Maksuda Mamatkulova,
Lecturer,
Tashkent State Pedagogical University

Case Study as Effective Training Form in University's' Professional Training

Key words: *interactive teaching method, illustrative learning situations, learning situations, applied cases, analytical skill, practical skill, creative skill, communicative skill, social skill.*

Annotation: *the article discusses the case study method as a standard form of training in vocational training in higher education institutions, the concept, classification and skills acquired by students.*

Case study became relevant at the beginning of the twentieth century, which began in the Harvard Business School, where it was used to apply theoretical knowledge in practical exercises. The main essence of this method is the implementation of specific situations in order to apply and activate a complex of knowledge. It can also be called a method of analyzing specific situations.

Students are offered to comprehend the real life situation, the description of which simultaneously reflects not only a practical problem, but also actualizes a certain set of knowledge that needs to be learned when solving this problem. The problem itself does not have unambiguous solutions. Being an interactive method of teaching, he gains a positive attitude on the part of students who see him as an opportunity to take the initiative, to feel independent in mastering theoretical positions to find different ways out of situations and to master practical skills. It is also important that the analysis of situations rather strongly affects the professionalization of students, contributes to their maturation, forms interest and positive motivation to study. Also there is an arrangement of students to the teacher, a free statement and division of their thoughts, which gives even more intensive and productive teamwork.

The concept of the case study method is as follows:
1. It is used in disciplines when there is no unequivocal answer to the question posed, but there are several possible answers that can compete in the degree of truth. The task of teaching varies from the classical scheme of obtaining one answer and is aimed at obtaining many truths and orientation in their problem field.
2. The main essence of the method is not mastering ready-made knowledge, but the ability to develop it in the process of acquiring knowledge in the creative work of a teacher and student. This is the fundamental difference between the case - stage method and the traditional methods - democracy in the process of acquiring knowledge, when the student is equal with other students and the teacher in the process of discussing and presenting his thoughts.
3. The main advantage of the case study method is not only the acquisition of knowledge and practical skills, but also the development of the system of values of students, attitudes, professional positions, attitude.

The classification of case studies is as follows:
- illustrative learning situations - cases that teach students the algorithm for making the right decision in a particular situation;

- learning situations - cases with the formation of the problem, here it is required of students to diagnose the situation and make their own decisions;
- learning situations - cases without forming a problem, which describes a more difficult situation, without a clearly expressed problem, it can be given statistical data, an assessment of public opinion, authorities, in this case you need to identify the problem yourself and indicate alternative ways to solve it analysis of available resources;
- applied cases, they describe a specific situation, and the purpose of its search for solutions to the problem.

Cases differ from practical tasks, since tasks give material that provides students with the opportunity to study and apply individual theories, methods, and techniques. A case study helps to acquire a wide range of diverse skills. Tasks have one solution and one way; cases have many alternative ways and solutions leading to it.

Discussion is central to the case study method. Here, of course, students with a significant degree of maturity and the ability of independent thinking, who prove their point of view, must take part, and give arguments justifying their point of view. The most important characteristic of the discussion is the level of its competence, which consists of the competence of its participants.

The following are examples of tasks used in math lessons.

Contents of the case:
A beginner aquarist turned into a company for the manufacture of aquariums. The firm for small aquariums uses glass in two sizes.

Price list:

Product Size	mm Price	rub. for 1 square. m
Polished glass	600 x 300	1200
Polished glass	300 x 300	700
Cut glass (for the bottom)	anyone	500

The company offers rectangular (square), triangular (angular) and hexagonal aquariums.

Price list for services:

Service	Price	Capacity
Making an	1000	Before 30 liter
aquarium	2000	31 – 60 liter

	2500	60 – 100 liter

The aquarist wants to get the largest aquarium and wants to place it on a pedestal with a 50 x 80 cm table top.

Help an aquarist order a suitable aquarium and find out the full cost of such an aquarium.

