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PEDAGOGICAL FOUNDATIONS FOR THE DEVELOPMENT OF CREATIVE SKILLS IN WORLD SCIENCE

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Annotation: This article analyzes the pedagogical foundations of the development of creative abilities in world science, the possibilities of using modern pedagogical approaches and innovative technologies. The main factors of the formation of creative thinking, the integration of creative elements into the educational process, and the methods of identifying and developing creative potential are considered in detail. Effective strategies aimed at developing creative abilities in educational institutions are offered.
Keywords:creative ability, creativity, divergent thinking, convergent thinking, imagination, artificial intelligence, STEAM, PISA, computer technologies.

During the globalization of the 21st century, the demand for innovative thinking and creative solutions in all areas of the economy has grown sharply. This requires new approaches to the development of creative abilities from the educational system. The main disadvantage of traditional education is that it is aimed at providing students with standardized knowledge and does not allow them to fully reveal their creative potential. "Creativity" is the driving force of the fourth industrial civilization that is taking place in the world today. Electronic services, 3D printer, virtual reality are all products of human imagination and thinking. Creativity is derived from the English word "create" and means to create. Creativity means the creative ability of a person to create something new and solve problems.

Creative abilities are a person's ability to create new ideas, find unique solutions to existing problems, non-standard thinking and show unique creativity. The following structural elements of creative abilities can be distinguished:

- Divergent thinking: the ability to find multiple solutions.
- Convergent thinking: the ability to choose the best among several solutions.
- Imagination: the ability to create new images and ideas.
- Fantasy: the ability to imagine new worlds and situations outside of existing reality.
- Problem Solving: Ability to analyze existing problems and find solutions to them.
- Experimentation: the ability to try new ideas and improve them.
- Self-confidence: confidence in one's own ideas and abilities.
- Perseverance: striving to achieve one's goals despite difficulties.

The following modern pedagogical approaches and innovative technologies play an important role in the development of creative abilities:

• Project-based learning: an effective method that allows students to plan, perform and analyze the results of their activities.

• Problem-based learning: encourages students to solve specific problems, develops their critical thinking

and problem-solving skills.

• Collaborative learning: by working in a group, it develops the skills of students to exchange ideas, cooperate and achieve results together.

• Use of computer technologies: computers, interactive games, simulations and other technologies make the educational process more interesting and effective.

• Application of artificial intelligence technologies: it is used to determine the creative potential of students and provide them with customized training.

The following methods can be used to identify and develop creative potential: Psychological tests: the use of special tests to determine the creative abilities of students. Observations: to determine the creative abilities of students by observing their activities in classes, participation in projects and other activities. Portfolios: the use of portfolios to collect creative works of students and monitor their development. Individual approach: applying an individual approach, taking into account the creative potential of each student. Encouragement and support: creative activity of students encourage and support their actions.

Effective Strategies for Developing Creative Abilities in Educational Institutions:

- ✓ Creating a creative environment: creating an open and democratic environment that allows students to freely express their ideas.
- ✓ Stimulation of creative activities: involving students in various creative activities, for example, painting, playing music, engaging in literature, etc.
- ✓ Offer unique creative projects: offer creative projects that match the interests and needs of students.
- ✓ Encouraging achievements: showing students' creative works through exhibitions, contests and other events.
- ✓ Teacher training: training teachers on the development of creative skills and improving their skills.

If we look at the world experience, many developed countries pay great attention to the development of creative abilities in the education system. For example, the Finnish education system aims to develop students' independent thinking and problem-solving skills. The program uses less standardized tests and assessments and uses a personalized approach that takes into account students' unique abilities and interests. Students are given a wide choice and can choose subjects and projects that suit their interests. In Finnish schools, technology is effectively integrated into the learning process. Students use computers, tablets, interactive whiteboards and other technical tools to deepen their understanding of their knowledge and work on creative projects. For example, in elementary school math classes, in addition to solving standard problems, students are offered problems based on real life situations. . In addition, teachers emphasize the active participation of students and the development of their independent thinking skills. Teachers play more of a coaching role, supporting students and encouraging their independent research. Collaborative teaching and project education methods are widely used. Pupils are engaged in painting, playing music, handicrafts, theatrical performances and other creative activities. It helps to develop their creative expression skills and to form their own way of thinking. In art classes, students are offered various tools and methods to express their feelings, experiences and thoughts.

They do painting, sculpture, collage and other creative works. Also, technologies are effectively integrated into the educational process. Students use computers, tablets, interactive whiteboards and other technical tools to deepen their knowledge and work on creative projects. For example, in computer science classes, students learn the basics of programming and create their own games, animations or other they create software. The Singaporean education system tries to open the creative potential of students by using technology. The US and Canadian education systems pay great attention to project-based learning and cooperative learning methods. The experiences of these countries can be studied and adapted to the national education system. International cooperation and exchange of experience in the field of development of creative abilities is very important. Through international conferences, seminars and trainings, experts from different countries can share their experience and find new ideas and solutions. This will help to improve the quality of education on a global scale and develop effective strategies for the development of creative abilities.

International educational studies, in particular PISA (Program for International Student Assessment) and STEAM (Science, Technology, Engineering, Art, Mathematics) approach, play an important role in the

development of creative abilities. For example, the PISA research aims to assess not only mathematics, science and reading literacy, but also students' skills such as problem solving, critical thinking and collaborative work. These skills are important components of creative abilities. The results of PISA provide an opportunity to compare the level of creative abilities of students in different countries and help to determine what changes should be made in educational systems. The STEAM approach also pays special attention to the development of creative abilities. In this approach, the important role of art is emphasized and various methods are used to identify and develop students' creative abilities. Through STEAM projects and activities, students' abilities to find creative solutions, create new ideas, and create unique examples of creativity are evaluated. The results of PISA have a significant impact on the education policy of different countries. According to the results of the research, educational reforms aimed at developing creative abilities will be implemented. Low-performing countries try to introduce new programs aimed at improving their education systems and developing creative skills. The STEAM approach is being integrated into educational programs in many countries. It helps to develop students' creative abilities, to form their 21st century skills and to create a foundation for future innovations. Innovative methods and technologies aimed at developing creative abilities are tested and their effectiveness is evaluated. In the future, research aimed at developing creative abilities will be deepened and more effective methods will be developed through the use of innovative technologies. Artificial intelligence, big data, and other technologies help provide personalized learning for students. Also, new methods and criteria for evaluating creative abilities will be developed.

It is necessary to deeply study and improve the pedagogical foundations of the development of creative abilities in world science. By using modern pedagogical approaches and innovative technologies, it is possible to fully reveal the creative potential of students. Creating a creative environment in educational institutions and supporting students' creative activities, project education, problem-based teaching and the use of cooperative teaching methods, the effective use of computer technologies and artificial intelligence technologies, training for improving the qualifications of teachers and developing their creative abilities, international cooperation and exchange of experience through searching for new ideas and solutions and implementing such recommendations, it is possible to improve the quality of the education system and prepare students for future success. Development of creative abilities is an important factor not only for education, but also for the development of society as a whole.

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