

USING THE CONFUSED LOGIC CHAIN METHOD IN STRUCTURAL MECHANICS USING THE CONFUSED LOGIC CHAIN METHOD IN STRUCTURAL MECHANICS

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Abstract: Today's main demand is to educate the young generation in all aspects. The main organizer of knowledge is the assessment of acquired knowledge. The issue of fair and qualitative determination of students' knowledge level based on the method of confused logical chain, which is widely used in the future, and increasing their activity in classes is an urgent issue today.

Key words: building mechanics, support reaction, longitudinal force, frame, degree of freedom, shear force, tensile system.

Construction mechanics, which is taught as a general engineering subject to students studying construction engineering at higher educational institutions, is one of the important subjects for specialization. It is the need of the hour to organize the science of construction mechanics with sufficient quality and comprehensibility, using modern pedagogical technologies. It is known that the use of interactive strategies such as Venn diagram, cluster, brainstorming in the teaching of science topics in the educational process has a good effect. The method of confused logical chain used to determine the level of students' knowledge is used by many pedagogues as one of the effective methods that meet the current demand.

Pedagogical scientists have carried out many studies on the effective teaching of students using pedagogical technologies in the educational process and will continue to do so. The organization of training using the Venn diagram is presented in works [1,4,10,12,19,25]. Practical solutions are given in [3] about the organization of the teaching process using the interactive cluster method. Important results were published in works [2,6,11,14,15,16,17,18] on ways and methods of increasing student activity. Research on the use of the logical chain

method to determine the level of students' knowledge is described in detail in works [7,8,20,21,22,27]. The issues of electricity production using wind energy were considered in works [5,23,24].

Pedagogical experiments prove that the "confused logical chain" method is one of the most effective methods for determining the level of students' knowledge of construction mechanics. This method is distinguished by its ease of use in the course of mid-term assessment and final assessment in order to determine whether students have mastered the subject within a subject of science. When using this method, the student will be able to combine the concepts related to the studied topic, such as formulas, expressions, definitions, and theorems related to the science of construction mechanics, and to match the correct ones from among them when the information on several studied topics is confused together. should be able to. In this case, the set of facts related to the topic is presented to the attention of students in a case where the chronological order of cause and effect is confused (broken). Students should be able to correctly place the task in order.

We use the method in the course of teaching the subject of the first chapter of construction mechanics "Static Exact Systems". Information about quantities and formulas on the subject is provided by the method of confused logical chain. The teacher distributes copies of tables corresponding to the number of students in the audience to the students of the group. After studying the given table in detail, students write down the answer number for each question listed on the left and the corresponding number on the right. Then the teacher collects the answers from all the students, checks them and announces the results. Below is a table corresponding to the above topic.

Determine compatibility:

1	What formula is used to determine the degree of freedom of a structure consisting of hinges and struts?	1	Static and dynamic
2	Show the unit of distributed forces?	2	KH / \mathcal{M}
3	Tell the definition of base?	3	A device that resists twisting, vertical and horizontal movement of the structure
4	What is a clamped support?	4	Devices that connect structures to the foundation or ground and limit their movement are referred to
5	What are the types of external loads according to the nature of the impact?	5	$= 3D - 2III - C_T$

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

We will now apply the fuzzy logic chain method to a chapter of construction mechanics, "Kinematic Analysis of Structures". The results of this score can be used to test students' knowledge in a non-traditional way to quickly determine the level of mastery of the studied

unit by the student and to obtain intermediate evaluation scores. In this case, the number of questions will be more compared to the assessment of one topic. Because the higher the number of questions, the higher the level of objectivity. At the beginning of the academic year, professors of the department create a bank of questions, which are regularly filled and improved. The table covering all topics of the "Kinematic Analysis of Structures" chapter of Construction Mechanics is given below:

Determine compatibility:

1	A system that meets the requirements of what degree of freedom is called a geometrically fixed and statically exact system?	1	Permanent and temporary
2	Show the unit of accumulated forces?	2	$kH \cdot m$
3	Show the unit of bending moment in the International System of Units (SI)?	3	kH
4	EI - what does the expression mean	4	refers to the number of independent geometric parameters that completely determine the state of the structure or system elements
5	What is a clamped support?	5	A graph representing the change of a stress along the axis of the structure under the influence of external loads
6	What do you mean by degrees of freedom of a structure?	6	Uniformity in bending
7	What are the types of external loads?	7	$W = 0$
8	What is called epura?	8	A device that resists twisting, vertical and horizontal movement of the structure
9	What is called a stress epura?	9	Longitudinal forces, bending moment, transverse force
10	What internal tension forces are created when the structure is affected by external forces?	10	A graph representing the change of a stress in a structure under the influence of external loads

Correct answers (7,3,2,6,8,4,1,5,10,9).

