

METHODOLOGY OF PREPARING STUDENTS FOR SCIENTIFIC RESEARCH WITH THE HELP OF LABORATORY TRAINING ON THE TOPIC “GEARS”

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ABSTRACT

The need to prepare students for scientific-research activity is based on the most important component of the qualification characteristics of a future engineer. The analysis of scientific, scientific-methodical, psychological and pedagogical literature made it possible to determine the research ability. By means of research abilities, abilities that ensure that students acquire scientific knowledge methods in the course of educational activities, and shape the interest and need of a person in creative (research) activities are meant.

Key words: scientific research activity, pedagogy, gears, teaching methodology.

The purpose of the work to get acquainted with the constructions of gears with cylindrical external coupling, to determine their main dimensions and parameters.

In order to increase the effectiveness of teaching, the laboratory exercise on the topic “Gears” is carried out according to the interactive teaching cycle presented in the sequence below. “Interactive learning cycle” is one of the means of effective mastering of the subject, formation of interest in the subject. Interactive learning has its own cycle, which consists of:

I. Let’s consider each part of the execution cycle of the selected method separately:

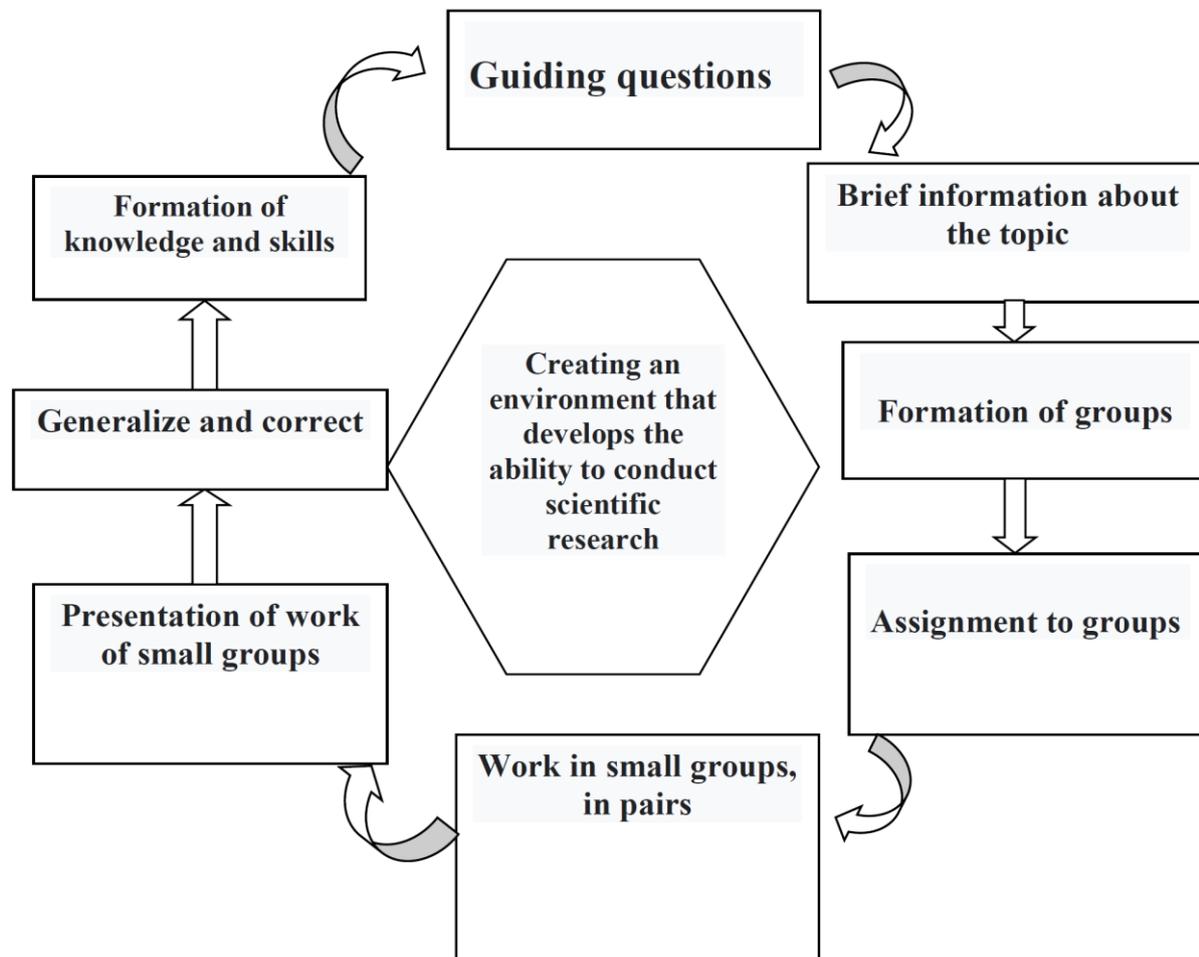
II. I. Guiding questions:

III. How many types of gears are there?

IV. What are the differences (advantages and disadvantages) of gears from other gears?

V. What do you mean by gear?

VI. Define gear.



VII. Introduce the constructions of gears with cylindrical external coupling.
Brief information about the topic.

Students will be informed about the constructions of gears with cylindrical external coupling, determining their main dimensions and parameters. (The solution is fully explained in the text).

Formation of groups. The number of students of the 3rd year "Technological machines and equipment" TMJ-133-20 group is 30, and they are formed into 5 groups.

Assignment to groups.

There are 2 ways to solve the problem

Texts and drawings covering method 1, group 2-4, method 2 of problem solving and laboratory equipment are given.

V. Working in small groups, in pairs.

1. In groups, students are given time to understand the content of the problem, the teacher helps.

VI. Presentation of the work of small groups.

The leader of the small groups analyzes the solution process and explains it to the other group members.

VII. Generalization and comparison.

The teacher summarizes, compares the calculation results with the actual dimensions and determines the relative and absolute error. Draws a conclusion. Students are encouraged morally [1-4].

VIII. Knowledge and skills.

1. A student redoes the laboratory exercise.

Students should be familiar with the structures of gears with cylindrical external coupling, and have thorough knowledge of determining their main dimensions and parameters.

Therefore, we consider it appropriate to choose problems with multi-method solutions that make students think broadly and show them how to solve them.

Another commonality of laboratory training is that after completing the next steps specific to each section, it is necessary to analyze the obtained result and check its accuracy. After making sure that the obtained result is correct, it is necessary to perform the calculations. Showing laboratory training in a virtual state helps students to have a more complete picture of the process. By using these methods in the educational process, students develop their readiness for design and scientific research activities [2-3].

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