Nature-based Solutions learning scenario

 Eco - park in our area

Author(s)

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Abstract

This learning scenario aims to encourage students to discover the importance of an ecological environment by addressing urban issues such as arranging a green park in the neighborhood where they live, which to include plants and shrubs, ecological lighting based on solar energy, by achieving of solar panels made of plastic bottles. Plastic packaging has become a big problem in school because the 1600 students daily consume at least 80% of them water or juices wrapped in plastic. After the consuming the liquids all this ends up in the trash and for this reason, I proposed them to think of solutions to use these plastic bottles for the beneficial purpose of thinking about creating solar panels for arranging an ecological park with the help of nature based solutions (NBS).

Through the activities, students will collaborate with specialists from the city environmental guard, applying the query-based learning methodology, and also with engineers who will guide them in the design process through the use of 3D applications.

We started from a case study - a park in the neighborhood where most students live has been allocated space for a park but has not been properly arranged to be a place of leisure but also safe for all residents in this neighborhood being the second that the size of the city.

I launched a challenge to the students where I trained them in a debate about what an ecological park involves, how it should be arranged and I presented them with examples of projects from address below:
 http://growgreenproject.eu/about/project/

https://connectingnature.eu/how-do-we-activate-construction-sector-mainstreaming-nature-based-solutions

This learning scenario is an integral part of the subject "Teaching through STEAM subjects", which I teach at the 5th grade has an included module about "Environmental balances and imbalances", where students will work in teams to make various products and models about environmental protection.

The participation of the students in this scenario will lead to the improvement of knowledge in finding solutions based on sustainable development and will increase the collaboration through partnerships between the school, the local community and the private environment for the orientation towards STEM-based professions.

Interconnected problems

The green spaces have a very important role because they contribute to improving the quality of the air we breathe, through the supply of oxygen that plants bring.

The green spaces bring many benefits on the quality of our life, by preventing soil erosion but also because they improve the absorption of rainwater, giving them a good drainage.

Trees have the ability to absorb pollutants and can prevent overheating of areas where there are large areas of concrete and asphalt. The city of Ploiesti is one of the largest in terms of surface and high temperatures feel much worse than in other areas, as these surfaces absorb heat and transmit it to the environment, thus raising even more the temperature felt in the air.

A green space with a lot of vegetation, especially trees and shrubs, reducing noise pollution, by creating sound-absorbing screens of dense vegetation. Consequently, as many green spaces should be arranged at the city level.

Keywords

Green spaces, cooperation, STEM activities, exploration, investigation, debate, nature-based solutions

Introduction (leave this section as it is)

> *"Nature-based solutions (NBS) are solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes, and seascapes, through locally adapted, resource-efficient and systemic interventions. Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services."*

Overview

Table of summary

Subject	Mathematics, Chemistry, English language, Biology, Geography, Phisycs, ICT for all levels
Topic	Green spaces and urban regeneration;
Age of students	10 -11 years old
Preparation time	90' min(2 lessons x 45')
Teaching time	6 lessons (each lesson x 45'):
Online teaching material	*List here all the links of online tools, applications and support documents that you will use during the lesson, such as: Padlet, Kahoot, Canva, etc.* Biology lesson -Meeting (open discussion) with a scientist- Ploiesti Museum of Natural Sciences. Topics: How we can contribute to the protection of existing green spaces and how we can help to arrange a green space, what plants and shrubs should be planted in the area near the school, to refresh the air and reduce high temperatures during the summer and for reuse rainwater for watering the green space to be arranged. Data analysis: Google documents and spreadsheets to collect data in documents and create graphs. Other online videos about building green spaces. https://youtu.be/YrylJgY6ihU https://youtu.be/_E4QJViBcY0 http://graasp.eu/ils/5c9f67378e853c853209c69c/?lang=ro https://padlet.com/lidiaristea2004/7pquwen0idos https://padlet.com/lidiaristea2004/gauqzxvntmoq Google Docs, Google form,Go-Lab , Interactive questions: https://www.menti.com/ Creating a mind map: https://www.mindmup.com/ Applications for brochures and e-books:

