

Didactic scenario

1. Title

The weather has its ups and downs but...man has devices!

2. Keywords

Frost, flood, wind turbines , weather, anti-flood works

3. Basic information

STEAM : Engineering, Science, Arts

Typical interaction time with the educational scenario in the teaching hours for in-school work: 4 teaching hours

General description of the scenario:

Phases	Stage	Time
1st	Warm up	45'
2nd	Implementation stage	45'
3rd	Evaluation stage	45' + 45'

Age group: mixed student group (Full day, Robotics Club)

Estimated difficulty level :

Easy	Very Easy	Moderate	Challenging	Very Challenging
		X		

Teaching resources

Material: wedo 2 (robotic constructions), worksheets, markers, cardboard, modelling clay

School infrastructure : interactive whiteboard, laptop , computer lab

Additional material from external sources/online tools:

<https://www.ertnews.gr/video/anemomiktes-kata-ton-pagetonon-gia-tis-dendrokalliergeies/>

<https://www.markakisagrotika.gr/index.php/2016-03-10-09-26-36>

https://www.google.gr/search?q=%CE%80%CE%BB%CE%B7%CE%BC%CE%BC%CF%8D%CF%81%CE%B1+%CE%B5%CF%83%CF%83%CE%B1%CE%BB%CE%B9%CE%BA%CE%BF%CF%83+%CE%BA%CE%B1%CE%BC%CF%80%CE%BF%CF%83&sca_esv=579655989&sxsrf=AM9HkKm3FIgJrr5gD9cZ6qKSM57WWEJp9g%3A16992157BC%CF%8D%CF%81%CE%B1+%CE%B8%CE%B5%CF%83%CF%83%CE%B1%CE%BB%CE%B9%CE%BA%CE%BF&gs_l=DKDVjcGXABeAGQAQCYAYsBoAGUBaoBAzAuNbgBACgBAPgBAClCChAAGEcY1gQYsAPCAgcQlxiKBRgnwglHEAAYgserp#fpsstate=ive&vld=cid:5441aa81,vid:3LRFiMRPBzl,st:0

<https://kahoot.com/> (online quiz)

<https://www.youtube.com/watch?v=7Vz6nZGgNF0> kahoot tutorial

<https://www.meteo.gr/>

<https://photodentro.edu.gr/v/item/ds/8521/11285>

<https://photodentro.edu.gr/v/item/ds/8521/10859>

<https://photodentro.edu.gr/v/item/ds/8521/10963>

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4. Educational Problem

The educational scenario refers to natural disasters, specifically floods and frost. Initially, the students come into contact with these extreme weather phenomena and what causes them (laws of physics, meteorology, etc.). In addition, students discover the ways to cope with these phenomena, by actively participating in dealing with the problems they cause. Finally, the students themselves will build these technical means that contribute to dealing with weather phenomena (wind turbine and dam).

The students seem to have some knowledge about the problems caused by severe weather phenomena, since they live in a lowland rural area and relatively everyone has contact with some

form of cultivation. The children need improvement in the technical part of the means used for prevention as well as the natural laws that lead to these weather phenomena.

5. learning objectives

1. To understand that weather conditions affect crops
2. To build with the help of the kit wedo 2 constructions that help protect crops from natural phenomena (frost, flood)
3. To create the model of the area (fields, wind turbines , anti-flood works)
4. To understand the importance of predicting extreme weather conditions with the help of technology
5. To develop and improve cooperation and communication skills

6. Phases of the Scenario

Phase 1

Title: Severe weather and crops

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 45'

Detailed description of the scenario phase:

- By using the brainstorming method , a first approach will be made to detect students' prior knowledge about extreme weather phenomena and the effects of these phenomena on people's daily lives.
- Students will be shown videos with these extreme weather events and their effects on crops in order to become familiar with extreme weather.
- Students watch a weather report for farmers and analyze how the report is presented in order to understand the symbols and terms used by meteorologists (using the question

and answer method).

Activity Sheets:

Photodentro activity where students are asked to complete a weather map.

<https://photodentro.edu.gr/v/item/ds/8521/10963>

Phase 2

Title: Ways to deal with extreme weather events in lowland areas

Indoor	Outdoor	Mixed
		X

Phase duration in minutes: 45'

Detailed description of the scenario phase:

By using simulation activities, an attempt is made to represent real life situations by presenting a fictional scenario using our school's robotics kit that actively engages students. The subject of the scenario is how to deal with natural disasters in crops. The scenario will be as follows: the local authorities are very worried about the severe weather phenomena that they will face this winter, since the main source of income comes from the agricultural sector. The Mayor convened a municipal council with the relevant services and asked them to immediately propose prevention methods.

Roles: 1 team of hydroelectric dam managers and 2 teams of crop protection managers

The children follow the instructions and proceed to make models. Presentation of wind turbine operation and video display.

Activity sheets: instructions for building a baseplate

Phase 3

Title: Building with Lego , dam , wind turbines , weather forecast control radar

Indoor	Outdoor	Mixed
		X

Phase duration in minutes: 45' + 45'

Detailed description of the scenario phase:

With the help of the Lego construction kit, students will build a dam and two windmills. View

videos and instructions on the operation of the machines that will be needed for the construction stage. The 2 groups watch the video and construct the lego bricks.

Windmill: <https://www.youtube.com/watch?v=E39dBINVuKc&t=0s>

The 3rd group follows the instructions on the worksheet. When the constructions are completed, they are placed on the mat, the codes for the operation of the constructions are created by the children and a check is made for their correct operation.

Activity sheets: Dam construction instructions

7. Evaluation Methodology

Kahoot (online quizzes) created by the teacher

8. Additional resources for the teacher

Folder: The weather has its ups and downs but...man has devices!_ Additional resources for the teacher