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DOMINO INTERACTIVE IN THEORETICAL MECHANICS LECTURES APPLY THE METHOD

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Annotation
This article discusses the possibilities of using the domino method, which is one of the interactive methods in teaching theoretical mechanics. The application of the method to a specific subject of science is given.

Keywords: dominoes, theoretical mechanics, center of gravity, symmetry, axis of symmetry, plane of symmetry, skill, table, statics.

The growing demand for education around the world requires professors and teachers of higher education institutions to organize their subjects on the basis of more interesting and higher pedagogical requirements. In this case, it is preferable that they resort to interactive learning. Interactive education is education based on the organization of students' interaction in the acquisition of knowledge, skills, competencies and certain moral qualities. From a logical point of view, interactivity refers, first of all, to the fact that social actors conduct dialogue, interaction-based action, activity.

Numerous studies have been conducted by pedagogical scientists on the teaching of theoretical mechanics on the basis of advanced pedagogical technologies. The organization of lecture sessions using Venn diagram is given in [3,6]. Practical solutions have been given in the study [5] to increase the visibility in the classroom using the cluster method. Research [2,4] discusses ways to increase student engagement in the classroom. An unconventional method based on the production of electricity using wind energy has been described in the works [1,7].

We are talking about a method that is one of the most effective interactive methods in teaching practice. The “domino” method is aimed at activating the learners, thinking independently and communicating their ideas to others and defending and substantiating their own views. This method can be used to review a topic covered or to determine a student’s level of knowledge after a section of a subject has been covered.

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Application of the method to the topic:

- Divide the student group into small groups using digital cards.
- To acquaint students with the procedure of using the domino method.
- The main purpose of the method is to determine which group will perform the task quickly and correctly.
- Distribute the dominion to small groups and set a time.
- The groups must collect the dominoes within the allotted time.
- Work on errors after completing the task.
- Evaluate group members based on the task they perform.

Advantages of the domino method:

- Possibility to repeat the whole topic;
- Strengthening the team work skills of each team member in the process of working in small groups;
- Achieving student activism;
- Develops the ability to listen to each other.
- Teamwork skills are formed.

Disadvantages of the domino method:
the method is time consuming to apply;
high level of students' emotion during the work;
the domino can be closed with incorrect answers.

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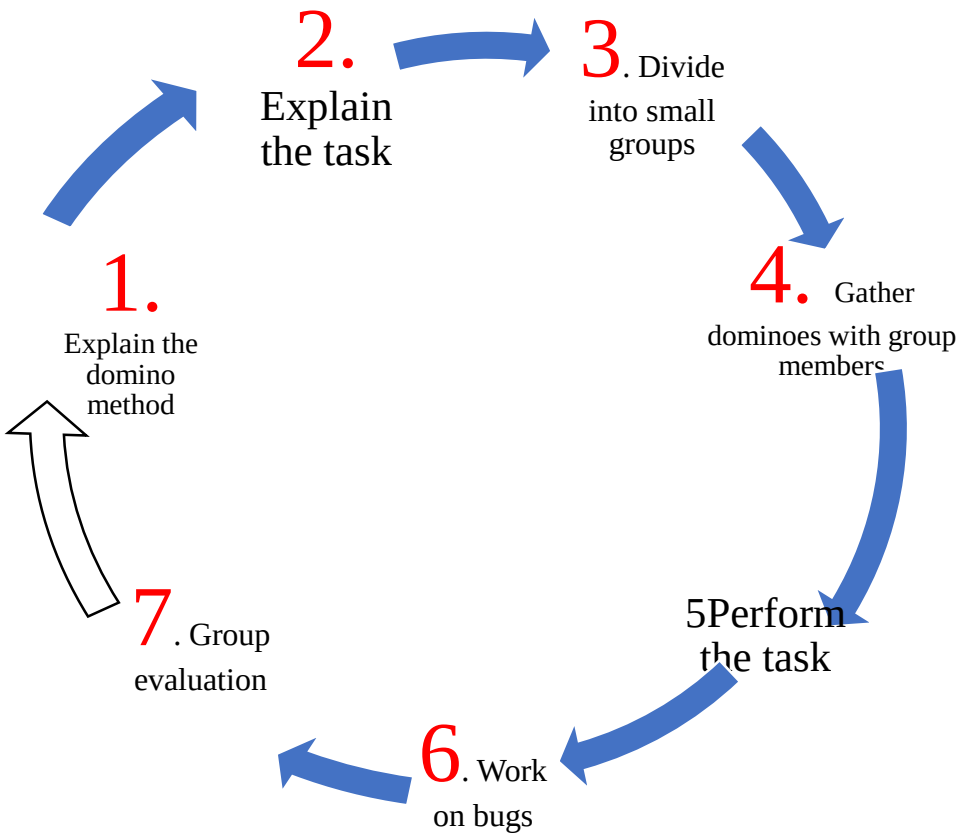
The structure of the domino method



