving: the contradiction between the need to train lecturers in innovative educational technologies and insufficient opportunities to prepare educators to use these technologies; the lack of lecturers' methodological support

and the absence of theoretical knowledge on educational technologies and special practices. Thus, requirements for the quality of work using educational technologies are high enough because their implementation in higher education determines the success of the pedagogical process as a whole.

The aim of this research is to substantiate the concept of “educational technology” and the methodological features of its development theoretically, to study how university lecturers work with educational technologies today for assessing real opportunities to analyze basic and general ways of implementing educational technologies in the context of modern higher education.

The objectives of the research:

- 1) to define the concept of “*educational technology*”;
- 2) to substantiate the methodological features of the development of “*educational technology*” at the university level;
- 3) to analyse basic and general implementation methods of educational technologies in higher education;
- 4) to study lecturers’ readiness and ability to implement the new educational technologies at the university level.

The object of the study is “*educational technology*”.

The subject of the study is the implementation ways of educational technologies at the university level.

Literature review

On the basis of the scientific literature, certain aspects of the problem have been revealed by scientists.

Scientist Galuschak (2023) studied the problem of using pedagogical technologies in the educational process of higher school. The author considers pedagogical technologies as a universal means of the educational process for the preparation of specialists in Economics. These findings prove that pedagogical technologies help students’ qualitative teaching. Additionally, a choice of effective pedagogical technologies is substantiated. However, the author divided the concepts of the technology into pedagogical, educational and technological ones which are contradictory to the concept of the common theory of pedagogical technologies.

Clark (2023) highlights the latest developments in learning technology including artificial intelligence, virtual reality and the metaverse. The author proves that educational technologies provide insights into the future of learning and offer his comprehensive overview or detailed exploration of any topic.

Umarova, Tsagaraeva and Muminova (2022) devoted their article to the role of modern educational technologies. Researchers believe that teaching must be based on the educational technology with computers. The concept of “*educational technology*” is also reflected in the article. In addition, suggestions for increasing the role of modern educational technologies in the development of Pedagogy have been developed.

Researchers Sukhonosov, Lopushniak, Harkusha, Karpyak, Kulish and Boychuk (2021) provided an essential description of educational technologies. They believe that the level of any educational institution is determined by the quality of innovative technologies that are used effectively because it is worth incorporating educational technologies into teaching for higher education development. Its effectiveness depends on the interaction of several important factors that support the educational process: lecturers' competence that possess educational technologies at a high professional level and improves it constantly; proper organized methodical support of the educational process; active implementation of modern educational technologies.

Prokopenko (2018) studies how to strengthen the process of updating the education system aimed at the professional school teacher training as a special social personality in conditions of European integration. Education modernization is considered to be a factor that systematically optimizes the process of the new era of teacher's professional training, the main purpose of which, is to help teachers in their work.

However, at the same time, the analysis of scientific papers on the above mentioned-problem of "*implementation ways for educational technologies in higher education*" led the author to the conclusions that issues related to educational technology implementation in the modern higher education system need to be improved.

Methodology

The research used on the methodological approach which was based on empirical and theoretical methods to achieve the aim and tasks of this research.

First, the theoretical base includes general scientific methods such as studying, analysing, generalizing and comparing sources of data in the same category as well as induction and deduction. The content-analysis of scientific literature aims to systematize electronic documents (Internet-transmitted) for their evaluation and review. Data was taken from the sources such as text-books, scientific articles via electronic libraries and websites. The state of the researched problem and basic concepts were obtained with the help of literary sources analysis and generalization.

Second, the current problem was studied via an empirical method such as a questionnaire, on the basis of which, a sociological survey was formed to test initial theoretical principles on the current issues. Being based on the questionnaire method, a pilot pedagogical experiment, involving experienced university lecturers, was performed to determine their readiness and ability to teach with the use of new educational technologies in the higher education system. The survey involved 56 respondents of different ages and disciplines and various levels of their qualifications and categories (lecturers, senior lecturers, associate professors and professors) from Indian, Chinese, Ukrainian and EU universities. The received data were processed via mathematical and statistical methods as well as an analysis and systematization of the data obtained. A description of the results is presented in tables and charts with general calculations and a comparative analysis of basic and fundamental results which are processed via a computer program in the Google system.

