

An out of school learning activity on biodiversity

Author Giuseppina Addeo

Introduction

The "biological diversity" of our planet, is key to human survival. There are about 9 million species of plants and animals on Earth, but biodiversity is more than just a count of how many different types of plants and animals exist in an area or on the planet. Biodiversity includes genetic diversity, species diversity and ecosystem diversity and it is a measure of planetary health. If you observe markers of biodiversity within individual ecosystems you are able to see biodiversity as a marker of interconnectedness for the planet as a whole. Learn about habitats, ecosystems, biomes, and conditions that can threaten biodiversity means also learn of climate change, and human interference.

Furthermore, it was proven that out of school learning opportunities in the real world overcome learning disabilities, develop talents, strengthen communities and increase interest in education and school itself. Link STE(A)M subjects and their use with everyday life is a cohesive educational opportunity for students that might largely affect their study path choice and eventually their career. And it also contributes to the creation of innovative and cross-disciplinary approaches to STE(A)M teaching in education, each subject adding their own insight, expertise and knowledge.

Designing a path based on methodologies such as Problem, Project and Challenged Based Learning allows incorporating problem-solving, inquiry and design based learning into the teaching activity taking care of real challenges in an authentic context, that of our world. That facilitates deep learning to enhance 21st century skills such as critical thinking, collaboration, communication and creativity and divergent thinking.

Summary

There is a delicate balance to be maintained in the Natural Areas but people can freely attend them. This could be a serious problem because in the long term it can affect the health of the area's biodiversity. Local authorities often do not understand the risk. Students are asked to conduct out-of-school research to investigate habitats, ecosystems, biomes and conditions that can threaten biodiversity in the study area and they are encouraged to find solutions to advise local authorities on how to better protect the area.

Subject

Subject: Biology, Geography, Math and Statistics, Citizenship Education, Art, ICT

Real- life questions

During the lessons dedicated to Biology and Citizenship Education it is possible to analyze the problems caused by the loss of biodiversity and individue which are the actions that citizens could do to protect it.

Aims of the lesson

At the end of this activity students will be able to:

- understand the relevance of biodiversity;
- design a diorama;
- consult a geographic, pluviometric and temperature databases;
- build a thermometric diagram
- suggest solutions.
- support their own ideas.

Age of students

14 – 17

Lesson Plan

Activity 1– in the first activity starts discussing the biodiversity problem in the world and in the natural areas in own town. The students will be asked to play a game in which different group of students represent different habitats and ecosystems. Students will need to figure out what the right habitat is for the animal and/or plant card they are given as they think about the relationship between habitat and animal and plant survival. (Goal: help students understand biodiversity as a measure of planetary health)

Activity 2– In this activity the students will learn some information about a natural area of their town by community partners of the town (organizations, museums, etc.). Some geological and botanical information, climate data and so on, could be given to students to learn more about the ecosystem and habitat could be.

At school in groups students will research on websites pictures and information of different aspect of the area of investigation. Every group will share own information with the other groups to have as much as possible a complete representation of every aspects of the site. (Goal: learning about local habitat; collect information and work together)

Activity 3 – using the collection of meteorological data of the town by climate local service the students will product a climograph, a graphical representation of a location's basic climate. Climographs display data for two variables: monthly average temperature and monthly average precipitation. These are useful tools to quickly describe a location's climate. (Goal: use ITC to represent data)

Activity 4– This activity plans to go on outdoor walks in the natural area with the students. Students are asked to observe, collect and gathered materials from nature site that are useful to build a diorama of the habitats. The students will be supported by science and art teachers. A diorama is a replica of a scene, three-dimensional full-size or miniature model, typically enclosed in a glass showcase for a museum. To build the diorama students can use a simple shoebox and the natural materials collected in mimic the real-life habitat. (Goal: learning how describe a habitat creatively)

Activity 5 – how it is possible take care of biodiversity of natural area of own town? Students are asked to think about solutions, actions, and monitoring plans that citizens could do to preserve biodiversity in the natural area. (Goal: learning critical thinking, collaboration, communication and creativity and divergent thinking).

Activity 6 – Presentation of the of the ideas and of the work realized to local authorities can be the best way to combine the activities with Citizenship Education. (Goal: investigate and present in public a technical subject).

Conclusion

Including STEAM activities in out of-school activity is a great way to combine learning with fun, and channel energy of students into projects that pique their curiosity and reel in their attention to become responsible citizens.

Furthermore It has been found in research that out-of-school learning can be a great opportunity to discover and develop talents. Especially if a school institution develops a learning environment that guides groups of students in their co-operation in creating a professional and publicly visible product, presentation or bperformance.