Let's focus on the application of the domino method to the topic "The center of gravity of a solid" in the department of statics of theoretical mechanics. When creating a domino, we first create a table from the cards, which consists of a question and the corresponding answers. We replace the answer to the first question with the answer to the last question. We replace the questions in the remaining cells with one of the cells above. That is, answer question 2 instead of question 1, answer question 3 instead of question 2, answer question 4 instead of question 3, and so on. The answer to the last question is replaced by the answer to question 1 as mentioned above. We then cut out each cell and mix it up, and ask the students to assemble them in a logical sequence, i.e., to fill in the dominoes. Group students are divided into small groups. Attention should be paid to the even distribution of student talent in it. Small groups are asked by the teacher to create a domino with the same or equal number of cells. The teacher recommends the following domino for students to work on to reinforce the topic after

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passing the topic of determining the center of gravity of a solid body. Here we have taken a small number of cells for simplicity.

The center of gravity of the trapezoid	$x_c = \frac{1}{3}(x_1 + x_2 + x_3),\ y_c = \frac{1}{3}(y_1 + y_2 + y_3)$
The center of gravity of the circular arc	$y_c = \frac{h(a+2b)}{3(a+b)}$
The center of gravity of the surface of the circle sector	$x_c = \frac{2R}{\pi} = 0{,}637R$
The center of gravity of a hemisphere volume	$x_c = \frac{2}{3}\frac{R \text{ син} \propto}{\propto}$
The center of gravity of a circular cone volume	$z_c = \frac{3}{8}R$
The center of gravity of a triangular surface	$z_c = \frac{1}{4}H$

If we work with each cell in this table in the above order, the following new table is created. In this table, we cut each row separately and place it randomly to create a domino.

The center of the triangular surface	$z_c = \frac{1}{4}H$
The center of gravity of the trapezoid	$x_c = \frac{1}{3}(x_1 + x_2 + x_3), \quad y_c = \frac{1}{3}(y_1 + y_2 + y_3)$
The center of gravity of the circular arc	$y_c = \frac{h(a+2b)}{3(a+b)}$
The center of gravity of the surface of the circle sector	$x_c = \frac{2R}{\pi} = 0{,}637R$
The center of gravity of a hemisphere volume	$x_c = \frac{2}{3}\frac{R \text{ син} \propto}{\propto}$
The center of gravity of a circular cone volume	$z_c = \frac{3}{8}R$

By applying this method to the educational process, students develop interest in the subject, develop the skills of teamwork in small groups, develop the skills of respecting the opinions of others, defending their opinions, the science is able to find a logical sequence between phrases and formulas.

In conclusion, it turned out that the use of the domino method, which is one of the interactive methods to increase the activity of students in the field of theoretical

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mechanics, gives good results. When using the method, students develop teamwork skills, the ability to defend their opinions, the ability to compete for knowledge. All this leads to an increase in the quality of students' knowledge.

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