Будь ласка, напишіть вашу посаду.

47 ответов

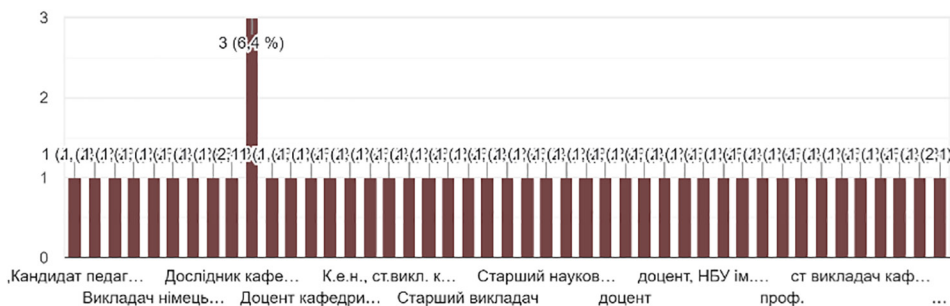


Chart 1 Ukrainian universities

Please write your position/-s at university

9 ответов

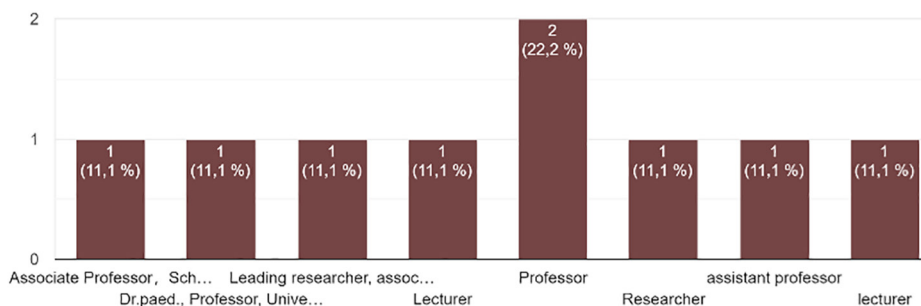


Chart 2 Chinese, Indian and EU universities

According to the statistics indicated in Charts 1 and 2, the largest number of the respondents, who took part in the survey, were associate professors (39.7%). The remaining 60.3% were educators of different categories such as professors, researchers, senior lecturers and lecturers. The average work experience of the respondents was 21 years.

All the respondents were warned about their participation in the experiment and that their responses were kept confidential and used only for the aim of the research. Privacy and protection of personal data were performed in accordance with the Data Protection Directive (95/46/EC). The participants were informed that their personal data would be used and processed exclusively in the connection with the purpose for which they were collected. If they agreed to processing their data, they submitted the questionnaire.

These research methods allowed us not only to collect facts, but also to check and systematize them, determine causes and consequences, find a logical study of the collected facts, develop concepts and judgments; make theoretical generalizations and conclusions.

Results

The aim of the survey is to show the effectiveness and identify possible features or limits of the educational technologies used in higher education system.

The respondents were asked 15 questions: questions 1–8 assess their knowledge of educational technology theory and questions 9–15 assess their degree of practical application in teaching.

As a result of the study, the following data were obtained.

Question 1 (“**Please write a factor that most influences the effectiveness of teaching students to your mind**”) aims to identify educators’ level of understanding the processes which take place in the education system and highlights the need to replace the traditional teaching system with modern educational technologies. It was expected that educators would know a full range of possibilities of educational technologies in achieving maximum learning outcomes.

The majority of the respondents (approximately 54%) identify students’ individual characteristics, namely, their personal motivation, as leading factors ensuring the highest level of learning effectiveness. In addition, 10.8% of the respondents think that good methodology and tasks are also parts of successful teaching.

However, only 34.6% of the respondents prioritized the educator’s professionalism (experience, control, individualization of learning, activity planning, interesting classes, logical lectures, knowledge of the current situation in the field of the subject learned, organizing students’ independent work, knowing students’ needs) teacher motivation, the psychological atmosphere during training and self-discipline.

Thus, the majority of the respondents associated the effectiveness of teaching with students’ personal motivation and good methodology. Both of these factors take part in educational technology teaching because they involve processes, methods and means that encourage students to be engaged in productive cognitive activity increasing their high motivation. Lecturers are not passive in transferring knowledge via pedagogical activities.

