A living dream

WP2

BEST PRACTICES FOR SUSTAINABILITY EDUCATION AND ENVIRONMENTAL AWARENESS

RELATED TO AN AGRARIAN LEARNING MODEL FOR STUDENTS AGED 8-12.

A living dream - Agrarian learning model in primary school
for Students Aged 8-12

2023-1-ESO1-KA220-SCH-000154333

Co-funded by the European Union

Universidad de Oviedo · TRAINING CENTRE RAGINA · SMART IDEA · CREATIVE STATION

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Best Practices

for Sustainability Education and Environmental Awareness related with an Agrarian Learning Model for Students Aged 8-12

Universidad de Oviedo

CREATIVE STATION

SMART IDEA

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Please consider the environment before printing!

Introduction

Discover inspiring ways to nurture a love for nature, teach sustainability, and develop essential skills in your primary school students! This booklet is packed with 22 of the best teaching practices from across Spain, Bulgaria, Slovenia, Serbia, and Slovakia.

We, a team of six partners from five countries, came together to create this resource as part of the **"A Living Dream - Agrarian Learning Model in Primary School"** project. We started by collecting 60 practices from our countries and carefully evaluated them based on relevance, quality, practicality, and adaptability. We distilled them to this final version of 22 best practices.

The result is a hand-picked collection of proven approaches you can easily use in your classroom, no matter where you teach. To make it even more accessible, we've translated this booklet into six languages: English, Bulgarian, Serbian, Slovakian, Slovenian, and Spanish.

These practices are organised into four chapters:

- ★ **Critical thinking**
- ★ **Cross-curricular collaboration**
- ★ **Environmental empathy**
- ★ **Teamwork**

To make it easier, we've split these practices into 4 categories, but many could easily fit into more than one. So check them all out! We encourage you to try them out, adapt them to your unique setting, and share your experiences with us.

Warm regards,

The Project team

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Table of contents

Methodology

Environmental education for children is crucial for fostering a deeper connection with nature and for instilling a sense of stewardship for the environment. Introducing young students to the wonders of the natural world through hands-on (along with minds-on) experiences, using school gardens as educational resources, can significantly enhance their critical understanding and caring for the environment. These gardens serve as living classrooms where children collaborate and learn about plant growth, biodiversity, ecosystems, climate and sustainable farming practices. Emphasizing the importance of nature, its value and respect will help a generation of young scholars to cultivate new values for sustainability and awareness of the critical role that nature plays in our lives as society.

Therefore, good practices in environmental education at primary schools are essential for bringing environmentally conscious citizens to society from early years. Within the framework of the ERASMUS+ project "A living dream - Agrarian learning model in primary school", collecting good practices and selecting the best ones, it is our expectation that not only environmental responsibility but also

sustainable literacy among primary school students will be promoted. Additionally, implementation of these good practices will develop key competences among participants, providing practical resources for teachers that align well with the values of education for sustainable development, facilitating the exchange of educational experiences among the partner countries in this project.

All good practices described herein have clear and achievable learning outcomes at hand. Instructions are provided to know how to reach tangible results that could be assessed in terms of their impact on students' knowledge, skills, and attitudes. Such practices may include hands-on activities, simulations, and interactive projects, all aimed at making learning in primary school a vivid, inclusive and memorable experience. To note, it is important to choose the ones that are age-appropriate, culturally sensitive, and flexible enough to fit various learning environments. This ensures they can be effectively used in diverse classroom settings.

As a team of six partners from five countries, collaboration was necessary to create this resource as part of the ERASMUS+ project "*A living dream - Agrarian learning model in primary school*". Initially, 60 practices from all countries were collected and carefully evaluated. This booklet is the final version that distils 22 best practices.

The selection criteria for identifying good practices for sustainability and key competences for students aged 8-12 involve four main aspects: relevance, quality, practicality, and adaptability. Relevance assesses whether the practice aligns with the topic of the project (an agrarian learning model to environmental education in primary school), targets the appropriate age group, and follows the provided methodological guidelines. Quality questions if the practice contains an assessment of learning outcomes, meets its educational objectives, has a solid implementation strategy, and avoids unintended negative impacts on stakeholders. Practicality refers to the ease of replication and scalability, resources or training as additional requirements, and benefits to stakeholders. Applicability focuses on how universal the practice is, paying close attention to potential risks which may arise in different contexts, including ethical considerations, and adaptability across various cultural, linguistic, and age-related factors. Each of the mentioned above criteria ensures that the selected practices not only fit the aims and scope of the project but also maintain high educational standards, are feasible to implement, and can be effectively adapted to different contexts.

Acknowledgements

We would like to extend our gratitude to all participating schools for their enthusiastic involvement in this effort for collecting all good

practices, including those which were not finally selected. We really appreciate the dedicated teachers who took a significant step forward in their educational tasks by sharing their experiences fostering a culture of environmental awareness and sustainability literacy. Finally, we give special thanks to every primary student whose active participation has brought these activities to life, making each project and each activity meaningful.

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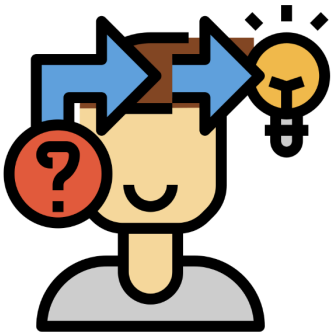
List with the Selected Best Practices:

Chapter 1: Critical Thinking



Chapter 1: Critical Thinking

Climate Quizzy

Source:

Bulgaria

Elementary School Nikola Obretenov, Ruse

Proposed by:

Marieta Mincheva
Teacher

Prepared by:

Description

Playful questionnaire which introduces the importance of reducing the emission of harmful greenhouse gases, which contribute to global warming. Climate change describes a change in the average conditions - such as temperature and rainfall in a region over a long period. Global climate change refers to the average long-term changes over the entire Earth. These include: warming temperatures

and changes in sea levels, ice melting at a faster rate, also changes in flower and plant blooming times;

With this practice, students learn how the greenhouse effect is related to global warming and how global warming impacts our planet. This practice is required to encourage students to change their behaviour and help them to adapt to what is already a global emergency.

