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Improving the Quality of Education through the Use of Interactive Methods in the Educational Process

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Abstract: This article presents the possibilities of using the entangled logical chain method to determine the level of education of students when teaching the subject "Structural Mechanics", which is part of the technical disciplines.

Keywords: Static indefinite system, force method, displacement method, support, basic system, canonical equation, external force, matrix, open circuit, connections, section, unit of force.

INTRODUCTION.

Today, as on all fronts in our country, in the field of education, the issues of developing high-quality, competitive education that meets the requirements of today are set as a task for all officials in this field. The use of interactive methods in the education system, especially in higher education, is one of the innovative methods that increases the effectiveness of education.

MATERIALS AND RESEARCH METHODS

Today in our country, in all higher educational institutions, much attention is paid to the use of interactive methods in the educational process. This situation helps to fully understand the essence of pedagogical processes organized on the basis of interactive education, and to be convinced of their effectiveness, interestingness and quality. Classes, organized in an interactive form, encourage students to think creatively, actively solve information received, freely express their opinions, take initiative, find solutions to problems in groups, develop skills in working in collaboration, and acquire the ability to express thoughts in writing. . When organizing interactive lessons, working individually and in pairs, working in groups, using research projects, role-playing games, working with sources of information, creative work, encouraging student activity in the lesson, dividing educational material into small ones, fragments and mental disclosure can be used their contents, such as attack, small group work, debate, problem situation, guided text, project.

RESEARCH RESULT

The science of structural mechanics is one of the most important technical subjects for students studying in the field of construction in higher education institutions. A solid grasp of the basics of this subject creates the basis for the development of engineering skills in a student and easy mastery of specialty subjects. The effect of using the entangled logic chain method, which is one of the interactive methods, during lectures and practical classes with students of structural mechanics is considered. The method can be used to determine a student's level of proficiency in a given material, find out the level of students' knowledge in a department or chapter, and also organize intermediate control using the method during a lecture. Below we recommend a table compiled on the topic of determining static indeterminate frames using the force method in the field of structural mechanics.

Determine compatibility:

| | | | |
|---|--|---|--|
| 1 | How many types are static indeterminate systems divided into? | 1 | linear and angular displacements at the nodes of a statically indeterminate system are considered unknown |
| 2 | What systems are called internally statically indeterminate? | 2 | the stresses arising in the reserve links of the system are called unknown stresses and are replaced by unknown forces. |
| 3 | What methods are used to calculate static indeterminate systems? | 3 | In the method of forces, in the method of displacements, in the mixed and combined method, in the method of successive approximations and in the method of matrices. |
| 4 | What is the force method? | 4 | (closed) statically indeterminate system with three support connectors |
| 5 | What is the migration method? | 5 | internal, external, internal and external at the same time |

Right answers (5,4,3,2,1).

The convoluted logic chain method can also be used in intermediate exams in structural mechanics. Only in this case, the number of questions presented to students is 10-15. Because as the number of questions increases, the level of fair assessment of students' acquired knowledge increases. In addition, a large number of questions provide the basis for asking questions on most of the subject. Below is a schedule for conducting intermediate certification in the subject of structural mechanics of static indeterminate frames using the force method.

Determine compatibility:

| | | | |
|---|--|---|--|
| 1 | What systems are called static indeterminate systems? | 1 | If the system consists of a closed circuit and has more than three support connectors |
| 2 | What systems are called external static indeterminate systems? | 2 | coefficient similar to the canonical equation |
| 3 | What is the matrix method? | 3 | A system chosen to be statically determined and geometrically invariant, with redundant constraints in a statically indeterminate system discarded and their influence replaced by unknown forces. |
| 4 | What is the method of the main force system? | 4 | movement in the direction of force resulting from the influence of external forces. |
| 5 | what do the expressions mean? | 5 | $\sum \int \dots$; |
| 6 | , - what is the coefficient of a canonical equation? | 6 | $\sum \int \dots$ |
| 7 | how is the coefficient of a canonical equation determined? | 7 | Free limits of the canonical equation |
| 8 | how is the coefficient of a canonical equation determined? | 8 | in the direction of force, units of force and the result ng movements. |
| 9 | what is the coefficient of a canonical equation called? | 9 | A statically indeterminate (open-loop) system with more than three reference contacts |

| | | | |
|----|---|----|---|
| 10 | what do the expressions mean? | 10 | By discarding supports or support connections considered unnecessary, by inserting hinges into a given system, by cutting part of a given system. |
| 11 | What systems are simultaneously internally and externally statically indeterminate systems? | 11 | Systems in which the tension and support reaction forces generated by external forces in the structural elements cannot be determined using the equilibrium equations of statics. |
| 12 | How is the main system of the method of forces derived? | 12 | A method based on the calculation of exposures using matrices. |

Right answers (11,9,12,10,8,7,6,5,2,4,1,3).

As a result of the author's organization of lectures and practical classes on structural mechanics using the logical chain method, it was possible to come to the following conclusions:

Ability to objectively, fairly and quickly determine the level of students' knowledge.

It takes a short time to determine the level of knowledge.

Low resource requirements for application.

Ability to effectively use formulas, questions, tests and assignments.

The fact that many people use this method.

Applicability of education in all its forms.

Thus, as a result of choosing the entangled logical chain method as an assessment criterion in structural mechanics classes at universities, it was found that the level of fair and objective assessment of students' knowledge has increased, which ultimately leads to an increase in quality.

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