Green Friends - lesson plan for environmental education

Subject: Environmental education
Grade: 12-14 years old
Topic: Designing a "green" house with renewable energies
Duration of the lesson: 45 minutes
Educational objectives: Environmental education, Developing presentation skills, Learning about sustainability, Learning about renewable energy sources

Preparation:

- Preparing blank paper cards, markers and magnets;
- Draw a top view of a house on a magnet board, with at least the following rooms: kitchen, bathroom, living room, garage, garden.
- 5 students prepare a small presentation for the class on the following topics in advance:
- water saving options at home
- energy saving possibilities at home
- waste management
- how to save water, water saving in the house
- green transport

Parts of the lesson

I.	Introduction of the topic, motivation	5 minutes
II.	Imparting knowledge, short presentations	12 minutes
III.	Forming groups	3 minutes
IV.	Development of tasks	10 minutes
V.	Description of the elements of a green house by group	13 minutes
VI.	Evaluation, confirmation	2 minutes

Lesson plan

	Task	Method, form of work	Tools	Time
I. Topic introduction, motivation	1. **Earth's global problems, facts and figures** Discussing the global problems threatening the Earth and affecting our future (urbanisation, overpopulation, global warming) Bringing up some facts that give a sense of the seriousness of the problems: - The Arctic ice cap has been melting for decades, shrinking by more than 10% in the last ten years. - The ice cap has been shrinking for decades, and has been reduced by less than ten times since the last decade. Population growth is exploding in developing countries. - The rapid and excessive use of natural resources has upset the previous balance of the Earth's systems - in about 40-50 years, the Earth's oil reserves could run out. - In Slovakia, a total of 4 million tonnes of household waste is generated every year. One person throws more than 400 kg of waste into the garbage every year. "These are all problems that, with a little attention, we can take care of ourselves, and even design our homes to address them, to be sustainable. Purpose: In today's lesson we will look at how to make a home as environmentally sustainable as possible.	Frontal classroom work Directed conversation		5 min.

II. Imparting knowledge, short presentations	Together we will put together a sustainable green house. **2. The concept of sustainable development** Explain what sustainability is. "Sustainable development is development that meets the needs of the present without compromising the needs of future generations, our grandchildren. For example: if humans use up the Earth's energy reserves in the coming decades, future generations will not have enough energy resources - this development is not sustainable." **1. Short presentations on sustainability** "Five of you have given us presentations today, giving us ideas on how we can do something about global problems ourselves." The students will give their presentations on the following topics: - water saving at home - water saving options at home - Waste management - how to save water, how to save energy - green transport Students can write down the most important green tips during the short presentations. **2. Collecting sustainability practices** At the end of the presentations, collect the most important sustainability tips using a word chain. Students take turns to say one sustainability tip after another	Explanation of terms Student reports (short presentation) Word chain	Blank paper cards, markers	12 min.

	that they have heard in the small presentations. Assign two students to write them down on blank paper cards, which will be the action cards for the rest of the session.			
III. Forming groups	Forming five groups, assigning tasks Each group will represent a part of the house and they have to make that area sustainable. **<u>The 5 groups:</u>** 1. kitchen 2. bathroom 3. living room 4. garage and roof 5. garden "Discuss who is responsible for what in the group, have someone to take notes, be a time keeper, brainstormer or spokesperson to present your sustainability ideas on behalf of the team."			3 min
IV. Task development	**1. Group work** "Each team is tasked with making their part of the house sustainable. You can bring the necessary action cards from the common table, but you can also write additional action cards if you have more sustainability tips." Have groups work independently, but make sure they use the most essential sustainability practices. If necessary, help them by guiding them in the right direction. The following action cards are recommended:	Group work within frontal class work Cooperative learning		10 min.

	Kitchen: - Water-saving tap - energy efficient household appliances - dishwashing by soaking, not in running water - cooking with lid, on low flame - selective waste bins **Bathroom:** - water-saving toilet flush - Environmentally friendly cleaning products - washing powder, washing soda - water reservoir to catch grey water* - showering instead of bathing - water shut-off when brushing teeth **Living room:** - advanced thermal insulation - southern exposure - plenty of sunshine - electronic devicesswitch off instead of stand by mode - turn off the lamp - installing LED bulbs instead of conventional ones - geothermal heating system **Garage and roof:** - solar collector - electric car - bicycle, scooter - eco-friendly fuels - frying oil storage - gym **Garden:** - tree planting			

	- organic garden - vegetables, fruit, herbs - compost bin - rainwater harvester - wind turbine *water left over after hand washing, showering			
V. Description of the elements of a green house by group	**Sustainable housing "building"** Each team's spokesperson, alongside a model of the house drawn on the magnet board, demonstrates how to make their part of the house sustainable. Record the action cards on magnets in their room. Highlight the more important sustainability methods that are repeatedly used, giving other examples of use and future-oriented solutions.	Student reports		13 min.
VI. Evaluation, confirmation	**Summary, evaluation** After the teams' reports, let's review the main points of the sustainability practices (water conservation, energy efficiency, renewable energy, chemical-free households, green transport, etc.). Praise the teams for their work and individual ideas.	Confirmation Teacher evaluation		2 min.