Asking Question 2 (“**How would you define what educational technology is?**”), we tried to determine whether the lecturers know what the term means which defines the perspective of the development of the whole education system. The expected result is the characteristic of any educational technology according to the scientific, procedural-descriptive or procedural-effective aspects. Therefore, the majority of the respondents (52.7%) defined the concept from a procedural-effective point of view. They believe that “*educational technology*” is a system implemented in practice, an algorithm of action or a real pedagogical process. The definition of the concept of educational technology according to the scientific and procedural-descriptive aspects received an equal, but a small number of responses with only 16.4% each one.

This result leads to the conclusions that lecturers understand more the place of educational technologies for their practical application in teaching, but they do not have complete theoretical knowledge regarding the concept of “*educational technology*” in

the system of Pedagogy, exploring rational ways of teaching and educating or as a description of the pedagogical process.

Question 3 (**To your mind: is teaching a technology (science) or an art (intuition?)**) is aimed to determine whether the educators correlate their activities with science or make it equal to the creative manifestation of the teacher's personality. Additionally, there is an opinion that a process of training is a system of actions and that it can be an algorithm, but, educator's creative potential is almost reduced. However, in our opinion, it is impossible to depersonalize teaching; it is always a combination of clear instructions and the teacher's individual approach.

Thus, respondents' opinions are divided almost in half: some of them believe that "educational technology" is an art (30.9%), whereas others think that it is a science (18.1%). As a result, 41.8% of the respondents agreed that "educational technology" is a combination of art and science.

The task of question 4 ("**What is the difference between the educational technology and teaching methodology to your mind?**") is to determine whether the difference between given terms is understood. The technology cannot be identified either with a form of education or a separate method and a methodology as a whole, or with a specific pedagogical system (Galuschak, 2023).

I agree with scientists (Mykhailichenko, 2016), who say that "Educational technologies are similar to teaching methods, as they are a way of organizing the pedagogical process and an interaction between its subjects and objects. However, there is a difference between them. "Educational technology" is a way to achieve the goal of the pedagogical process optimally via specific methods. *The method* is a particular procedure of subject and object joint activity in the pedagogical process that can be used in one or many technologies. *The teaching methodology* is a set of actions to obtain a local result which are not accompanied by a strict diagnosis an achieved goal" (Mykhailichenko, 2016, 18).

It was assumed that the respondents mostly identified these two concepts, but only 14.5% of them joined those notions together or named them equal. The remaining 36.6% found it difficult to answer. A total of 12,5% believed that methods and the teaching methodology are the same conceptions. In addition, only 41.8% of the lecturers considered "educational technology" more complex than methodology is which is referred to the definite work-out algorithm that includes various teaching methods, however the difference is clear.

As a result, no definite respondents realize the real difference between conceptions such as "educational technology" and "teaching methodology" completely.

Question 5 ("**Please highlight structural components of "educational technology"**") defines how the lecturers associate educational technologies with the educational process including teaching, students' activities, a structure, means, methods and forms. We expected three structures to be distinguished: *a conceptual framework* (a scientific basis including psychological and pedagogical ideas); *the content of teaching* (a content of material and purposes of learning); *the procedural part* as a technological process (forms and methods with which a teacher works, the educator's activities in managing the process of mastering any material by students and the diagnostics of the educational process).

12% of the respondents could not answer this question at all, only 3.6% identified all three substructures correctly. 36.3% named only one substructure which was the content substructure and 56.3% defined the procedural substructure. The results of their answers proved the need for educators to obtain definite knowledge of educational technology theory.

The answer to question 6 (“Please highlight the requirements for “educational technology””) was intended to highlight the requirements, the list of which was given by a lot of researchers (Ortinsky, 2009): diagnostic goal setting, effectiveness (results), economy, algorithm, design, integrity, managing, visualization. The results of the answers are shown in charts 3 and 4.

Thus, the educators did not highlight any main requirements for “educational technology” such as diagnostic goal setting or economy. The requirements for the educational technologies loose their effectiveness and integrity as well as a group of factors that reflect various aspects of the idea of the reproduction. This suggests that the lecturers do not understand all the positive effects of using technologies in the teaching process.