Table of summary

	- Flipsnack: https://www.flipsnack.com/digital-booklet - Canva: https://www.canva.com/pt_pt/criar/flyers/ - Venngage: - https://venngage.com/features/Brochure-Maker/ - Crello: https://crello.com/pt/create/ebooks/ - StoryJumper :https://www.storyjumper.com/ - Satellite measurement of land : https://apps.apple.com/us/app/gps-fields-area-measure/id1123033235 - https://geomeasure.in/#down-app - Nature-based solutions: Transforming cities, enhancing well-being | H2020 | Results Pack | CORDIS | European Commission (europa.eu) - Urban Science UK - NATURVATION | - How to Build a DIY Vertical Garden | ArchDaily - Word Search Puzzle: Identifica cuvintele- Identify the words (biology - education - chemistry) (educaplay.com)
Offline teaching material	Computers, Video projector, multimedia presentation, posters, activity sheets, paper, cardboard, glue, scissors, rulers, polystyrene 5 cm thick, screws, tinfoil, plants Recyclable materials(plastic bottles, juice doses etc). Materials for documentation and realised are posted on Google classroom,
NBS resources used	https://oppla.eu/ https://oppla.eu/product/154 https://oppla.eu/sites/default/files/uploads/nbs2nslayout230x160mm2019engweb.pdf https://www.nature-basedsolutions.com/ https://www.naturebasedsolutionsinitiative.org/what-are-nature-based-solutions/ Nature-based solutions for biodiversity - what we need to know | Oppla http://www.scientix.eu/resources/details?resourceId=28169 http://www.scientix.eu/resources/details?resourceId=28164

License

Integration into the curriculum

The learning scenario is related to the integrated curriculum at school level, in line with the national secondary education curriculum: students are able to combine knowledge of several sciences, plan and conduct research in the field of STEAM, analyze and interpret the results obtained, apply knowledge and skills in biology, chemistry, mathematics.

Searching information to process research, interpret results, solve problems, and explain the influence of human activity on the local environment and the world as a whole. English: B2, to know how to look for documents and experiences in English.

The theme of this learning scenario - Arranging an ecological park - "Eco - Park in our area" is in accordance with the curriculum integrated at the decision of the school from the 5th grade "Teaching through STEAM subjects" which has a module included "Balances and imbalances environmental" . Within this module are targeted contents about environmental pollution, and finding sustainable development solutions in the affected areas. Through these contents it is followed that the students:

• to reflect on environmental issues.
• to know and appreciate the importance of ways to achieve sustainable development.
• to find solutions for arranging ecological green spaces when making economic decisions.
• to reflect on the impact of economic growth and its effects on people's quality of life, the environment and the distribution of wealth locally and globally.

This learning scenario is based on the collaboration between teachers of different disciplines and classes. The content of this scenario is related to environmental pollution and degradation (eg, biology, chemistry), and nature-based solutions (NBS) depend on ecosystems and their services to provide solutions to problems such as climate change .

The Students will work in teams on this topic and will have to look for information on official or governmental sites (ICT) to create a model / plan of an Eco-park as a place of recreation with green spaces, playgrounds, benches, hanging plants to ensure an oxygen supply, rainwater collection channels that can be used after filtration to water the plants and shrubs in the park, reducing the consumption of drinking water in the area, being very effective in summer when there is a drought.

In addition, students must find eco-park management strategies, use new technologies, digital devices and online applications to carry out the proposed activities (technology). They also need critical thinking to know how to build solar panels from plastic bottles (the bottles will be collected in containers at school) to provide lighting for the park at night, reducing electricity consumption.

Thanks to their creativity, students reflect on the ways in which they will be able to adapt their work results to ecological needs using nature-based solutions. Throughout the process, students will work with their peers and they collaborate together to achieve optimal results. Communication within the team is essential to learn how to convey different ideas and how can be put in practice.

