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THE ROLE OF PRACTICAL TRAINING IN THE DEVELOPMENT OF FUTURE SPECIALISTS' PROFESSIONAL COMPETENCE

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Abstract
This article presents ideas about the role of practical exercises in the process of educating a person. The scheme of practical exercises for developing the professional competence of future specialists has been improved. Also, the issues of forming an independent worldview of students and teaching them critical thinking are discussed.

Keywords: Professional competence, competence, practical exercises, Bloom's taxonomy, model, scheme.

Introduction

Practical classes differ from lectures primarily in that they are characterized by the joint activity of participants in the educational process aimed at achieving common learning objectives. While lectures present the foundations of scientific knowledge, practical classes reinforce the knowledge acquired by students, transform basic concepts into more complex scientific (including astronomical) concepts, expand them, and create opportunities for their application in new and unexpected situations. In addition, practical classes serve to consolidate students' knowledge, facilitate its application in practice, and provide means for monitoring and assessment.

Practical training also involves solving various types of problems, including professional tasks (such as resolving production situations, case-based problems, performing professional functions, etc.), carrying out calculations, preparing drawings, working with measuring instruments, using educational materials, designing, and planning. According to V.V. Zhuravlev, various forms of practical

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classes constitute a significant portion of the academic workload in higher education institutions, ensuring a reproductive learning method that connects theory with practice. At the same time, practical classes fulfill the following objectives:

- assisting students in developing skills and competencies for applying knowledge acquired during lectures and independent study;
- teaching students to solve practical problems and perform computational, graphical, and other types of assignments;
- guiding students in the use of scientific and methodological literature;
- fostering the ability for independent learning, self-education, self-development, and self-control.

It should be emphasized that within the system of professional training, lectures provide theoretical information, whereas practical classes and independent study ensure the connection between theory and practice. According to V.P. Bespalko, practical classes typically consist of sessions devoted to solving various applied problems, examples of which are introduced during lectures. As a result, students must develop a specific professional approach to solving each problem.

In this regard, practical classes are essential in organizing professional training in higher education institutions. They determine the number and type of tasks required, ensure their timely structuring within the course, and reinforce independent learning assignments. When selecting exercises and assignments for practical classes, the instructor should strive to provide a holistic understanding of the subject matter and methods of the discipline, with the methodological function playing a leading role.

As noted by V.V. Zhuravlev and V.N. Lesin, the sequence of lectures and practical classes within the educational system is of particular importance. The lecture serves as the first stage in preparing students for practical work. The problems introduced in lectures receive concrete expression and solutions during practical sessions. Although each practical class traditionally reinforces previously studied material, it simultaneously prepares students for the active perception of subsequent lectures.

The content and methodology of practical classes should ensure the development of students' creative activity. On this basis, students' scientific thinking and

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speech are developed, their knowledge is tested, and rapid feedback is provided through exercises, seminars, and laboratory work. Therefore, practical classes should not only perform cognitive and educational functions but also contribute to students' growth as creative and innovative professionals.

During lectures, students reach a conceptual level of understanding and establish relationships between studied phenomena and real-world objects. The physiological basis of practical classes lies in strengthening neural connections and associations formed through repeated performance of discipline-specific actions.

The implementation of practical classes begins with studying initial documents (curriculum and thematic plan) and concludes with lesson planning. Based on these documents, the instructor must clearly define the objectives and tasks of the practical session and understand the scope of work required from each student. The core element of a practical class is the educational task or problem proposed for solution. When selecting examples and assignments, the instructor must clearly define the didactic purpose of each task: what skills and competencies are to be developed and what actions are required from students.

A common shortcoming of practical classes is that the set of solved problems often consists mainly of simple examples. Although such tasks are necessary, they should serve as a foundation for transitioning to more complex and problem-based assignments. Students' interest declines when they perceive that all learning opportunities have been exhausted. Therefore, it is important to organize practical sessions in such a way that students continuously experience increasing levels of complexity, which positively stimulates their cognitive activity.

