



Climate Heritage
Game

The Climate Heritage Game

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IO2-THE CLIMATE HERITAGE GAME Lesson plans

2023



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INTRODUCTION

This document entitled “Lesson plans” is part of IO2 The Climate Heritage Game, a comprehensive educational project aimed at addressing the subjects of Cultural Heritage and Climate Change through a unique and innovative approach. The project encompasses two interconnected goals: raising awareness among students and teachers about these important issues and developing an educational game called the Climate Heritage Game. This game, designed to be expandable and adaptable, utilizes an open game platform and multimedia content to engage students in critical thinking and learning about various cultural sites across European cities. By combining subject knowledge with digital skills, O2 offers a holistic approach to fostering awareness and knowledge among participants. The document highlights the impact of O2 on educators, students, and schools, emphasizing the acquisition of game development skills as an innovative tool for enhancing educational programs. Furthermore, the transferability of O2 as an open educational resource ensures its potential adoption by schools and training organizations across Europe, promoting interdisciplinary learning in diverse subjects

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The goal of the lesson plans is to give specific instructions to teachers on how to include the Game in their subjects and the notion of Gaming in a learning context. Each lesson plan addressed a specific topic such as Geology, History and Chemistry. For each topic, an activity is selected and defined, including :

- The lesson objectives
- A general description
- The material and resources needed, if necessary
- The expected learning outcomes
- The learning activities or the activity involved
- A room for discussion about the topic/activity
- A description of how the activity will be assessed

The Climate Heritage Partnership

Lesson Plan 1

Geology

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<p>TITLE</p>	<p>Field trip to "Jurassica Beach"</p>
<p>LESSON FOCUS & OBJECTIVES</p>	<ul style="list-style-type: none"> - Observation of fossils of marine animals from the Jurassic Period in loco; - To understand the fossilization process and its relationship with the limestone rock of the region. - To understand the phenomena of weathering and erosion of limestone rock (and fossils in it) caused by rainfall, namely acid rain; - Relate the fossils observed with geological mobility and the theory of Plate Tectonics; - Realization of a photographic record for the elaboration of a report on the field trip.
<p>GENERAL DESCRIPTION</p>	<p>Practical activities: Observation, in loco, of marine fossils of the Jurassic Period (Mesozoic Era) and photographic record.</p> <p>Research and Synthesis: Research of information for the identification of fossils and for the realization of a report on the field activity. The report shall contain the objectives of the field trip; the observations (photos of the fossils captioned); a discussion and a conclusion, taking into account the objectives.</p> <p>Application of knowledge: playing the Climate Heritage game, namely "Praia Jurássica" Mission.</p>
<p>MATERIAL/ RESOURCES</p>	<ul style="list-style-type: none"> - Bus; - Mobile phone to photograph and search for information; - Digital Handbook of Geology 10th grade; - Computer (in the classroom).
	<p>At the end of a lesson, students should know and be able to accomplish:</p>



LEARNING OUTCOMES	<ul style="list-style-type: none">- Develop skills related to scientific work: observation; information research; systematization of information; knowledge integration; synthesis capacity; elaboration of conclusions.
LEARNING ACTIVITY/ ACTIVITIES	<ul style="list-style-type: none">- Field trip- Preparation of a report- Search- Debate- Knowledge application/assessment
DISCUSSION	Students present their reports followed by discussion.
ASSESSMENT AFTER THE COMPLETION OF THE LESSON	A report made in collaborative work by two or more students can be used, regarding the experimental part, and also performance observation grids in laboratory work. Performance in the Climate Heritage Game can be used as an evaluation element. Other gamification elements can also be used for evaluation, namely EdPuzzle and Wordwall.
SOURCE	https://cte.smu.edu.sg/approach-teaching/integrated-design/lesson-planning

Lesson Plan 2

History



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TITLE

COMING TO HISTORY. THE SPANISH CIVIL WAR

LESSON FOCUS & OBJECTIVES

- To know the importance of the Spanish Civil War. To know the origins of the war, the different idealities and their consequences.
- To recognise the meaning and symbolism of nearby places and buildings during the war years, as well as the different uses of the same space throughout history.
- Recognise what the Civil War generated at the local level.
- To verify the consequences that the climate may have had on the historical and cultural heritage that remains from the Spanish Civil War.
- Recognize, from an interdisciplinary perspective, climate change as one of the major problems of current environmental issues.