6. Please highlight requirements for the educational technology.

9 ответов

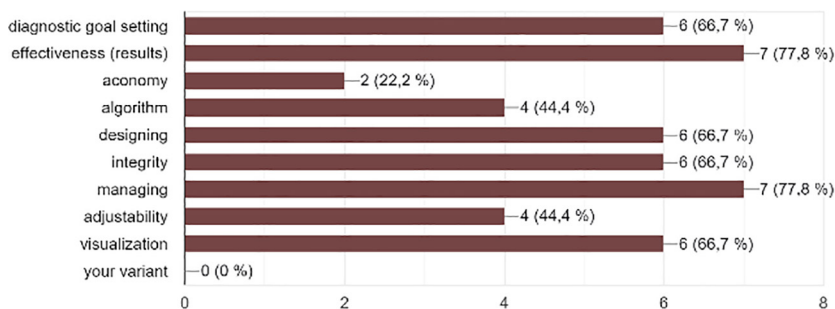


Chart 3 Chinese, Indian and EU universities

6. Висвітліть вимоги до освітньої технології:

47 ответов

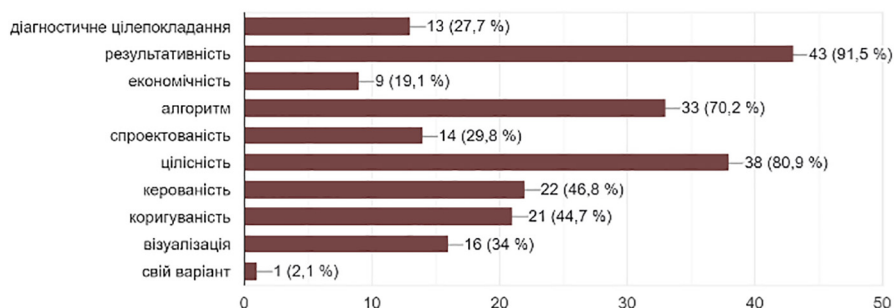


Chart 4 Ukraine

Question 7 (“How does the teacher’s qualification influence the choice of an educational technology?”).

Famous scientists (Kremen, Sukhomlynska, Savchenko, Boyko, Prokopenko, Bondar, Buryak, Yevtukh and others) consider the modernization of education is a factor that systematically optimizes the process of professional preparation of the new era teacher (Prokopenko, 2018).

It is paradoxical, but opinions are divided. Thus, the respondents (66,7%) from China, India, and EU universities did not prioritize the lecturer’s qualification. They believe that any educators can master a technology and use it successfully in their teaching activities.

However, it is correct for the remaining of the respondents (only 33,3%) and the majority (72,3%) from Ukrainian universities who answered that the higher the teacher’s qualification is, the wider a range of educational technologies can effectively be used.

7. How does teacher’s qualification influence the choice of the educational technology?

9 ответов

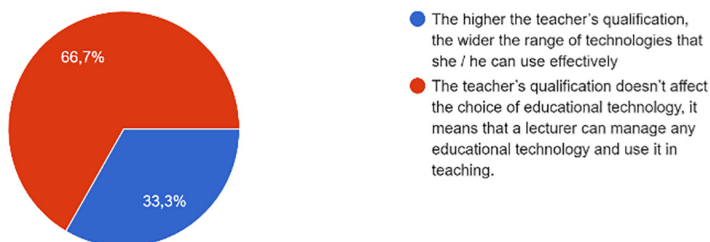


Chart 5 Chinese, Indian and EU universities

7. Як кваліфікація викладача впливає на вибір освітньої технології?

47 ответов

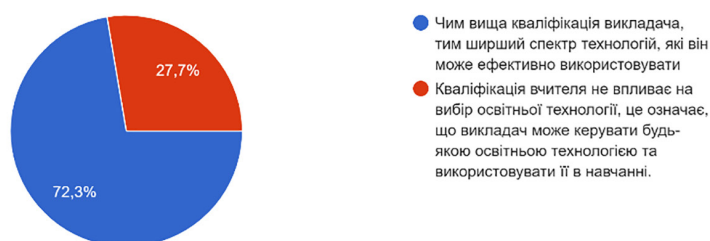


Chart 6 Ukraine

Question 8 (“Please name the educational technologies that you know”) assumed to determine how well the lecturers know different types of educational technologies. The presence of an enormous list of educational technologies, their ambiguous titles and various combinations of them face any educator in front of a problem to choose anything that is directly related to how well lectures know a technology structure.