By using this method to determine the level of knowledge acquired by students in the course of a lesson on construction mechanics, it becomes possible to quickly, transparently and fairly assess the level of knowledge of students. For this, the teacher prepares question bank materials covering all departments of the subject. It is natural that the number of questions offered to students increases with the increase in the weight of the material. However, after a certain number of questions (25-30) using the method of confused logical chain causes a number of

inconveniences. Therefore, it is necessary to use this method without increasing the number of questions to 25 when conducting the final assessment.

Determine compatibility:

1	What is a hinged mobile support?	1	An element that resists only one movement of the base section of the structure
2	As base reactions -----	2	Number of disks
3	What is a traction system?	3	The number of degrees of freedom is the actual work done by the internal forces
4	What kind of hammers are called multi-span static concrete hammers?	4	Movable and immovable
5	What does construction mechanics study?	5	A geometrically invariant static definite system formed by connecting several simple and cantilever beams with the help of hinges
6		6	An element that resists only one linear displacement of the base section of the structure
7	What is a hinged fixed support?	7	$Q_y = \sum (F_i) \cdot$
8	Show the expression of longitudinal force?	8	$N_x = \sum (F_i)X$
9	Give the expression of transverse (shear) force?	9	The horizontal pressure that occurs on the supports of the three-hinged system and the reaction against it is called traction. The system itself is called a traction system.
10	What does the symbol W mean?	10	The forces are said to be those whose bases have been thrown away and their influence replaced by unknown forces
11	What does the symbol D mean?	11	k is the twist angle of the nutada section
12	What does the Sh symbol mean?	12	Geometrically invariant static concrete systems formed by connecting several simple and cantilever beams with the help of hinges are called multi-span static concrete articulated beams or multi-span static concrete beams
13	φ_K - what does the sign mean?	13	Simple hinged number
14	Define multi-span static concrete beam?	14	It is a science of the principles and methods of calculating the durability, uniqueness and priority of constructions and structures.

15	What is the shear force in the arbitrary section of the beam?	15	is equal to the algebraic sum of the vertical axis projections of all forces located to the left of the section or to the left with the opposite sign

Correct answers (6,10,9,12,14,1,8,7,3,2,13,4,11,5,15).

Based on the above, it is possible to come to the following conclusion: as a result of using the method of a confused logical chain, students can organize the subjects they have studied in science, divide them into components, compare them with other parts of the subject, and obtain information about the newly studied subject. skills such as understanding are formed. Regular use of this method in lectures gives students the opportunity to systematically study scientific materials, organize, divide and differentiate what they have learned. As a result, the level of knowledge of students increases significantly. Alternative opportunities for the teacher to objectively determine the level of students' knowledge in a quick way, to successfully conduct intermediate and final evaluations will be expanded.

When it is planned to evaluate students' knowledge using the method of confused logical chain, it is necessary to pay attention to the following: it is necessary to expand the bank of questions related to science by topics, it is necessary to create a bank of logical, easily solved examples and problems related to the topics, the topic of science in order to determine the level of mastery, it is necessary to compile options of tables consisting of 5-10 questions at least equal to the number of students in the group, for the assessment of intermediate control, the option of tables consisting of 10-20 questions is offered to students by the professor-teacher, the final control assessment is It is recommended to prepare a table of 15-25 questions for conducting, and regularly publish samples of the bank of questions and example-problems and the order of execution on the website of the department.

So, in conclusion, it turned out that the method of confused logical chain is one of the modern and convenient methods for determining the level of students' knowledge. It has been found that its use for general engineering sciences will be effective.

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