Objectives

1	2
Explain the concept of climate change	Consider the effects of climate change on extreme weather
3	**4**
Recognize ways that they can lower the impact on the environment at home	The questionnaire method is more effective as it measures the behaviour, attitudes, preferences, opinions and intentions of relatively large numbers of subjects than other methods

Required Materials

- ★ Climate change Worksheets
- ★ A pen
- ★ Scoreboard
- ★ Certificates

Preliminary Preparation

Questionnaire worksheets
Videos to watch:
Climate change

The Greenhouse effect

Climate Quizzy

1. Why are electric cars a good way to help reduce global warming?

□ They can go so fast that the winds they create help the Earth cool down a bit.

□ They don't release greenhouse gases to the atmosphere.

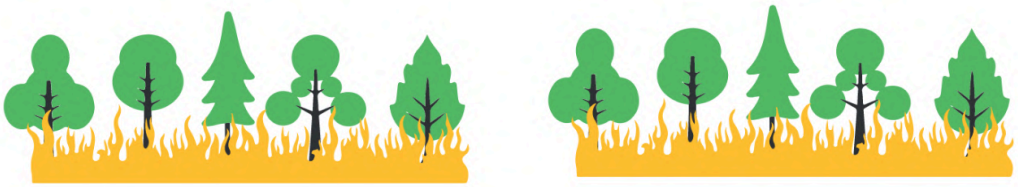
□ They go so slow that after a while people just end up walking to work-the most environmentally friendly mode of transportation.

2. Clean energy is:

□ A form of energy that does not release greenhouse gases or other pollutants into the atmosphere.

□ An energy drink that doesn't leave a stain if you spill it

□ The positive energy you get if you don't use curse words



4. Why is it a good idea to turn off lights and other electronics when you are not using them?

□ Because all that energy comes from somewhere, and more likely than not it is coming from a power plant that is burning fossil fuels.

□ Because your parents might think that you are playing videos games for a longer amount of time than you actually are. This could lead to less video game time.

□ Because they might get bored after a long run of shining and beeping for nobody.

5. Which greenhouse gas is abundant in Earth's atmosphere?

□ Carbon dioxide

□ Water vapor

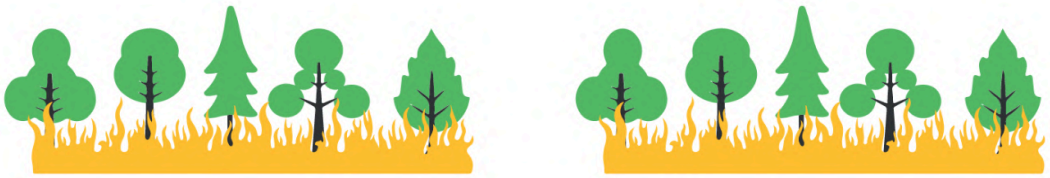
□ Goat burps

6. Which of these weather events can be worsened by global warming?

□ Hurricanes

□ Falling sky

□ Raining cats and dogs



7. As the polar ice caps melt, the world could warm even faster because:

□ It will make polar regions seem like a nice summer vacation spot. All that new plane traffic will release even more carbon dioxide into the air.

□ The ice acts like a mirror, reflecting the sun's energy back into space.

□ They are Earth's favourite toys. When you take away Earth's favourite toy, it gets angry. When it gets angry, it heats up.

8. Global warming is causing the ocean to get warmer, resulting in:

□ Coral reefs getting sick and losing their colour.

□ An increase in people mistaking the ocean for their own personal bathtub, leading to an increase in ocean soapiness.

□ More beach vacations

Elementary School "Nikola Obretenov", Ruse, Bulgaria

Certificates for participants

Quiz Warm-Up Questions

CLIMATE QUIZ

Warm-up questions

What is CLimate Change?

Short Answer: Climate change describes a change in the average conditions — such as temperature and rainfall — in a region over a long period of time. NASA scientists have observed Earth's surface is warming, and many of the warmest years on record have happened in the past 20 years.

What Causes Climate Change?

Short Answer: Certain gases in Earth's atmosphere block heat from escaping. This is called the greenhouse effect. These gases keep Earth warm like the glass in a greenhouse keeps plants warm.

Human activities — such as burning fuel to power factories, cars and buses — are changing the natural greenhouse. These changes cause the atmosphere to trap more heat than it used to, leading to a warmer Earth.

Does What We Do Matter?

Short answer: Yes. When human activities create greenhouse gases, Earth warms. This matters because oceans, land, air, plants, animals and energy from the Sun all have an effect on one another. The combined effects of all these things give us our global climate. In other words, Earth's climate functions like one big, connected system.

How do we know the climate is changing?

Short answer: Scientists have been observing Earth for a long time. They use NASA satellites and other instruments to collect many types of information about Earth's land, atmosphere, ocean and ice. This information tells us that Earth's climate is getting warmer.

Why does it matter that Earth's climate is changing?

Short answer: Global air temperatures near Earth's surface have gone up about 2 degrees Fahrenheit in the last century. In fact, the past five years have been the warmest five years in centuries.

A couple of degrees may not seem like much. However, this change can have big impacts on the health of Earth's plants and animals.

Duration

30 - 40 minutes

Considerations

A practice round is needed to get the participants warmed up. These are easy questions for open discussion just so the students get the hang of what the main information of the quiz is and form their answers.

How to Implement the Practice

The teacher welcomes the teams and briefly introduces the purpose and rules of the Quiz. Worksheets with questions are given to each group.

The teacher then reads each question and gives time for delivering an answer. The time to deliver an answer on the worksheet is one minute. When all questions are answered and groups are ready, the teacher collects the papers and announces the correct answers. Then the results are written on the scoreboard for each team. The winner group is announced with small prizes and certificates are given to all participants who took part -they become Climate Champions.

