SCENARIO		
Title	Work and power of electric current.	
Summery	In class, students will learn the concepts of work and power of electric current. They will become familiar with the formulas for their calculation. In practical operation, they will determine the power of the receiver. They will use an ammeter and a voltmeter to determine the power.	
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Didactic objectives
General objectives: - Introduction of the concepts of work and power of electric current and formulas for their calculation. - Plan and carry out the experiment of determining the power of the receiver using an ammeter and voltmeter. **Specific lesson objectives:** Students will be able to: - replace the forms of energy into which electricity is converted into the indicated devices, e.g. used in the household, -describe the conversion of electricity into mechanical energy (work), - present the ways of generating electricity and their importance for the protection of the natural environment, - demonstrate the conversion of electricity into mechanical work, - using the concepts of work and power of electric current, calculate work and power of electric current, - convert electricity given in kilowatt hours into joules and vice versa, - plan and carry out the experiment related to determining the power of the receiver, - determine the receiver power using a voltmeter and ammeter, - draw a chama electrical circuit depicting the experimental setup for determining power, -solve simple calculation tasks using the formula for the work and power of electric current, distinguishes between the size of data and searched.

Physics☐	Mathematics☐	Information Technology☐	Robotics☒	Programming☐
Education Level:	10-12 years☐	12-14 years ☒		

Problem Statement

-What are the formulas for calculating the work and power of an electric current?

- How to determine power?

- What instruments are needed to determine the receiver power?

BOM (Bill Of Materials needed)

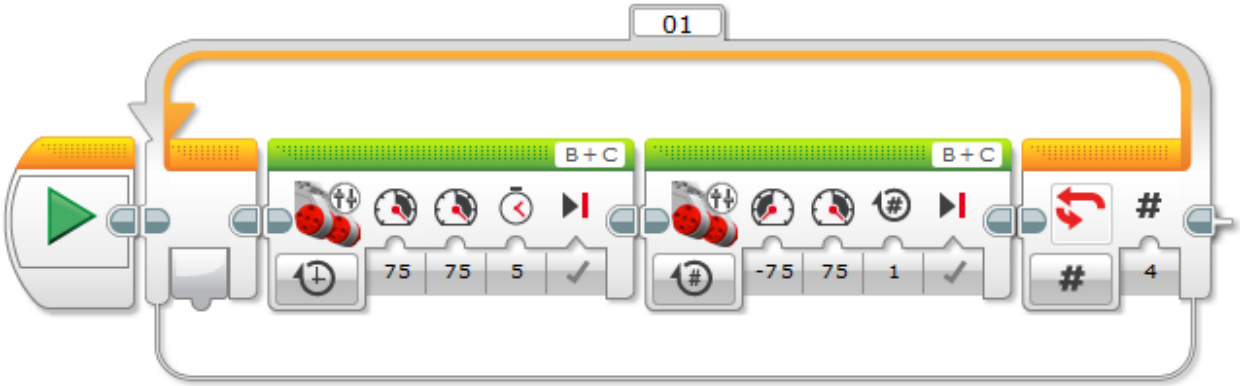
- computer station
- LEGO MINDSTORMS EV3 robot
- instruments for experience: light bulb, 4.5 V battery, ammeter, voltmeter, wires.

