THE BIG GAME: Immersive and Multidisciplinary STEM Learning through A Cooperative Story-Driven Digital Game

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THE BIG_GAME Contest Rules

Rev.1.2

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Contents

INTRODUCTION

This document describes THE BIG_GAME Contest Rules for the European Competition among Secondary Schools, including the assessment criteria and procedures for the learning scenarios designed by the students to be uploaded in the Digital Bank and transformed into game missions for the Game-based learning Environment developed by the project game team.

1. THE RESEARCH ACTIVITIES TO BE DONE IN THE CLASSROOMS

All the learning scenarios should be carried out in a face-to-face modality in the classroom.

a. Teachers will:

- Provide students with information on environmental issues.
- Provide students with information regarding the learning scenario setting as follows:

  The scenario setting is 2030 – but Earth continues to face the same climate challenges as we are already dealing with it, but the situation has worsened.

  The United Nations has formed the UN Anti-Apocalypse Force (UNAAF), which the student teams play a part in, to respond quickly to various global environmental emergencies.

- Prepare, if they wish, the topic to be studied by their students. ***Annex 1*** (*Operation "Black Ice"*) is an example describing how teachers can deliver a specific topic to their students.

Let your students (11-16 years old) work in groups (around 3-4 members), but the teachers can choose the best way to manage their classes.

b. Students will start their research on the environmental issue selected. However, they will focus on local and specific problems connected to a particular place.

e.g. in Finland, one of the main problems is our endangered species, the "ringed seal" or "arctic fox", which will not survive without the snow.

In addition, they will:

- Come up with the scenario idea (e.g., problem to be solved, setting).
- Search the information about the environmental problem to be solved.
- Provide a possible solution to the problem selected.
- Prepare their scenario analysing the problem. They can use the following model for students' research (Figure 1):

Team name_____

Proposed solutions *What are the steps to be taken?*	**Requirements/Resources** *What equipment and resources are required?*	**Expected outcome** *What will the solution achieve?*
Risks and limitations *What can the solution help with and what it may not?* *What could go wrong?*	**Priorities** *What are the priorities?*	

Figure 1 – Model for students' research

c. During the students' work, teachers:

- Observe, help, and encourage students to work on their scenarios.
- Help students find suitable references for their scenarios.
- Manage the groups in the class.

d. Students present their research work to the class. They can include pictures, videos, or something they consider important to show their work.

Please, always check the copyright of the references (videos, pictures, etc.) inserted.

The research work can be delivered in the national language. However, some students can decide to work directly in English.

e. After the students' research work, they will prepare a story-driven presentation in digital format by using the provided power point template (Annex 2 - Scenario Presentation_Context Template) to describe their scenarios representing the context, the main environmental issue to be solved, and the possible solution found.

2. THE BIG_GAME EVALUATION PROCEDURES AND SUBMISSION PROCESS

The first step of the assessment process will occur in the class or the school with the evaluation of digital product developed by the students to describe their learning scenarios on the environmental challenges to solve.

A *peer review* will be done by the students together with the teacher or a group of teachers who have worked with the students.

The peer review will be guided by three/four questions suggested by the teachers for their students. The assessment criteria to be followed at this stage are the following:

Table 1. Rubric for the students' learning scenarios designed in the classroom.

CRITERIA	LEVELS		
	YES	NO	TO BE IMPROVED
Learning scenario guides to waste less natural resources.			
Learning scenario suggests products that have low environmental impact.			
Learning scenario suggests processes that have low environmental impact.			
Learning scenario suggests organisation that have low environmental impact.			
Learning scenario suggests sustainable solutions.			

After this *peer-review*, the best scenario (presented in power point presentation and a short video presentation) will be submitted by the teacher for the THE BIG_GAME contest via email: thebiggame.contest@gmail.com

Please, pay attention that each school can submit only one/two scenarios.

2.1 THE DIGITAL BANK

All the scenarios submitted following the instructions provided in the *Scenario Presentation_Context Template* (Annex 2) with the video presentation will be uploaded to THE BIG_GAME Digital Bank.

2.2 THE GAME MISSION SELECTION

Among the scenarios submitted to THE BIG_GAME Digital Bank, the Game Project Team will evaluate, from the technical point of view, the most suitable missions to be uploaded in the Game-Based Learning Environment according to the following criteria:

- FEASIBILITY: Could the solution realistically be done in practice?

- EFFECTIVENESS: Would the solution actually solve the problem?
- PRACTICALITY: Does it make good use of our limited resources?
- CLARITY: Is the solution understandable and well-presented?

The missions selected will be transformed into the game part, and the students' teams will be challenged in the Game-based Environment to overcome these missions.

ANNEX 1 - An example: Operation “Black Ice”

Mission statement

On March 3rd, 2030 (Sun) at 3:30 am, a research vessel (The Vassa flying a Swedish flag) and an oil tanker (The MT Dolviken, flying a Norwegian flag) collided near the Norwegian island of Andøya in the Arctic circle. Due to the impact, the hull of the oil tanker was pierced, resulting in an oil spill into the sea. By following the Shipboard Oil Pollution Emergency Plan, MT Dolviken crew were able to locate the damaged tank and stop the spill within an hour; however, by that point, a significant quantity of oil was spilt into the sea. Both ships’ crews were then evacuated by air rescue.

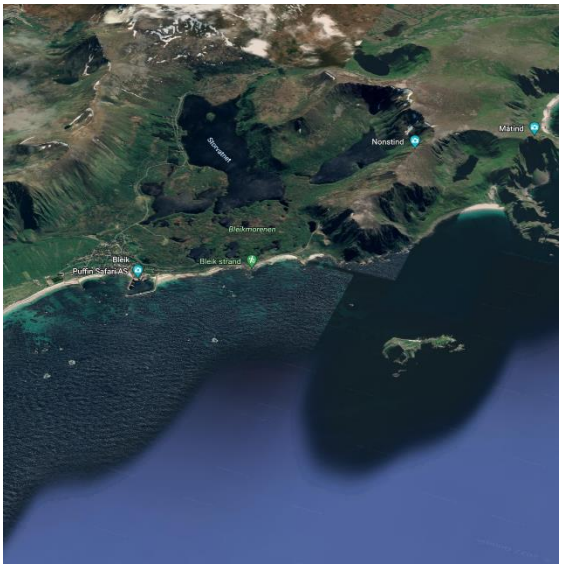
The situation is time sensitive due to the oil leak happening in a natural reserve less than 4 km away from the Bleiksøya cliff, home to one of the largest surviving sea puffin colonies. The fishing village of Bleik, a popular bird-watching destination, is also nearby.

The UN Anti-Apocalypse Force (UNAAF) has been activated to address this threat. You can be on site by 6 am local time. What is your course of action?

Location and environmental conditions

5 km off the coast of Andøya island in the Arctic circle, part of Norway’s Skogvoll natural reserve. The closest settlement is the fishing village of Bleik (population 500), and the sea puffin colony on the Bleiksøya cliff is 4 km away. It is possible to airlift to the site from Harstad in 20 minutes.

Due to the icy waters, navigation is difficult, and since the ice is breaking, the spill can spread fast and reach both the cliff and the nearby village of Bleik, affecting local fisheries and tourists.



ANNEX 2 - Scenario Presentation_Context Template