FORMATION OF TECHNICAL CREATIVITY SKILLS OF FUTURE TECHNOLOGY SCIENCE TEACHERS ON THE BASIS OF TECHNICAL SCIENCES

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Abstract: The article describes opinions on increasing the effectiveness of training future technology teachers for technical creativity and forming technical creativity skills.

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Introduction.

The establishment and commissioning of many production enterprises in our country, as well as in various sectors of the national economy, brought about great changes in the system of training of working personnel. Today, there is a growing need for not only highly qualified professionals, but also personnel who can find creative solutions to various production issues, have the ability to be inventive and rationalize.

In the system of general secondary and vocational education, technology teachers and production masters play an important role in preparing students for technical creativity. However, at the moment, it is observed that the methodical training of teachers is not sufficient for the proper establishment, development and management of the technical creativity of students.

That's why a number of higher educational institutions of our country, during the implementation of the practical training process and extracurricular club activities and independent education, the future technological education science One of the urgent issues is to increase the attention of teachers to increase the effectiveness of training students for technical creativity activities.

Literature analysis.

In the 40s of the 20th century, the need for active methods of researching technical solutions increased. The lack of methods in this regard had a negative impact on the development of nuclear energy, rocket engineering, and improvement of electronic computing machines. During this period, as a result of conducting research in various directions, the following conditions are determined:

- the fact that even geniuses cannot solve complex problems by themselves, the need for a collective method of creation was based on;
- taking into account the shortness of the time allocated for the development of technical solutions, scientific research should be carried out continuously together with the development of new ideas.
- determining ways to distinguish the valid and effective ones from among the many existing ideas.

According to scientists, creative activity is based on specific laws and creates a basis for finding adequate methods of solving creative problems. These methods are divided into 2 groups.

"Brainstorming" is based on mechanisms of synectics, control questions, morphological analysis, associative thoughts and unexpected solutions. These methods are very easy to use, but are not tied to the nature of the object being used.

Algorithmic functional-cost analysis methods for solving invention problems and others are included. Using these methods is very complicated. But it is aimed at revealing the essence of the object. As the need arises in the scientific foundations of production enterprises, it causes the development of science in relation to many scientific research institutes. In the middle of 1990, the rapid development of electric computers in atomic energy, rocket engineering, and the search for ways to organize creative work on a scientific basis began. They are conducted in different directions. One of them was the "Brainstorming" method proposed by the American entrepreneur and inventor A. Osbod. In his opinion, some people have the ability to give an idea, while others have the ability to critically analyze it. He suggests dividing them into 2 groups, i.e. "Generators" and "experts". The following rules have been developed for the use of the "Brainstorming" method:

1. 12-25 people should participate in solving problems using the "Brainstorming" method. Half of them give ideas, and half analyze them. Brain generators include people with strong fantasy and abstract thinking. Analytical and critical thinkers are selected for the expert group. The "Brainstorming" session is led by qualified and experienced staff.

2. Generators provide the maximum number of ideas to find a solution to the given problems. The statement of given ideas is recorded on tape recorders. Experts choose the best among them.

3. "Session" lasts 30-50 minutes, depending on the difficulty of solving the problem.

4. It is necessary to learn mutual respect and free attitude among the employees participating in the "Brainstorming" session.

5. If the session ends without results, it is necessary to change its participants. It is advisable to reconsider the issue.

Inventors should have the following personal qualities:

- a set of social qualities - worldview, spiritual work and aesthetic qualities.
- a set of experience characteristics - awareness, scientificity, skill and size.
- set of mental qualities - integrity of imagination, concentration, breadth of thinking, independent and critical thinking, strength of memory.
- a set of hereditary conditions - ingenuity, intelligence, intelligence, inventiveness, diligence, promptness, logic, common sense.

In this case, training in higher pedagogic educational institutions is not sufficiently connected with the practical-pedagogical activity of the teacher. This idea can be explained as follows.

- first of all, most of the content of the training included in the curriculum is aimed at the formation of the teacher's personality, taking into account the preparation of future teachers for creative activities. Although this situation has a positive effect on the formation of a teacher as a qualified specialist, it does not help him acquire the methods of preparation for creative activities that he can directly use in his professional pedagogical activities;

- secondly, the concept of creativity in the preparation of future teachers for professional activities is interpreted in a certain limited sense, usually in the sense of preparation for the implementation and management of technical creativity. In the process of implementing the national model of personnel training, it is necessary to develop research creativity, which is not only related to technical or artistic creativity, but also requires more in-depth knowledge.

Discussion.

In order to eliminate these shortcomings and to improve the effectiveness of preparing future teachers of technological education for students' technical creativity, extracurricular activities are organized.

In the circle plan, depending on the abilities of the members of the circle, the preparation of various small-scale objects, visual aids and moving models (*from various residual waste raw materials)* used in various sectors of the national economy, the creation of automation elements and robots It is appropriate to provide for the development of creative abilities of talented and talented students, depending on their own desire, by introducing such tasks.