At the initial stage of practical work, it is recommended to provide simple reproductive tasks aimed at reinforcing theoretical knowledge gained in lectures. These tasks help verify students' understanding of recently studied material. Subsequently, assignments should gradually increase in complexity, progressing from productive to partially exploratory and creative levels.

Productive-level tasks require students not only to reproduce known methods but also to analyze their appropriateness. Partially exploratory tasks involve

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analyzing conditions, hypotheses, and results. Creative-level tasks foster research skills and independent problem-solving abilities.

Gradually increasing the complexity of assignments enables both instructors and students to master essential discipline-specific methods. The instructor's preparation for practical classes includes selecting control questions to assess students' understanding of theoretical material, logically organizing them to ensure a coherent theoretical foundation, carefully selecting tasks and examples, solving them in advance, preparing methodological commentary, planning time distribution, and selecting appropriate visual materials.

Practical classes may be conducted collectively under instructor guidance or individually. Connecting theoretical knowledge with practical experience remains a fundamental principle of education. In natural sciences, including astronomy, practical sessions involve observing natural phenomena, working with instruments, conducting experiments, analyzing data, and working with thematic and outline maps. These activities familiarize students with research methods and develop practical skills.

Modern higher education is built upon Outcome-Based Education and a competency-based approach. In this paradigm, emphasis shifts from the volume of knowledge to:

- the ability to independently perform professional activities,
- problem-solving in real-life situations,
- reflection and adaptability,
- social and professional responsibility.

From this perspective, practical classes serve as the central didactic tool for developing professional competence (see Figure 1).

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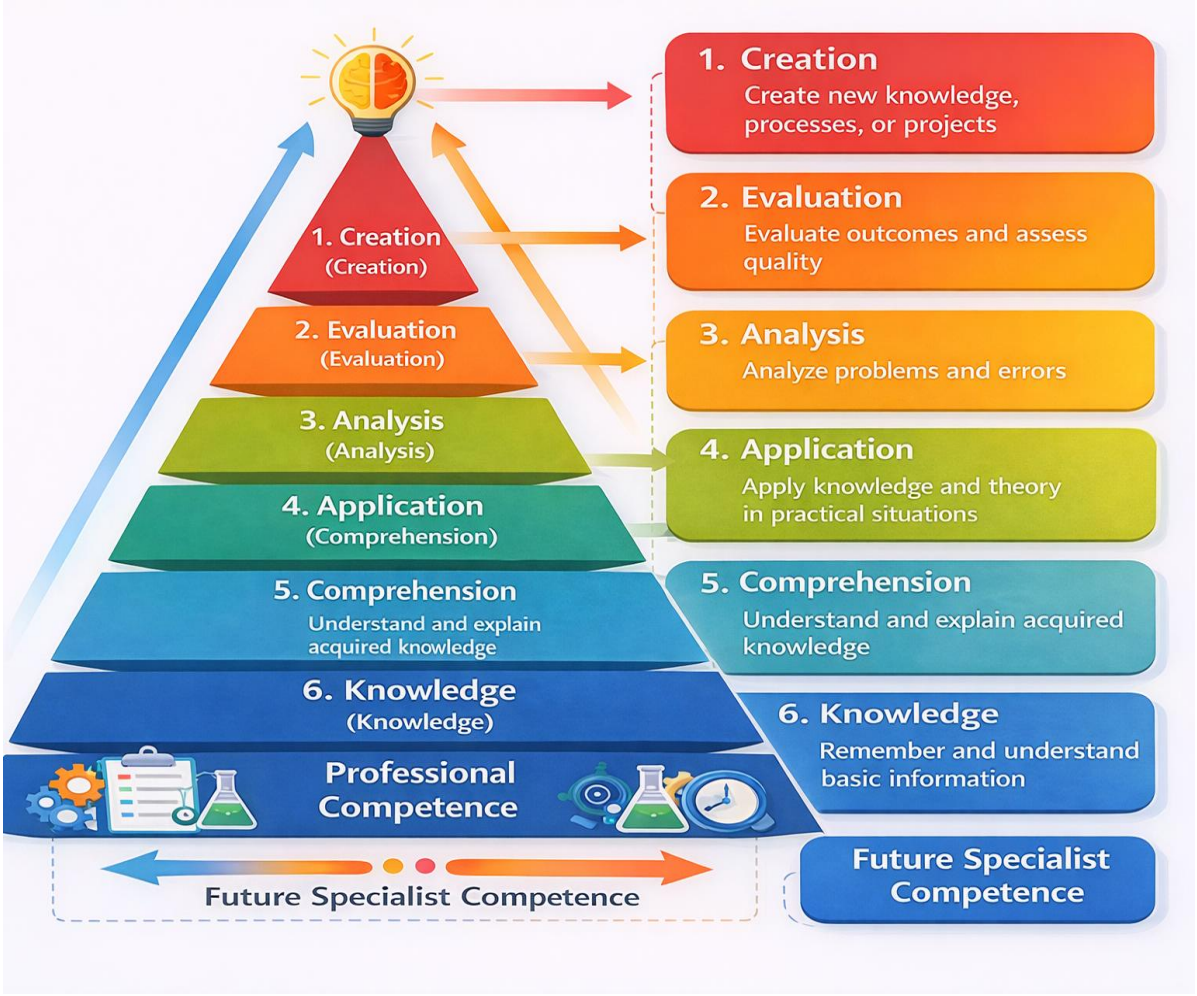

