Use Of Educational Technologies In Teaching The Subject "Static Exact Steel Structures And Their Calculation Methods"

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This article describes the methods of using innovative educational technologies in the teaching of static concrete steel structures and their calculation methods

Reforming and improving the education system in Uzbekistan is one of the priority tasks promoted by our country. This, in turn, requires the professors to update the educational literature in the relevant subjects, taking into account the current requirements and the latest achievements of science, to introduce innovative educational technologies into the educational process. .

Teaching theoretical mechanics consists of lectures, practice and independent study.

Conducting lectures and practical classes using computer and information technologies and using modern innovative pedagogical methods will increase students' interest in science, as a result of which they will increase their learning efficiency.

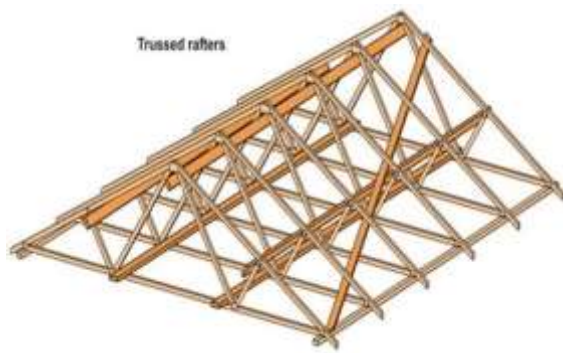**Concept of the steel structure**

The following pedagogic methods can be used in the teaching of the topic "Static exact steel structure and methods of their calculation"
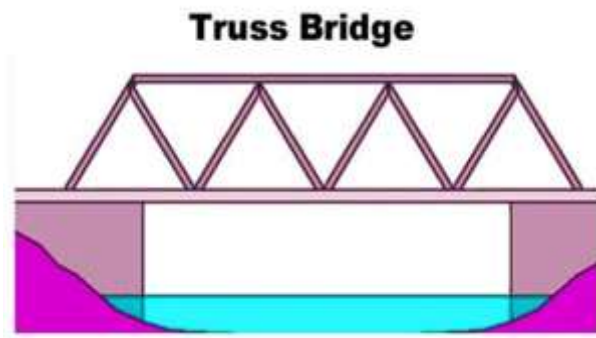
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3b- picture

For example, let's compare the exact static methods of tension in steel structure beams. A device consisting of rigid bars connected geometrically invariant by means of a hinge is called a truss.

In the truss, the points where the ends of the booms meet are called nodes, and the points attached to the supports are called support nodes.

Steel structures can be named differently depending on what kind of structures they are used in: bridge steel structures (Fig. 1), rafter steel structures that support the roof of structures (Fig. 2), crane steel structures used in lifting devices (Figs. 3a,b), etc.

Let's consider the cluster method. The sequence of creating a cluster is as follows:

• We write the sentence "STATIC PRECISE STEEL STRUCTURE" on the board; write ("brainstorm") words or sentences that you think are relevant to this topic; For example, a steering wheel, a geometric invariant, a hinge, a device, a fixed support, a moving support, etc.

• teach the connections between concepts and ideas.

A device that is held by means of fixed (or movable) supports consisting of rods connected geometrically invariant by means of hinges is called a steel structure.

• Write down all the options you remember. Detailed information about the static concrete steel structure is given.

Application of Case Study educational technology.

It is based on a problem-situational analysis of a specific real or artificially created situation, which is presented in a case and directs learners to express the problem and search for options for its appropriate solution

The case study provides for the following:

to prepare a case assignment in written form;

students' independent study and discussion of the case assignment.

To discuss the case-assignment collaboratively in the audience under the guidance of a professor-teacher;
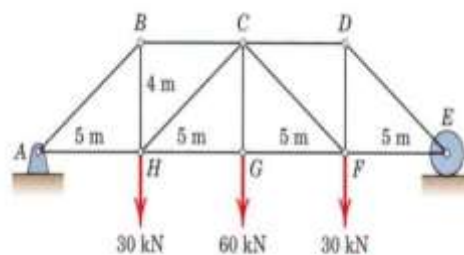
to adhere to the principle "discussion is more important than solution".

Base reactions of the truss at the given load and all of it
determine the tension in the sterns.
Steel structure constructions are given below.
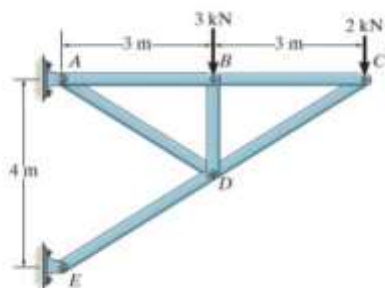
1.

2.

Procedure for solving the problem:
1. The basic reactions of the steel structure are determined. For this:
a) The external forces applied to the truss are shown.
b) The truss is freed from the supports and connections, and their impact on the truss is replaced by the reaction forces of the connections.
2. The balance equations of the forces applied to the truss are drawn up.
3. By solving the equilibrium equations, the base reaction forces are determined.
4. Tensions in the trusses of the steel structure are determined by the method of cutting knots. For this:

a) All the booms are assumed to be in tension, and the tension forces are directed along the boom accordingly.
b) Two equilibrium equations are created for each node.
c) Equilibrium equations are solved and unknown stresses are determined.
5. The tension in the trusses is determined by Ritter's method (the number of the trusses and their number are indicated in the condition of the problem). For this:
a) In the Ritter method, it is taken into account that each tension is found from separate equations and it is not represented by the forces in other rods.
b) The steel structure is divided into two parts by section II, in the section where the struts are

located, the tension of which should be determined.

c) As before, it is conditionally assumed that all the sterns are stretched, and the balance of one of the resulting sections is studied.

d) Equilibrium equations are created (if the equation to be created is a moment equation, the Ritter point must be determined, and a moment equation is created relative to this point).

e) The equations are solved and the values of the stresses that need to be determined are found.

List of used literature

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