MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE NATIONAL TECHNICAL UNIVERSITY "KHARKIV POLYTECHNIC INSTITUTE"

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DIDACTIC SYSTEMS AND PEDAGOGICAL TECHNOLOGIES IN HIGHER EDUCATION

METHODOLOGICAL RECOMMENDATIONS FOR THE DISCIPLINE

FOREWORD

The academic discipline "Didactic Systems and Pedagogical Technologies in Higher Education" is one of the normative disciplines of the integrated system of psychological and pedagogical training of future teachers of higher education institutions and is aimed at mastering the didactic foundations of modern pedagogical science and modern pedagogical technologies by master's students, develop innovative thinking, shape the personality of a modern higher education institution teacher, their professional competence, and develop professionally important and personal qualities of a teacher.

The subject of study of the academic discipline "Didactic Systems and Pedagogical Technologies in Higher Education" is technologies, forms, methods, and means of teaching.

The purpose of studying the academic discipline "Didactic Systems and Pedagogical Technologies in Higher Education" is: mastering the theory of teaching and education, the peculiarities of didactic systems of various levels and the practice of their design; to master modern pedagogical technologies, didactic principles of content selection, structuring of educational material for the discipline, types and forms of educational activities, as well as methods of assessing the effectiveness of cognitive activity of higher education seekers, organizational forms and methods of teaching.

The main **objectives of** the academic discipline "Didactic Systems and Pedagogical Technologies in Higher Education" are:

- to study the components of didactic systems in higher education;
- developing the ability to scientifically analyze the essence of modern didactic teaching technologies in higher education;
- developing skills and abilities in selecting content and modeling the structure of an academic discipline;
- developing skills and skills forms of forms, methods and innovative educational technologies.

The discipline "Didactic Systems and Pedagogical Technologies in Higher Education" ensures that higher education seekers acquire ***the following competencies*:**

- *integral* – the ability to solve typical and complex specialized tasks and critically comprehend and solve practical problems in the field of planning and organizing the educational process in

higher education institutions using the provisions, theories, and methods of fundamental, pedagogical, and psychological sciences, which involves the implementation of research and innovative activities, often in conditions of insufficient information and conflicting requirements; make decisions in complex and unpredictable conditions that require the integration of knowledge, the application of new approaches, and forecasting; clearly and unambiguously convey their knowledge, conclusions, and their rationale to the audience.

- *General:*

  ZK1. Ability to think abstractly, analyze, and synthesize.
  SK2. Ability to search for, process, and analyze information from various sources.
  SK3. Ability to apply knowledge in practical situations. SK4.
  Ability to learn and master modern knowledge.
  SK5. Ability to adapt and act in new situations. SK6. Ability to
  identify, pose, and solve problems. SK7. Ability to interact with
  others.
  SK8. Ability to act in a socially responsible and conscious manner.

- *Special (professional, subject-specific):*

  FC1. Ability to design and research educational systems.

  FC2. Ability to apply and develop new approaches to solving research and/or innovation problems in the field of education and pedagogy.

  FC3. Ability to take into account the diversity and individual characteristics of students in planning and implementing the educational process in an educational institution.

  FC4. Ability to conduct expert assessments and provide consultations on educational policy and innovation in education.

  FC5. Ability to develop and implement new educational tools and projects and integrate them into the educational environment of an educational institution.

  FC6. Ability to manage the strategic development of a team in pedagogical, scientific-pedagogical, and scientific activities.

  FC7. Critical understanding of issues in education, pedagogy, and at the intersection of disciplines.

FC8. Ability to integrate knowledge in the field of education/pedagogy and solve complex problems in multidisciplinary and interdisciplinary contexts.

FC11. Ability to use knowledge of psychological science and methods of effective communication in professional and pedagogical activities.

Program learning outcomes

PRN 5. Organize the educational process based on student-centered, competency-based, contextual approaches and modern achievements in educational and pedagogical sciences, manage educational and cognitive activities, and objectively evaluate the learning outcomes of students.

PRN 8. Develop and teach educational courses in higher education institutions using the methods, tools, and technologies necessary to achieve the set goals.

PRN 11. Provide consulting services in the field of educational and pedagogical sciences.