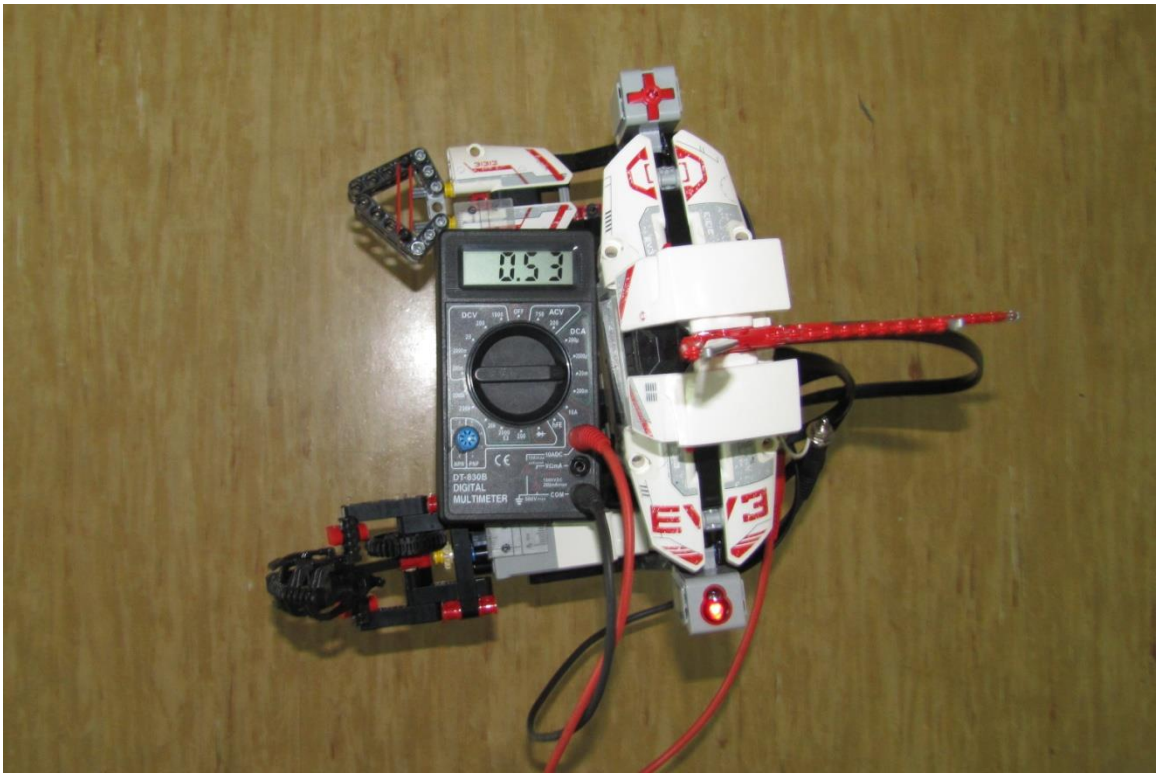
Activity description

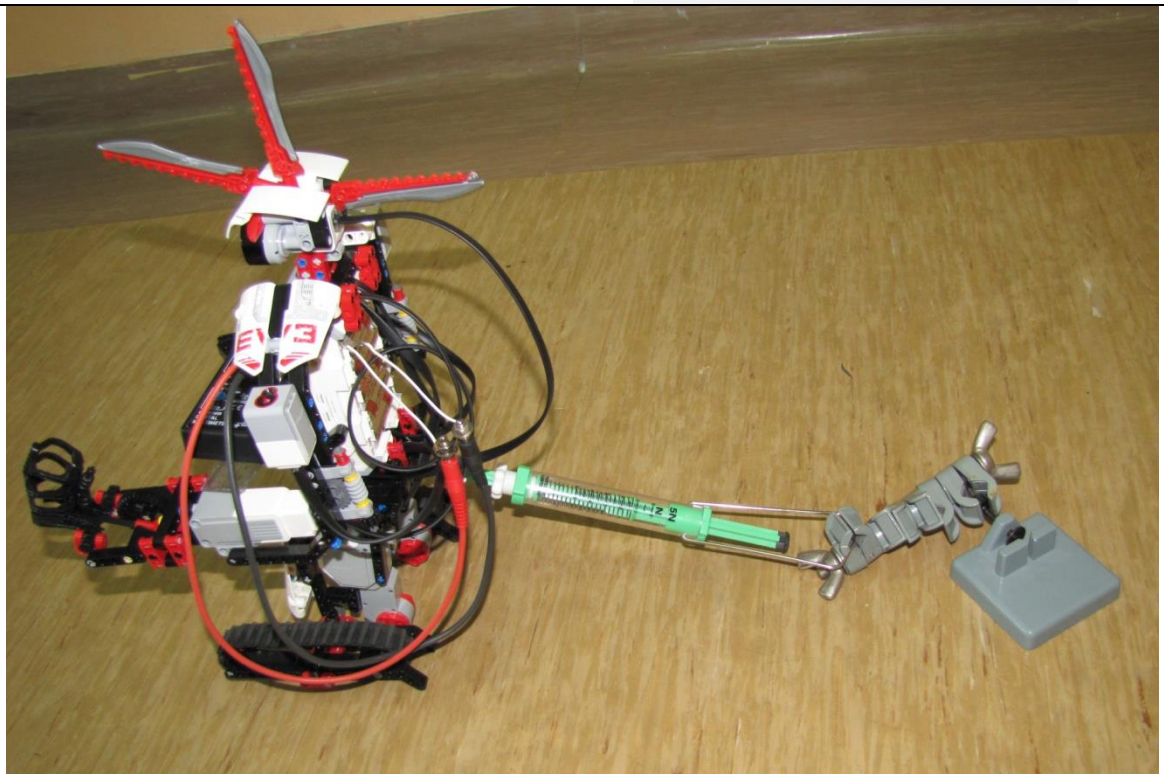
1. Organizational and organizational activities
2. Introduction to the topic - discussion of ways to generate electricity.
3. Discussion of examples of the conversion of electricity into other forms of energy.
4. Discussion of work performed by electric current.
5. Discussion of the power of electric current.
6. Performing by the students the experiment of determining the receiver power using an ammeter and voltmeter - work in groups.
7. A reminder of a kilowatt hour as a unit of energy and work.
8. Reading information from nameplates of electrical devices.
   Calculation of electricity costs
9. Practical exercises - working with the LEGO MINDSTORMS EV3 robot.
   - measurement of voltage prevailing in the robot circuit
   - reading current while the robot is working,
   - calculating the robot's power and electricity consumed during its work.
10. Problem solving.
11. Summary and end of the lesson.

Resources

light bulb, 4.5 V battery, ammeter, voltmeter, cables.







Students' Evaluation
The student will be assessed in writing for his commitment and correct conclusions from experience.
Bibliography
Spotkania z fizyką - Podręcznik do fizyki dla klasy siódmej szkoły podstawowej Authors: Grażyna Francuz-Ornat, Teresa Kulawik, Maria Nowotny-Różańska https://www.robocamp.pl/pl/lego-mindstorms-ev3-wersja-domowa-edukacyjna/
Scalability
Script modification and improvement.
More information
Solving tasks using the program.