Lesson plan

Topic 1 - Construction organisation plan

Duration: 4 lessons (4*45 minutes)

Operational objectives:

Student is able to:

- Plan activities necessary to complete a group task.
- Assign tasks to the group members according to their abilities.
- Plan the activities of a construction team on the basis of technical documentation.
- Cooperate.
- Discuss priorities during the group task.

Methods:

Exercises and games, group work planning and decision-making, preparation of a contract

Course of the lesson:

The lesson is preceded by a presentation and signing of a team work contract, agreed jointly by the teacher and students or prepared and accepted by both parties.

Sample contract:

a) based on the German experience:

- Everyone is responsible for the successful completion of the task.
- The task is being solved - no one is excluded.
- We discuss the course of action together and the whole group agrees on it .
- Everyone has a voice.
- Everyone respects what another person has to say.

b) based on the Polish experience:

- We start on time.
- We turn off mobile phones.
- We speak in turn.
- We don't disrupt each other.
- We don't judge each other.
- We don't ridicule each other.
- We are discreet.
- Everyone has the right to express their own opinion.
- We don't force anyone to speak.
- I have the right to refuse to participate in the exercises.

The contract must be prominently displayed and valid throughout the duration of the course. It allows us to clearly define the relationship between the teacher and students.

Expected duration - 10 minutes

The lesson is divided into 5 stages:

1. **Information stage**

The teacher informs students about the task. The students will act as employees of a construction company. The purpose of the group work is to plan activities related to the performance of works commissioned by the investor. The task can be adapted to any industry - for example:

- construction of a purlin and collar beam roof (roofer)
- assembly of a gas boiler room, supported by solar collectors (installation fitter)
- construction of a suspended ceiling (drywall fitter)

In order to implement the task the students will have to get acquainted with the received materials, plan activities necessary for implementation of the task and to distribute tasks among themselves.

The further part of the lesson plan is dedicated to installation fitters.

All tasks must be performed in groups of 4-6 students.

Expected duration - 5 minutes

Planning stage

The students receive sample technical documentation of the gas installation from the teacher. It contains a technical description of the planned construction, a list of materials and a technical drawing.

ANNEX 1 – Technical documentation of the gas boiler room.

Task 1.

Analyse the received documentation of the installation. Read the technical description and the list of materials carefully. Analyse the components shown in the technical drawings attached.

Complete a list of activities that must be performed in order to implement this particular investment project, starting from the bill of quantities to the acceptance of the installation.

Divide activities and tasks into planning, organisation, preparation, execution and supervision

Expected duration - 30 minutes

2. Decision making

Task 2.

Assign students in your group to specific tasks related to the implementation of the project, e.g. as follows:

- coordinating group work (required leadership skills)
- purchasing materials (required communication skills)
- analysis of the project documentation (required thoroughness and accuracy)
- technical activities (required manual accuracy)
- organisation of transport (required logistics skills)
- talks with the investor (required assertiveness)

Expected duration - 15 minutes

Task 3.

Leadership workshop - sometimes known as the Marshmallow Challenge

Students are divided into groups. They are supplied with:

- 20 uncooked spaghetti sticks,
- 1 metre of masking tape or several sheets of copy paper
- 1 metre of string or adhesive tape on a roll
- 1 ping-pong ball or an egg.

Teams of several people must build the highest, free-standing construction. The time required for this task, from the moment of distribution of materials, is about 25 minutes. The ball / egg is to be placed on top of the tower. The minimum height to complete the task **is 50 cm**. The team that builds the highest structure wins.

How to do it? Effective team work requires, in the first place, a common goal and commitment of all team members. Before you start working you can designate "official" leaders - on the side you individually assign them the role of an autocratic boss, a liberal boss, etc.

During the work, a spontaneous team leader is often found, one that is not the designated person. Why? Because the group is often distrustful of the leader and his/her "liberal" approach is treated by members as delaying action

Expected duration- 30 minutes

3. Implementation

Task 4.

Moon landing:

You are a group of astronauts sent to the Moon with a research mission. Your crew were to land near a previously established fixed base located in the centre of the light side of the Moon. Due to damage to your space vehicle it had to make an emergency landing about 190 miles from the base. During the landing most of the equipment was completely destroyed, with the exception of the 15 items listed below. Since your survival depends on reaching the base, you should choose only the most necessary items to make it. For this purpose, the hierarchy of usefulness under lunar conditions of the items listed below must be determined.

The task consists in determining the hierarchy of all items according to the criterion of their usefulness in the trip. Assign number 1 to the most important item, number 2 to the second one in the order, etc. up to the least useful item, which will receive number 15. When making a hierarchy, you must not omit any item. No number can be assigned to two different items.

Expected duration - 15 minutes

Students work in a group completing the received worksheet. After the exercise, the groups receive the correct order as determined by NASA. They compare their results and discuss in the

group the correctness of the decisions made.

The correct order:

1. Oxygen containers - the most essential, without them you will not stay alive,
2. Water - to supplement a significant loss of body moisture on the illuminated side of the Moon,
3. Atlas of the sky - basic navigational device,
4. Food concentrates - an efficient means of supplying the necessary energy,
5. VHF transmitter / receiver - enables communication with the vehicle over a short distance,
6. Nylon rope - useful for climbing and for fixing and transporting injured people,
7. First aid kit with a syringe - useful medicines,
8. Silk parachute - protection from the sun,
9. Self-inflating raft - CO2 bottle can be used as a drive
10. Flares - to signal danger,
11. 9mm guns - can be useful as a signal for everyone,
12. Dry milk - useful as food or drink when mixed with water,
13. Portable heater - needed only on the dark side of the Moon,
14. Magnetic compass - not very useful, lack of strong magnetic field on the Moon,
15. Matches - little or no usefulness, no oxygen on the Moon.

Expected duration - 10 minutes

ANNEX 2 – "Moon landing" worksheet

Task 5.

You play the role of a construction team with previously assigned tasks. The team arrives at the construction site to complete the project. Unfortunately - due to the very difficult location, once you get there you cannot go back to get forgotten materials and tools or order them. Together, you decide what needs to be taken. On the basis of the documentation make a list of necessary tools and equipment:

- selection of materials (such as pipes, fittings and valves)
- selection of personal protective equipment (including gloves, helmets and footwear)
- selection of the technique to perform the task (including manual and power tools)
- organisation of transport,
- organisation of the workplace,

The team leader distributes tasks among team members.

Expected duration - 45 minutes

4. Verification

Once the lists have been prepared, each of the students presents their results in turn. The other students analyse the selection in terms of its completeness and priority of the means necessary to complete the task.

After completing the task, students receive questionnaires about how they felt during the group task.

ANNEX 3 – "Self-reflection of the work process" questionnaire

Expected duration- 20 minutes