PRN 13. Identify and guide students' educational and cognitive activities; take into account psychological characteristics of individuals in the process of teaching, moral qualities of personality, development of their creative powers and abilities

CONTENT OF THE DISCIPLINE

Module 1. Didactics of higher education

Content module 1. The educational process as a didactic system

Topic 1. Didactic system of higher education institutions. Concepts of learning theory

Didactic system, its components: content, purpose, principles, patterns, technologies, forms, methods, teaching aids, system of control and assessment of the results of educational activities of students. Teaching as a way of organizing the pedagogical process. The essence of students' educational activities. Concepts of learning theory: J. F. Herbart's system, J. Dewey's didactic system, modern didactic systems. Programmed learning concept. Theory of step-by-step formation of mental actions. Modern foreign didactic concepts.

Topic 2. Patterns and principles of learning

Patterns. External and internal patterns. External: the dependence of learning on social processes and conditions, on the social and political situation, the level of culture, etc. Internal: reflection of the connections between the components of the learning process. Principles of learning (consciousness and activity, scientificity, systematicity and consistency, clarity, accessibility, durability, connection of learning with life, optimization) as ways to achieve pedagogical goals, taking into account the regularities of the learning process. Classical and modern principles. Pedagogical conditions for the implementation of learning principles in the teacher's activities.

Topic 3. Goals and content of education

The purpose and goals of learning. A competency-based approach to defining learning goals. Knowledge as a category of expression of learning goals. Skills and abilities as categories of expression of learning goals. Experience in creative activity. Professionally important qualities of a future specialist. Classification of learning goals. Bloom's taxonomy. The problem of educational content. Questions of the theory of educational content. Structure of educational content. Regulatory documents that determine educational content.

Topic 4. Methods, forms, and means of learning

Essential characteristics of teaching methods. Classification of teaching methods. Modern active and interactive teaching methods and the specifics of their implementation in the educational process of higher education institutions. Forms of teaching in higher education institutions. The concept of group interaction. The discussion method. Game-based

teaching methods: role-playing, business, simulation. Modern teaching tools and their use in the educational process.

Topic 5. Types and styles of teaching

Dogmatic teaching. Explanatory-illustrative teaching. Problem-based teaching. Programmed teaching. Reproductive teaching style. Creative teaching style. Emotional-value teaching style.

Topic 6. Innovative professional activity of a higher education institution teacher

Essential characteristics and structure of innovations. Innovative professional activity. Readiness for innovative activity as an important professional quality of a teacher. Structure of readiness for innovative pedagogical activity. Development of innovative behavior of a teacher. Ways of forming innovative behavior of a teacher. Acmeology in pedagogical activity.

Content module 2. Modern educational technologies

Topic 7. General characteristics of modern pedagogical technologies

Pedagogical technologies, their classification. Features of pedagogical technology. Principles of pedagogical technology. Conditions for the implementation of pedagogical technologies in the educational process of a higher education institution. Pedagogical technologies as a factor in the intensification of learning.

Topic 8. Interactive learning technologies

The essence of technology. Basic conceptual ideas and concepts. Features of interactive technologies. Classification of interactive technologies. Characteristics of interactive learning technology classes: group interaction and cooperation. Active and interactive teaching methods.

Topic 9. Technologies for developing critical thinking

The essence of technology. Basic conceptual ideas and concepts. Features of critical thinking technology. Types of learning tasks according to learning objectives and outcomes.

Topic 10. Technologies for developing creative personalities

The concepts of creativity and creativity. Formation and development of a creative personality. Conditions for the development of creativity in future specialists. Methods of creative development for students and teachers in higher education: case method, training technologies, collective and group learning technologies, heuristic teaching methods (brainstorming, synectics, associative methods), etc.

Topic 11. Distance learning technologies

Characteristics of distance learning technologies. Features of distance learning. Computers in the modern educational process: electronic textbooks, virtual libraries, excursions, video lectures and press conferences, other resources. Methods and technologies in distance learning.

Topic 12. Health-saving technologies

Health and its components. Health criteria. Valeological competence of subjects in the educational process. The essence and characteristics of health-saving technologies. Classification of health-saving technologies. Basic conceptual ideas and concepts.

