

SCENARIO		
Title	Light Fission	
Summery	Students will become familiar with the concept of "refraction of light". They know the relationship between the angle of incidence and the angle of refraction. They will know what is the phenomenon of refraction and fission of white light in the prism.	
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Didactic objectives	
<p>General objectives:</p> <ul style="list-style-type: none"> -Introduction of the concept of refraction. -Experimental demonstration of the relationship between the angle of incidence and the angle of refraction. -Discussion of the phenomenon of refraction and fission of white light in a prism. <p>Specific lesson objectives:</p> <ul style="list-style-type: none"> -Students will be able to: -Show examples of refraction in the surrounding reality, -Design an experiment illustrating the phenomenon of refraction (changes in the angle of refraction when changing the angle of incidence -describe the course and result of the experiment carried out, explain the role of the instruments used -make a schematic drawing illustrating the experimental system, -describe the course of rays at the transition of light from a thinner medium to an optically thicker medium and vice versa, using the concept of refraction angle, -describe the phenomenon of light splitting using a prism, -describe white light as a mixture of colors, and laser light as one-colored light 	
Physics <input checked="" type="checkbox"/>	Mathematics <input type="checkbox"/> Information Technology <input type="checkbox"/> Robotics <input type="checkbox"/> Programming
Education Level:	10-12 years <input type="checkbox"/> 12-14 years <input checked="" type="checkbox"/>

Problem Statement

- What is a refraction of light?
- What are the relationships between the angle of incidence and the angle of refraction?
- What is the phenomenon of refraction?

BOM (Bill Of Materials needed)

- computer station
- SCRATCH environment or Internet access installed
- instruments for optics experiments.

Activity description

Lesson flow:

1. Organizational and organizational activities
2. Introduction to the topic - a reminder of messages regarding the propagation of light in homogeneous media
3. Demonstration of an experiment showing refraction of light.
4. Demonstration of an experiment showing refraction at the border of two centers.
5. Explanation of the phenomenon of refraction based on observation of experiments.
6. Demonstration of the difference in refraction of light depending on the centers on which the light falls.
7. Explanation of the dependence angle of refraction on the type of medium.
8. Explanation of the relationship between the angle of incidence and the angle of refraction.
9. Experience demonstration - the passage of laser light through the prism
10. Simulation in SCRATCH environment of white light splitting after passing through the prism.

„InnoExperiment – Innovative Approach to Teaching through Experiment”

Project Leader: Zespół Szkolno – Przedszkolny w Goniądzu (ZSP)



```

when clicked
  set size to 60 %
  go to x: -220 y: -125
  point in direction 90
  turn 5 degrees
  clear
  set n to 2

```

```

when clicked
  go to x: 25 y: -96
  set ghost effect to 50

```

```

when clicked
  show
  go to front
  set size to 20 %
  point in direction 90
  go to x: -174 y: -71
  pen down
  set pen color to
  set pen size to 4
  turn 10 degrees
  wait 1 secs
  play sound pop
  hide
  forever
    move 10 steps
    if x position > -16 then
      broadcast komunikat1
      stop this script

```

```

when I receive komunikat1
  hide
  set pen size to 4
  go to front
  set size to 40 %
  point in direction 90
  go to x: -7 y: -41
  pen down
  set pen color to
  turn 1 * n degrees
  repeat until x position > 54
    move 5 steps
  turn 1 * n degrees
  forever
    move 10 steps
    if touching edge ? then
      pen up
      go to x: -7 y: -41
      stop this script

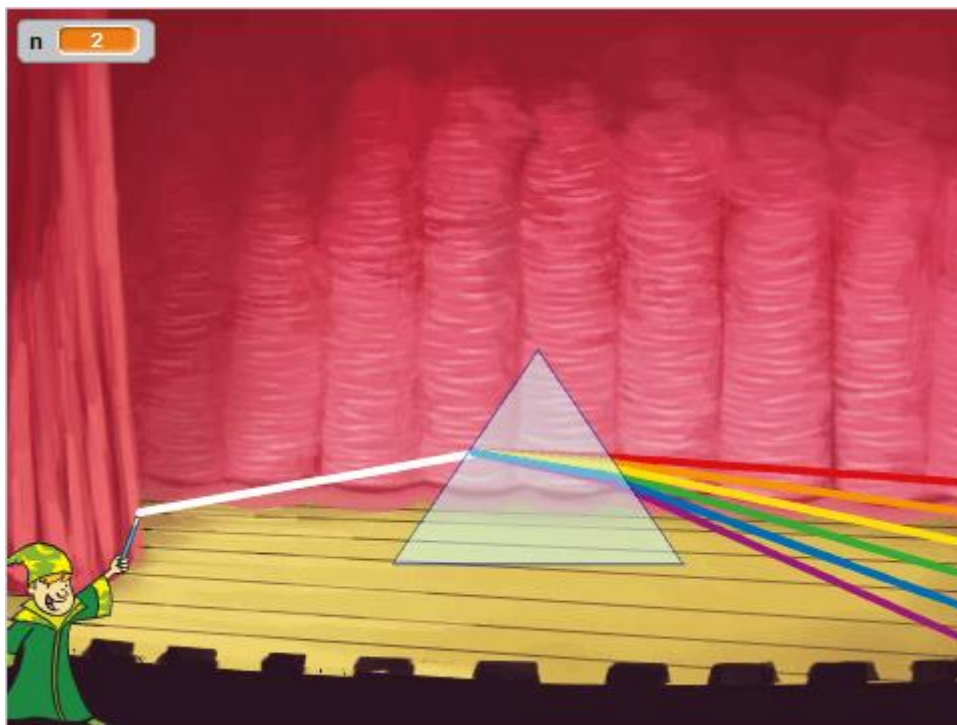
```

11. Summary and end of the lesson.



Resources

- computer stadion
- SCRATCH environment installed or Internet Access



Students' Evaluation

The student will be assessed for commitment and proper performance of experiments.

Bibliography

Spotkania z fizyką - Podręcznik do fizyki dla klasy ósmej szkoły podstawowej

Authors: Grażyna Francuz-Ornat, Teresa Kulawik, Maria Nowotny-Różańska

<https://scratch.mit.edu>

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Scalability
Script modification and improvement.
More information
Solving tasks using the program.

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