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THE PROJECT-BASED LEARNING METHOD AS A SYSTEMIC FORM OF PROBLEM-ORIENTED EDUCATION

МЕТОД НАВЧАЛЬНИХ ПРОЄКТІВ ЯК СИСТЕМНА ФОРМА ПРОБЛЕМНО- ОРІЄНТОВАНОГО НАВЧАННЯ

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Abstract. The modern education system is undergoing a profound transformation under the influence of digitalization, technological innovations, and changing societal demands. It is gradually shifting from the traditional model of knowledge transmission to a competence-based paradigm, centered on the individual's ability to independently acquire, integrate, and apply knowledge in practical contexts. The project-based learning method, as a systemic form of problem-oriented education, enables the integration of research and practical components within the learning process, fostering students' responsibility, critical thinking, and communication skills. This article examines the methodological foundations of this approach, its relationship with problem-based learning, and the classification of modern lecture types as fundamental elements of competence-based education.

Keywords: project-based learning method, competence-based education, problem-oriented approach, lecture types, digitalization of education, educational paradigm.

Анотація. Сучасна система освіти переживає трансформацію під впливом цифровізації, технологічних інновацій та змін у суспільних запитах. Від традиційної моделі передачі знань вона поступово переходить до компетентнісної парадигми, у центрі якої стоїть здатність особистості самостійно здобувати, інтегрувати й застосовувати знання у практичній діяльності. Метод навчальних проєктів, як системна форма проблемно-орієнтованого навчання, дає змогу поєднати дослідницький і практичний компоненти освітнього процесу, формуючи у студентів відповідальність, критичне мислення та комунікативні навички. У статті розглянуто методологічні засади цього підходу, його зв'язок із проблемним навчанням, а також класифікацію сучасних типів лекцій як базових елементів компетентнісної освіти.

Ключові слова: метод навчальних проєктів, компетентнісна освіта, проблемно-орієнтований підхід, типи лекцій, цифровізація освіти, освітня парадигма.

Introduction.

The development of a modern high-tech society necessitates the renewal of the educational paradigm. Knowledge is no longer an end in itself – it becomes a tool for forming competencies that enable individuals to act effectively in conditions of constant change. Accordingly, education should not only transmit information but also develop students' ability to acquire it independently, think critically, and apply it.

In higher education institutions, various teaching methods are used, including explanatory-illustrative, reproductive, problem-based, and research-oriented approaches, as well as modern modular, distance, and case-study learning. These methods aim to cultivate a wide range of competencies in students. The choice of method depends on the learning objectives and desired outcomes, which may involve both professional (hard skills) and personal (soft skills) development.

Main Text.

The main teaching methods include *verbal* methods (lectures, conversations, discussions), *visual* methods (demonstrations, video materials, presentations), and *practical* methods (problem solving, laboratory work, training sessions, simulations). *Problem-based* and *inquiry-oriented* methods form a separate group and include problem lectures, heuristic conversations, research activities, and project work. Contemporary teaching methods include:

- *modular learning* (structuring material into logically completed modules);
- *distance learning* (using online resources to acquire knowledge regardless of place and time);
- *case study* (analyzing real-life situations and searching for optimal solutions);
- *coaching* (individual mentoring aimed at achieving specific goals);
- *blended learning* (combining face-to-face instruction with online activities).

Different teaching methods aim to develop various competencies, including:

- ✓ professional competencies (specialized knowledge and skills required for work in a specific field);

✓ general competencies (soft skills such as critical thinking, creativity, communication, teamwork, and leadership);

✓ information competencies (skills related to searching, analyzing, and using information, including online resources);

✓ personal competencies (self-organization, responsibility, learning ability, etc.).

One of the key tools enabling the shift from the informative function of education to the acquisition of specific competencies is the method of project-based learning (PBL), which fosters cognitive engagement, knowledge integration, and the development of research skills.

The essence of the project-based learning method lies in organizing students' cognitive activity through inquiry and creative exploration that combine the acquisition of new knowledge with solving real-world problems.

The use of this method during instruction creates an atmosphere of cooperation and inquiry, facilitates the transition from reproductive learning to creative knowledge acquisition, develops key competencies, and motivates students to actively participate in the learning process.

Main requirements for the implementation of the project-based learning method.

1. Formulating a meaningful problem of research or practical nature that requires integrated knowledge for its solution (e.g., the impact of acid rain on the environment, analysis of demographic processes, creation of thematic reports, etc.).

2. Determining the value of the results – both practical and cognitive (a presentation, recommendations, project proposals, informational materials).

3. Independent completion of tasks, either individually or in groups.

4. Clear formulation of the aim and expected outcomes.

5. Selecting the necessary basic knowledge from various fields to ensure high-quality project implementation.

6. Structuring the stages of work – planning, execution, and presentation of results.

7. Using research methods such as problem formulation, hypothesis development,

data collection and analysis, discussion, and drawing conclusions (including methods such as brainstorming, round-table discussions, etc.).

8. Materialization of results – presenting the final product of the activity in a specific form (a report, model, publication, presentation, etc.).

The application of the project-based learning method enables students to perceive themselves as active researchers, interact with real processes and phenomena, gain deeper understanding of the subject, and create new educational products. The advantages of this method include fostering creativity, overcoming psychological barriers in working with technical tools, stimulating motivation for learning, and supporting self-realization. At the same time, the activity-based approach underlying it equips students with instruments for exploring the world and effectively adapting to its changes.

