

Europeana Learning Scenario

Title

Power Stations: geolocation and natural resources (EN-ES)

Author(s)

Marcos Vázquez Rozas

Abstract

The main goal of this learning scenario is for the students to realize the great efforts all the countries have been making to generate their energy. The importance of the location of energy production plants in a country must be analyzed by the students and the benefits of each type of energy. Still, students must also understand the disadvantages they produce.

The students will work with the Europeana galleries, searching for the main power stations and ways of generating energy in an area or country. They would have to geolocate the power stations with some API (Application Interface Programming, installed on a computer or just used on the web).

The students must also show on a map the area where the Power Station is located. This map will also show the natural resources and human resources that are affected, in any way, by this Power plant.

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El principal objetivo de este Escenario de Aprendizaje es que los estudiantes sean conscientes del gran esfuerzo que han venido haciendo todos los países para generar su propia energía. La importancia de la localización de las centrales de producción de energía en un país debe ser analizada, así como los beneficios de cada tipo de energía, pero también debemos comprender las desventajas que producen.

Los estudiantes trabajarán con las galerías de Europeana, para buscar las principales centrales de producción de energía en una zona o país. Asimismo, deberán geolocalizar estas centrales con alguna aplicación.

Posteriormente presentarán un mapa de la zona en la que está localizada, señalando los recursos naturales y humanos que se ven afectados por la central.

Keywords

energy, electricity, geography, natural resources, human impact, environment.



Table of summary

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Subject	Physics (Upper Secondary, 14-16 years), ICT, Geography.
Topic	Production of electricity: where, how, why.
Age of students	European Schools (14-16)
Preparation time	For teachers: 15' searching through Europeana + 15' Openstreet Map.
Teaching time	3x45 min
Online teaching material	<p>Open Source Maps: https://www.openstreetmap.org Collaborative Maps: https://umap.openstreetmap.fr/es/ Information about the Power Stations: https://en.wikipedia.org/</p> <p>Environmental impact:</p> <ul style="list-style-type: none"> • https://www.thermalwatch.org.in/environmental-impact-assessment/impacts-power-plants • https://www.azocleantech.com/article.aspx?ArticleID=861 • https://www-pub.iaea.org/MTCD/publications/PDF/TRS394_scr.pdf
Offline teaching material	Printed assessment rubrics for peer evaluation. Printed photographs. Maps. Collaborative map.
Europeana resources used	<p>Galleries students will use:</p> <ul style="list-style-type: none"> • https://www.europeana.eu/it/galleries/generating-electricity-and-power • https://www.europeana.eu/es/galleries/generating-electricity-and-power <p>Examples of other galleries students can use:</p> <ul style="list-style-type: none"> • https://www.europeana.eu/es/blog/engineering-photography-eduards-kraucs-and-the-construction-of-the-kegums-hydroelectric-power-plant-in-latvia <p>Examples of other scenarios:</p> <ul style="list-style-type: none"> • http://blogs.eun.org/teachwitheuropeana/learning-scenarios/wind-is-all-around-us-lets-make-eletricity-ls-pt-94/ • http://blogs.eun.org/teachwitheuropeana/learning-scenarios/pv-sources-solar-energy-ls-pl-308/

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Integration into the curriculum

- Level: Secondary Education (13-17 years)
- Subjects: ICT, Physics and Integrated Science, Geography, Technology, STEM scenario.
- Curriculum: European Schools:
 - integrated Science S3 (13-14) *Machines and How they Work*
 - European Schools: Physics S4 (14-15) *Electricity at home. Magnetism*
 - European Schools: ICT S4-S5 (14-16) Computer graphics. Projects.
- Curriculum: Spanish System:
 - Física y Química. 2 ESO. Bloque 5. Energía.
 - Spanish System: Física y Química. 3 ESO. Formas de producción de energía.
 - Spanish System: Tecnología. 3 ESO. Energía Eléctrica y su conversión en otras energías.
 - Geografía e Historia. Todos los cursos. Recursos naturales, uso de herramientas TIC para geolocalización, impacto humano de la producción, ...

Aim of the lesson

The first objective is for the students to be aware of the importance of energy production to develop civilization in Europe and the environmental and social implications.

The second objective is for the students to learn how to use Europeana resources and show them the available resources.

Outcome of the lesson

The student will produce a presentation with pictures of the Power Station they have chosen, the kind of energy it uses, the year of construction, the general map of the area, and the environmental problems the power station could bring to this specific area.

They will also geolocate the Power Stations using umap.openstreetmap.fr, writing a short comment about the power station's energy.

Trends

Project-based learning. All the project will be developed through this methodology, with short activities to get the final result.

STEM activity. This is a Learning Scenario directly related to Science and Technology. The location of Power Plants, production of energy and environmental issues of power plants are all skills related to STEM.

Visual search and learning. One of the main goals is to locate the Power Plants, and the students will have to deal with maps, images and the galleries of Europeana, all visual resources.

21st century skills

Critical thinking skills. We ask the students to search, compare and extract information from internet, and they will also have to share their conclusions.

Collaborative Learning. Students will have to create a collaborative map, so they are impelled to work in a big group.

Communication skills. All the students will have to do a short presentation of your work.

Digital learning. The whole activity has been designed to use a computer an internet connection. The students will learn how to introduce a new mark into a collaborative map and several other activities related to digital skills.