GENERAL DESCRIPTION

Motivation:

- Explanatory videos about the Civil War.
- Watch “mientras dure la guerra” film.
- Dynamic "Now and then". Recognizing images of nearby constructions that were significant during the Civil War.

Experimental activities:

- Among the current inhabitants of the valley, how many people lived through the civil war? Go out, ask people and find as much as you can.
- Make a poster of those survivors you found

Research and Synthesis:

- Conduct a debate about the pros and cons of different ideologies
- Draw a map with the help of the Technical Drawing students, in which they will identify all the significant constructions related to the Civil War or to important figures of that period
- To make a written proposal to the town council on what they consider necessary for the preservation of the historical and cultural heritage of the valley, explaining the issues caused by climate change.

Application of knowledge:

- Playing the Climate Heritage game, Mission Spain
- Teaching elderly people from the valley how to play “The Climate Heritage game”

MATERIAL/ RESOURCES

- Multimedia material such as videos, short films or films that bring students closer to what happened during the war, in order to understand the conflicts of the time.
- Graphic documentation available online to learn about the transformation of the area in recent years.
- Free online applications to work on orthophotos from different periods.
- Free online applications that show climate trends, the increase in temperatures and rainfall and a forecast of what may happen in the coming years

At the end of a lesson, students should know and be able to accomplish:



LEARNING OUTCOMES

- Understand and explain the Spanish Civil War, 1936-1939.
- Know and be able to identify the ideological and social principles of the Franco regime. International relations and the political and economic stages of that time.
- Explain in a reasoned way the meaning of historical and cultural heritage, relating it to collective memory, using it as a source of historical information and giving value to the tangible and intangible heritage, as well as to its conservation.
- Conduct research using historical sources and methodology to generate products related to characters or events.

LEARNING ACTIVITY/ ACTIVITIES

- Videos to present the period to be analysed.
- Dynamics to get to know the subject to be worked on.
- Research work. Searching the internet or calling associations or public bodies to obtain the necessary information.
- Communication of the information in different media (plan/map, text and images, etc.).
- Fieldwork. Go out into the street and identify people who survived the war or their descendants, who can give an account of it.
- Infographic or similar presenting the families or people who survived the war and live in the valley.
- "The Climate Heritage game, a game to understand the historical and cultural heritage and the consequences of climate change.
- Oral communication. Debate on the period.
- Oral communication of everything worked on in a debate.

DISCUSSION

Through the final debate each team of students will have the opportunity to make their position known and the letter they will send to the city council.



ASSESSMENT AFTER THE COMPLETION OF THE LESSON	<p>Students will assess themselves and will complete a co-assessment of their teammates. They will use some rubrics for that.</p> <p>A short test in which each student will be able to express the knowledge he/she has acquired on the subject, and an individual reflection on it.</p>
SOURCE	<p>https://cte.smu.edu.sg/approach-teaching/integrated-design/lesson-planning</p>



Lesson Plan 3

Chemistry



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<p>TITLE</p>	<p>IMPACT OF ACID RAIN ON LIMESTONE</p>
<p>LESSON FOCUS & OBJECTIVES</p>	<ul style="list-style-type: none"> - Recognize that sodium hydrogen carbonate reacts with vinegar to produce carbon dioxide, through an experimental activity; - Understand the effect of acidification of water by the action of carbon dioxide, through an experimental activity; - Check the effect of an acid solution on a limestone sample, by carrying out a simple experimental activity. - Apply the acquired knowledge in understanding the effect of the destruction of monuments by the action of acid rain - Recognize, from an interdisciplinary perspective, climate change as one of the major problems of current environmental issues and relate them to air pollution resulting from the increase in greenhouse gases



GENERAL DESCRIPTION

Motivation: Viewing of videos on the environmental impact of climate change, namely acid rain on monuments;

Experimental activities: produce carbon dioxide through a chemical reaction; prove the acidification of the water by the action of carbon dioxide; check the corrosion of the limestone; by the action of acid rain.