Figure 1. The Role of Practical Training in the Development of Future Specialists' Professional Competence

1. **Professional competence** is a complex systemic quality that represents the integration of the following components necessary for the effective performance of professional activities:
2. **Knowledge** (cognitive component)
3. **Skills and abilities** (operational-technological component)
4. **Values and motivation** (motivational-axiological component)
5. **Reflective and communicative qualities**

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Competence is formed not only through theoretical preparation but also in the process of practical activity. This scientifically substantiates the importance of practical training. While theoretical knowledge constitutes the foundation of professional competence, practical training ensures its real manifestation. Therefore, increasing the proportion of practical classes in higher education and organizing them on the basis of innovative methods remains a priority direction of modern educational policy.

During practical sessions, students reinforce the theoretical knowledge they have acquired by performing tasks such as drawing thematic maps, interpreting conventional symbols, analyzing maps, and preparing cross-sectional representations based on cartographic materials. For this reason, particular attention should be paid to organizing and conducting practical classes in astronomy disciplines within higher education institutions, including improving the system of using modern information technologies.

The widespread application of new information technologies, the computerization of society, and the development of modern communication tools have led to significant transformations in education. In recent years, there has been increasing recognition that nearly all relationships existing in nature possess an informational character. Information serves as the carrier of meaning in all processes occurring in nature and society.

The organization of practical training is designed as a multi-stage system based on modern pedagogical technologies, digital learning environments, and a competency-based approach. In contemporary higher education, professional training cannot be limited to providing theoretical knowledge alone; it must ensure students' readiness for real professional activity. Practical classes function as the central mechanism of this process.

Therefore, the proposed model was developed based on the following needs:

- systematic integration of the competency-based approach into practical training;
- harmonization of digital educational technologies with professional preparation;
- transformation of the student from a passive listener into an active professional subject;

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- transition of the assessment process to an outcome-oriented, performance-based system.

This model ensures integration between the professor, the student, and the information-educational environment (see Figure 2).

The model is grounded in the following scientific approaches:

1. Competency-based approach: Professional competence is interpreted as an integrative system of knowledge, skills, abilities, and personal qualities. Each type of activity within practical training is directed toward the formation of specific competencies.

2. Activity-based approach: Students do not passively receive knowledge but acquire it through active engagement. Professional experience is modeled through problem situations, case studies, and simulations.

3. Systemic approach: The stages of the model (organizational – content-based – reflective) form an interconnected unified system. Each stage logically continues the previous one.

4. Integrative approach: The integration of theoretical knowledge, practical activity, digital technology, and reflection is ensured within a unified pedagogical process.