Evaluation strategy

➔ Contribution to a healthier and more peaceful world

➔ Understanding the indications that we must act with urgency to move beyond fossil fuels and eliminate man-made emissions of greenhouse gases.

Associated outputs (videos, pictures, websites)

Not available.

Chapter 1: Critical Thinking

The theatre of nature and environment

Source:	Proposed by:	Prepared by:
Slovakia	Youthfully Yours SK	

Description

This activity engages children in environmental storytelling and role-playing to foster a deep connection with nature and a sense of responsibility for protecting it. Children develop critical thinking, collaboration, and empathy by creating and performing stories about environmental themes such as pollution, habitat loss, and climate change. The activity involves brainstorming, writing scripts, rehearsing, and presenting performances, followed by discussions to reflect on the messages and solutions proposed. This hands-on approach empowers children to become environmental advocates in their communities, enhancing their creativity and communication skills.

Objectives

1	2
Foster empathy and understanding of environmental issues through storytelling and role-playing.	Encourage creativity and imagination in exploring environmental themes.
3	**4**
Develop communication and collaboration skills through group storytelling and performance.	Promote critical thinking by considering different perspectives and solutions to environmental challenges.

Required Materials

- Paper and pens/pencils for writing stories or scripts.
- Costumes or props (optional but can enhance the role-playing experience).
- Space for performances or presentations.

Preliminary Preparation

No preliminary preparation needed.

Duration

60-120 minutes (activity can be divided in multiple sessions/lessons).

Considerations

Facilitate Discussion: Encourage open discussion and reflection throughout the activity. Support students in sharing their thoughts, feelings, and observations about the environment.

How to Implement the Practice

- Begin by introducing children to various environmental topics such as pollution, habitat loss, climate change, or wildlife conservation. Provide background information and examples to spark their interest and understanding.
- Hold a brainstorming session where children can generate ideas for stories or skits related to environmental themes. Encourage them to think creatively and consider different perspectives, such as those of animals, plants, or humans affected by environmental issues.
- Have children work individually or in small groups to write their environmental stories or scripts. Provide guidance and support as needed, encouraging them to develop engaging plots, characters, and messages that highlight the importance of environmental stewardship.

- Once the stories or scripts are written, allow children time to rehearse their performances. They can assign roles, practise their lines, and plan any props or costumes they may need. Encourage collaboration and teamwork as they work together to bring their stories to life.
- Organise a presentation or performance event where children can share their environmental stories or skits with an audience. This could be done in a classroom, school assembly, or community setting. Encourage children to express themselves creatively and confidently as they deliver their messages.
- After the presentations or performances, facilitate a reflection and discussion session where children can share their thoughts and insights. Ask questions to prompt critical thinking, such as:
    a. What environmental messages did you take away from the stories or skits?
    b. How did the characters in the stories demonstrate empathy and environmental stewardship?
    c. What solutions or actions were proposed to address environmental challenges?

Evaluation strategy

At our school, we evaluate the "Theatre of Nature and Environment" activity by focusing on several key areas: engagement, understanding and empathy towards environmental issues, creativity in storytelling, communication and

collaboration skills, and critical thinking abilities. We collect data through observations, surveys, performance evaluations, reflection sessions, and self-assessments. The evaluation process might include (depending on the group):

- Pre-activity surveys to measure initial knowledge.
- Continuous observation during the activity.
- Post-activity assessments to measure any changes.

We analyze this data to identify trends and effectiveness and then review our findings to create an action plan for improvement.

Associated outputs (videos, pictures, websites)

EkodomovKe stažení

Chapter 1: Critical Thinking

Fridays for growing in the school garden

Source:
Spain, C.P. Ablaña- La Pereda.

Proposed by:
University of Oviedo

Prepared by:
Celia García Rodríguez

Description

A school garden area was created some years ago as a learning space for primary education. On Fridays, primary school students are in charge of tending and caring for the garden, carrying out the relevant practices depending on the time of year: preparing the land, planting, cleaning or searching for and implementing ecological pest control, promoting and valuing the presence of beneficial insects and other animals in the school garden.

The space is also used by other Natural Sciences contents (basic knowledge related to living beings, plants, preservation of the environment) and mathematics.

Objectives

1	2	3
Implement real learning at school about nature, sustainability and caring for the environment.	Bring students closer to the reality of the rural area, the work of the land, the times of year and the origin of food products.	Promote cooperation and collaboration of the entire school in a common project.

Required Materials

- ★ The plot of land intended for the garden
- ★ Tools for working the land (large and small shovels, rakes, gloves...)
- ★ Fertiliser and soil
- ★ Seeds or crops (lettuce, tomatoes, peas, pumpkins...) to germinate
- ★ Flowers

Preliminary Preparation

It is essential in our school to have a responsible person who is dedicated to taking care of the garden, obtaining the necessary material and organising the students to practise it. This teacher has good knowledge about planting and gardening, which is very necessary.

Duration

The activity takes place every Friday for one hour (one hour per week, throughout the course). The students in charge rotate in shifts but everyone knows the evolution, the point at which they are in the school garden project and what needs to be done.

Considerations

It is very important to have a person in the team who knows how to cultivate a garden, willing to organise it, taking care of it, taking charge of it along with the students.

Limitations would be the lack of time to make the garden larger. It would also be positive if the students in the higher years were in charge of organising time in order to teach the younger ones.

The strength is the fact that students, every week, have contact with the garden and learn all the care it needs. The students are very involved and mostly know all the types of plants we have. In addition,

they are concerned about climate change, how it affects them and about implementing ecological pest control techniques.

How to Implement the Practice

Tutors and teachers of Natural Sciences and Mathematics are the organisers and are in charge of the school garden. First year, students research on the characteristics (a sunny place, medium size, terraces, water) that a garden should have, to define its location in the schoolyard. In the following years the place will be maintained.