Formulas:

$V_{prisms} = S_{basic} \cdot H$ $\qquad\qquad\qquad$ $S_{polygon} = 1/2\ P \cdot r$

| No. of sides of a regular polygon	Described circle	Inscribed circle
3	$a = R\sqrt{3}$	$a = 2r\sqrt{3}$
4	$a = R\sqrt{2}$	$a = 2r$
6	$a = R$	$a = \dfrac{2r}{\sqrt{3}}$

Case solution:

Students propose and sketch the shape of aquariums: 2 rectangular, 2 square, 3 triangular, 3 hexagonal. Of these, 1 square and 1 hexagonal obviously will not fit on the cabinet, and 1 small triangular and 1 small square obviously smaller than all in terms of volume. As well as two rectangular aquariums coincide in volume, differ only in position. Total in consideration of 5 prisms.
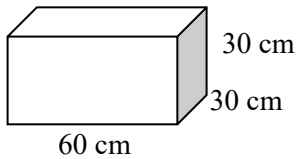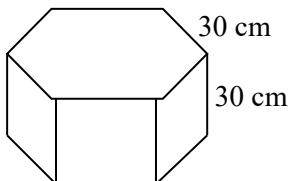

$$V = 30 \cdot 30 \cdot 60 = 54000\ (cm^3)$$
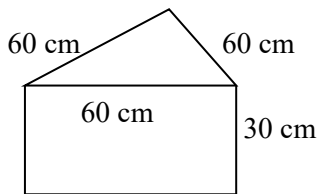
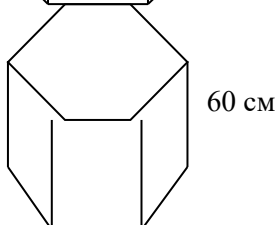$$V = \frac{1}{2} \cdot 60 \cdot 60 \cdot \sin 60 \cdot 30 = 27000\sqrt{3}\ (cm^3)$$
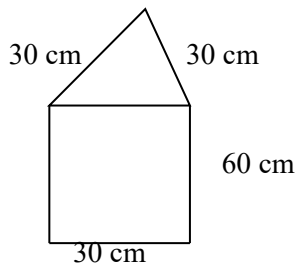
$$V = \frac{1}{2} \cdot 30 \cdot 30 \cdot \sin 60 \cdot 60 = 13500\sqrt{3}\ (cm^3)$$
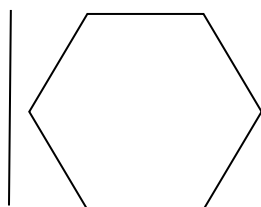

$$V = \frac{1}{2} \cdot 6 \cdot 30 \cdot \frac{30\sqrt{3}}{2} \cdot 30 = 40500\sqrt{3}\ (cm^3)$$

$$V = \frac{1}{2} \cdot 6 \cdot 30 \cdot \frac{30\sqrt{3}}{2} \cdot 60 = 81000\sqrt{3} \ (cm^3)$$

30 см

The last prism has the largest volume. The possibility of placing such an aquarium on a given cabinet is checked (this action can be the first, and only then the finding of volumes).

$r = \frac{30\sqrt{3}}{2} = 15\sqrt{3} => D = 30\sqrt{3} =>$ will not fit on the cabinet

Consequently, the penultimate aquarium will not fit.

Obviously, it will fit on the cabinet. Calculates the cost of such an aquarium.

54,000 cb. cm = 54 l => production of 2000 rubles.

The cost of a horizontal aquarium:

$0.6 \cdot 0.3 \ 500 + 0.6 \ 0.3 \cdot 2 \cdot 1200 + 0.3 \cdot 0.3 \cdot 2 \cdot 700 = 648$ rubles.

Total: 2648 rubles.

The cost of a vertical aquarium: $0.3 \cdot 0.3 \cdot 500 + 0.6 \cdot 0.3 \cdot 4 \cdot 1200 = 909$ rubles.

Total: 2909 rubles.

Students make economically, as well as household (low aquarium easier to wash) reasonable conclusion:

It is necessary to order an aquarium in the form of a horizontal rectangular parallelepiped of 600x300x300 mm worth 2648 rubles.

This case describes the presence of a real problem, the need for choice. Work on the case can take place both in the classroom and outside the classroom (at the preparatory stage) for the teacher and students. The teacher prepares the case on the following issues: determine the cases, the relationship of persons in a difficult situation of the case; develop the beginning, development and completion; discover questions arising during the passage of the case and the arguments that students focus on. Designed questions help learners find the right solution; develop a case evaluation system. The introduction of the case method helps to control students' mastering the skills to apply their knowledge and experience to solve problems modeled on the basis of real-life situations.

References:
1. *Polukhina AK. Case as a means of control in the educational process: Sidorov SV. teacher-researcher site.*
2. *Atanasyan LS. Geometry: Tutorial for grades 10-11. Moscow, 2010.*
3. *[Internet] Available from: http://festival.1september.ru/articles/626702/*