MATERIALS FOR PRACTICAL CLASSES

Practical class No. 1 (2 hours)

TOPIC: Didactic system of higher education institutions. Concepts of learning theory

Lesson objective: to familiarize students with the educational process in higher education institutions as a didactic system and its components; to learn the basic concepts of learning theory and the components of the didactic system; to be able to analyze and identify the essential characteristics of modern didactic systems; to develop communication skills.

Plan:

1.1 The didactic system and its components

1.2 Concepts of learning theory.

1.3. Modern didactic systems.

Methodological recommendations:

Pay attention to *the* main *concepts of the topic:* didactic system, educational process, learning theories, learning objectives, learning content, principles, forms and methods of learning, learning tools, learning structure.

Practical tasks:

Task 1. *Group work.* Define the essence of the educational process as a didactic system.

Methodological techniques: "Cinquain," "Slogan." Groups compose a slogan on the topic "Educational process." After completion, each group presents its projects and justifies its answer.

Task 2. *Methodological technique "Step."* Define the structural components of the educational process as a didactic system and their semantic meaning. Fill in the table. *Instructions:* students are asked to place key concepts of the topic on a conditional "step", for example: "didactic system", "educational process", "learning", "upbringing", "development", "form of learning", "teaching", "method learning", "means learning", "learning",
"principle of teaching," "competencies," and with subsequent justification of their sequence.

Concept	Definition
Principle of learning	
competence	
didactic system	
teaching method	
educational process	
upbringing	
teaching tool	
development	
learning	
form of learning	
teaching	
learning	
patterns of learning	
rules of learning	

Task 3. *Group work.* Study additional theoretical material and create a model of J. F. Herbart's didactic system and J. Dewey's didactic system. Present the main provisions of the concept, ideas, and principles.

Task 4. Prepare a presentation on one of the modern concepts of learning: programmed learning, the theory of step-by-step formation of mental actions, problem-based learning, developmental learning, personality-oriented learning.

Control questions:

1. What is a didactic system?
2. What components make up a didactic system?
3. Describe the ideas and principles of modern learning concepts.

Assignments for independent work:

1. Prepare a presentation with presentation of a modern didactic system in Ukraine and contemporary foreign didactic concepts.
2. Prepare reports on the topic: Which issues of 20th-century didactics remain relevant in the 21st century, who are the authors of the studies, and what is their essence?

Practical class No. 2 (2 hours)

TOPIC: Patterns and principles of learning

Lesson objective: to familiarize yourself with the basic patterns and principles of the educational process, to know the classical and modern principles of teaching, to be able to determine ways of implementing teaching principles in practice, to be able to determine the pedagogical conditions for implementing teaching principles in the activities of a teacher.

Plan:

2.1. External and internal patterns of learning 2.2. Classical and modern principles of learning

2.3. Pedagogical conditions for the principles teaching in the activities of teachers.

Methodological recommendations

Please note that the systemic didactic categories that reflect the integrity of the pedagogical process are the laws and principles of teaching. They are closely related to the main components of the educational process: the goals and objectives of teaching, the content and forms of its implementation, methods and means, stimulation, and the effectiveness of teaching. Didactic regularities as system-forming didactic categories reflect the essential and necessary connections between the learning process and social processes, as well as internal connections (between goals and content, forms and methods). The principles of learning determine the content, organizational forms, and methods of the educational process in accordance with general goals and laws, and regulate the main components of the learning process. The total number of principles in didactic theory is not clearly defined, since science is constantly penetrating into more complex connections and relationships between the subjects and components of the learning process. The rules of teaching, as separate requirements for teaching, reveal and specify various aspects of the principles of teaching, are formulated mostly in a categorical form, and require immediate action from the teacher. Knowledge of typical situations and methodological techniques helps

correctly assess specific learning conditions and make decisions appropriate to the situation. *Learn the basic concepts of the topic*: the principle of learning, the rule of learning, scientificity, accessibility, clarity, systematicity and consistency, activity, durability, differentiation, selectivity of learning, the connection between learning and life.

Practical tasks:

Task 1. *Frontal discussion.* Determine the semantic meaning and relationship between the concepts of "learning patterns," "learning principles," and "learning rules." Justify your answer.