The scientific novelty of this methodological model is manifested in the following:

1. The process of practical training was systematized based on competency criteria.
2. Digital educational technologies were integrated as a mechanism for developing professional competence.
3. The assessment system was redirected from knowledge-based evaluation to professional readiness evaluation.
4. The trajectory of students' professional development was modeled step by step, expanding the pedagogical potential of practical training.

The mechanism for forming professional competence was scientifically substantiated. The methodological function of digital educational tools was

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clarified. A concept for the practical improvement of the competency-based approach in higher education was developed.

The dominance of information in natural and social phenomena has led to the necessity of mastering practical methods using modern information and communication technologies. Practical training involves students completing a set of learning tasks aimed at developing applied skills. Students perform practical assignments in written form, as presentations, and as reports, which are submitted electronically or in printed format to the responsible instructor.

These activities can be effectively implemented using global network opportunities, including information-educational environments, learning platforms, and educational websites. For this reason, within the framework of this research, the model for organizing practical training in astronomy disciplines was improved (see Figure 2).

The proposed model is intended for the organization of practical training in higher education institutions. In the conditions of the 21st-century labor market, possessing only theoretical knowledge is insufficient; specialists must also demonstrate practical skills and the ability to work independently.

Bloom's taxonomy classifies cognitive activity into six levels: remembering, understanding, applying, analyzing, evaluating, and creating. This approach allows the step-by-step organization of the process of developing future specialists' professional competence and provides an effective tool for assessing their capabilities.

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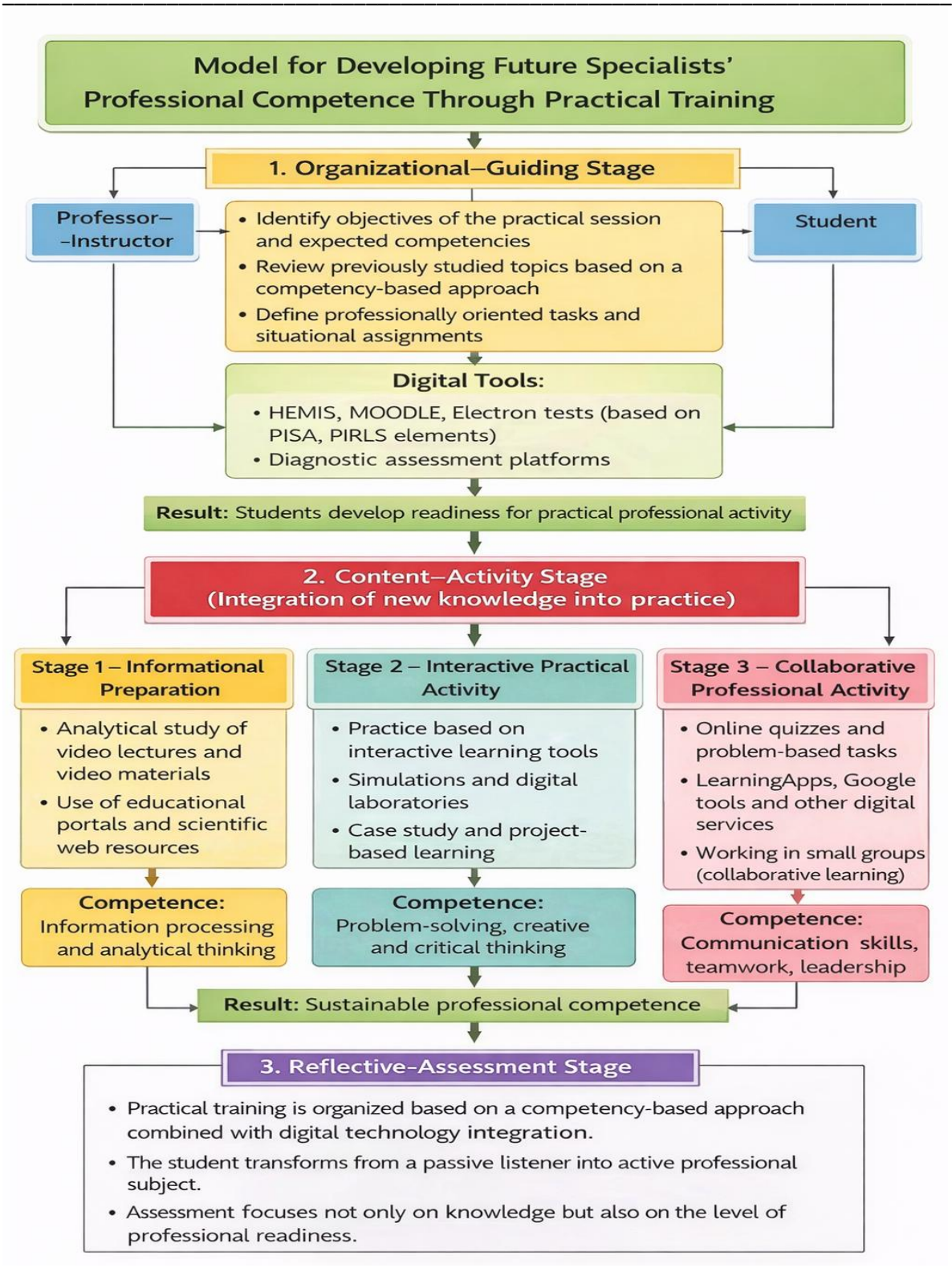

