

# Housing and energy



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ENVI-MOBILE: Integration of mobile learning into environmental education fostering local communities' development

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## Activity No. 1

Part of the lesson:  
**EVOCATION**

**The aim of the activity:** Sources and types of energy that are used in our houses for daily comfort (space conditioning/heating, water heating).

**STEP 1.**

Brief description of the activity:

Assess what pupils know about the type and use of energy in their houses using the KWL method. The teacher gives each pupil a KWL form (ANNEX 1), explains the meaning and provides instructions on how to fill it. Pupils fill out the KWL form, particularly the first two columns: what they know about the topic (K) and what they want to know (W). In the first column, the pupils write what they know about the energy in their house. To be clearer, the teacher can write some questions on the board helping the pupils to identify with the topic. For example: Why and what do we use the energy for at home (to keep warm, to have a shower ...)? What sources of energy do you know (solar, electric, gas, wind)? What energy do we use to heat the water? Where does the electricity come from? Are there any ways to save energy inside the house? Pupils can write what they want, give them the indication to write the keywords and short sentences.

Instruction (what you need to tell the students):

Think through:

What do you know about the type and the use of energy in your homes?

Write your notes into the first column of the Table from Annex 1. Write short sentences or the key words. Following questions might help you:

- Why do we use energy at home?
- What sources of energy do you know?
- What energy do we use to heat the water?
- Where does the electricity come from?
- Are there any ways to save energy inside the house?

**STEP 2.**

Brief description of the activity:

Sum up pupils comments. The pupils read in the classroom what they wrote about the energy and then commentary and short discussion follows. The teacher writes the most relevant comments on the blackboard/interactive whiteboard.

Instruction (what you need to tell the students):

Read in the classroom what you wrote about the energy.

**STEP 3.**

Brief description of the activity:

Collect the ideas about what pupils want to know about the topic.

The pupils start to fill in the second column of the table (what I want to know). These questions could be answered through the appreciation activity or used as the basis for future insight on the topic. The teacher writes the relevant questions on the blackboard.

Instruction (what you need to tell the students):

Now fill in the second column of the table.

(after the while) What do you want to know about the energy?

**Tools for the activity** (everything you need to take to the classroom): KWL form (ANNEX 1), pen for each pupil, blackboard, interactive whiteboard, flipchart

**Estimated time** (max. 40 min.): 10 minutes

## Activity No. 2

**The aim of the activity:** Understand the concept of energy efficiency and how building design can improve house efficiency and reduce energy consumption.

### STEP 1.

Brief description of the activity:

Learn concepts about reducing energy impacts in housing with the aim of reaching zero energy consumption by using simplified INSERT method.

The teacher uses the text from ANNEX 2 or prepares his/her own text on the subject. Give a copy of the text to each pupil. The teacher explains the rules: the meaning of the marks (see the notes below) and how to read the text.

Each pupil reads and writes the appropriate mark on the text depending on what they know.

Pupils write already known information into the first column of the KWL table. If they found anything interesting and want to learn more about it, they write it down into the second column. If they found the answers to their questions in the text, they write it down into the third column (10 minutes).

Instruction (what you need to tell the students):

Read the text from ANNEX 2. If you find the information that is already known to you, mark it with "✓" and write it down in the first column of the table. If you find anything interesting and you want to learn more about it, mark it with "?", writing it down into the second column. If you found the answers to your questions, mark them with "+". Write these down into the third column.

### STEP 2.

Brief description of the activity:

Summing up what pupils learnt. Each pupil annotates in the "L" column what he/she has learnt. Teacher writes important information on the blackboard. The teacher also asks if there is anything unclear or wrong and discusses with the class.

Instruction (what you need to tell the students):

Did you find the answers to your questions in the text?

Each of you read in the class what you learnt from the text.

Is there anything unclear or wrong?

Are there any questions you didn't find the answers to?

What you want to remember from this information?

