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## SCIENCE 4 ALL



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### Lesson Plan

<b>Class: first/second</b>	<b>Grade: 13-14 years old</b>	<b>Time:45 minuts</b>
<b>Teacher: Monika Miśkiewicz</b>		<b>Date: February, 2017</b>
<b>Country: Poland</b>	<b>Subject: Physics</b>	
<b>Topic Area:</b> What can we do when the power runs out- solar panels?		
<p><b>Aims:</b> By the end of this lesson students will be able to:</p> <ul style="list-style-type: none"> <li>• know the basic English vocabulary related to this topic. Lesson conducted partly in English, students become familiar with the English vocabulary connected with this subject.</li> <li>• be convinced that alternative sources of energy should be used very often, and in this way each of us can help our environment and save energy,</li> <li>• construct an electric circuit with a solar panel,</li> <li>• know how calculators work.</li> <li>• develop their ability of logical thinking</li> <li>• construct a robot solar robot.</li> </ul>		
<b>Aids</b> <sup>1</sup> : interactive whiteboard, circuits with solar panels, solar robot, worksheets.		
<b>Procedure:</b>		<b>Time</b>
<p>Warm up/ review:</p> <p>Step 1: Students come to the dark class (where the binds is shut, and there is light darkness). Their first question is - <b>Can we turn on</b></p>		

<sup>1</sup> Attach worksheets, Other material used, links to websites...

## **the light?**

Nevertheless the teacher ask the question – “What would happen if really, one day run out of energy? Students give different possibilities, "what would happen if could run out of power? – brainstorming.

### **What is energy?**

*Is it the gas that fuels our cars and planes? The electrical current that comes from a wall socket? Is it the calories transformed from the food we eat? Is it food itself?*

### **Where does energy come from?**

*Is it buried in the earth? Does it flow through rivers? Through the wind? Does it radiate from our sun?*

### **How do we use energy?**

*How do our neighbours ,People in other countries use energy? Does everybody use the same kind of energy to do things? What would we do without energy?*

*These questions are fundamental to conversations that take place at every level of society and in every part of the world today— conversations involving science and technology, politics, economics, environmentalism, community, and family issues. The questions are critical to every person living on the planet and yet the ideas, experiences and answers are different for everyone.*

## **Engage the class in a discussion about renewable and solar energy.**

Step 2: The topic is announced.

Teacher checks the list of presence and dictates the topic of lesson.

Step 3:

Teacher presents in power point presentation about a basic sources of energy used in Poland. Students notice that we do not use of alternative energy sources.

Students watch a movie

<https://www.youtube.com/watch?v=hEghkVpQsk4>

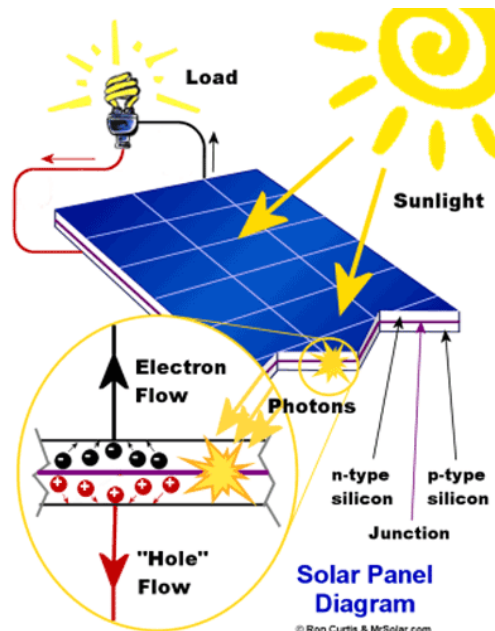
Teacher shows a simple experience with inflamed paper by a magnifying glass. On a piece of paper teacher paints a black area, attaches magnifier in the sun and shows students that solar energy

can set fire to paper.

Step 4: The teacher divides the students into four groups. Each of group is assigned to one table where he has a specific job to do. If one group finishes their task they move to the next table, and do the task which was doing by the group before. In this way, each of group does four tasks.

**The first table:** students should write a few advantages and disadvantages of using solar panels- pupils use of texts on this subject in the English language, which are prepared by the teacher. Their answers in English are sticked on a common board. The group can use the dictionaries.

**The second table:**



The second group construct circuitries including solar panels and explain why this current flows.

**The third table:**

Students use the instruction and construct robots which are powered by solar energy.



### **The fourth table:**

Students are supposed to get some information about the cost of purchasing and installing such panels in our homes on the internet. How much energy provides one of that standard solar panel. Students have to decide whether is better to buy if they would like have panels at their homes, separately panels or order special outsource company which deals with it, they mount and installation it. Students have to estimate costs and decide what is better to buy panels separately or order the company. Students also have to find on the internet three companies that deal with solar panels, compare their offers and choose the best.

### **Homework:**

Students watch at home part of the popular science film about energy, and they make notes to notebook.

<https://www.youtube.com/watch?v=LfKzSrLOUlw>

### **Evaluation:**

the teacher will evaluate the students' work card  
the teacher control students if they mounted circuits with solar panels or if

they need help.

After all this tasks the teacher gives students series of questions regarding solar energy and assesses how they understood the issue.

**Summary:**

This may be one of several lessons about saving energy and profits to society. We can talk about water, wind or nuclear energy.

Work this form is suited better to classes with a small number of students.