The main activities to carry out each year include:

1. Establishment of the crops calendar and tasks and shifts for the students.
2. Preparation of land and materials (fixing fences, working on the soil, preparing fertilisers, becoming familiar with garden tools).
3. Research on the activities and requirements of different crops (time of planting, requirements, actions).
4. Seed purchase decisions, involving students visiting the store, talking with sellers and writing down their advice.
5. Sowing and planting.

6. Taking care of the garden (1 hour weekly to observe its evolution, water requirements, cleaning...).
7. Research on garden pests, ecological solutions and beneficial animals (insects, worms and amphibians' identification and natural history research, using photographs and searching for them in the garden).
8. Harvest crops, taking them to the school cafeteria to show them for final consumption.
9. Organization of a harvest festival inviting families and friends from other schools to share experiences.

Students' involvement in decision-making is a keystone. Challenges, problems and commitment are presented to, and accepted by the students. Older students (9-11 years old) carry the greatest burden of responsibility, but research on crops, ecological pest control, promotion of beneficial insects and other animals, garden works, harvest crops and shown in school cafeteria involve all students. The assignment of a specific time on Fridays allows students to plan the different activities to achieve the result within a defined schedule, and presents that last day of the week as a symbolic day for sustainability.

Evaluation strategy

The evaluation at our school is carried out in different ways:

- ➔ Through daily observation of the activities carried out in the garden, its progress, participation and organisation. It is a formative and continuous evaluation to change what is necessary at each moment and improve the activity throughout the course as circumstances require. In this regard, it is very important to adapt at all times and have the collaboration of the teaching staff to do so if required.
- ➔ Formal monitoring of the project throughout the course. Monitoring is carried out in the project with the participation of the tutors, teachers who teach natural sciences and mathematics and, especially, the project coordinator.
- ➔ Dialogue with the students. The students' opinions are collected orally to improve and see what to improve or change.
- ➔ Final course report. The feedback on the garden activity is collected in the final course report along with the conclusions and final reflections on the matter.

Associated outputs (videos, pictures, websites)

Blog entry with video of the beginning of the project:

cpablanalapereda.blogspot.com

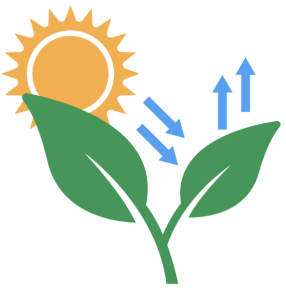
https://youtu.be/7UxaxEsKpFQ

Collection of images and from the workshop on ecological pest control

Huerto 2023-2024

Chapter 1: Critical Thinking

Do plants need light?



Source:	Proposed by:	Prepared by:
Bulgaria Elementary school “Nikola Obretenov”	Svetlana Dimitrova Teacher	Svetlana Dimitrova Teacher

Description

Students will investigate by observation how plants respond to different light conditions. They will sow rye-grass seeds in one case in

sunlight and in the other in darkness. Students will make predictions about how the seeds will grow.

Objectives

1	2	3
To interpret observations and make conclusions.	To conduct simple tests and experiments.	To learn that plants need normal sunlight to grow and to make the process of photosynthesis.

Required Materials

- ★ Rye-grass seeds or other plants
- ★ Two pots or plastic containers per group
- ★ Potting soil
- ★ A spoon
- ★ A cardboard box
- ★ Water

Preliminary Preparation

Not needed.

Useful videos:

YouTube Link 1

YouTube Link 2

Duration

30 minutes to complete the activity and one one-week waiting period.

Considerations

It is possible the waiting period could be longer than one week because of some environmental conditions.

How to Implement the Practice

In the classroom, divide the class into small groups of two to four students. Inform them that they will conduct an experiment to investigate how rye grass grows in different lighting conditions: constant darkness and normal sunlight. Distribute the students the materials needed: two pots, potting soil, rye-grass seeds, spoon and water. Tell each group of students to sow the seeds and water them equally. Give them instructions to place one of the pots in total darkness (the cardboard box could be placed in a dark place) and to leave the other one near the window. Ask the students if they have ever seen a plant that has been left in the dark. What do they think will happen to a plant if it cannot get any sunlight? Encourage students to

discuss in groups and to make predictions. Leave the pots for approximately one week.

Evaluation strategy

After one week the students can retrieve their pots and do observations. In groups they will compare the two pots and will make inferences about the differences observed in the two plants. The rye grass grown in sunlight should have a normal healthy development with a green colour. The rye-grass grown in constant darkness should be noticeably taller and should have a white colour with yellow leaves. It is taller because the plant has accelerated its growth (using the energy stored in the seed) in order to search for light. It is not green because it doesn't have chlorophyll (which has not formed due to the absence of light) – it is the presence of chlorophyll that gives plants their green colour.

Associated outputs (videos, pictures, websites)

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List with the Selected Best Practices:

Chapter 2: Cross-curricular Collaboration

Chapter 2: Cross-curricular Collaboration

Creating a Watermill Wheel Model: An Educational Experiment

Source:
Serbia, Primary school Jovan Sterija Popovic, Belgrade

Proposed by:
Creative station

Prepared by:
Teacher Marijana Veljić
Doc. Nina Stojanović

Description

In this activity, students explore the historical invention of the watermill, a significant advancement in harnessing water power. They construct a working model using everyday materials like plastic bottles, caps, cups, straws, containers, wooden sticks, glue, and plastic spoons. Pouring water from a height simulates the flow impacting the wheel, demonstrating mechanical energy conversion. After the hands-on activity, students collaboratively create a notebook with illustrations of watermills, deepening their understanding of this ancient technology and its applications.

Objectives

1	2
Understand the historical significance of the watermill and its impact on technological advancement.	Learn the principles of mechanical energy conversion through a practical experiment.
3	**4**
Foster teamwork and creativity in constructing a model watermill wheel.	Enhance artistic skills by illustrating the watermill in a communal notebook.