Problem-Oriented Approach in Higher Education

Problem-Oriented Learning (POL) is a form of organizing the educational process in which knowledge acquisition occurs through solving concrete problems. Its goal is to teach students to think critically, analyze situations, draw conclusions, and make decisions based on interdisciplinary knowledge.

POL shares many features with project-based learning: both approaches emphasize practicality, research-oriented activities, and competence development. However, POL is more commonly used to cultivate analytical thinking and problem-solving culture, while PBL focuses on producing a completed output (a model, recommendations, a report, a publication, etc.).

Lecture as a Core Form of Knowledge Transfer.

The traditional lecture in higher education is undergoing rethinking in the context of digital education. It is no longer merely a means of transmitting information but is transforming into an interactive form of collective cognition. A modern lecture should combine informativeness, problem-based learning elements, and visualization, while also creating conditions for dialogue between the lecturer and students. Thus, the lecture format acquires new functions – it becomes a space for reflection, critical analysis, discussion, and co-creation.

The typology of lectures in higher education reflects various approaches to organizing the learning process and perceiving knowledge.

Main Types of Lectures.

A graphical classification of lecture types is presented in Figure 1.

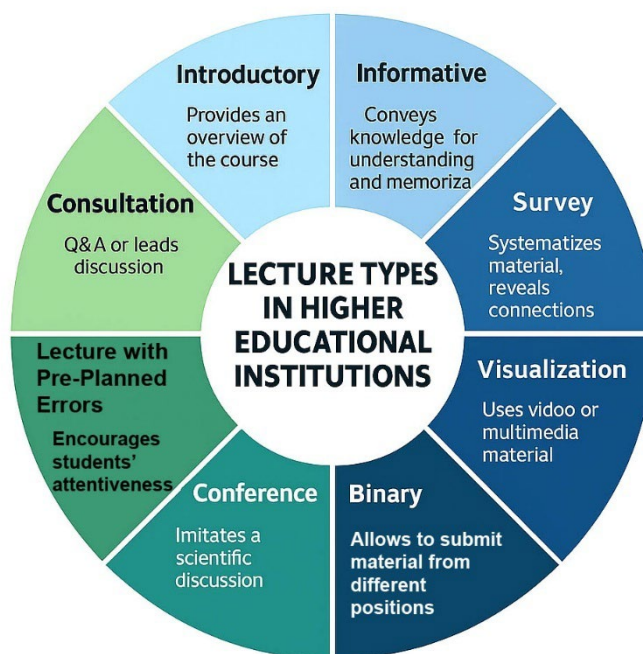


Figure 1 – Classification of lecture types in higher education

Author's illustration

Introductory Lecture. This type of lecture provides students with a general understanding of the course and helps them navigate the structure of future work. The lecturer introduces the audience to the course objectives, tasks, and structure, explaining its role within the system of disciplines and professional training. In addition to a brief overview of the course content, the main stages in the development of the relevant field of knowledge, key scientific achievements, and the names of prominent scholars are discussed. Methodological recommendations, specific features of the educational process, reporting forms, and the use of learning materials are also clarified.

Informative Lecture. This type of lecture is designed for the consistent presentation and explanation of scientific facts, concepts, and patterns that students

need to comprehend and memorize. It is the most common and traditional lecture format in higher education.

Survey (Overview) Lecture. This type of lecture involves the systematization of knowledge at a high level of generalization and the establishment of associative, interdisciplinary, and intradisciplinary connections. The focus is placed not on specific details but on key theoretical concepts that form the conceptual foundation of the course or its major sections.

Problem-Based Lecture. New educational material is presented through the formulation of problem-oriented questions, tasks, or situations. In the process of collaboratively searching for solutions, students' activities approach the nature of research work. The problem is revealed through the analysis of possible solutions or by comparing traditional and modern scientific approaches.

Visualization Lecture. This form of instruction emphasizes the visual perception of information. Various educational technologies, video tools, and multimedia equipment (e.g., video lectures) are used. The lecturer's task is to comment on the visual materials presented – objects, phenomena, processes, images, diagrams, models, graphs, or tables.

Binary Lecture. This format involves a joint session conducted by two lecturers who engage in a dialogue. They may represent different scientific schools, theoretical and practical perspectives, or even a lecturer and a student, providing an opportunity to present material from multiple viewpoints.

Lecture with Pre-Planned Errors. The purpose of this approach is to stimulate students' attentiveness and self-control. The lecture text intentionally includes content-related, methodological, or orthographic errors. After the presentation, students participate in a discussion and analysis of the identified inaccuracies.

Conference Lecture. Conducted as a scientific and practical session with a predetermined topic and short (5–10 minute) student presentations. Each participant prepares a report addressing a particular aspect of the problem. After the presentations, the lecturer summarizes the results, adds relevant commentary, and formulates conclusions.

Consultation Lecture. This format may take several forms. In the first, a «question–answer» type, the lecturer responds to students' questions on specific topics or the entire course. In the second – a «question–answer–discussion» format – the lecture combines explanations of new material, the formulation of problem-based questions, and a collective search for solutions through discussion.

Conclusions.

The project-based learning method is a systemic form of implementing problem-oriented education. It fosters the development of key competencies, promotes a creative approach to learning, and aligns the educational process with the real needs of society and the labor market. Its effective implementation requires the integration of modern technologies, flexible lecture formats, and interdisciplinary collaboration.

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