**Tools for the activity** (everything you need to take to the classroom): Pen, proposed text from ANNEX 2, internet is recommended

**Estimated time** (max. 40 min.): 20 minutes

**Notes:** If possible, let the pupils search on internet for the answers from "W" column, which couldn't be found in the ANNEX 2.

MEANING OF THE MARKS:

✓ I knew this

+ New information, answer to my question from the KWL table

? I want to know more

Part of the lesson:

## APPRECIATION

## Activity No. 3

Part of the lesson:

## REFLECTION

**The aim of the activity:** Reflect of the new knowledge and create a slogan.

### STEP 1.

Brief description of the activity:

Creating a slogans and drawing the pictures or posters about everything that pupils learned in order to communicate this topic to all school pupils.

Pupils work in groups. Each group works on a part of the lesson they prefer and together they create a slogan (a phrase, a drawing) to promote the reduction of energy consumption.

Instruction (what you need to tell the students):

Create a slogan and draw pictures or posters about everything that you learned in order to communicate this topic - reduction of energy consumption - to all school pupils.

### STEP 2.

Brief description of the activity:

Each group presents its slogan and explains the purpose to the classroom. Let the other groups guess the purpose of the slogan or whether they understand the meaning of the slogan, poster.

Instruction (what you need to tell the students):

Now present your slogan. Did classroom understand the purpose of your slogan?

**Tools for the activity** (everything you need to take to the classroom): Paper, pen, markers, flipchart paper or paper of bigger size (e.g. A2 format)

**Estimated time** (max. 40 min.): 10 minutes

**Notes:** If you have internet in classroom, inspire the pupils with the video or games mentioned in ANNEX 3. Or ask them to watch it at home.

If you cannot finish the work/posters in the school, ask the pupils to finalize it at home. They can add some pictures from internet and make really useful posters for other school pupils to present the topic.

SOURCE: ENVI-MOBILE / [envi.stromzivota.sk](http://envi.stromzivota.sk)

Annex 1

(what I) Know	(what I) Want to know	(what I) Learned

## Annex 2

We need a big amount of energy for our daily lives for heating in winter, cooling in summer, washing clothes, having showers etc. Most of this energy is produced by carbon and oil that are not renewable ( ). Burning carbon and oil is dangerous because they release pollutants and carbon dioxide that contributes to climate change ( ). Therefore we should take action to reduce this consumption. What can we do?

- 1) We can set the temperature in our houses to the proper level, not too hot in winter and not too cold in summer, to reduce consumption by heating and cooling systems ( ).
- 2) Use efficient light bulbs that consume less energy and last longer ( ), Like LED lighting ( ).
- 3) We can buy appliances (refrigerator, washing machine etc.) at high energy efficiency ( ). Energy efficiency is rated in classes and the most efficient are A+, A++, A+++ ( ).

The design of the house is also important. Insulated walls, windows and roofs maintain the house warmer in winter and cooler in summer ( ). If the windows are faced south they collect more sun in winter and the house is warmer ( ). We can also use renewable energy like solar radiation to heat water ( ). There are also other things to do and applying them all together we can reach the so called zero energy house ( ), that means that we won't need to use any energy coming from carbon fossils ( ).

### MEANING OF THE MARKS:

- ✓ I knew this
- + New information, answer to my question from the KWL table
- ? I want to know more

## Annex 3

### **Video:**

1. <https://www.youtube.com/watch?v=1-g73ty9v04>

It is a classical animated cartoon that contains only images and music. A family starts wasting energy carelessly and unknowingly, from the moment they wake up. Until the whole Europe is covered by smoke. This cartoon shows both the bad and the good behaviour in energy consumption. It presents simple and basic energy saving tips to save the planet and to save money, would it be at home, at work, or on the way to work.

### **Game:**

<http://www.2020energy.eu/game> In this game you can design a building in a sustainable way. You choose building solutions and experts evaluate the sustainability of your project and give you hints on how to improve it.

# NOTES

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