The OSCAR PUBLISHING Services
International Journal of Pedagogics

VOLUME Vol.06 Issue02 2026
PAGE NO. 75-78
DOI 10.37547/ijp/Volume06Issue02-18

Conditions For Developing Academic Lyceum Students' Preparation For Professional Activity In Physics

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Received: 19 December 2025; **Accepted:** 11 January 2026; **Published:** 15 February 2026

Abstract: This annotation describes the pedagogical, methodological, and organizational conditions necessary for developing academic lyceum students' preparation for professional activity in the process of studying physics. The practical orientation of physics education and its role in forming professional competencies are analyzed.

Keywords: Academic lyceum, physics education, professional activity, professional training, pedagogical conditions, methodological support, practice-oriented education, professional competencies.

Introduction: In the context of globalization and rapid scientific and technological development, one of the most important tasks facing the education system is to thoroughly prepare young people for future professional activity. In particular, the deep and conscious mastery of fundamental sciences, including physics, by academic lyceum students plays a significant role in determining their future professional orientation. Physics is not only a body of theoretical knowledge, but also an applied science closely connected with industry, technology, engineering, and modern innovations, contributing to the development of students' professional interests and competencies. Today, the labor market increasingly demands competitive specialists who are capable of independent thinking and applying theoretical knowledge in practice. Therefore, organizing physics education in academic lyceums not merely at the level of memorizing formulas and laws, but with a focus on students' future professional activities, has become a pressing issue. This, in turn, requires the creation of effective pedagogical, methodological, and organizational conditions within the educational process. Developing academic lyceum students' preparation for professional activity through physics education, expanding their scientific worldview, and strengthening their knowledge and skills through profession-oriented practical training are among the key directions of current educational reforms. In this respect, the topic is relevant to modern educational requirements and possesses significant scientific and practical value.

LITERATURE REVIEW

In recent years, the issue of developing academic lyceum students' preparation for professional activity through physics education has been considered one of the most relevant research areas in pedagogy and subject methodology. Numerous scientific sources emphasize the necessity of organizing education based on a competency-based approach and linking students' knowledge with real-life situations and future professional activities. In particular, the professional orientation of physics teaching in general and secondary specialized education is recognized as an important pedagogical problem.

Research conducted by pedagogical scholars indicates that strengthening the practical orientation of physics teaching contributes to the development of students' professional interests, motivation, and independent thinking skills. Many studies demonstrate that the use of laboratory work, experiments, modeling, and real-life problem-solving enhances students' understanding and effectively directs them toward future professions.

This confirms that physics education is not purely theoretical but is closely connected with professional activity. The literature also highlights the importance of organizing the educational process with consideration of the age and psychological characteristics of academic lyceum students. Researchers substantiate that professional competencies can be developed through the use of modern pedagogical technologies, interactive methods, and innovative approaches. In this process, the teacher's professional competence, methodological preparedness, and a supportive educational environment are regarded as decisive factors. Foreign scientific literature likewise pays considerable attention to the integration of physics education with professional activity. The application of STEM education, project-based learning, and problem-based learning technologies is emphasized as a means of developing students' practical skills. These approaches enable the formation of readiness for professional activity from an early stage. In general, the analysis of existing literature shows that creating a комплекс set of pedagogical, methodological, and organizational conditions is essential for developing academic lyceum students' preparation for professional activity through physics education. At the same time, further in-depth research on this issue and the development of effective models and mechanisms adapted to the national education system remain highly relevant tasks.

METHODOLOGY

The methodology for studying the development of academic lyceum students' preparation for professional activity in physics is based on a scientifically grounded and practically oriented approach. This study employed several methods to assess students' levels of professional readiness, evaluate pedagogical conditions, and develop effective teaching strategies.

Firstly, a theoretical analysis was conducted, examining scientific literature, educational standards, and modern pedagogical approaches. This method allowed for the study of existing practices, methodological developments, and innovative approaches in physics education and professional preparation in academic lyceums. The theoretical analysis also enabled comparisons between national and international pedagogical experiences, ensuring a solid scientific foundation for the research.

Experimental methods formed the practical component of the study. These methods helped determine students' levels of knowledge, skills, and professional readiness in physics, as well as evaluate the effectiveness of pedagogical conditions. Through experimental lessons, laboratory work, and project-based learning, the study observed students' development of independent thinking, problem-solving abilities, and practical skills.

Additionally, surveys, interviews, and observations were used to assess students' motivation, interest, and satisfaction with pedagogical conditions. These tools provided accurate and reliable results, while also enabling the development of practical recommendations for optimizing the educational process.