Task 2. *Frontal-individual work.* Having determined the essence of the basic principles of learning, fill in the table.

Principle of learning	Essence
Consciousness and activity	
Scientific	
Systematicity and consistency	
Visuality	
Accessibility	
Connection between learning and life	
Solidity	
Optimization	

Task 3. *Conducting an educational game* "Establishing correspondence between learning principles and rules for their implementation."

Instructions: Students are asked to divide into pairs and compete in determining the rules for implementing a particular principle. Each pair receives a set of learning principles and a list of rules from which they must choose those that allow for effective implementation. The task takes 25 minutes to complete. Then each group presents the selected rules (before this, the teacher checks the number of errors).

The degree of implementation of teaching principles and rules in teaching practice is discussed together.

Teaching rules:

1. Familiarization with contemporary scientific views and theories.
2. Summarizing your thoughts, formulating conclusions and findings.
3. Move from easy to difficult, from known to unknown, from simple to complex.
4. Explain the interpretation of scientific concepts, the variety of solutions to problems, and the diversity of approaches and opinions.
5. Take into account individual abilities and differentiate tasks for different categories of students.
6. Prove the practical need for of knowledge, provided provided. Constantly relate knowledge to life.
7. Implement modern methods of educational and cognitive activities.
8. It is better to see something once than to hear about it a hundred times.
9. Teach in such a way that students understand what, why, and how to do something.
10. Clearly formulate concepts, avoid monotony, teach figuratively, using vivid facts and examples from life.
11. Accessibility does not means ease learning, the instructor should should facilitate learning by providing all the necessary knowledge.
12. Ensure consistency between previous and subsequent learning.
13. Constantly emphasize the interconnection between theory and practice.
14. Establish an optimal learning environment.
15. Try to ensure that the content and methods of teaching are slightly ahead of the students' abilities, so that learning is challenging but accessible.
16. Do not allow misinterpretation of scientific terms.
17. Do not over to studying new material before not formed interest and a positive attitude towards it.
18. Use the most effective methods and techniques for organizing the learning process
19. Each class should have practical significance.
20. Introduce students to the biographies of prominent scientists and their contributions to the development of science.
21. Never limit yourself to visual aids alone.
22. Give students the opportunity to immediately test their acquired knowledge in practice.
23. Knowledge is retained more quickly within a system than outside of it.

24. During classes, try to engage students in active cognitive activity and the search for new knowledge.
25. Try to memorize new material in combination with what has already been learned.
26. Prevent incorrectly perceived information or things that students have not understood from becoming fixed in their memory.
27. Constantly reveal the dialectical connection between science and practice. Show that science develops under the influence of practical needs, and practice requires scientific knowledge.
28. When studying new and complex material, rely on strong students, and when reviewing and reinforcing, rely on weaker students.
29. Study and understand the level of preparedness and development of students, rely on their abilities.
30. Use all types and forms of cognitive activity, combining them and taking into account the age-related abilities of students.
31. Offer students tasks that are of practical importance and relate to their professional interests.
32. Reveal the genesis of scientific knowledge, explain the process of discovery and cognition of a particular phenomenon.
33. Systematically inform students about new achievements, use new terminology, and link new achievements to the knowledge system being formed.

Task 4. Determine the need to apply the basic principles of learning in the educational process. Justify your answer.

The "Aquarium" method. Instructions: Two circles are formed from among the students: an outer circle and an inner circle. The students in the inner circle sit with their backs to each other, facing the students in the outer circle. Each pair discusses the given question for 2-3 minutes. After that, the inner circle moves one student clockwise, and the outer circle moves counterclockwise. They discuss the next question.

Questions for discussion:

- If the goals and content of education determine what to teach, what do the principles of education regulate?
- What do you think can happen if the principles of learning are not followed?

- What are the limits of applying the principle of durability? Is the achievement of durable knowledge equally accessible to everyone?

Task 5. *Individual work* - ***"Check yourself" method.*** The teacher gives each student a task. Divide the listed phrases into two groups: 1) principles of learning (underline); 2) patterns.