Chemistry
• Students identify the chemical properties of non-biodegradable materials, such as plastic bottles, their chemical decomposition, what effects they can have when they are burned directly on the ground for the environment an for healthy of the people.

Science
• Biological aspects of health - dependence on environmental pollution;
• Internal and external factors that affect health;
• Methods and ways of using plastics in order to ensure sustainable development
• Chemistry observations and experiments.

Biology
• Students are documented about ornamental plants and shrubs that can be planted in parks as ornaments but also as green space for oxygenation,
• carries out activities of direct observation of plants and how to adapt them in unfavorable weather conditions, testing them in an enclosed space, then in the open air for adaptation and observation to climate change,
• biological experiments are documented, observed and performed - how frost affects certain plants.
• Students understand the importance of protecting nature and the environment, know and understand the principles of sustainable development and NBS.

The students are able to describe the attitudes and behaviors of people who use natural and environmental resources responsibly and reuse plastics and paper to make products for landscaping an ecological park.

Maths
Calculate the number of plastic bottles needed to make a 1m / 1m solar panel.
Calculate how many solar panels are needed relative to the surface of an entire park - the measurement of the terrain is done by satellite using android applications, because during the

pandemic period no visit lessons can be made for direct measurements at the identified location in the neighborhood where most students live.

Calculate the area and perimeter of the land on which the green park will be located to evenly distribute the panels, plants and shrubs and other materials that can be used for recreation.

Physics - will perform tests to measure the intensity of electric current.

English - Search for original information on official websites about the construction of solar panels, assembly and assembly. Translation of information found.

Aim of the lesson

Provide general information about NBS.

- to gain more responsibility and be more concerned with protecting the environment, learning how to recycle plastics and paper, reuse them, reduce natural energy consumption, by using the energy of the Sun - construction of solar panels from plastic bottles.

To put into practice ideas for arranging green spaces in the neighborhood where I live.

- They will learn about the technology of making a solar panel from recyclable materials (cardboard and plastic bottles).

Computational thinking and digital literacy - the students look for solutions to problems identified using various online applications and tools, for satellite measurement of land, for creating posters, videos to promote final products.

Participating in practical activities focused on solving a problem related to environmental pollution using green design with nature-based solutions, an approach that stimulates participatory planning.

Collaboration - students work in teams and each group makes a project - eco park and the images during the final product activities will be inserted in a PowerPoint presentation, which they will present online and will be posted on the project page in Google classroom .

Initiative - will make their own PowerPoint or Powtoon presentation about Eco-park that they want in their area.

Innovation - thinking about how to make a solar panel

• In addition to the tangible result of the project that will be put into practice, the participating students in this learning scenario they will consolidate their numerous competencies (STEAM), venture beyond their field of knowledge, understand the role of interdisciplinarity and green thinking and expand their range of language skills. At this time the degree of pollution is quite high and therefore students must know how to design innovative solutions by correlating engineering and nature that can be an extremely necessary skill for future engineers or technicians designing in ecology and environmental protection..

Outcome of the lesson

The results of this learning scenario will be:
- Creating a glossary of ecology terms in the SoryJumper application,
- a model with an eco park that could be put into practice in the neighborhood where the school is located,
- a magazine in the Issuu application with various posters made digitally or manually with images during the activities.

The materials can be distributed on social media channels, on the school website. All these products are related to the existence of local NBS initiatives.

Students will discover new things, enrich their specific vocabulary and implement the knowledge gained in the materials that can be displayed on the notice board, to encourage participation in the actions of NBS and other students in the school.

Trends

Project-Based Learning: students get fact-based tasks, problems to solve and they work in groups

Collaborative Learning - each member of the group is given a task with the final product they need to achieve

STEM Learning - Increased attention will be paid to Science, Technology, Chemistry, Physics, Biology and Arts that are included in the educational process. Search information on the internet about the degree of waste pollution in the last 5 years, schemes about the construction of solar panels.

