

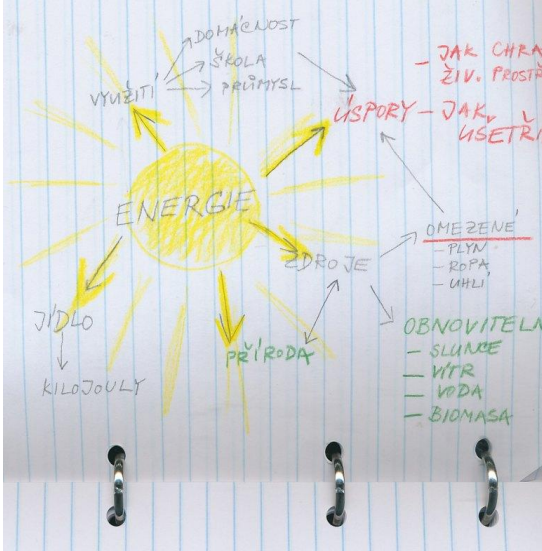


ENERGY SAVINGS

Age group	Primary School, Grades 1 – 9	
Competency features	Proactive approach and creativity 	Ability to shape ideas into plans and bring them to fruition 
Aims	<ul style="list-style-type: none"> to manage information – look up needed data to find a solution, be creative and active to suggest energy savings (to reduce costs of school premises); remembering this, they should behave likewise in future 	
Timing	2 – 3 lessons; additional lessons may be devoted to the issue of energy	
Location	indoors, outdoors	
Resources & materials	scientific literature and/or educational programmes suitable for the grade (also the Internet - Wikipedia, Google) Worksheets: Interim Calculation Tables; Energy, Leaflet Samples	
Description		
<p>Stage: Evocation</p> <ol style="list-style-type: none"> 1) Teacher introduces the topic through brainstorming: What do we know about energy (What do we get from it? What do we need it for? Where does it come from?) 2) Every pupil makes out his own mind map on the topic of energy. 3) Teacher hands out the Energy Worksheet (alternatively, he draws the chart on the board, and pupils copy it in their exercise books). The task is to add the information they have to the chart. 		
		
<p>Stage: Realizing the importance of energy</p> <ol style="list-style-type: none"> 4) Teacher distributes articles, leaflets and other materials about energy (for examples, see Worksheet Leaflet Samples), or they watch a suitable 		

presentation; with senior grades, multimedia CD-ROMs provided by utility companies may be used (usually free of charge, downloadable from the web). Teacher should make his own search and/or enquire.

- 5) Now the pupils should add information in their charts.
- 6) Teacher discusses with his charges how energy reaches us in the first place.
- 7) In senior grades, pupils may observe energy consumption on school premises (checking the meters, and making weekly record, consumption follows from comparing the figures) – see Interim Calculation Tables.
- 8) External input may be included; e.g., inviting a representative of utility company, meeting the school caretaker, etc.
- 9) Teacher sets homework: to come up with as many ways of saving energy at school as possible.

Stage: Reflection

- 10) In the following lesson, teacher discusses with pupils their energy-saving suggestions. Together, they prepare a plan for making these savings real.

Teacher's resource – Possible suggestions:

- When it is warm outside, heating will be cut at school.
- If we switch the lights off at school, we shall save energy.
- Opening the windows for 30 minutes, room temperature drops by 5°C, so we shall not open the windows at all.
- At home, I can save 5 litres of hot water by taking just tepid showers.
- Energy consumption will drop if energy-saving bulbs are used.

Energy-saving ideas can be used throughout the school premises, as long as all the classes agree to adhere to them for a period of time. Then an assessment is made, savings calculated, and money spared used for something else.

- 11) Pupils shall draw a five-line chart – What energy means for me. Teacher draws a blueprint for it on the board, explaining how to use it.

_____	topic
_____	attributes (adjectives)
_____	action (verbs)
_____	slogan (4 words characteristic)
_____	synonym, summary

<p><u>Teacher's resource – Five-line chart:</u></p> <p>What energy means for me Strong Dear Shocks Lights Heat Life without energy tough Comfort</p>	
Risks and recommendations	<p>For senior grades, the task may also involve estimating how much energy their suggestion will have saved. Those measures that they all agree on, can be accompanied by the calculation of money saved.</p> <p><u>Teacher's resource – Calculation:</u></p> <p>Reducing the room temperature by 1°C will cut the heating costs by 5 %. Currently, our class consumes about 10 GJ p.a., while 1 GJ of energy costs our school about CZK 530. What could the actual savings be for the whole year?</p> <p>10 GJ p.a. = CZK 5,300. Out of that, 5 % = CZK 265.</p> <p>Alternatively, the recommended classroom temperature of 22° C may be watched. Teacher and pupils will measure the actual temperature at intervals (see Worksheet Interim Calculation Tables), establish the differential between actual and nominal figures, and express it in energy used.</p> <p>Another option would be comparing energy consumption at home and at school.</p>
Feedback	<p><u>Questions for discussion:</u></p> <p>How did you manage it all? Are you happy with the result? Did anything surprise you? How could we save at school? Is the heating on for no good reason? (airing the room; unobstructed radiators; air circulation in the room) Do we air the room sparingly? (short, sharp airing) Are the windows well insulated? Do we burn the lights in vain? What bulbs do we use? Could we save at home, too? Do we put a lid on the pots when cooking? What is the lid good for? Do we switch the lights on only when we are in the room? Do I only use energy when I really need it? What will have changed once I start using energy sparingly? How is energy measured? (electrical equipment designation by energy-consumption labels)</p>