Humanization, the dependence of learning on social needs and conditions, which determines the role of activity and communication in the formation of personality; democratization; dependence of learning on the age, individual and gender characteristics of the student; scientific nature; accessibility; clarity; interdependence of the processes of learning, education and personality development; systematicity and consistency; consciousness; activity; interconnection of tasks, content, methods and forms of learning in the pedagogical process; durability; the connection between theory and practice and with life; a positive emotional background to the pedagogical process.

Control questions:

1. Define the essence and explain the interrelationship "learning patterns," "learning principles," and "learning rules"
2. Characterize classical and modern principles of learning
3. What are the pedagogical conditions for implementing modern principles of learning?

Assignment for independent work:

1. Fill in the table "Comparative characteristics of traditional and modern didactic principles of learning."
2. Develop rules for implementing the principle of creating a situation of success in learning, justify its significance.

Practical lesson No. 3

TOPIC: Goals and content of education

Lesson objective: to familiarize students with the competency-based approach in education; to understand the structure of learning content and the main classifications of learning objectives; to be able to define learning objectives in accordance with the competency-based approach.

Plan:

3.1. Competence-based approach to defining learning goals

3.2. Classification of learning goals. Bloom's taxonomy

3.3. Structure of learning content

Methodological recommendations:

Learn the basic concepts of the topic: competency-based approach in education, learning objectives and content, higher education standards, educational and professional programs, curricula, syllabi, and work programs.

Task 1. Describe the regulatory documents that define the content of education: higher education standards, educational and professional programs, curricula, syllabi, and work programs by filling out the table:

Concept	Characteristics
Higher education standard	
Educational and professional program	
Curriculum	
Curriculum	
Work program	

2. *Work in pairs.* Study theoretical material "Competence-based approach in education" and determine: the main goal of education in the context of a competence-based approach, distinctive features of a competence-based approach, basic concepts of a competence-based approach (competences and competence).

Task 3. *Frontal discussion.* Discussion.

1. What is Bloom's Taxonomy?
2. How are learning objectives and specific tasks combined?
3. How can the achievement of learning objectives be assessed?

Task 4. *Work in pairs.* Study theoretical material "Didactic text – "Concepts of levels of assimilation of educational material" and summarize the text in the form of a list of questions, the answers to which would reveal its content. There should be about 15 questions. Try to formulate problematic questions, the answers to which require not only reproducing the content of the text, but also thinking and expressing your attitude.

Control questions:

1. What are the distinctive characteristics of the competency-based approach?
2. How are learning objectives determined in accordance with the competency-based approach?
3. What normative documents determine the content of education?

Assignment for independent work:

1. Based on the theoretical material "Competence-based approach in education," suggest tasks for students according to Bloom's Taxonomy.

Practical lesson No. 4

TOPIC: Methods, forms, and means of teaching

Lesson objective: to familiarize students with the main classifications of teaching methods in higher education institutions; to understand the essence and purpose of the main forms of teaching in higher education institutions; to be able to choose teaching methods and means in accordance with the purpose of the form of teaching organization.

Plan:

4.1. Essential characteristics of teaching methods

4.2. Forms of teaching organization in higher education institutions

4.3. Modern teaching tools and their use in the educational process

Methodological recommendations:

Learn the basic concepts of the topic: teaching methods, forms of teaching organization, teaching tools, interactive teaching methods, modern teaching methods. Note that changes in life in the modern world require changes in the goals and purpose of modern education. The functional significance and attractiveness of traditional organization of teaching, transfer "ready-made" knowledge from the teacher to the student is no longer the main task of the educational process. *It should be noted* that it is important to arouse interest in the subject matter, transforming the audience from passive observers into active participants in the lesson. If the teacher uses active forms and methods of teaching in their work, this important issue will be resolved by itself. Active forms of teaching are based on interactive methods, where there is interaction not only between the teacher and the student, but also between the students themselves. In this case, the teacher acts as a consultant.

Task 1. *Frontal conversation*

1. What is a teaching method?
2. What classifications of teaching methods do you know?
3. What forms of learning organization exist in higher education institutions, and what is the essence and purpose of each of them?
4. What role does modern teaching in in the educational process?

