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## **THEORETICAL AND METHODOLOGICAL PROBLEMS REGARDING THE TRAINING OF THE FUTURE ASTRONOMY TEACHER**

In the development of the system of professional and pedagogical education in Ukraine, the creation of new methods and forms of education, which contribute to the formation of future teachers' independent and critical thinking skills, practical use of the acquired knowledge and experience in teaching activities, is of great importance. This includes role-playing and simulation, creative exploration and active exchange of ideas through discussions.

The approach to learning also changes in the direction of the organization of educational and research activities, educational-gaming and modeling activities, and also stimulates creative exchange of ideas and discussions.

When considering the problem of training future natural science teachers, it is important to understand its structural components and functional relationships. Two approaches can be used for this: external-structural and internal-structural. The external-structural approach considers methodological training of future teachers as an important part of their professional training. The intra-structural approach, on the other hand, examines methodological training in an internal context, using systemic, person-oriented, acmeological and activity approaches as methodological bases.

In the process of developing the system of professional and pedagogical education in Ukraine, it is of great importance to create new methods and forms of education that will help future teachers develop the skills of independent and critical thinking, practical use of knowledge and experience in their pedagogical activities. It is important to take into account all aspects of this activity, such as knowledge (including special, psychological-pedagogical and concrete-methodical), work methods, perception of the surrounding world and oneself, as

well as experience of creative activity. These elements and their relationship must be constantly updated and adapted, as future teachers will work in conditions of constant changes in the education system, which include various organizational forms, content structures and methodological approaches to teaching natural sciences. Methodical training of future teachers in the natural and scientific direction should be considered as a project for the formation of a creative personality, with a focus on pedagogical activity. This means that this project should take into account all the key elements of pedagogical work, such as knowledge (including specialized, psychological-pedagogical and concrete-methodical), methods of activity, ideas about the world and oneself, as well as practical experience in the pedagogical field. Each of these elements and their relationship must be constantly reviewed and rethought, as future teachers will work in conditions of constant changes in the education system, which includes various organizational forms, content structures, and methodological approaches for teaching natural sciences.

Professional activity becomes an important part of the motivational sphere of the personality of the future teacher of astronomy. This applies not only to the fact that this activity is an important aspect of his life because of its social significance, but also because it is a personal value. Becoming a subject of professional pedagogical creativity is the main goal for achieving competitiveness in the labor market in the future. The professional training of an astronomy teacher should include constant study of questions about how to effectively master the material and how to behave in different educational institutions.

The training of future astronomy teachers in classical higher education institutions is a complex and multi-component process. The training of future teachers of astronomy should be aimed at the development of their astronomical outlook, including knowledge, ideas, values and methods of action in this field. It is important to organize the educational process so that teachers receive the necessary training for work in various types of educational institutions.

The methodological system of teaching astronomy in classical universities should help create the content of astronomical education that meets the requirements, starting from

theoretical consideration and ending with practical aspects. The ability and willingness of an astronomy teacher to teach students of higher education institutions is determined by the competencies and skills that the future specialist must acquire during his studies at the university.

Despite the existing state standards for the astronomical education of future astronomy teachers, the astronomical educational environment (OS) has considerable diversity in terms of scope, structure, and content. Typically, this is limited to a short course consisting of approximately 90 hours of classroom instruction, including a lecture course and a laboratory practicum. The methodological principles of creating an astronomical OS in classical higher education institutions were described earlier. For this, it is necessary to organize practical classes during which these tasks will be solved, as well as to include a complex of current astronomical problems, as well as problems related to astronomy. These issues will be discussed at the seminars. In addition, it is important to organize the independent work of students in accordance with these OS components.

The workshop on solving astrophysical problems is an important resource for improving the quality of teaching astronomy. We believe that students' understanding of astronomical phenomena, the nature and evolution of space objects is possible only through such a practicum. In the process of training specialists in the field of physics (regardless of whether they are future engineers, scientists or teachers), systematic problem solving is mandatory. Solving astrophysics problems has the beneficial side effect of helping future astronomy teachers to better understand the laws of physics and their application in space. It expands their physical thinking. On the other hand, solving problems also helps the teacher to draw students' attention to the most important questions, theories, hypotheses and even simple formulas. The sense of the process of acquiring knowledge becomes clearer, and this is important from a methodological point of view. In order to improve this situation, we are developing a project to create modern collections of problems from various sections of astronomy for higher educational institutions. Our project is based on the previously published works of famous theoretical astronomers of our university and the collectives of

authors of the Department of Experimental and Theoretical Physics and Astronomy, such as "Astronomy: Laboratory Practice" (NPU, 2007), "Astronomy Course. Laboratory Practice in Practical Astrophysics" (NPU, 2009), "Solar system. Laboratory workshop on astronomy" (NPU, 2022). These problem books are designed for seminar and practical classes, and most of the problems are accompanied by detailed solutions, explanations and comments. This approach will help to improve the educational process, increase the independent work of students and solve problems related to the lack of appropriate experience and standard methods of solving problems. Note that such an astrophysics practicum should be mandatory for students of the Faculty of Mathematics, Informatics and Physics of Mykhailo Drahomanov State University. At the beginning of each semester, students receive a course syllabus that contains modules with relevant topics and lesson plans, including problem numbers for classroom and self-study.

Therefore, for the formation of special competencies of the future teacher of astronomy, we recommend conducting seminar classes. Seminars are held in the form of discussions, where students have the opportunity to study additional interesting material and express their opinions. Students also learn to express their views in a reasoned way, build constructive relationships and develop dialectical thinking. Each module has its own topic, plans for seminar classes and a list of recommended literature for each class.

1. Since astronomy is a fundamental discipline in the system of professional training of future astronomy teachers, its tasks are to form students a holistic idea of the fundamental laws of the universe; ensuring their mastery of the main ideas, methods and achievements of modern astronomy; ensuring the general development of intelligence; formation and development of activity and independence in cognitive activity; fostering the need for continuous improvement of knowledge.

2. Contradictions in astronomical education that exist in universities (between the level of scientific achievements in astronomy, psychology, pedagogy and teaching methods and their reflection in the content, forms, methods and means of teaching; the need for the formation of special competencies, creative abilities and the absence of a perfect implementation system of

this process) negatively affect the quality of professional training of future astronomy teachers.

3. The many-year experience of teaching astronomy at M.P. Dragomanov State University of Ukraine, now Mykhailo Dragomanov Ukrainian State University, shows that a full-fledged system of astronomical training must include, in addition to the traditional lecture course and laboratory classes, practical classes that would develop There were specially selected tasks and seminars where current problems of astronomy would be discussed in the context of the future profession.

4. Only the presence of practical and seminar classes (as elements of a well-thought-out and coordinated system) make it possible, in our opinion, to effectively manage the process of training an astronomy teacher, to form his competence and worldview professional qualities. The development of a professionally oriented laboratory practicum in astronomy is the subject of further research.