Research and Synthesis: research on carbon dioxide as one of the greenhouse gases and also responsible for acid rain. Identify the sources that produce this gas and discuss measures to minimize the problem.

Recognize that acid rain is an environmental problem with negative consequences for nature and monuments.

Application of knowledge: playing the Climate Heritage game, namely Mission Greece

MATERIAL/ RESOURCES

Videos will be used on the issue of acid rain and its impact on life on our planet. Various laboratory setups and various chemical reagents will be used for the three laboratory activities to be carried out. Students will use their laptops to carry out the proposed research and final assessment through the Climate Heritage game.

LEARNING OUTCOMES

At the end of a lesson, students should know and be able to accomplish:

- Interpret chemical reactions, distinguishing reactants from reaction products
- Perform laboratory activities and interpret the results obtained
- Collection of data and opinions for analysis of themes under study;
- Argue about controversial scientific topics and present, accepting points of view different from those yours;
- Know how to work in a group, performing different roles, respecting and knowing how to listen to all elements of the group.
- Communicate results of laboratory activities and research, or otherwise, orally and in writing, using scientific vocabulary
- Participate in activities related to Chemistry's central role in technological development and its socio-environmental consequences.

- Motivation: viewing videos
- laboratory activities
- Search





LEARNING ACTIVITY/ ACTIVITIES	<ul style="list-style-type: none"> - Debate - Knowledge application/assessment
DISCUSSION	Students present to their colleagues the results of their research on the sources of carbon dioxide, the impact of the increase in this gas in the atmosphere on living beings and monuments. They discuss ways to minimize the problem.
ASSESSMENT AFTER THE COMPLETION OF THE LESSON	A report made in collaborative work by two or more students can be used, regarding the experimental part, and also performance observation grids in laboratory work. Performance in the Climate Heritage Game can be used as an evaluation element. Other gamification elements can also be used for evaluation, namely EdPuzzle and Wordwall.
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Other examples of School subjects were game content can be included :

Sports/ Physical Education

Before doing an activity, such as the one represented in the image, or a walk in a valley, or on a beach, or a peddy paper in the city, sports teachers can ask students to, in a flipped classroom, investigate a little about the characteristics of the place where the activity will happen and then apply the game (the part related to that place) in order to have an evaluation/feedback of the knowledge acquired by the students about it.



Canoeing on the Alviela river



Biology

Before doing an activity, such as the one represented in the image, or an exploration of a wetland, or a beach, biology teachers can ask students to, in a flipped classroom, investigate a little about the characteristics of the place where the activity will happen and then apply the game (the part related to that place) in order to have an evaluation/feedback of the knowledge acquired by the students about it, or ask the students to create their own questions to be uploaded to the game..



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Knowing the fauna and the flora of a protected area

Geology

Before doing an activity, such as an exploration of a cave or a waterfall geology teacher can ask students to, in a flipped classroom, investigate a little about the characteristics of the place where the activity will happen and then apply the game (the part related to that place) in order to have evaluation / feedback of the knowledge acquired by the students about it, or ask the students to create their own questions to be uploaded to the game.



Waterfall formation – a band of hard rock overlies a softer rock



History

The history teacher can prepare a flipped classroom, where students are encouraged to research, in collaborative work, historical structures/monuments and about the impact of climate change on them. The teacher can ask the students to create their questions to be uploaded to the game or can ask the students to play the part of the game related to this subject.



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The iron belt

Geography

The geography teacher can prepare a visit, to one of the sites where he can explain the geographic characteristics of the place, associating in the end, an interactive activity: the realization of the game.



Going through a gorge at the source of the Alviela river



Citizenship

The citizenship teacher can prepare a collaborative work, encouraging students to discuss the issue of climate change and measures to minimize this problem, associating in the end, an interactive activity: the realization of the game.



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Students debating the theme of climate change