The results are as follows (see Table 1).

Table 1 How well the lecturers know the classification of educational technologies

The number of name educational technologies	The number of respondents
None	21.8%
1–3	61.8%
more than 3	18.1%

The majority of the lecturers (61.8%) knew and named 1–3 educational technologies correctly. The results are presented in *Table 2*:

Table 2

Problem-solving technology 25.5%	The technology of the Development of creativity by G. Altshuller 3.6%
Gaming technology 22 40%	Portfolio technology 1.8%
Computer technology 22 40%	Technology of Creative Workshops 1.8%
The technology of critical thinking 21.8%	Early technology of G. Doman 1.8%
Particularly oriented technology 14.5%	Health-saving technologies 1.8%
Case-study technology 9.09%	

These results indicate that the respondents knew about the existence of a certain number of educational technologies. But, how often do they use them in their activities?

The second block of the questionnaire was used to answer this question.

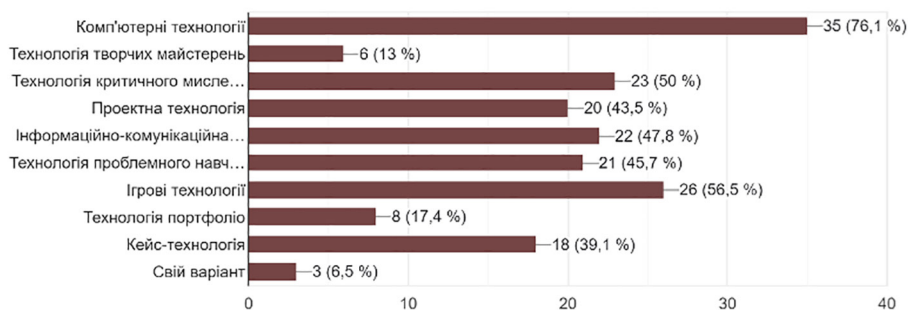
Question 9 (“Do you use any educational technologies in your teaching?”).

100% of the respondents answered “Yes”.

Question 10 (“Please choose any educational technologies that you work with the most”).

10. Будь ласка, виберіть педагогічні технології, з якими ви найбільше працюєте.

46 ответов

**Chart 8** Ukraine

10. Please choose the educational technologies that you work with most.

9 ответов

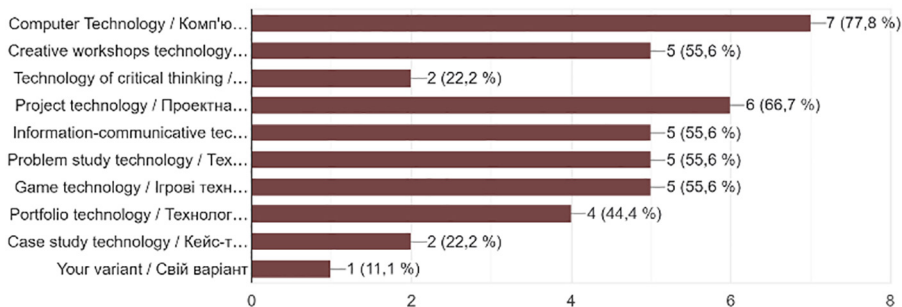


Chart 7 Chinese, Indian and EU universities

The answers were distributed as follows:

- 1) 100% of the respondents used educational technologies;
- 2) the most of the respondents (76%) used computer technologies constantly;
- 3) more than half of lecturers (53%) used technology, information-communicative technology, problem-solving technology and game-based technology systematically;
- 4) the use of critical thinking development technology has a completely opposite meaning. Thus, half of the respondents from Ukrainian universities (50%) often used this technology in class, whereas only 22,2% of the respondents from EU universities, China and India used it very rarely;
- 5) creative workshop technology, portfolio and case-study technologies were used periodically, accounting for only 32% of the total quantity of the respondents.

Thus, more than half of the respondents listed those educational technologies with which they worked. The rest of them did this unconsciously: they did not think about their professional activity or analysed it, or they did not develop their reflexive abilities at all.