Activities

Name of activity	Procedure	Time
1. Introducing Europeana	<p>First lesson</p> <p>The starting point has to be the introduction of Europeana as a website with resources that we can use for this activity. To do that, the teacher will explain how to search through Europeana, selecting the keywords, the language and the kind of material we are looking for.</p> <p>Watch the Video on how to search through Europeana Galleries: https://youtu.be/dsc4D2cCwiQ</p>	15'
2. Searching power stations	<p>The students will have then to search, using Europeana, for images or videos about Power Stations. They can do first a broad search in all the languages, and, if they find something about their own country, they should focus the search on this particular country.</p> <p>They would have to select some pictures or videos about one specific Power Station.</p> <p>At the end of the activity, they have to use software to edit some of the images. In this manner, they will also be implementing the knowledge from the ICT course. That would be the end of the first lesson.</p>	20-25'
3. Geolocate	<p>Second lesson</p> <p>Geolocation is one of the objectives of this activity. The students will have to use Open Street Map to locate the Power Station geographically. They should then identify the natural resources in that specific area, like rivers, lakes, natural forest and others.</p>	20'
4. Environment issues	<p>The second part of this lesson is to make a list of environmental problems the Power Station could bring to the area where it has been introduced. Students must investigate the problems of this specific power plant. Students should consider that the construction of a thermal power plant is different from that of a hydroelectric power plant.</p>	20'

Name of activity	Procedure	Time
	In this activity I've found interesting to open a chat with the students, so they can share the environmental problems they found for every kind of power plant.	
5. Presentation	Third lesson The last part of this activity is the presentation the students will have to do. That could be a short video or any presentation. It mandatory needs to fulfil the following requirements: <ul style="list-style-type: none"> • Pictures of the power plant, taken from Europeana. • Geolocation. Use of OpenStreetMap. • Map of the area surrounding. Indicate the primary natural resources. • List of environmental issues. • Conclusions. Student's point of view. 	40'

Assessment

There are different activities we will ask the students to do to complete the evaluation of this project:

- Share the images of power plants. Students will have to upload a picture of the power plant they have chosen to a shared folder, with the geolocation of this image. Activities 2 and 3.
- Comments about the environmental problems they associate with each kind of power plant. We usually ask the students to share the comments via Microsoft Teams, but it is possible to use any other tool.
- Students' final presentation. This presentation needs to fulfil the following requirements:
 - Title and name of the student.
 - Location of the Power Plant.
 - Geolocation, using OpenStreetMap. Link or screenshot.
 - List of environmental issues of this Power Plant.
 - Conclusions.

***** AFTER IMPLEMENTATION *****

Student feedback

The feedback will be given mainly by an online form:

<https://forms.office.com/Pages/ResponsePage.aspx?id=aeA505McU0OzBwsicDW6Qi6IC2ADg7xGqE4bYFKqhRpUQkgyTEewVlcwSUJIR1pJQTM2U1g0SznQTy4u>

Teacher's remarks

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About the Europeana DSI-4 project

[Europeana](#) is Europe's digital platform for cultural heritage, providing free online access to over 53 million digitised items drawn from Europe's museums, archives, libraries and galleries. The Europeana DSI-4 project continues the work of the previous three Europeana Digital Service Infrastructures (DSIs). It is the fourth iteration with a proven record of accomplishment in creating access, interoperability, visibility and use of European cultural heritage in the five target markets outlined: European Citizens, Education, Research, Creative Industries and Cultural Heritage Institutions.

[European Schoolnet](#) (EUN) is the network of 34 European Ministries of Education, based in Brussels. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners. European Schoolnet's task in the Europeana DSI-4 project is to continue and expand the Europeana Education Community.

Annex

External resources:

Video: how to search through Europeana Galleries <https://youtu.be/dsc4D2cCwiQ>

Video: how to geolocate with OpenStreetMap: <https://youtu.be/lr-3K0pjwOI>

Rubric for assessment the presentation.
https://drive.google.com/file/d/1hv4uRw_4KCr9PZkxOBWOUH8cxeQhe7n/view?usp=sharing

RUBRIC: PRESENTATION	CRITERIA				MARKS
	REALLY POOR	AVERAGE	GOOD	EXCELLENT	
ORGANIZATION	Audience cannot understand presentation because there is no sequence of information.	Audience has difficulty following presentation because student jumps around.	Student presents information in logical sequence which audience can follow.	Student presents information in logical, interesting sequence which audience can follow.	4
CONTENT	Student does not have grasp of information; there is a lack of explanations about the process and the environmental problems.	Student is uncomfortable with information and is able to answer only rudimentary questions about the process of the activity, and the environmental problems are not right.	Student is at ease with content but presents some lapsus or small misconceptions in the elaboration or with the environmental issues.	Student demonstrates deep knowledge of all the process, with explanations and elaboration and the environmental issues are well founded.	8
VISUALS	Student doesn't provide the correct visuals of the Power Plant and/or map.	Student provides some of the images or maps required but rarely support text and presentation.	The visuals provided are well related to text and presentation.	Student used images and maps with the correct imaging treatment to reinforce screen text and presentation.	4
GEOLOCATION	There is a lack of geolocation or the Power Plant is wrongly geolocated	The geolocation hasn't been finished; it is not in the proposed API.	The student provides the geolocation, but the explanations are not completed or totally right.	The student has finished the geolocation with a correct explanation of the Power Plant.	8
DELIVERY	Student mumbles, there is a lack of explanations, and speaks too quietly for students in the back of class to hear, or the delivery of the project hasn't been on time.	Audience members have difficulty hearing presentation, the speech is not adapted to the presentation.	Student's voice is clear, and he/she follows the order according to the presentation.	Student used a clear voice and correct, precise pronunciation of terms and the speech is perfectly adapted to the presentation.	6

TEACHER COMMENT'S: _____