Required Materials

- Plastic bottles, caps, and spoons
- Cups and straws
- Containers
- Wooden sticks and glue

Preliminary Preparation

Gather all necessary materials for the model construction.

Prepare an instructional session on the history and mechanics of the watermill.

Duration

60-90 minutes

Considerations

Ensure safety measures are in place when working with tools for cutting plastic bottles and other materials. Supervise the water pouring to prevent spills and messes in the classroom.

How to Implement the Practice

Begin by initiating a conversation about the invention of the watermill, highlighting its pivotal role in the history of technological advancements. This discussion sets the stage for appreciating the ingenuity of ancient civilizations and understanding the mechanics behind using water as a power source.

Next, demonstrate the construction process of the watermill wheel model. You'll guide the students through assembling the necessary materials—plastic bottles, caps, cups, straws, containers, wooden sticks, glue, and plastic spoons—to build a functional model. This hands-on activity not only engages students in practical engineering but also brings the historical concept to life.

Proceed to the experiment by pouring water onto the wheel model. This phase illustrates the conversion of water's kinetic energy into

mechanical energy, providing a tangible example of how watermills operate. Facilitate this process, ensuring students can clearly see the water impacting the wheel and causing it to turn. Discuss the principles of energy conversion and the relevance of such mechanisms in early industrial processes.

Encourage students to closely observe the operation of their watermill models and engage in discussions about the mechanics and efficiency of their designs. This step fosters critical thinking and allows students to explore the factors that influence the functionality of water-powered machines.

Finally, guide the creation of a communal notebook filled with illustrations of watermills. This creative task allows students to artistically express their understanding and observations from the experiment. Encouraging artistic representation of their learning not only consolidates their knowledge but also provides an avenue for individual expression.

As a teacher, your role is to facilitate these activities, ensuring a safe, informative, and engaging learning experience. By guiding students through the construction, experimentation, observation, and artistic documentation of watermills, you help them connect historical innovations with practical applications, fostering an appreciation for

ancient technologies and their impact on modern engineering concepts. This comprehensive approach combines history, science, engineering, and art, providing a rich, multidisciplinary educational experience.

Evaluation strategy

➔ Assess students based on their participation in the construction and discussion, the functionality of their watermill wheel model, and their contribution to the communal notebook.

Associated outputs (videos, pictures, websites)

Document the building process and the final models through photos or videos. Share the students' communal notebook online to showcase their collaborative and artistic efforts.

Creating a Watermill Wheel Model

Chapter 2: Cross-curricular Collaboration

House Model Project from Recycled Materials

Source:
Bulgaria,
Peyo K. Yavorov Primary School, Gjovren, Smolyan

Proposed by:
Ragina

Prepared by:

Description

In this engaging project-based model, students team up to design and build a model house using new and recycled materials, mixing maths skills with real-world applications. The method promotes critical thinking, teamwork and environmental awareness, making learning interactive and purposeful. The practice stands out by transforming theoretical mathematics into tangible projects, promoting financial literacy and sustainable living, and preparing students for real-life challenges through creative problem-solving and collaboration.

Objectives

1	2	3
Apply mathematical knowledge and skills in a practical project.	Develop teamwork skills (activity organisation, time management, reflection).	Enhance financial literacy through budget planning for a project.

Required Materials

- ★ Recycled materials (cardboard, plastic, paper, etc.)
- ★ Geometric shape templates
- ★ Calculators
- ★ Rulers, compasses, and other drawing instruments
- ★ Recycled decorating materials
- ★ Glue, scissors

Preliminary Preparation

No additional teacher training is required, but familiarity with project-based learning and basic architectural principles using geometric shapes could be beneficial.

Duration

The project spans several sessions, ideally implemented over a month with weekly activities.

Considerations

- Allocate enough time for planning and execution.
- Facilitate teamwork and conflict resolution.
- Ensure students have access to a variety of recycled materials.

How to Implement the Practice

1. Start by introducing the concept of sustainable living and the importance of recycling. Explain the project's objective: to design and build a model house using recycled materials, applying mathematical concepts and teamwork skills. Set a price for each type of material. For example used paper - 5 coins; used plastic: 10 coins; new materials - 50 coins etc.
2. Randomly assign students to teams of 3-5 members. Each team should develop an action plan and allocate responsibilities within the team, including project manager, architect (designer), accountant (budget manager), builder (constructor), and spokesperson.
3. Each team holds a brainstorming session to discuss possible designs for their house model. Encourage them to consider different types of recycled materials and how they can be used creatively to represent

various parts of a house. For older students you can set a certain volume for the house as a number and then ask them to calculate each part of the house to fit in this number. The same could be done with the budget for building the house.

4. Teams draft their house design, using geometric shapes to plan the layout. This step involves calculating dimensions and estimating the quantity of materials needed, integrating maths skills in a practical context.
5. With the design in place, students calculate the estimated cost of their project. This hypothetical budget helps students appreciate the cost-saving aspect of using recycled materials.
6. Students gather recycled materials from home or recycling centres. This phase can take a few days and may require some coordination with parents and school staff.
7. Teams construct their house models, applying their plans and adjusting as necessary.
8. Upon completion, each team presents their house model to the class. They should explain their design process, material choices, mathematical calculations, and teamwork experiences.
9. After presentations, allow time for feedback from peers and the teacher. Discuss successes, challenges, and problem-solving strategies. Use a rubric covering creativity, mathematical application, teamwork, and presentation skills.

10. End with a reflection session where students discuss their learning about sustainability, mathematics, and teamwork. Encourage them to think about future applications of these skills.
11. Consider setting up an exhibition space in the school to display the models, letting the school community see and learn from the projects.