Question 11 (“**What educational technologies would you like to use in your teaching?**”) was asked so that the lecturers could say about what exactly prevents them from using educational technologies. However, some of them (18.1%) expressed their unwillingness to use technologies in teaching or they didn’t know. But, there was no opinion about the lack of information on this topic among the possible answers. A total of the respondents (85.4%) would like to use educational technologies in the future: 14.5% want “The development of critical thinking”, 10.9% prefer “Game technology” and 9,09% would like ICT. Therefore, this group of the lecturers who are ready for self-development and innovative activities.

Question 12 (“**Does the use of educational technologies make teaching more difficult or easier? Justify your answer**”). A majority of educators (61.8%) responded that the use of educational technologies makes teaching easier: material is learned better; it is easier to work; the student’s personality develops more intensively and the students’ intellectual

level of cognitive and creative potential is increased; it allows them to perform experiments in Pedagogy and receive quick connection or provide new resources for educators giving them more opportunities to diversify the process of teaching or making it more interesting and organized; it improves results; it makes teaching efficient and it motivates students. Thus, the answers to asked questions showed that the lecturers had planned to work with educational technologies because they facilitate both educators' and students' activities.

Question 13 (“**The success of teaching is determined by educational technologies and the teacher’s individual skills. In what ratio is it? (10-point scale, for an example: 3:5)**”).

It was intended to clarify the relationship between two categories, “*individual skills*” and “*educational technology*”. The fact is that there is an opinion in the scientific literature: “Any activity can be either a technology or an art. Art is based on intuition, but technology is based on science regularities. Everything begins with the art and ends with the technology, lets everything start again” (Plotniska, 2005, p. 1). Thus, the questionnaire results were distributed in approximately equal proportions (45% for educational technologies, 55% for the teacher’s individual skills). In our opinion, these categories are interconnected and complete each other: if lectures’ individual skills are high, they can master any original educational technology.

Question 14 (“**Rate on five-point scale (where 1 is the lowest point and 5 is the highest one) how ready you are to work using “educational technologies)** was asked about lecturers’ estimation of their readiness to teach via educational technologies.

Respondents’ answers (see Chart 9).

14. Оцініть за п’ятибальною шкалою (де 1 – найнижча, 5 – найвища), наскільки ви готові працювати з використанням освітніх технологій.

46 ответов

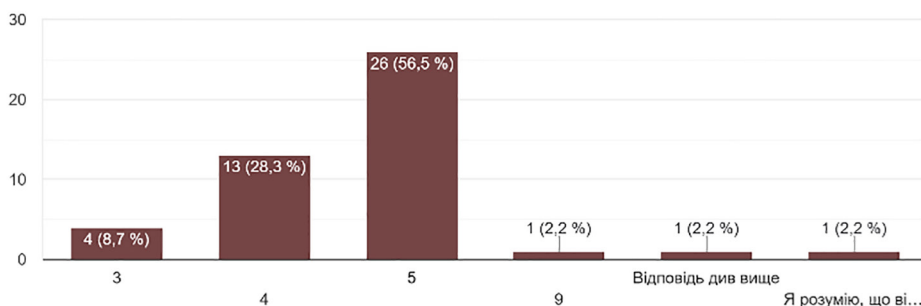


Chart 9

An analysis of Chart 9 revealed that all the lecturers were more or less ready to use educational technologies in their teaching.

This problem increased after analysing the answers to question 15 (“**Is it necessary to implement educational technologies in higher education?**”).

All the respondents (100%) agreed that it is necessary to implement educational technologies in the vocational education system.