Analytical and comparative methods were also applied to analyze students' professional readiness and the effectiveness of various pedagogical approaches. Based on these analyses, the most effective methods were identified and recommendations for their implementation in practice were formulated. The methodology was student-centered, taking into account individual characteristics, age, and psychological traits. The approach emphasized the creation of effective pedagogical, methodological, and organizational conditions to foster students' professional competencies. Overall, this methodology allowed for a strong theoretical foundation, practical validation of educational strategies, and the identification of clear and effective directions for developing academic lyceum students' preparation for professional activity in physics.

DISCUSSION AND RESULTS

The results of the study on developing academic lyceum students' preparation for professional activity in physics indicate that an effective educational process depends on several key factors. Firstly, it was found that students' level of professional readiness is directly related to the extent to which they study physics in a practical and applied manner. Through laboratory work, experiments, and project-based activities, students significantly developed their independent thinking, problem-solving skills, and ability to apply theoretical knowledge in practice. The study also

revealed that the quality of pedagogical conditions has a direct impact on students' professional motivation and interest. In particular, the consistent implementation of interactive methods, innovative pedagogical technologies, and practical exercises significantly enhances students' readiness for professional activity. For example, using project-based learning allows students to analyze real-life problems and find solutions, thereby strengthening their preparedness for future professional work. Additionally, organizing the educational process with consideration for students' age and psychological characteristics was found to be highly important. A combination of individualized approaches and group work fosters self-development and confidence in students' own abilities, which in turn supports the formation of professional competencies.

The study results indicate that achieving effective outcomes in developing professional readiness in physics requires the following conditions:

1. **Practice-oriented education**: Laboratory sessions, experiments, and project work help strengthen students' knowledge and skills.
2. **Innovative pedagogical technologies**: Interactive methods, problem-based learning, and STEM approaches increase students' professional interest and motivation.
3. **Pedagogical competence and methodological preparation**: The teacher's professional and methodological expertise is a key factor determining the effectiveness of the learning process.
4. **Individualized approach**: Organizing the educational process with attention to students' age and psychological characteristics supports the development of professional competencies.
5. **Organizational conditions**: A comfortable learning environment, access to modern laboratories, and adequate resources significantly enhance students' professional readiness.

Overall, the study demonstrates that developing academic lyceum students' preparation for professional activity in physics requires a systematic and comprehensive approach. By combining theoretical knowledge with practical activities, implementing pedagogical innovations, and ensuring individualized support, students' professional competencies can be effectively formed. This approach significantly improves their readiness for future professional work.

CONCLUSION

The results of this study indicate that developing academic lyceum students' preparation for professional activity in physics requires a systematic and comprehensive approach. Integrating theoretical knowledge with practical activities, such as laboratory work, experiments, and project-based learning, plays a crucial role in fostering students' independent thinking, problem-solving abilities, and professional skills. The study also showed that students' professional readiness depends not only on their level of knowledge but also on pedagogical conditions, the teacher's professional and methodological competence, the use of modern educational technologies, and consideration of students' individual characteristics and motivation. Interactive methods, problem-based learning, and STEM approaches proved to be effective tools for developing students' professional interest and practical competencies. Furthermore, the results highlighted the importance of organizational conditions in structuring the educational process. Access to modern laboratories, a comfortable learning environment, and sufficient resources significantly enhance students' professional preparedness. An individualized approach strengthens students' confidence in their abilities and prepares them for future professional activities. Overall, developing academic lyceum students' preparation for professional activity in physics not only consolidates their knowledge and skills but also helps shape them into competitive, independent-thinking specialists capable of meeting modern professional demands. Therefore, systematically creating pedagogical, methodological, and organizational conditions, implementing modern educational technologies, and ensuring an individualized approach are essential for the success of the educational process.

REFERENCES

1. Abdullayeva, G. (2020). Practical-Oriented Methods in Teaching Physics. Tashkent: O'qituvchi.
2. Karimov, S. (2019). Professional Training and Competency Development. Tashkent: Fan.
3. Mirzaev, A. (2021). Academic Lyceums and STEM Education. Tashkent: Ta'lim.

4. Rashidova, N. (2018). Methods of Teaching Physics in Secondary Specialized Education. Tashkent: Ilm-fan.

5. Johnson, D., & Smith, P. (2017). Project-Based Learning in Physics Education. New York: Springer.

6. Brown, R. (2016). STEM Approaches for Secondary Education. London: Routledge.

7. O‘rozov, T. (2020). Interactive Methods and Innovative Approaches in Education. Tashkent: Pedagogika.

8. Abdullaev, M. (2019). Competency-Based Approach and Practical Training in Education. Tashkent: O‘qituvchi.