

DEVELOPING STUDENTS' CREATIVE ABILITIES THROUGH TEACHING HOW TO SOLVE NON-STANDARD PROBLEMS

Dhananjaya Rao Cuddapah

Navoi state university

Bozороva Aziza Murodillaevna

Navoi state university

Annotation. This article explores the role and importance of non-standard problems in developing students' creative thinking, especially in the context of astronomy education. It defines non-standard problems as tasks that lack a straightforward solution and require innovative, logical, and analytical thinking. The text emphasizes their effectiveness in enhancing divergent thinking, problem-solving skills, and creativity. Various pedagogical approaches such as group collaboration, creative questioning, and problem-based learning are suggested for effective teaching. The article also highlights the need to reform Uzbekistan's educational system by integrating non-standard problems to bridge the gap between theory and real-world application. It argues that developing methodological tools and teaching materials focused on non-standard problem-solving will significantly enhance students' intellectual and creative potential.

Key words: creative thinking, divergent thinking, problem-based learning, independent thinking, student-centered learning, cognitive activity, critical thinking.

INTRODUCTION

Modern education requires students not only to acquire existing knowledge but also to apply it in new situations and to find independent solutions to problems. In particular, the method of teaching through non-standard problems is considered effective in developing students' creative and critical thinking. Such problems go beyond conventional algorithmic approaches and demand advanced thinking, making assumptions, confirming through experimentation, and generalizing, among other forms of creative activity.

1. Definition and characteristics of a non-standard problem.

Non-standard problems are not typical cases, but rather issues that require new, non-traditional approaches. They possess the following characteristics:

- The solution to the problem is not clearly visible;
- There may be several possible solutions;
- Estimation and logical analysis are necessary;
- It will be related to real and practical situations.

2. Creative thinking and non-standard issues.

The following advantages of non-standard issues exist in the development of creative thinking:

- It facilitates divergent thinking – that is, solving one problem from different perspectives;

- It encourages finding alternative approaches;
- It develops the skills of asking questions and making predictions;
- It shapes the ability to base one's own solution.

3. Pedagogical approaches.

It is important to teach students how to solve non-standard problems using the following methodological approaches:

- Problematic education – the complexity level of the problem is increased;
- Group thinking – students share their thoughts in small groups;
- Observation and analysis – identifying the common characteristics of previous problem solutions;

- Asking creative questions – thinking based on questions such as "What if the conditions change...?" and "Can it be solved in another way?". Raising students who possess modern scientific and technical knowledge, providing quality education, giving initial lessons on developing youth in all aspects, and properly directing children's worldview are responsibilities assigned to preschool educational institutions and schools. In our country, special attention is paid to the education and upbringing of the younger generation, and it is approached with care. In this regard, strategic directions for providing modern education in our country have been thoroughly developed, creating all conditions for students to effectively implement their personal plans and fully demonstrate their abilities and scientific-creative potentials. It brings us all pride and honor that our youth are becoming the decisive force of today and tomorrow, capable of taking responsibility for the future of our homeland.

Using non-standard problems is a form of education that activates a student's intellectual potential, based on creative and independent thinking. Through such problems, students test their knowledge, propose new ideas, and attempt to substantiate them. Therefore, it is possible to develop a creative personality by systematically integrating non-standard problems into the educational curriculum. Creating equal conditions for students in education globally and introducing innovative pedagogical technologies into the education process has become an urgent issue. Currently, our researchers and scholars are conducting scientific research to focus on encouraging students to engage in collaborative and individual search, study, and develop creative abilities, as well as to create innovations in the field of education. Today, among students, one of the urgent issues is to develop methods for solving non-standard problems related to astronomy, to provide them with specific information about such problems, to offer

recommendations and proposals that enhance students' creative abilities, to publish textbooks, guides, and scientific papers, to improve the knowledge of future teachers in this field, and to organize extracurricular activities aimed at fostering students' creative abilities. Creating methodological guidelines and manuals regarding this subject is one of the issues that cannot be delayed.

Due to Uzbekistan's transition to a new stage of development, there is a need to fundamentally improve the education system, like all other sectors of our country.

In our republic, the lack of continuity between the existing educational programs, the quality of textbooks, the school curriculum, and higher education curriculum, the focus of astronomy textbooks primarily on theoretical knowledge, detachment from real life, insufficient teaching of practical problems related to astronomy for youth who are interested in it, and as a result, the development of negative attitudes among students towards the subject of astronomy, combined with their slightly lagging behind international peers, has made teaching the subject in a way that connects it with practice one of the most pressing issues. A person's intellectual level is characterized by two main indicators. These are: the volume of information obtained and the ability to utilize this information in various problematic situations during the course of practical activities. The first of these indicators reflects the individual's knowledge, while the second indicates their intellectual development.

The primary intellectual ability that develops during the process of learning astronomy is the creative ability. Nowadays, it is of great importance to utilize various problems that do not bore students during the teaching process of astronomy, which is aimed at developing creative thinking and independent work.

Non-standard problems are issues that cannot be solved using a specific algorithm based on a certain methodology, and they are characterized by insufficient amounts of certain quantities. Such problems allow students to enhance their cognitive activity during lessons. This is because students may generate unconventional ideas for solving a problem. This is considered a small discovery related to the topic and the problem. They direct students towards research, action, comparison, analysis, synthesis, generalization, observing the functions of a single object, and establishing relationships of this object with others.

All of these are necessary to develop children's creative thinking. Non-standard problems should be chosen according to the following principles:

- Possible difficulty, meaning the problems may be challenging for the children, but they must be based on the individual and age characteristics of the children and fully grounded in the educational material;

- Attractiveness, meaning the problems should be interesting, entertaining, and varied;
- Consistency.

The non-standard problems characteristic of development, if the teacher organizes the children's search activities skillfully and directs their thinking correctly, can yield the greatest results. It is important to develop general methods for solving any problems suitable for the age of students regarding various non-standard problems and exercises.

CONCLUSION

The analysis of astronomy lessons shows that under certain conditions, each text problem can be non-standard, while in others it may be simple and standard. Based on the analysis of the theory and practice of using non-standard problems in teaching astronomy, it is possible to determine their general and specific roles.

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