The research allows us to draw the following conclusions

1. The main factors, conferring the greatest effectiveness for training, are associated with students' personal motivation and the good methodology that provides educational technologies with a priority role in teaching.
2. Most lecturers believe that teaching is the integrity of any technology (science) and art (intuition) and that is the integrity of the categories "*individual skill*" and "*educational technology*".
3. There are two possible levels of educational technology implementation: mastering only key operations as main components of the technology or a professional one when a lecturer is good at a wide range of educational operations in all technology components. Therefore, the results show that the respondents (97%) are at the elementary level of mastering educational technologies: they know about the existence of a certain number of technologies and use them in their activities, but they do not realize all the positive effects of using innovations in education. On the one hand, some educators see the difference between concepts such as "*educational technology*" and "*teaching methodology*", but the only one: they consider the technology to be more complex than the teaching methodology. On the other hand, they cannot determine any difference between these two concepts at all or equate them. Thus, the level of their competence in the field of educational technologies includes only their unqualified practical realization because their theoretical preparation in this field is low or has developed only slightly.
4. Thus, the results prove a need for the lecturers to have a strong system of knowledge on the educational technology theory. Most educators understand that the higher their qualification is, the wider the range of technologies can effectively be used. For the reason, lecturers are ready for self-development and innovative activities, as they realize that educational technologies make teacher and student activities easier.
5. Along with the recognition of the theoretical and practical significance of the development of the technological approach in teaching, its successful implementation in the real pedagogical process is not painless: conservatism of the pedagogical system; unclear understanding concepts such as "*educational technology*"; lack of information; low effectiveness of some educational technologies; poor methodological support; distortion of the technology and a low level of competence among lecturers.
6. For this reason, it is necessary to implement educational technologies in higher education. Notably, all the lecturers are ready to use educational technologies in class, but they need to be helped in the form of methodological recommendations that will reduce time, material and physical costs.
7. Moreover, a lot of educational technologies have been developed, but lecturers are lost in their choice. That is why, it becomes relevant to develop methodological recommendations on the selection of any educational technologies for specific conditions. However, this is realistic only if the methodology for the assessment of "*educational technology*" effectiveness is used.

Discussion

1. The concept of “*educational technology*”

Technology is a word from Greek (*techne* – art, craft; *logia* – writings, which means something that can be reflected upon something and used for learning). It is used to teach or learn with intentional cognitive goals (Clark, 2023).

At the beginning of the last century, Makarenko (1988) was the first who introduced the scientific term such as “*technology of upbringing*”. His idea was that the real development of educational technology is connected with its ability to “*project a personality*” (Makarenko, 1988). However, according to Clark (2023), the first content of “*learning technology*” was “the application in the field of education of inventions, industrial products, processes that are parts of a technology today” (Tkachuk, 2010, p. 4).

Therefore, there is no single definition for the term of “*pedagogical technology*”. The content-analysis of the science literature sources made it possible to come across many definitions of this notion. As a result, the notion “*pedagogical technology*” developed with Pedagogy as a science and transformed into the new ones such as “*educational technologies*”, “*learning technologies*”, “*teaching technologies*” and others (Tkachuk, 2010, p. 9).

2. Methodological features of the development of “*educational technology*” at the university level

Methodology is from Greek, *the notion* means a way to anything, a means of achieving a goal or a combination of research techniques used in any science (Shcherba, 2004). Also, methodology is a strategy for scientific research which is based on understanding tasks, methods and valuable characteristics and solving scientific problems (Birta, 2014).

The methodology of scientific knowledge is defined as a system of initial conditions of “*educational technology*” which includes the following aspects:

- a) the substantiation of a scientific theory structure based on the generalization of empirical facts;
- b) relying on principles and methods of obtaining scientific information (Dubasenyuk, 2016).

The science methodology in the framework of “*educational technology*” development provides the following:

- a) teaching about a structure and functions of scientific knowledge;
- b) substantiation of basic, fundamental and general scientific provisions (on the basis of hypotheses, concepts, facts, pedagogical regularities);
- c) teaching scientific research methods and the substantiation of practical experience for training highly qualified specialists at the university (Padalka, 1995).

Notably, if the theory of teaching Didactics is ontological knowledge, that is, knowledge description, in contrary, the concept of “*educational technology*” is normative knowledge, that is, the knowledge prescription. It includes knowledge about management norms, specific educational methods or established sequences of feedback procedures as well as intermediate result adjustment (Dahin, 2007).

“*Educational technology*” is implemented as a systematic, purposeful activity and it is used in educational practice at three levels:

- a) *general pedagogical level* (general didactic, general educational): the technology characterizes the entire educational process in a given region, an educational institution or at a certain education level (a combination of goals, content, means and methods of education, an algorithm of subject and object activity of the process);
- b) *methodological (subject) level*: subject educational technology is used in the sense of the notion of “*partial methodology*”; it is a set of methods and means for the implementation of certain content of teaching within the limits of one subject, class or teacher (the methodology of teaching subjects, teaching methodology, methodology teacher’s work, an educator).

