SPECIFIC FEATURES OF THE DIDACTIC SUPPORT OF LABORATORY CLASSES

Tursynbaeva Khalima Atabekovna
Doctoral student of the Qori Niyoziy
National Institute of Educational Pedagogy

ABSTRAC *This article examines the specific features of didactic support in the organization and implementation of laboratory classes in higher education institutions. Laboratory training serves as a crucial component in the formation of students' practical skills, research abilities, and professional competencies. The effectiveness of laboratory classes depends largely on systematically developed didactic support that integrates methodological, informational, technical, and assessment components. The study analyzes the structural elements of didactic support, highlights its practice-oriented and competence-based nature, and emphasizes the importance of innovative pedagogical technologies, including digital tools and virtual laboratories. The findings demonstrate that comprehensive and well-structured didactic support significantly enhances students' cognitive activity, independent learning, and overall educational outcomes.*

Keywords: *didactic support, laboratory classes, higher education, competence-based approach, teaching methodology, practical training, instructional materials, innovative technologies, assessment criteria, professional competencies.*

Introduction - Modern higher education is characterized by a transition to competence-based and student-centered learning models. In this context, laboratory classes play a fundamental role in ensuring the integration of theoretical knowledge with practical application. Unlike lecture-based instruction, laboratory training creates conditions for experimentation, observation, analysis, and independent problem-solving.

However, the effectiveness of laboratory classes depends not only on equipment and facilities but primarily on the quality of their didactic support. Didactic support represents a systematic set of normative documents, methodological materials, instructional resources, technological tools, and assessment mechanisms aimed at achieving clearly defined learning outcomes.

The relevance of this study is determined by the need to improve the methodological foundation of laboratory instruction in accordance with modern educational standards and innovative pedagogical technologies. The purpose of the article is to identify the structural components and specific features of didactic support for laboratory classes and to determine its role in enhancing educational effectiveness.

Research Methodology - The research is based on theoretical and methodological analysis of pedagogical literature, higher education standards, and best practices in organizing laboratory classes.

The following research methods were applied:

Theoretical analysis and synthesis of scientific sources on didactic systems and laboratory pedagogy;
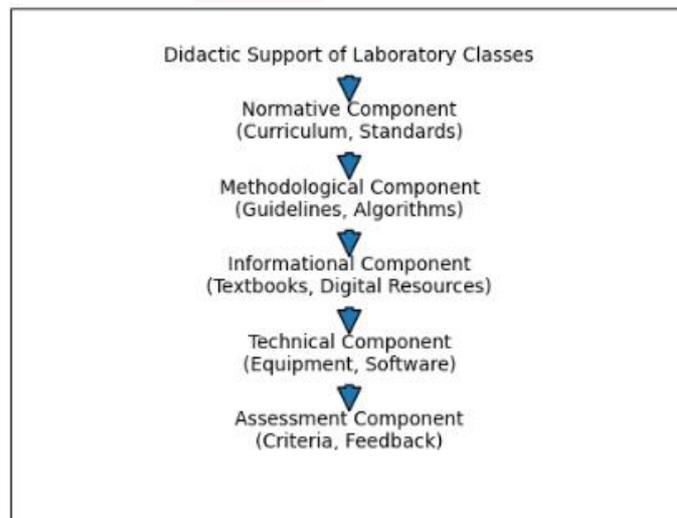
Comparative analysis of traditional and innovative approaches to laboratory instruction;

System-structural analysis to identify key components of didactic support;

Modeling of an integrated didactic support framework;

Generalization of pedagogical experience in higher education institutions.

The methodological basis of the study includes the competence-based approach, the activity-based approach, the systemic approach, and the principles of student-centered learning. These approaches ensure alignment between laboratory objectives, instructional methods, and expected professional competencies.

Didactic Support of Laboratory Classes

Normative Component
(Curriculum, Standards)

Methodological Component
(Guidelines, Algorithms)

Informational Component
(Textbooks, Digital Resources)

Technical Component
(Equipment, Software)

Assessment Component
(Criteria, Feedback)

Analysis and Results - Structural Components of Didactic Support

The analysis shows that effective didactic support for laboratory classes consists of interconnected components:

Normative Component – curriculum, syllabus, learning objectives, and regulatory standards.

Methodological Component – laboratory manuals, methodological guidelines, experiment algorithms, safety instructions.

Informational Component – textbooks, electronic educational resources, multimedia materials, scientific articles.

Technical Component – laboratory equipment, measuring instruments, software, digital platforms, and virtual laboratories.

Assessment Component – evaluation criteria, rubrics, diagnostic tools, formative and summative assessment systems.