Task 2. *Work in pairs.* Compile a comparative description of traditional and interactive teaching **methods** (essence, purpose, types, application, possibilities) and fill in the table:

Characteristics	**Traditional teaching methods**	**Interactive teaching methods**
Essence		
Purpose		
Types		
Conditions Application		
Possibilities		

Tasks 3. Conduct *a "round table"* on issues the use of interactive methods in the educational process of higher education institutions:

1. How do the concepts of "activity" and "interactivity" in learning relate to each other?
2. What can hinder the organization of effective student interaction in class?
3. Under what conditions does interaction between teachers and students yield positive results?
4. Do you consider the level of application of interactive methods in higher education to be sufficient?

Control questions:

1. Name and describe the main teaching methods.
2. Describe the forms of teaching organization in higher education institutions.
3. Describe modern teaching methods.
4. What are the disadvantages of interactive teaching methods?
5. What are the advantages of the discussion method for training specialists?

Assignment for independent work:

1. Prepare a presentation with a presentation, analyzing modern teaching methods in higher education institutions, determine their characteristics and possibilities for application.
2. Develop a seminar class on using discussion teaching methods.
3. Develop a practical lesson using game-based teaching methods.

Practical lesson No. 5

TOPIC: Types and styles of teaching

Lesson objective: to familiarize students with the main types and styles of teaching; to understand the essence, purpose, and feasibility of using each type and style of teaching in the educational process; to be able to choose an effective teaching style in accordance with the purpose of the form of teaching organization.

Plan:

5.1. Essential characteristics of of (dogmatic, explanatory-illustrative, problem-based, programmed)

5.2. Essential characteristics of teaching styles (reproductive, creative, emotional-value-based)

Methodological recommendations:

Learn the basic concepts of the topic: types of learning, learning styles, dogmatic learning, explanatory-illustrative learning, problem-based learning, programmed learning; reproductive learning style, creative learning style, emotional-value learning style.

Task 1. *Frontal discussion.*

1. What types of learning exist?
2. What are the characteristic features of each type of learning?
3. What learning styles exist?
4. What are the characteristic features of each learning style?

Task 2. *Group work using the project method.*

Divide the students into three groups. Each group draws a card with a specific type and style of learning.

Task: Create a project.

- Name the characteristic features of the specified type and style of learning.
- Present the essence and examples of the application of the type and style of learning in the educational process of higher education in the form of a graphic image. Justify the feasibility of their use.
- Discuss the results of the projects in an academic group.

Control questions:

1. Name the types of learning.
2. Compare dogmatic and explanatory-illustrative learning.
3. Name the features of programmed learning.
4. Explain the concept of "learning style."
5. Name the characteristic features of the emotional-value learning style.

Tasks for independent work:

1. Make a comparative analysis reproductive and creative learning styles. Present the results in a table.

Practical lesson No. 6

TOPIC: Innovative professional activity of a higher education institution teacher

Lesson objective: to familiarize yourself with the essence of innovative professional activity of a higher education institution teacher, to know the structure and dynamics of the development of educational innovation processes; to develop the ability to manage the innovative activity of a teacher, to analyze the causes and consequences of anti-innovative barriers to the activity of a teacher and to determine ways to overcome them.

Plan:

6.1. Essential characteristics and features of professional activity of a higher education institution teacher.

6.2. Structure and dynamics of the development of educational innovation processes.

6.3. Methods of managing the innovative activity of teachers.

6.4. Anti-innovative barriers to the activity of a teacher and ways to overcome them.

Methodological recommendations

Learn the basic concepts of the topic: innovation, educational innovation, innovative activity, innovative processes, anti-innovation barriers, teaching activity.

It should be noted that innovative activity plays a special role in the process of professional self-improvement of teachers. In this regard, the readiness of teachers for such activity is the most important condition for their professional development. If a teacher working in a traditional system only needs to have teaching skills, which are a set of educational abilities that let them do their job professionally and get pretty good results, then to switch to an innovative approach, the teacher's readiness for innovation is key. The professional activity of a teacher is incomplete if it is based only on the reproduction of once-learned working methods, if it does not use objectively existing opportunities to achieve higher educational results, if it does not contribute to the development of the teacher's own personality. Without creativity, there is no master teacher.