Game Based Learning - Creating graphic animations using Scratch about the description of the eco park,

Problem-based learning: Real life the starting point learning is the main activity identifying and formulating problems presenting totalities from the outset acquire knowledge in relation to needs.

Project-based Learning- (PBL) teaching method in which students learn by actively engaging in real-world and personally meaningful projects.

Collaborative Learning - educational approach of using groups to enhance learning through working together.

Open Source Learning - empowers students to work in partnership with teachers to develop their own learning experiences and interdisciplinary paths of inquiry.

Mobile Learning- new way to access learning content using mobile devices.

Social Media- provides students with the ability to get more useful information, to connect with learning groups and other educational systems that make education convenient.

Learning using virtual learning spaces through investigation on the online platform - Graasp - Lesson created

Visual Search & Learning

Investigation - how many plastic bottles of juice or water can be collected in a week if they consume 25-30% of the total number of students in the school every day. How many bottles is needed for a solar panel? But a family of four who each consume a bottle of juice or water a day. How many bottles are emptied per week?

Creating concept map using Coggle(https://coggle.it/) online applications, mindmapp

Peer Learning: students learn from peers and give each other feedback (apps from lesson Graasp).

Practical activities

Project creation - eco-park models made of recyclable materials, plastic, cardboard, paper

• Socratives for assessment - the focus of assessment activities shifts from "what you know" to "what you can do".

21st century skills

21st Century Skills Learning requires an innovative support system to engage students to put their knowledge into practice, use appropriate technologies and real life connections to make learning relevant, personalized and help them orient themselves to STEAM careers.

🚌 Creativity and innovation - students create models of what an eco park should look like, using recyclable materials, glossary of ecological terms, digital posters using ICT tools and collaborate in a creative way.

🚌 Critical thinking and problem solving - students analyze information about NBS initiatives on environmental pollution.

🚌 Communication - students present their ideas, listen carefully, use communication to achieve various objectives (combination of lectures and autonomous learning),

🚌 Collaboration - students work in groups to achieve a common goal and together take responsibility for the collaborative activity in which they participated.

🚌 ICT literacy - ICT tools, web 2.0 tools that serve to document and make final products,

🚌 Curiosity, amazement and questioning - the practical activities in this scenario give students the opportunity to think critically, ask questions, observe, evaluate information and collaborate constructively.

Activities
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Name of activity	Procedure	Time
Presentation of the notion about NBS	Reading about different types of ecosystem services, about NBS. We invited students to a debate about what they think about moving to nature-based solutions. What he would like to change in the neighborhood where I live. "Do you want a ecological park?" They will write the answers in a Word document that they will submit to the portfolio. In this lesson, we used the following materials so that students can be inspired to create a project: Nature4Cities - Be part of the Green Transition! https://youtu.be/6rn6jOZ6Bs8 Think Nature (think-nature.eu)	45'
Investigating NBS-based services in the neighborhood where they live.	Needs analysis regarding the arrangement of an ecological park, with lighting using solar panels, green space, leisure and playground for children. Park that also includes an underground rainwater collection tank. For online implementation, you can use the Internet to search for information on what an ecological park looks like, in order to create a model arranged with everything that an ecological park involves. The lesson plan is designed for online implementation so that students with a rich imagination can create project sketches using online applications, such as Tinkercad - 3D models and can document themselves in their learning pace.	45'
Introduction	People have always wanted to spend more time in the natural environment, with lots of plants, fresh air and more little noise and therefore more and more importance must be given to the arrangement and maintenance of green spaces. The main role of green spaces is the protection of the environment and the harmonization of landscapes created with the natural ones, thus achieving optimal conditions for the development of sports and recreational activities of people and especially for children. Green spaces are an extra energy, improve air quality, which influences people's health and relaxation. The arrangement of the green spaces consists in the development of some works through which the plants that will enter in their composition. Presentation of some materials about soil characteristics, land surface size, soil conditions climate, location of plants and shrubs, ecological bodies for lighting, playgrounds, presentation of project models, ways of preparing the land for planting material in the soil (by planting or sowing).	
Operative Phase	This lesson will focus on identifying the best NBS plan for landscaping/ ecological park in a urban areas, near from school. Group work will be carried out to identify the area where an ecological park can be arranged, the size of the space to be arranged. Various regulatory mechanisms and an advanced approach to business are not enough - educating the population, because the habits of each of us matter, and nature suffers.	

