AMERICAN JOURNALS
Open Access, Peer Reviewed Journals

American Journal of Pedagogical and Educational Research
ISSN (E): 2832-9791| Volume 33, | February - 2025

IMPROVING THE SKILLS OF SOLVING PROBLEMS IN THE MECHANICAL DEPARTMENT OF PHYSICS ON THE BASIS OF MODELING

Karimova Dilbar Zayniddinovna
Student of Shakhrisabz State Pedagogical Institute, Master's Student in the Field of Physics and Astronomy Teaching Methods

A B S T R A C T

The article presents the improvement of solving skills based on modeling of issues in the Mechanical Department of physics. It is also based on the fact that educators and students should begin with a discussion of how significant it is to master the modelling method.

K E Y W O R D S

Model, modeling, physical issue, modeling method, experiment, experimental issues.

Introduction

From the analysis of the distribution of hours allocated to classes of different forms in the study of physics in technical specialties of higher educational institutions, it turns out that modeling sessions can be carried out in accordance with the hours allocated for the implementation of practical classes. In order to strengthen the theoretical materials of the physics course in students of technical specialties, a modeling method is used in teaching solving issues in practical classes, which is performed in stages with a consistency of preparation, implementation, control.

At the preparatory stage, the educator prepares in detail about what he can use to work with students, what he presents and what motivation he gives.

The presentation of the course begins by introducing students to the educator's information about admission to the specialty. This pressure is understood as the stage of preparing students for further activities.

The educator should familiarize himself with the terminology of the modeling method from didactic materials developed before conducting an introductory lesson with students, the structure of the organization of practical classes in the semester, and choose the method of organizing practical classes.

In the introduction, the educator and the students start by discussing how important it is to master the modeling method llozim. This method is the main state of implementation of engineering activities and should be indicated by examples that it is a component of professional and general cultural competencies to carry out access control through student questionnaires, to carry out a system of theoretical issues, experimental assignments and solving a system of issues.

In this: - the state educational standard of pedagogical higher education explains the importance of modeling to students in Ravish in accordance with the general cultural, professional competencies of

the field of Education established in the qualification requirements, as well as the implementation of the basic stages of the modeling method and types of professional activities in mastering, taking into account similarities in the actions; - the purpose of access control is to carry out the diagnosis of the initial level of formation of modeling skills in students; - the purpose of teaching physics to solve issues is to introduce students to the modeling method and formulate this method in them. In the initial sessions, the solution of the system of theoretical issues on the topic “advanced motion kinematics” of the general physics course is considered as a model when teaching students to the method of Direct Modeling in the teaching of problem solving. In the example above, the study of the flat variable motion of a car is an object of knowledge. To select the issues that need to be mastered regarding pedagogical physics, the following: - the choice of wet training issues in a manner consistent with the theoretical data provided; - to focus on their immediate levels of complexity when dealing with issues. At the same time, it is not necessary to use complex mathematical transformations in the solution of these issues lozzim. Educational stage-the second click. At the stage of implementation of Education, pedagogical-students jointly consider the solution of a system of theoretical issues in practical training. It discusses efforts to master the modeling method, considers the solution of each assignment system or systems of issues related to physics in the next approach to the organization of practical training.

In the course of practical training, it may be recommended to solve the solved issues related to the topic with several other traditional methods as well.

In order for the educator to conduct practical training in harmony with the theory, the following are:

- the fact that thematic issues have mastered the relevant section related to the theory before starting to solve;
- if it is required to solve an issue containing more than three tasks, then the educator may not have to analyze all his tasks in it, but focus on solving it, but at the same time he will have to follow the goal of solving these tasks. Students must independently complete schedule 2.4, that is, learn to model objects of knowledge during solving the assignment system, and use the examination of the teaching of the modeling method in solving the problem system through table 2.5. These tutorials show the object of knowledge being studied for each assignment system, allowing the teacher to act quickly in the abundance of structured systems and select the original object model where learning requires a practical lesson.

Below is a detailed review of samples from the system of theoretical and experimental issues. Teaching and learning to solve them shapes teaching to model original objects in solving physical issues in students of technical specialties.

As an example of solving theoretical issues, it will be necessary to look at the issues in which the solution is considered in harmony with physics and other sciences.

The use of a system of harmonized tasks in the process of mastering physics in technical specialties reveals not only the formation of knowledge object modeling skills in students, but also the interaction between fundamental sciences, that is, the professional Sciences of engineering and technical specialties with the science “physics”, as well as natural-scientific disciplines.

The use of a system of assignments in teaching physics to students of technical specialties - helps to form the skills of modeling objects of knowledge in solving problems. In solving this type of issue, students work with a variety of models, including a material model - an experimental device, by rearranging its elements, replacing them, or removing them, students gain knowledge of the object.

When choosing a second approach to organizing practical classes at the educational stage, after studying each section of the physics course by the student, it is necessary to carry out phased control by independently filling out table 2.4. When solving a system of issues, it is advisable to obtain information on the formation of modeling skills, their analysis and, as a result, making adjustments to the educational process.