In order to increase the effectiveness of the preparation of students for technical creativity activities of future teachers of technology, to increase and strengthen their knowledge, skills and qualifications in the field of technical creativity, to form the ability to independently plan creative work, in schools and colleges organization and conducting of training sessions on the basis of technical creativity, rationally equipping them with technical documents and didactic materials related to practical objects, being able to rationally use various methodical literature and advanced pedagogical and innovative experiences, necessary materials in computer technology such tasks are solved.

We believe that it is appropriate to divide the individual tasks on the objects of creativity that can be given to students in group classes into approximately five groups:

Group 1. Assignments in the direction of carpentry.

Group 2. Making devices for the creation of electrical engineering, radio engineering, automation elements and robots.

Group 3. Improvement of techniques and technologies (model, layout and natural device).

Group 4. Preparation of improved equipment for household services;

Group 5. Development of educational laboratory equipment.

In the first direction, a folding chair, a folding bed, a bread holder, a soft seat, a stool, a chest, etc,.

A warning device (*alarm*) in the event of a fire on gas stoves in the second direction, various original night lights, an automatic moving cradle, candlesticks and candlesticks.

In the third direction, a small-scale cultivator, a soil softener (motiga), a device for measuring the depth of a plow, etc.

Kitchen appliances, universal opener (key), shelf, vase, etc. according to the fourth direction.

Resistance of materials in the fifth direction, labor education (hand-made protractors, kinetic and potential energy display device).

Step-by-step implementation of the specified tasks is envisaged when starting the work of the circle:

Step I - a prospective plan is drawn up; requirements for objects of creativity are developed; information is provided; on the basis of a prospective plan, the members of the circle are provided with individual assignments.

Step II - a methodological recommendation on the implementation of practical tasks is developed and distributed (introduced) to the members of the circle; on the basis of the recommendation, the members of the circle are involved in performing the tasks set in the issues of creativity.

Step III - creativity of members of the circle is actively monitored, observed shortcomings are eliminated and material and methodological conditions are created; the obtained results are discussed and a final conclusion is drawn; prepared devices are recommended for use in educational and production processes and are presented to the general public (in the form of inventions, articles, recommendations, etc.); circle members (authors) who have achieved the best results are encouraged and helped to participate in various competitions.

As a result, it is applied to educational production processes, high-quality performance is achieved, it is published in the press and popularized, the creativity of the expected technology teacher is high, and in the places where they go to work, they make an important contribution to the education of the young generation in the spirit of creativity with their creative abilities. will be able to swell.

Conclusions and suggestions.

The process of creating a new technical device by secondary school students includes a certain number of independent, as well as several organically interrelated stages. We will look at the main stages of creative activity to create a new technical device.

Stage I. At this stage, students actively seek to study existing devices created in the field of technology, and as a result, a problematic situation arises in the minds of students. As a result, some think analytically: a creative search arises, and as a result of this stage, a specific technical issue is put forward.

II stage. At this stage, students have technical ideas about the existing device. At this stage, the principle of operation of the technical device to be created is determined, which is changed from the previously known one or selected and created anew. In this case, the idea is the technical essence of the matter. At the technical idea stage, active conscious technical creativity occurs.

III stage. It consists in the production of the model to be created. It appears in the minds of students as a result of a thought experiment: the technical idea is formalized in a scheme, the functional and structural scheme of the developing formula is determined, the idea appears as an image in the minds of students.

Stage IV. It is the stage of construction, in which young technicians strive to reveal the content and form of their thoughts. At this stage, as the main principle of creative research, the purposefulness, accuracy, simplicity and technologicalness of the device being constructed, the reality of its dimensions in the external form, and their optimal compatibility with the essence of the creative object serve as the main principle of success.

During the construction phase, a sketch or technical project worker prepares drawing models or mock-ups. The design is based on technical calculation: depending on the age of the students, the level of physical, mathematical and technical training, and the level of

complexity, the information varies within a certain limit. In addition, at this stage, some details and components of the device are checked by experiment.

Stage V. Build and test a moving model. At this stage, in practice, the feasibility of the technical calculation of the idea is checked, its implementation and rationality are checked and the material is provided. Due to the complexity of the problem to be solved, the stage of models for the experiment can be constantly complicated, mainly variable.

Stage VI. Creating a trial copy of a real-world device, testing it. Based on the work performed at the theoretical stage of technical creativity, as well as on the basis of the constructed experimental model and testing it, a technical device that is actually used by students can be created *(for the purpose of transport for agricultural and industrial production, etc.).*

Stage VII. Preparation of technical documents. This is the final stage in the process of students' technical creativity.

This stage is currently rarely used, in most cases the leader of the group of young technicians is not in a position to ensure the application of students' creative work to production, so the students' design and creativity activities are transferred to the stage of drawing up new documents does not reach In such cases, formalizing the technical documents of this stage in writing in the form of a diagram in the form of a scheme actively helps to increase the technical culture of students..

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