Name of activity	Procedure	Time
	Groups of students (groups 1 and 2) worked collaboratively, using available tools (Google Docs, Google Presentations Google Meetings, Padlets, eBook on Canva) they created the park design. • Part A - Provide recommendations on the location of plants and shrubs in the park, solar panels for lighting playground. • Part B - Propose to the NBS how to provide recommendations about arranging an ecological park, for the citizens living in the area, how to inspire them to actively participate in solving the problem (collecting plastic bottles, assembling panels according to the schemes created in collaboration with specialists in the field, planting vegetation,). Tools: AutoCAD, Photoshop, Canva, posterMyWall: https://www.canva.com/	
Group work1	The class is divided into groups of four students. Each group must create a plan to create an ecological park to maintain the balance with nature in the neighborhood where they live. The best plan will be selected, which has a complex structure regarding the uniformly distributed location of all the elements that go into the arrangement of a park. The teacher asks the students the following questions: 1. What would you like to change in your neighborhood? 2. What do you think is missing? 3. Is there anything we can do about it? The students make a list with the answers to the questions but also with their own ideas and the indications given by the teacher. Using the Padlet application, they will exchange information about the ways in which they could create a model of an ecological park with everything involved. Padlet : https://padlet.com/lidiaristea2004/e6l4mmm77v	*Time : 2 lessons* *2x (45')*
Group work 2	Students work in teams of 4, each member has a task to complete. Making a solar panel made of plastic bottles. Why plastic bottles? Watch video. Where do plastic bottles end up after the contents have been consumed? https://youtu.be/II4wRvH8a-o Students reflect on the video they watched and begin to make schemes to make the solar panel, the location inside the park. - building the scheme - calculation of the number of bottles needed to make a solar panel to ensure the lighting over a certain distance - calculation of the number of solar panels needed to provide lighting at night for the entire surface of the park, -calculation of the distance between the panels at which they can be placed - the construction of an underground rainwater collection tank that can be used to irrigate the plants and shrubs in the park during the summer when there is a drought, thus saving drinking water which is indispensable for the inhabitants of the neighborhood. How many cubic meters should the tank have taking into account the average water flow of torrential rains that fall during rainy periods. The average water flow from 3 different days will be calculated, taking into account the water falls in the last 3 years. https://urbanizehub.ro/dezvoltarea-infrastructurii-verzi-albastre/ https://images.app.goo.gl/g4PcmVSbFivTa1Z39	3 lessons (3 x 45 ')

Name of activity	Procedure	Time
	https://images.app.goo.gl/GtuHJsm44KA45PG59	
Ingredients to use	Plastic bottles, plants compatible with the ground, shrubs, pipe for mounting solar panels, benches made of plastic bottles filled with sand and reinforced by gluing, tying with string, underground pool, plastic pipe channels for rainwater collection.	
Disemination	At this stage, the aim is to make public the experience gained, as well as the transmission of content, materials, results obtained and dissemination of good practices at the local level, through conferences, social networks and posting on the school website. The project will be presented to local authorities and specialists from the environment department. Specialists could provide feedback and recommendations, in order to improve the project, could organize project competitions to select the best projects in terms of feasibility, design, NBS integration of planning and methods to be put into practice, especially that it is one of the needs of the inhabitants of this neighborhood, being the second largest in the city and it has no park. Finally, the projects could be exhibited publicly, in an exhibition with free participation, for a better collaboration with the local community, the proximity to NBS and the field of engineering.	1 h 45'