Final control, at the discretion of the educator, can be carried out both in a practical lesson and outside the audience. In order to pass the final control outside the audience, the educator must include in the control work of the students a system of physical assignments (control work - a list of studies of assignments for each subject of the studied physics course).

When teaching students to find a solution by using the method of modeling the system of experimental assignments, the educator will have to determine that at all educational stages, reports on solving experimental problems, assessing the completeness of student actions, they have mastered the modeling stages.

The next stage of teaching students to the modeling method is the control stage, this stage manifests current, intermediate and final controls.

The final control work, which is carried out at the end of practical training, helps to determine the objects that should be mastered in solving problems from physics using a modeling method. In Table 2.5, it is carried out to verify that the student has mastered the modeling method in solving problems related to physics.

The educator can assess the level of formation of the skills of using the modeling method in students when solving the system of issues from physics with the implementation of table 2.5.

Particular importance was shown to teach students studying in technical specialties to create models of original objects and to solve problems related to physics using the modeling method, as well as the formation of skills in them to be able to model different objects.

It has been shown that teaching students to solve theoretical problems in physics using a modeling method can be done in direct connection with teaching them to solve other field issues in harmony.

Teaching to solve issues through the use of a modeling method in practical classes of physics: preparation, training and control are brought to the fore, and the procedures for the implementation of these stages are covered.

In the process of teaching students to model the system of experimental assignments, the educator's assessment of the completeness of student actions on conversation, advice, solving experimental problems of systems at all educational stages will be evidence that they have mastered the modeling stages.

Practical experiments show that when determining the solution of issues, we propose to use the following stages: Stage 1-determining the purpose of the issue; at this stage, an attempt is made to determine the purpose of the issue through time, understanding, writing, indicating its accuracy and correctness. Stage 2 is the choice of a model to solve the problem; in this case, if the issue is explicitly stated, then a ready-made model is chosen, and if there is no specific model, then a model suitable for solving this issue is developed. Models can be different physical, anological, mathematical, determinant (determinant), staxostic, etc.k. When determining the stage 3 solution, the necessary initial information is sought and prepared, specific variables are selected and adapted based on the verbal model. Step 4 – Solution testing-in which a solution is tested, a match is studied where a solution closer to the test is studied.

REFERENCES:

1. Антипин И.Г. Экспериментальные задачи по физике в 6-7 классах. Пособие для учителей. М.: Просвещение, 1974. 126 с.
2. Беликов Б.С. Решение задач по физике: Общие методы: Учеб. пособие для студентов вузов. – М.: Высш. шк., 1986. 256 с.
3. Майер Р.В. Проблема формирования системы эмпирических знаний по физике: дис. д-ра пед. наук: 13.00.02/ Р.В. Майер. – СПб., 1999. 350 с.
4. Усова А.В., Тулькибаева Н.Н. Практикум по решению физических задач: Учеб. пособие для студентов физ.-мат. фак. – М.: Просвещение, 1992. 209 с.
5. Shodiyev Rizamat Davronovich, and Ergashev Nuriddin Gayratovich. “ANALYSIS OF EXISTING RISKS AND METHODS OF COMBATING THEM IN CLOUD TECHNOLOGIES”. American Journal of Pedagogical and Educational Research, vol. 18, Nov. 2023, pp. 190-8, https://www.americanjournal.org/index.php/ajper/article/view/1522.
6. Gayratovich, Ergashev Nuriddin. "A MODEL OF THE STRUCTURAL STRUCTURE OF PEDAGOGICAL STRUCTURING OF EDUCATION IN THE CONTEXT OF DIGITAL TECHNOLOGIES." American Journal of Pedagogical and Educational Research 13 (2023): 64-69.
7. Ergashev, N. (2023). Methods of teaching parallel programming methods in higher education. Electron Library Karshi EEI, 1(01). Retrieved from https://ojs.qmii.uz/index.php/el/article/view/271
8. Gayratovich, E. N., & Jovliyevich, K. B. (2023). Theory and Methodology of Software Modeling Using the Web Platform. Eurasian Scientific Herald, 16, 59-63.
9. Ergashev, N. (2022, May). PROBLEMS OF DIGITAL EDUCATION IN PEDAGOGICAL THEORY AND PRACTICE. In International Conference on Problems of Improving Education and Science (Vol. 1, No. 02).
10. Ergashev, N. (2021). METHODS OF USING VISUALIZED EDUCATIONAL MATERIALS IN TEACHING PROGRAMMING LANGUAGES IN TECHNICAL UNIVERSITIES. INNOVATION IN THE MODERN EDUCATION SYSTEM.
11. G’ayratovich, E. N. (2022). The Problem of Training Future Engineer Personnel on the Basis of Cloud Technology in Technical Specialties of Higher Education. Eurasian Scientific Herald, 13, 1-4.