However, there are definite differences between two characteristics (methods and technologies) of teaching. Methods characterize ways, strategies of teaching or technologies and do means of effective achievement for specified educational results (competencies) through teaching. That is, the methods are more process-oriented, but, the technologies are more productive; *the local (modular) level* is a technology of certain parts of the educational process, the solution of partial didactic and educational tasks (the technology of certain types of activities, the formation of concepts, the education of certain personal qualities, the technology of new knowledge acquisition, the technology of material repetition and testing and the technology of personal work) (Psychological and pedagogical principles of teaching innovative teaching technologies in higher education, 2011).

Many educational technologies are based on the following concepts:

- a) associative-reflective teaching (a theory of concept formation);
- b) the theory of the gradual formation of mental actions;
- c) a suggestive concept of training (a complex use of verbal and non-verbal, external and internal means of suggestion for educational purposes which contributes to extra memorization);
- d) the theory of neurolinguistic programming (NLP) which considers the training process as information movement through the human nervous system;
- e) theories of content generalization which are based on the hypothesis about the leading role of theoretical knowledge in intelligence formation. (Dubrovskaja, 2011).

Thus, the main methodological requirements for “*educational technology*” are as follows:

- a) *conceptualization* (relying on a certain concept that includes philosophical, psychological, didactic and socio- pedagogical justification of educational goals);
- b) *systematization, efficiency* (efficiency in terms of results, the achievement of the planned results as an education standard);
- c) *the possibility of diagnostic goal-setting, planning, designing the learning process, step-by-step diagnostics, varying means and methods to correct results;*
- d) *the reproduction* (the possibility of applying other subjects under other identical conditions);

- e) *management* (designing a teaching process, step-by-step diagnostics): a unity of content and procedural parts and their interaction;
- f) *visualization* (typical for certain technologies). It involves the use of audio-visual and electronic computing equipment, as well as the construction and application of various didactic materials and original visual aids (Zakharchuk, 2010).

The main features of the process of any cognitive action assimilation is that such actions are always active: any knowledge can be transferred only when students perform a certain creative activity (Padalka, 1995).

3. Basic and general implementation ways of educational technologies in higher education

The goal of higher education is becoming not only multidisciplinary, but also multilevel.

1. Each lecturer has a curriculum for providing content knowledge to students, but any specific type of any activity is not highlighted in each curriculum in which future specialists will use acquired knowledge (Padalka, 1995).
2. “*Educational technology*” is a projection of a theory and methodology of education. Therefore, it should optimize the educational process with a system of scientific knowledge.
3. The elements of educational technology are pedagogical communication, evaluation, demand, conflict and informative influence (Pyatkovska, 2019). For this reason, the main purpose of pedagogical influence is communication (Podolyak, 2012). Thus, the assessment should evaluate qualities that are revealed, but not the personality of a student as a whole (Baranovska, 2000).
5. The psychological atmosphere is a set of psychological conditions that prevent productive joint activities in class.
6. Any innovative educational technologies can be such an integral complex in the educational process. Therefore, it is especially relevant today to unite lecturers and psychologists. (Noskov, 2002).

Conclusions

The author concludes that general implementation ways of innovative educational technologies in higher education are aimed to develop human innovative skills and the lecturer’s theoretical-methodological or technological culture; to make the only unified plan for the university and its branches; to increase the classroom load with methodically organized students’ individual work; to apply the individual approach in teaching; to make special conditions for students’ creativeness.

Additionally, educational technologies must be matched with the main methodological principles to form unified plans and a specific curricular of different kinds of students’ cognitive skills; to increase classroom work; to introduce business games, situational problems and case-study methods into the educational process; to establish

good relationships between students and lecturers and to provide educators with a strong system of knowledge on the educational technology and methodological support.

An effective combination of all known types and levels of educational technologies should be provided.

The subject of “*Modern educational technologies*” should be created and included in a curricular of the university and it becomes relevant to develop methodological recommendations on the selection of educational technologies for specific conditions because it will help to change the ordinary system of higher education into the modern educational system.

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