Application in classes	This exercise is suitable for basic learning. With senior grades, civic education, health education, natural science, environment, physics and math come into it. In communication classes (vernacular), it may be used with description, working with text, reporting news, etc.
Inspired by	Web pages of ČEZ (www.cez.cz), TEREZA (www.terezanet.cz) and EkoWATT (www.ekowatt.cz) have been perused.
Notes	

Worksheet
INTERIM CALCULATION TABLES

AVERAGE TEMPERATURE IN CLASSROOM

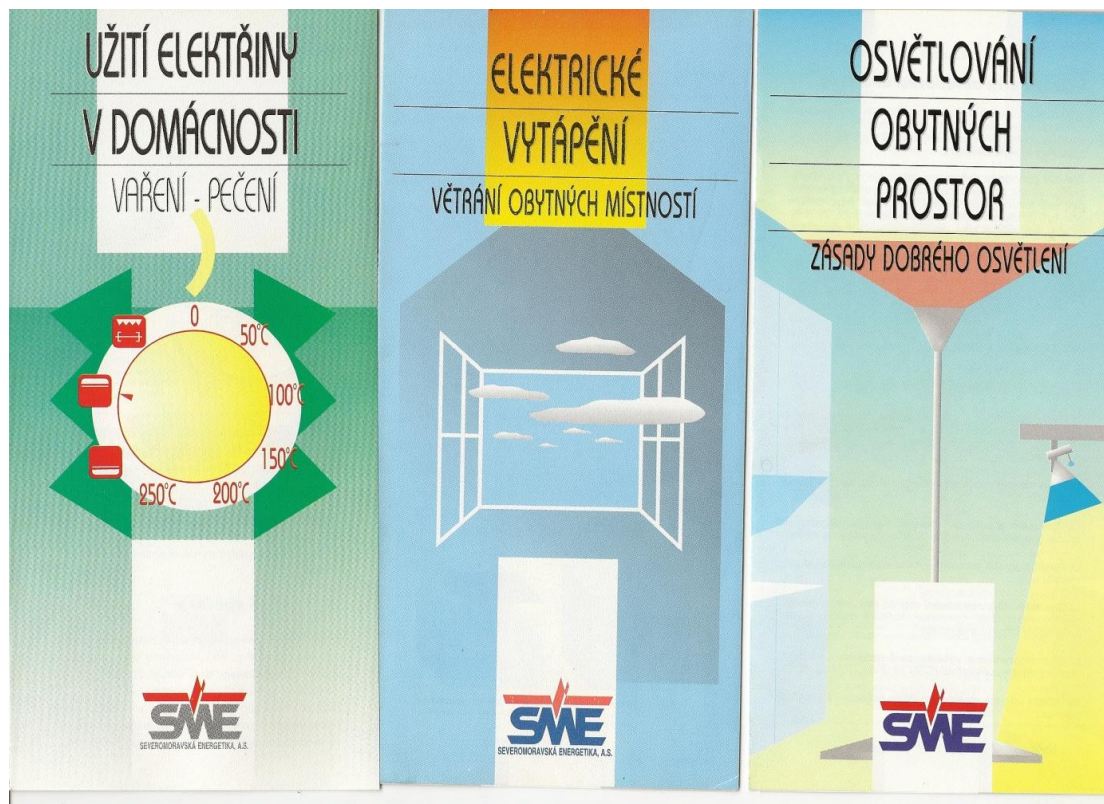
Date	Temperature (°C)			
	Morning	Midday	Afternoon	Average

WEEKLY ENERGY CONSUMPTION AT SCHOOL

Utility	Meter status		Energy used	Cost per unit	Total cost
	Monday morning	Following Monday (morning)			
electricity					
gas					
heating					
cold water					
hot water					

Worksheet
LEAFLET SAMPLES

Utility companies would normally provide a number of free leaflets that may be used for obtaining additional information for the table /see 4) above/.



Worksheet
ENERGY

	Fossil fuels	Solar	Nuclear	Wind	Water	Human	Biomass
Source							
Use							
Renewal							
Waste							
Savings							