Practical tasks

Task 1. *Frontal discussion using the "round table" method* on the question "The essence of innovative professional activity of a higher education institution teacher." Questions for discussion:

- prerequisites for the emergence of pedagogical innovation in our country;
- similarities and differences between the concepts of "innovation," "innovative processes in education";
- the relationship between creativity and professionalism in the of the innovative teacher.

Listening to reports. Discussion.

Task 2. *Group work.* In order to consolidate theoretical knowledge about the essence pedagogical innovations it is proposed intellectual game *"Terminology warm-up."* Each group is given a task: to match a pedagogical term with its definition (pedagogical innovation, innovation, absolute novelty, relative novelty, subjective novelty, novelty, pedagogical discoveries, pedagogical inventions, pedagogical improvements, innovative pedagogical activity, innovative learning). The materials for the task are in envelopes. A representative of each group chooses an envelope. Upon completion of the task, each group announces its results.

Instructions: match the pedagogical term with its definition; the group representative presents the group's knowledge of innovative pedagogical activity.

Task 3. *Frontal-individual work.* Identify the signs of something new in pedagogy as a special phenomenon. Fill in the table: define the essence of "Basic characteristics of innovation"

Spatial-temporal non-identity	
Relevance	
stability	
Effectiveness	
Optimality	
changeability	

Task 4. *Group work.* Define the essence of the structure of educational innovation processes. Give examples and fill in the table.

Task 4. *Group work.* Define the essence of the structure of educational innovation processes. Give examples and fill in the table.

Stages	Essence
Stage emergence of aidea, emergence a new concept innovation (start).	
stage of invention	
stage of implementation of innovation	
stage of innovation dissemination (maturity)	
saturation stage in a specific industry.	
decline stage (crisis, end).	
irradiation (Latin irradiare — to shine, emit) innovation.	

Task 5. *Frontal discussion* using the *"round table"* method on the following issues: the essence of anti-innovation barriers for teachers, ways to overcome

anti-innovation barriers. Identify the reasons for the teacher's anti-innovation activities.

Control questions:

1. Describe the essence and characteristics of innovative professional activity of a teacher at a higher education institution.
2. Determine the structure and the dynamics development educational innovative processes.
3. Identify ways to overcome anti-innovation barriers for higher education teachers.

Tasks for independent work:

Prepare a report on one of three questions:

1. What is the reason for the need to constantly update the pedagogical process in higher education?
2. What ways can you suggest for shaping innovative behavior in teachers?
3. In your opinion, what constitutes a teacher's readiness for innovative activity?

Practical lesson No. 7

TOPIC: General characteristics of modern pedagogical technologies

Objective of the session: To familiarize with the essence and classification of modern pedagogical technologies; know the characteristics and principles of pedagogical technology, develop the ability and skills to use modern pedagogical technologies in the educational process of higher education institutions.

Plan:

7.1. Essential characteristics of the concepts of "pedagogical technologies," "educational technologies," "innovative technologies," and the relationship between them.

7.2. Criteria for compliance and structure of pedagogical technologies.

7.3. Educational technologies as a factor in intensifying learning.

Methodological recommendations:

Learn the basic concepts of the topic: technology, pedagogical technologies, educational technologies, innovative technologies, characteristics of pedagogical technology, stages of

of establishment. *Note* that in modern higher education, technologization is one of the norms of educational process design. In modern pedagogical theory and practice, there is a long-standing tradition of understanding technologization of education as the systematization of the learning process: the consolidation and standardization of goals, forms, organizations, procedures, results, etc. in the activities of educators. A more accurate understanding of the essence of the terms "pedagogical technology" and "technologization of the educational process" requires reference to the history of their origin. *Identify and analyze the* approaches of scientists to defining the concept of "pedagogical technology."

Practical tasks:

Task 1. *Individual work.* Analyze the approaches of scientists to defining the concept of "pedagogical technology." Identify common and distinctive features. Give your own definition and justify your answer.

Task 2. *Methodological technique "Step".* Define the semantic meaning of the concepts: technology, pedagogical technology, educational technology, innovative technology. Establish the relationship between them. Arrange the concepts in hierarchical order, giving examples of relevant technologies.

