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TO DEVELOP THE TECHNICAL CREATIVITY OF TALENTED STUDENTS BASED ON AN INNOVATIVE APPROACH IN TEACHING TECHNOLOGICAL SUBJECTS

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Abstract

This article examines the laws and trends of the integrative development of education, science, technology, and production, the conceptual and scientific-methodological foundations of the problems of preparing students for creative activities based on an innovative approach based on technological education , and the development of technical creativity in them.

Introduction

V dannoy state raskryty zakonomernosti i tendentsii integrativnogo razvitiya obrazovaniya, nauki, tekhniki i proizvodstva , p odgotovki uchashchihsya k tvorcheskoy deyatelnosti na osnove tekhnologicheskogo obrazovaniya, conceptual i nauchno-methodicheskie osnovy problem razvitiya teknicheskogo tvorchestva v nix. izucheno v tay ili inoy stepi.

The patterns and trends in the integrative development of education, science, technology and production, the preparation of students for creative activity on the basis of technological education, the conceptual and scientific-methodological foundations of the problems of the development of technical creativity in them. studied to one degree or another.

Significant research is being conducted in educational institutions of our republic to improve and optimize the methodology of teaching technology, and to use pedagogical technologies in the educational process in an integrated manner. In the context of the integration of science and production, it is becoming necessary to teach students not only to acquire in-depth technological knowledge, but also to search, find, analyze scientific disciplines, select optimal options for technological solutions, engage in creativity and implement their results in practice. Increasing the number of circles in the regional "Barkamol Avlod" children's centers, including robotics and programming, is considered a priority task. The implementation of this task is an important pedagogical problem, including the development of technological readiness and technical creativity of gifted students through improving pedagogical mechanisms for ensuring the effectiveness of out-of-school technological education.

The results of the analysis of the current pedagogical software tools and pedagogical practices in teaching technology in schools showed a number of inconsistencies: In particular:

between the ability of society to use information and communication technologies, modern technological knowledge, in particular innovative teaching methods, technology and didactic tools in the educational process, and the inadequacy of didactic, educational and methodological support;

between modern requirements for the level of students' technological knowledge and information culture, creative skills and preparation;

The need for the use of modern didactic tools, in particular TRIZ technologies, in the process of teaching technology is between the need and the insufficiency of such tools.

Based on the above considerations, it can be said that although the laws and trends of the integrative development of education, science, technology and production, the preparation of students for creative activities based on technological education, in particular, the problems of developing technical creativity in them, the theoretical, conceptual and scientific-methodological foundations of practical and psychological-pedagogical aspects of technical training have been studied to a certain extent, the didactic possibilities of developing technical creativity in gifted students in teaching technology, the educational and methodological support of teaching based on an integrative approach, and the need to develop and implement scientific-methodological foundations for pedagogical diagnosis of learning outcomes determine the relevance of the research topic .

Objectives of the study:

–To study the state of the social, psychological-pedagogical, scientific-technical foundations and problems of developing technical creativity of gifted students in teaching technology based on the analysis of scientific sources related to the research topic ;

–To identify the components of technical creativity and their specific characteristics based on a retrospective analysis of the concepts of "talent" and "technical creativity" based on scientific sources;

–to determine the pedagogical conditions, possibilities, criteria, indicators, and levels of developing technical creativity of gifted students in teaching technology;

–developing a model for the development of technical creativity, consisting of the content and form of creative experimental education in teaching technology, and the components of creative thinking (convergent, divergent, critical, creative, descriptive , practical, reflexive);

–improving methodologies based on TRIZ technologies that allow students to develop technical creativity in the classroom, extracurricular activities, and production enterprises;

–Based on the analysis of the results of diagnosing students' readiness for design, construction, creativity and production technological activities, selecting criteria for assessing technical creativity by type of activity and conducting experimental and testing work .

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–Monographs entitled “Development of Students' Technical Creativity”, “Scientific and Methodological Foundations of Social Cooperation in the Educational Process”, methodological guides on practical training in the subject “Technology”, “Organization of Students' Practice in the Subject of Technology” have been developed and put into practice;

–Based on the demands and needs of talented students, the "Technology" curriculum has been improved and put into practice based on the method of developing technical creative skills;

–a model and didactic support for the development of students' technical creativity (structural-logical schemes, practical and laboratory tasks, diagnostic complex) and a systematic mechanism for its implementation have been developed and put into practice;

–A diagnostic system has been implemented through the integrative coordination of motivational-value, cognitive, and practical-activity methods for assessing the level of development of technical creativity in students;

–Electronic textbooks on the subjects "Technological Education Methodology", "Technology", methodological manuals "Application of pedagogical technologies and interactive methods in the organization of education", co-authored textbooks on the subjects "Technological Education Methodology" and "Technology" have been published and put into practice

Based on the scientific results obtained on improving the methodology for developing technical creativity of gifted students in teaching technology:

- Analytical study of trends in the development of technological education, foreign experiences, organizational and pedagogical factors, interpretation of the problem of developing technical creativity of gifted students in teaching technology at the socio-pedagogical, scientific-theoretical, scientific-methodological levels, deepening the conceptual foundations of technical and technological creativity based on the principle of innovation and improving the content of creative experimental education in teaching technology based on scientific-theoretical approaches (active, cognitive, person-oriented, competent), practical proposals for developing a model for developing technical thinking components (convergent, divergent, critical, creative, descriptive, practical, reflexive) and technical creativity competencies are included in the content of the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 187 dated April 6, 2017 “On approval of state educational standards for general secondary and secondary specialized, vocational education” (Higher and Ministry of Secondary Specialized Education, reference number No. 89-03-1638 dated May 20, 2024).

These suggestions and recommendations were used to develop improved curricula, textbooks, and methodological guides based on the modernization of the content of technological science;

Based on a comparative comparison and description of traditional and modern approaches, the methods of forming the specific psychological characteristics (cognitive, practical,

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technological, creative) and technological competencies of general secondary school students in the classroom, the organizational and structural model of developing technical creativity in gifted students based on an innovative approach, and recommendations for improving the methodological support for its implementation (through algorithmic maps of training sessions, creative technological tasks, innovative teaching aids, a systematized task database) were used in the practical project for 2022-2024 on the topic "Contentual modernization of labor education in general secondary schools and technologies for improving the quality and efficiency of education" (Reference of the Ministry of Higher and Secondary Specialized Education No. 89-03-1638 dated May 20, 2020).

These approaches have served to increase the efficiency and quality of technological education for students;

"Technological Education Methodology", electronic textbooks on the subject of "Technology", a methodological manual entitled "Application of pedagogical technologies and interactive methods in the organization of education", a co-authored textbook on the subject of "Technological Education Methodology" and "Technology", a manual "Development of technical creativity in students", methodological recommendations and instructions, methods for performing technological practical tasks aimed at developing students' technical creativity (selection of options, technology for processing materials, performance of practical tasks, creation of objects based on modeling) have been improved and put into practice based on interactive educational technologies (TRIZ, STEAM, "SMART technologies") (Reference of the Ministry of Higher and Secondary Specialized Education No. 89-03-1638 dated May 20, 2024).

As a result, the effectiveness of teaching technology and the formation of technical creativity and technological competencies in students based on an innovative approach has been increased .

Conclusion

We believe that it is appropriate to consider the process of developing technical creativity of gifted students in teaching technology as a pedagogical phenomenon. We conclude that the development of technical creativity of gifted students in a secondary educational institution can be an object of pedagogical design and targeted management, which will provide a high level of opportunities for effective use of their time outside of class.

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