The absence or weakness of any component reduces the effectiveness of laboratory training.

Specific Features of Didactic Support

The research identifies several distinctive features:

Practice-oriented focus – laboratory tasks simulate real professional situations.

Integration of theory and practice – theoretical concepts are immediately applied in experiments.

Algorithmization of procedures – step-by-step instructions ensure clarity and safety.

Competence orientation – emphasis on forming professional, analytical, and research competencies.

Differentiation and individualization – tasks adapted to students' abilities and preparedness levels.

Use of innovative technologies – integration of digital tools, simulations, and virtual laboratories.

Feedback and reflection mechanisms – continuous monitoring and correction of learning outcomes.

Impact on Learning Outcomes

Properly organized didactic support leads to:

Increased student motivation and engagement;

Development of independent research skills;

Improvement of analytical and critical thinking;

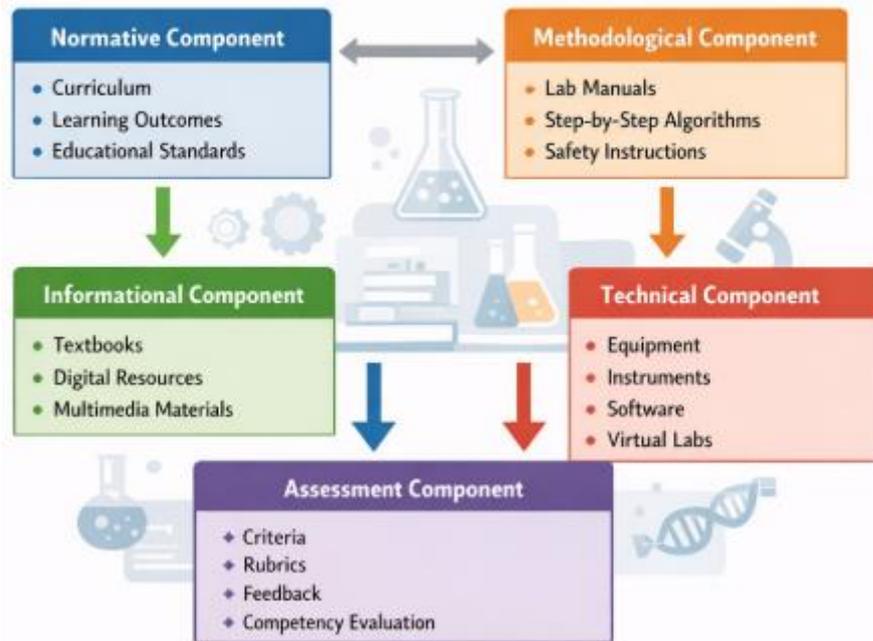Strengthening of practical and professional competencies;

Higher quality of knowledge assimilation and long-term retention.

The results confirm that systematic didactic support significantly enhances the educational effectiveness of laboratory classes.

Structure of Didactic Support for Laboratory Classes

Normative Component
- Curriculum
- Learning Outcomes
- Educational Standards

Methodological Component
- Lab Manuals
- Step-by-Step Algorithms
- Safety Instructions

Informational Component
- Textbooks
- Digital Resources
- Multimedia Materials

Technical Component
- Equipment
- Instruments
- Software
- Virtual Labs

Assessment Component
- Criteria
- Rubrics
- Feedback
- Competency Evaluation

Conclusion and Recommendations

The study concludes that didactic support is a fundamental factor in ensuring the quality and effectiveness of laboratory classes in higher education. A systematic, competence-oriented, and technologically integrated approach to organizing didactic support creates optimal conditions for practical training and professional development.

Based on the findings, the following recommendations are proposed:

Develop integrated methodological complexes for each laboratory course.

Align laboratory tasks with professional standards and competence-based outcomes.

Incorporate digital tools, virtual laboratories, and interactive technologies.

Implement clear and transparent assessment criteria and feedback systems.

Regularly update instructional materials in accordance with scientific and technological advancements.

Promote student independence through pre-laboratory preparation and research-oriented tasks.

In conclusion, comprehensive and innovative didactic support ensures the transformation of laboratory classes into an effective environment for developing professional competence and research culture among students.

REFERENCES

1.Biggs, J., & Tang, C. (2011). Teaching for quality learning at university (4th ed.). Open University Press.

2.Bloom, B. S. (Ed.). (1956). Taxonomy of educational objectives: The classification of educational goals. Longmans.

3.Kolb, D. A. (2015). Experiential learning: Experience as the source of learning and development (2nd ed.). Pearson Education.

4.Prince, M., & Felder, R. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. Journal of Engineering Education, 95(2), 123–138.