Assessment
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Assessment

In the evaluation I considered:
- the originality of the chosen subject that refers to real life
- creating files with the documentation obtained from direct measurements
- originality and image design (layout of the solar panel)
- creation and editing of presentations with data obtained from the field
- the multimedia presentation project and its impact on the classroom, on the school and on the local community,

Authentic assessment :
    Performance evaluation in participation in tasks, experiments;
        Extensive topics: realization and interpretation of the results of the questionnaire regarding the construction of some solar panels in the green space to be arranged;
    Portfolio creation.

Initial assessment

    Students will receive a test with some questions related to solar panels,
    We will use Google Forms, which provides the ability to view statistics on each question.

Students follow the learning stages through a "learning survey" and by designing an experimental procedure.

We presented to the students the learning stages from the survey by applying a questionnaire about obtaining electricity using the energy of the Sun.

The tasks I proposed at the beginning of the activity were of the following type:

A. Tasks involving scientific documentation regarding the construction of a solar panel in PETs, the construction of a rainwater collection tank to irrigate the green space during drought (how many cubic meters should have), the arrangement of a green space with plants and shrubs (number of plants and shrubs distributed on a number of x cubic meters of land),

b. Problematic tasks: case studies - calculation of the number of bottles needed for the construction of solar panels, the need for materials

c. The work tasks focused on the development of presentations and documentation that meet the requirements specified in the tasks.

d. Tasks related to finding solutions and proposing methods of counseling and advertising about green spaces designed to be a place of leisure but also safe play for all residents of the neighborhood near the school.

Work tasks to coagulate the work teams, to engage them in the performance of team work tasks, in the preparation of the presentation and production of documentaries, posters.

They focused on finding information, tips on how to assemble solar panels, the number of panels needed to provide lighting at night, the benefits of using plastic bottles in making various products and how it affects the quality of the environment. .

The students defined the objectives of the experiment, built hypotheses and designed the model implementation procedure.

They then conducted the experiment to test whether they could answer the questions they asked.

At the end, they will improve their modeling procedure and present this in an essay, which will be presented to the class.

We also applied the "Group Questionnaires" to the students to detect what they think and their degree of interest in demonstrating through sketches and models what should be done and known, so that they know and show a high degree of interest in environmental protection, the use of plastics, especially plastic bottles, to reduce the degree of environmental pollution.

Link
https://docs.google.com/document/d/1MGetMGAjS2tuWB3DRTiw8lvxXEPCMNm85cbEBJMs r4s/edit?usp=sharing

Formative evaluation

During each of lesson subject, several formative assessments will take place in the form of a quizzes and surveys.

Analyzing the students' answers on Padlet.

Formative assessment :

The aim is to obtain feedback at each stage of the activity through the materials made at a given time and through their intermediate evaluation. Students are challenged to self-evaluate at each level of work.

All these are tracked on the basis of the worksheets or materials made up to that moment; the progress of the working groups will be monitored. Additional additions and clarifications will be provided if necessary.

Final assessment

The evaluation of the PowerPoint presentation
Summative assessment:
Portfolios
Documentation, articles, posters, posters, films
Powtoon, PowerPoint presentation, presentations made by students in front of their colleagues, parents and teachers in the school;

- questionnaire addressed to students;
- summary test
Creating the page on the Google Drive
Attitude and effort put into project execution
During the summative evaluation, certain test sheets are used, the evaluation of the knowledge, the way of solving the difficulties, the skills in the realization of the materials ; how to communicate with those in the work team; participation in the presentation and in the final debate, the opinion of the others but also the self-assessment about the degree of involvement of each member of the team in the realization of the project.
Rubrics: For evaluation we used the following tools:
   a) Products created, individually or in groups;
   b) Individual or group performances;
   c) Individual and group behavior;
   d) Portfolio;
   e) Test worksheets;
   f) Final presentation with the steps of a solar panel (multimedia presentation posted on the Google Docs website)
The following fields are used for the final presentation:
Link:

https://docs.google.com/document/d/100bGVOKqDO9JOpxsU275gKxHdW1xOLvslmUfJJcMKk
w/edit?usp = sharing

Student feedback

Add here the method with which your students will be able to give you feedback and discuss the lesson.