Evaluation strategy

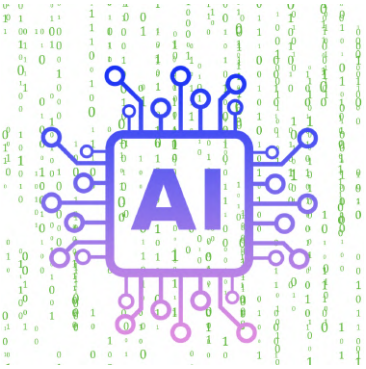
➔ The evaluation strategy uses peer review, teacher evaluations and self-reflection. Criteria include creativity, mathematical precision, teamwork and sustainability. Tools such as rubrics and questionnaires can be used to measure success, focusing on the application of mathematics, effective collaboration, innovative use of materials, and presentation skills. By grading the class according to pre-set criteria, children are given the opportunity to develop their critical and analytical thinking. Students also learn to give and receive feedback and to reflect on their performance and teamwork. After using this practice, students have increased their understanding of geometric shapes and improved their maths skills.

Associated outputs (videos, pictures, websites)

Not available.

Chapter 2: Cross-curricular Collaboration

Artificial intelligence and coding to manage the school garden with Microbit



Source:	Proposed by:	Prepared by:
Spain, CEIP de Negueira de Muñiz	University of Oviedo	Aida Soto Álvarez

Description

The school garden is a place for competency learning applying new technologies (artificial intelligence, coding, free hardware systems), and scientific methodology (field notebook, scientific method) and agricultural practices (manual cultivation of vegetables). Challenges are proposed to students to code for Microbit the automation systems for irrigation, lights, alarm... implemented in the school garden. Students can observe plant survival rates and growth as success

events. Families participate in workshops in the school garden sharing their agricultural knowledge with the school community.

Objective

1	2
Promote the acquisition of knowledge and skills in the students related to programming, electrical circuits and the natural environment.	Develop communication and teamwork skills in the students.
3	**4**
Involve families in the teaching-learning processes	Basic programming training; can be optimised using GPT chat or other Artificial Intelligence chat that helps with programming.

Required Materials

- ★ Flat floor
- ★ Terraces
- ★ Seeds (depends on the season)
- ★ Earth
- ★ Microbit boards and pins

Wiring, screws, screwdrivers (all components of basic circuits).

- ★ Depending on the challenge: small LED bulbs, temperature sensors
- ★ liquid, etc.
- ★ Garden tools: Irrigation system, shovel, hoe, rake, carrycot and gloves.
- ★ Exemplary field notebook
- ★ Field notebook for each student
- ★ Students guide to each challenge
- ★ Computer with USB port
- ★ Python program / GPT chat account

Preliminary Preparation

Preparation of the challenges: 2-3h to prepare the challenge guide.

Duration

Weekly. Each challenge may need a different time. Observations are made daily as a routine, monitoring required care and needs. Workshops with families are held one day every fortnight during not more than 2 hours, as maximum.

Considerations

It would be advisable to organise periodic training sessions for teachers to ensure they are technologically updated and capable of effectively addressing the technical challenges that the project may bring.

The greatest difficulty is noticing that not everything is always under control. There are complex programming levels, which components can be damaged or any other unforeseen event may occur during the process. The teaching staff will not be able to answer all students´ questions to solve certain challenges that may occur. Then, it is needed for the teachers to keep their disposition to investigate, learning in some cases at the same time as the students, contacting experts when needed asking for training.

The material is expensive so it is important to make efficient use of resources. This practice requires good planning in the classroom before executing the tasks.

Exogenous conditions such as meteorology imply frequently the need to modify programming already done or to plan new performances, with flexibility.

How to Implement the Practice

The practice begins with planning, analysing the situation from the start: information on the land, selecting harvest times and seasonal plants, controlling the water footprint of each product or other aspects that are considered relevant to perform a sustainable practice. It is also important to consider the type of garden that is going to be built in the particular context.

In the case of this school, the project was defined according to its objectives and other methodological and organisational elements to structure it, establishing a proper timing.

The next step is to work the land and place the terraces in the space available at the school. This can be done, as in this case, in collaboration with the students and their families, or only by the teaching staff. However, published literature points out that better results are achieved with shared commitment of students and families from the very beginning.

Once the students acquire working skills in the garden, teachers begin to include challenges in the students´ practices related to automation of processes, notices, alerts, etc. These challenges are previously scripted and solved by the teaching staff. Families coordinate with the school to carry out workshops to help students to solve these challenges.

Evaluation strategy

➔ Anonymous surveys are applied annually to get feedback from students and families about the degree of enjoyment and the significance of the practice. On a quarterly basis an assessment of the teachers´ performance is done and recorded in the minutes. At pedagogy level, knowledge and competencies are assessed

according to the syllabus of each subject or discipline.

Associated outputs (videos, pictures, websites)

Not available.

Chapter 2: Cross-curricular Collaboration

Eco-Engineers

Source:	Proposed by:	Prepared by:
Bulgaria, Stefan Karadzha Primary School, Dobrich	Ragina	/name of person/

Description

This practice aims to challenge and engage students in deeper environmental issues through advanced robotics, science experiments, and art projects. By taking on the role of eco-engineers, students apply critical thinking and teamwork to solve real-world ecological challenges. The expanded curriculum encourages a holistic understanding of environmental stewardship, blending STEM education with creativity and civic responsibility.

Objectives

1	2
To understand and analyse complex environmental issues.	To apply STEM skills in solving real-world ecological challenges.
3	**4**
To foster teamwork, leadership, and collaborative problem-solving.	To promote creativity and innovation in environmental solutions.
5	

To develop emotional intelligence and empathy towards environmental issues.

Required Materials

- ★ Digital tools for research and presentation
- ★ Programmable robots (e.g., "E.a.R.L")
- ★ Recyclable materials for art projects
- ★ Gardening supplies for planting
- ★ Reusable bags and textile paints
- ★ LEGO or other construction materials

Preliminary Preparation

- Teachers may need training in advanced robotics and STEM education.
- Gathering of recyclable materials and preparation of multimedia presentations.
- Coordination with local environmental organisations for resources or guest speakers.