Figure 2. Scheme for Organizing Practical Training

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Practical training specifically serves to ensure the consistent and sequential formation of these stages, guiding the student from being a holder of theoretical knowledge to becoming a specialist capable of independent professional activity.

1. Remembering

Content: mastering theoretical concepts, professional terminology, and regulatory documents.

In practical sessions: test assignments (HEMIS, MOODLE), quick question-and-answer activities, working with key concepts.

Formed competence: reproductive knowledge and the initial level of professional readiness.

2. Understanding

Content: explaining professional processes and clarifying cause-and-effect relationships.

In practical sessions: analyzing video materials, interpreting problem situations, constructing conceptual maps.

Formed competence: analytical thinking and the ability to process information.

3. Applying

Content: applying theoretical knowledge in real or simulated professional situations.

In practical sessions: case studies, simulations, laboratory work, solving professional situations.

Formed competence: operational skills and readiness for practical activity.

4. Analyzing

Content: breaking down a problem into components, identifying causes, comparing alternative solutions.

In practical sessions: group analysis of problem situations, SWOT analysis, identifying professional errors.

Formed competence: critical thinking and independent conclusion-making.

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5. Evaluating

Content: determining the effectiveness of decisions based on established criteria.

In practical sessions: peer assessment, reflection, analysis of electronic portfolios, rubric-based evaluation.

Formed competence: independent professional decision-making.

6. Creating

Content: developing a new project, methodological framework, or innovative solution.

In practical sessions: preparing innovative projects, designing original methodologies, developing startup ideas, creating digital products.

Formed competence: creative and innovative thinking.

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Figure 3. A Model for Developing Professional Competence Based on Bloom's Taxonomy

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The novelty of this theoretical model is reflected in the following aspects:

- Bloom's Taxonomy is interpreted as a didactic mechanism for developing professional competence;
- Practical training is transformed from a reproductive form of instruction into a platform for creative professional activity;
- A stage-based diagnostic system for competence development is substantiated;
- The process of transforming a student into a professional subject is scientifically modeled.

Practical training organized on the basis of Bloom's Taxonomy represents an effective pedagogical strategy for developing the professional competence of future specialists. This model:

- strengthens the scientific nature of the educational process;
- ensures the integration of theory and practice;
- promotes the development of higher-order thinking skills;
- fosters creative and competitive specialists.

As a result, the student transforms from a passive recipient of knowledge into an active, independent, and innovative professional subject.

In conclusion, the significance of practical training in the development of professional competence is comprehensive and multifaceted. Through the presented scheme and Bloom's Taxonomy framework, it is possible to further enhance the effectiveness of practical sessions and significantly advance the development of professional competence.

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