Task 3. *Group work.* Define the criteria that pedagogical technologies must meet. Create a table:

Criterion	**Essence**
Conceptuality	
Controllability	
Systematicity	
Effectiveness	
Reproducibility	

Task 4. *Group work.* Define the structure of pedagogical technology. Create a table:

Structural element	Characteristic
Conceptual basis	

Content	
Procedural part	

Control questions:

1. Describe the essence of modern pedagogical technologies.
2. Define the criteria for the compliance of pedagogical technologies.
3. Conduct a comparative analysis of educational, pedagogical, and innovative technologies.

Assignments for independent work:

1. Prepare a report on the topic: "Why are innovative technologies a factor in the intensification of learning?"

Practical lesson No. 8

TOPIC: Interactive learning technologies

Lesson objective: to familiarize students with the essence of interactive learning technologies; to learn the basic forms and methods of interactive learning technologies; to master the methodology of applying interactive learning methods in the educational process; to develop the creative activity and independence of students.

Plan:

8.1. Essential characteristics of interactive learning technologies.

8.2. Classification of interactive learning technologies.

8.3. Interactive teaching methods teaching as a factor in optimizing the educational process at higher education institutions.

Methodological recommendations:

Learn the basic concepts of the topic: learning models, interactive learning technologies, interactive learning methods, collective and group learning methods, cooperative learning methods, discussion-based learning methods, and situational task analysis methods. *It should be noted* that today, in higher education in the pharmaceutical and medical fields, the principle of activating learning is a priority, during the implementation of which the active cognitive activity of students is

specialists become active seekers of and skills, whichthey use when solving complex professional tasks

Practical tasks:

Task 1. *Work in small groups. Learning models.* Consider the diagram of one of the learning models. Explain what is shown in the diagram. What can this learning model be called? Under what conditions can a teacher choose this model? What are the strengths and weaknesses of this model? Describe the learning model, confirming your words with lines from a well-known song or proverb.

Task 2. *Brainstorming method.* Familiarize yourself with the essence of interactive learning technologies. *Instructions:* write down 3 words that you associate with the concept of "interactive learning technologies" on pieces of paper; as a group, select the words that match; the group leader presents the group's knowledge of interactive learning technologies; the assistant writes it down on a poster.

Task 3. *Work in small groups using the "Mosaic" method.*

Instructions:

- you will receive cards of four colors with numbers (1, 2, 3, 4);
- I suggest you form groups according to the number on your card and on the table;
- Each group will receive teaching materials containing information on various aspects of interactive teaching technologies.
- You should study the information so that you can teach others (the groups are given the following materials to study: "discussion methods of teaching," "methods of collective-group teaching," "methods of cooperative teaching," "methods of analyzing situational tasks");
- 5 minutes are allocated for the task.

After reviewing the information:

- return to your groups;
- conduct peer learning for numbers 1 to 4 (each person is given 3 minutes to work).

Each group takes turns presenting their knowledge by answering questions from the sheets on the table (2 minutes per presentation).

Questions for the groups:

1. Describe discussion-based teaching methods and the requirements for their organizers and participants.
2. Talk about collective and group learning methods.
3. Discuss cooperative learning methods.
4. Discuss methods of analyzing situational tasks.

Such form of work can used in classes, when you need to work through a large text.

How do you think what advantages and disadvantages of form group work of interactive learning?

Tasks 4. *Work in pairs. Method "Cross Discussion" method.*

Using the information obtained , write down on 3 arguments "for" and "against" for each of the methods: discussion, collective group learning, cooperative learning, analysis of situational tasks. To determine the effectiveness of these methods when used in the educational process, let's have a discussion.

Instructions:

Write the method on the board, dividing the board into two parts – "advantages" and "disadvantages." Each pair voices their opinion on the use of this method. Everyone else adds to the discussion, providing arguments.

Discussion:

Which methods do you think are more effective when used in the educational process?

Control questions:

1. Describe interactive teaching technologies.
2. Provide known classifications of interactive teaching technologies.
3. How way methods interactive teaching contribute the implementation of the principle of optimization in learning?

Assignments for independent work:

1. Develop tasks for cooperative activities (small group method).
2. Develop tasks for collective group activities your own choice.