It will be oriented on solving some work tasks, using mainly the method of learning and training skills by solving a wide range of practical applications and focusing on achieving with accuracy and timeliness of workload requirements. The realization of the projects within the practical activities will follow the development of the team work skills.

The place where the training normally takes place is in the computer laboratory where - in order to optimize the didactic approach - it is necessary to have a minimum endowment(that supposes a number of computers equal to the number of students in the class, connected in network and with access to all services), but at this moment we work online, the students work in team : the designers, writters of the project, the real size of a park - direct measurements from the field mathematicians for calculations number of bottles needed, how many solar panels are needed, the number of cubic meters of the water tank, the equidistances for green spaces.

INTERNET. The configuration of the computers must allow the running of the applications through which the specific competencies will be formed.

Teachers will choose the most suitable applications depending on the specialty.

There must also be a printer and peripheral and external storage devices in the laboratory. The presence of a video projector will improve interactive training.
The specifics of the discipline require interactive teaching methods, especially recommending individual practical applications, the method of discovery, demonstration, heuristic conversation.

The dynamics of this field, extremely fast, determines the permanent updating of software products by presenting the latest versions, so that it is easier for graduates to adapt to subsequent developments in productive activity.

Teacher's remarks

Given the recent pandemic of COVID-19, this lesson plan is designed for online learning.
At the moment, the lesson plan is in progress, having in the school curriculum "Teaching through STEAM subjects" in the learning unit "Environmental balances and imbalances" in this semester, where students work on tasks and final products. At this time, the "pieces" for the plan of

an ecological park were made (trees, bird cages, ornamental plants for green space made of colored paper - origami, miniature solar panels)

The students were interested in putting their ideas into practice, but it was not easy for us at the beginning, because they had to learn by discovery themselves.

The subject aroused their interest to such an extent that they adapted to online learning and communication.

I sent materials on Google classroom and organized online discussion sessions.

The students are well prepared for discussions, because they have already searched for NBS solutions on the Internet about arranging an ecological park and found interesting examples, although they encountered difficulties in adapting them to the situation in our country.

 Most students are very interested in creating solar panels especially as some of them have already installed solar panels at home and the discussion turned out to be very interesting and I think it opened their eyes to new solutions.

Regarding the competencies that the students are going to form, at this moment the students have communication skills, critical thinking and found solutions to solve this problem, the project is to be completed.

Project development, implementation processes and results are seen as an aim for student progress in disaster risk reduction and making solutions;

• Enduring value, continuity, relation to life (significance of results and their use in social environment, etc.);

• Appropriate use of materials, tools, devices, information sources;

About the NBS project (leave this section as it is)

 The project is in progress, we are working on products that will be mounted on polystyrene - the project of an ecological park with what students think should contain such a park.

The completion and assembly of the ecological park is done in teams at the school and the most complex project will be posted on the school website .

Annex 1

https://padlet.com/lidiaristea2004/kd4xhriiidua

Annex2

" Glossary of ecology terms "

"ABC's of ...... Glosar de ecologie " - Free stories online. Create books for kids | StoryJumper

Quizalize - Save time with personalized learning and mastery data - the cod ehh9710

Student Login (quizalize.com)

Annex 3

https://drive.google.com/drive/folders/1_4RTarqqc0W-EOpTPtsm-UpygQ2YJlft?usp=sharing

Annex 4

https://drive.google.com/drive/folders/18ko4mEROmLpdvjYRlJ8ZGcML0s4XTQOD?usp=sharing