Duration

The practice spans over 1-2 months, integrating various activities into the curriculum. Each step can be adapted to fit within weekly or bi-weekly sessions.

Considerations

- Ensure all materials, especially for robotics, are safe and suitable for the students' age group.
- Consider environmental sensitivities and allergies when planning planting activities.
- Adapt the complexity of discussions and projects to match students' understanding levels.

How to Implement the Practice

Step 1: Overview of Environmental Issues

Begin with an in-depth look at environmental issues. This introduction on World Water Day involves multimedia presentations and discussions about the complexities of water pollution, its sources, and impacts on ecosystems and human health. Preparation includes gathering recyclable materials to understand the tangible effects of pollution. This step aims to build a foundational understanding and awareness of environmental challenges.

Step 2: Robotics and Problem Solving

In this robotics-focused lesson, the theme of recycling is explored further. Students use a programmable robot, "E.a.R.L," to simulate waste collection and sorting, applying coding skills to solve environmental challenges. This activity can be adapted for schools without robotics equipment by using a simple grid system and manual commands, promoting problem-solving and teamwork in a tactile way.

Step 3: Emotional Intelligence and Environmental Connection

Marking the Day of Patience, this step focuses on developing students' emotional intelligence, linking it with environmental care. Through activities like planting and nurturing seeds, students learn the values of patience, care, and the slow but rewarding process of growth, both in nature and personal development.

Step 4: Promoting Sustainable Practices

This art lesson centres on reducing waste through reusable products. Students decorate reusable bags, learning about the environmental and economic costs of single-use plastics. This hands-on activity encourages creativity while reinforcing the message of sustainability and the practical steps individuals can take to reduce their environmental footprint.

Step 5: Building a Sustainable Community Model

In this culminating project, students use LEGO or other construction materials to build models of sustainable communities, featuring houses, green spaces, and recycling centres. This step allows students to apply what they've learned about environmental stewardship, recycling, and community planning into a tangible, creative project.

Final Reflection:

Conclude with a reflection session where students share their projects, discuss what they learned, and consider how they can apply these lessons in their daily lives. This step reinforces the knowledge gained, skills developed, and attitudes shaped towards environmental stewardship, preparing students to be thoughtful and proactive citizens.

Evaluation strategy

➔ The evaluation strategy uses project presentations, reflection journals, and targeted quizzes. Criteria include understanding of environmental issues, application of STEM skills, teamwork, and creativity in project execution. Tools such as rubrics for presentations, reflective journal prompts, and knowledge quizzes can be employed to measure progress and outcomes. The final result of the students' classes can be seen in their

actions - they recycle their waste, use reusable bottles and cotton bags, throw waste in the containers even if it is not theirs, know how to reduce air pollution, can name global environmental issues and relate to nature.

Associated outputs (videos, pictures, websites)

Not available.

Chapter 2: Cross-curricular Collaboration

Bee Bots for Bee Awareness

Source:	Proposed by:	Prepared by:
Bulgaria, Lyuben Karavelov Primary School, Nova Zagora	Ragina	

Description

This interactive activity employs Bee Bot robots and a game mat illustrating plants to educate students about bee ecosystems. It blends technology with environmental education, fostering critical thinking, teamwork, and empathy towards bees, as students learn the vital role these pollinators play in sustaining life on Earth.

Objectives

1	2
To appreciate the ecological significance of bees.	To comprehend and utilise basic programming for simulating pollination.
3	**4**
To encourage teamwork in strategizing pollination routes.	To develop problem-solving skills through critical thinking.

5

To deepen understanding of environmental impact and conservation.

Required Materials

- ★ Bee Bot programmable robots.
- ★ Game mat depicting regional flora and non-forage plants.
- ★ Fact sheets about bees, pollination, and regional plants.
- ★ Computer or tablet with Bee Bot-compatible programming app. (optional)

Preliminary Preparation

- Teacher familiarisation with Bee Bot operation and programming concepts.
- Creation of game mat and compilation of fact sheets.
- Preparation of classroom space for the activity.

Duration

One session of 45-60 minutes as extracurricular activity or divided in two for regular classes.

Considerations

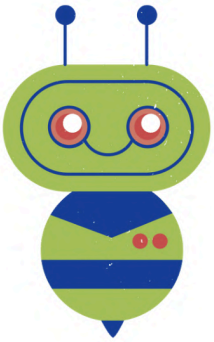
- Ensure a safe, spacious area for activity
- Be ready to address misconceptions about bees
- Have contingency plans for technology malfunctions

How to Implement the Practice

Begin by discussing the importance of bees to our environment, their role in pollination, and the current threats they face. Introduce the students to the prepared Fact sheets about bees and pollination.

Use a mat printed with different plants and flowers and a Bee Bot robot. Explain how bees visit plants and the significance of each plant to the bee's ecosystem and honey production.

Show students how to program the Bee Bot to navigate the mat, simulating a bee's journey from plant to plant. This will introduce basic coding concepts and foster computational thinking.



Allow students to experiment with the Bee Bot, discovering the plants that are essential for bees. Encourage them to discuss why each plant is important and how it fits into the larger ecosystem. Also explore the plants from which bees collect nectar not honey and explain why.

Ask students to create stories or scenarios based on the robot's journey, incorporating facts about bees and pollination.

Wrap up the session with a discussion on what students have learned about bees and their habitat. Discuss how technology, like Bee Bots, can be used to learn about and address environmental issues.

Evaluation strategy

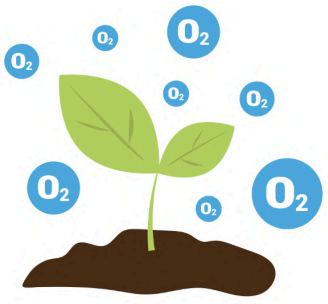
Observation and recording of student engagement and success in programming the Bee Bots, as well as group discussions to evaluate understanding and synthesis of information about bees and pollination.

Associated outputs (videos, pictures, websites)

https://schoolkaravelov.com/projects.html

Chapter 2: Cross-curricular Collaboration

Oxygen cycle, plants and the planet: A school experience



Source: **Proposed by:** **Prepared by:**

Spain, CEIP La Ería | University of Oviedo | Jaime García Martínez

Description

Primary schools need to go beyond the textbook to discover the world around them.

The aim of the project is to teach the importance of the plant world and biodiversity for a better planet. Preparing the necessary materials, especially the Field Notebook, which will be the guide of activities to develop. It is a project based learning practice that allows to develop basic experiments to be carried out relating the different subjects in the Primary school.

Objectives

1	2
Teach science and environmental competencies in the natural environment appreciate the ecological significance of bees.	Observe and explain natural phenomena empirically
3	**4**

Carry out simple experiences and small guided investigations.	Improve learning in the school laboratory
5	
Communicate the work carried out to different audiences	

Required Materials

Environment (flat floor, grass etc.).

- ★ Wooden boxes with soil
- ★ Seeds
- ★ Germination boxes
- ★ Laboratory material
- ★ Types of quality humus
- ★ Gardening tools
- ★ Watering can
- ★ Signs for organising plants
- ★ Magnifying glass
- ★ Microscope
- ★ Science notebook

Preliminary Preparation

Project based methodology, which relates the contents around the "Oxygen Cycle and Plants" Project

Duration

Biweekly ongoing project that can start in November December with the Planning.

- ☐ **January February:** Forecast of material, seeds, tools and land preparation
- ☐ **March-April:** germinations and first plantings
- ☐ **May-June:** harvesting lettuce, tomatoes, zucchini, onions

Considerations

Have organised the planning for the different stages and the supply of seeds, plants and working spaces.

Linking the experimental work with the school horticulture cooperative, the STEAM approach, outings to the Park and participation in the Meeting at the National program of School Science meant great students´ involvement and commitment.

It would be interesting to develop partnerships with schools from other European countries participating in eTwinning projects conducting

similar projects, enabling exchange of knowledge and experiences among students.

How to Implement the Practice

The school environment offers the possibility of having an ecological garden, a 12 square metre plot, composter, germinators, tools, types of soil, seeds, nest boxes...

To ensure the traceability of the project from seeds to fruits, experiments in the school laboratory varying germination conditions and factors (light, humidity, soil types...) are carried out to observe the results. Subsequently, the plants are moved to the outdoor garden located in the school yard, incorporating the composter and tree seedlings from the Atlantic forest to create in our school a horticulture cooperative(entrepreneurship) with a STEAM perspective. The project includes an outing to the suburban park with fruit and autochthonous trees near the school.

The whole school is involved in the project, so it was decided to share the project with other schools, participating in a Meeting of a National Program of School Science in which the students presented orally the project to the audience.

Evaluation strategy

The students have been more involved, understanding the global nature of the project and have also obtained better academic outcomes.

The preparation of oral presentations by the students has been a good indicator to evaluate the experience.

Associated outputs (videos, pictures, websites)

Part of the project was presented at the Meeting of the National Program of School Science organised by the Spanish National Research Council (held in Madrid, Spain).

A living dream

Co-funded by the European Union

List with the Selected Best Practices:

Chapter 3: Environmental Empathy

Chapter 3: Environmental Empathy

Soil Shake

Source:	Proposed by:	Prepared by:
Bulgaria, Elementary school “Nikola Obretenov”	Teacher Svetlana Dimitrova	Teacher Svetlana Dimitrova

Description

Discover the makeup of a soil you collect, by shaking it in a jar with water and seeing how the layers of soil particles settle out.

Objectives

1	2	3

To conduct simple tests and experiments.	To develop interest in soil composition.	To understand that not every soil is a fertile soil and we have to protect it.

Required Materials

- ★ The nearest place with exposed soil
- ★ A trowel (or spoon) if the soil isn't digged
- ★ A tall jar (or even a clear water bottle)
- ★ A funnel if the jar has a narrow mouth
- ★ Water

Preliminary Preparation

Not needed

Videos:

https://www.lifelab.org/about

https://youtu.be/sMjEMBcd_Dg

Duration

- 10 minutes
- 24 hours waiting period
- 10-15 minutes to complete the activity

Considerations

-

How to Implement the Practice

Is the soil near your home a clay-heavy soil? Or a sandy soil? Or a balanced loam, coveted by any gardener?

Help the kids fill the jar ⅔ with water. Then bring the jar, trowel, and funnel if needed to the nearest place with exposed soil where you can take a sample. Let the kids take turns scooping soil and adding it to the jar until it is nearly full. Cap the jar and let the kids take turns shaking it until they are satisfied that it is completely shaken up (it won't hurt to shake it extra, luckily!). Then find a place to set the jar where everyone can see it and it can stay undisturbed for 24 hours. Ask the kids what they notice about what's in the jar. What does it look like? What do they see happening? (The largest particles will settle out right away, but the smallest may take hours). Come back 24 hours later to see the soil completely layered in the jar. The layers may be different colours or all the same colour; you'll know the difference between the layers by the size of the particles you see. The bottom layer with a grainy appearance is the sand; the middle layer is silt; and the top layer of fine particles is clay. You may see organic matter (such as pieces of leaves) layered on top of that, or floating.

If the students are interested, they could collect another soil sample from a different setting, make another soil “shake” and compare the results.

Evaluation strategy

Soil is made up of rock particles of different sizes. The smallest particles are clay, the middle size silt, and the largest particles are sand. The proportion of each of these categories of particles affects how your soil feels, looks, acts when it’s wet, and how well plants grow in it. For example, soil with a high proportion of clay is hard to dig, and soil with a high proportion of sand tends to dry out quickly. The most ideal garden soil, loam, has about 40% sand, 40% silt, and 20% clay. Knowing the makeup of your soil can help you figure out how to make it better (for example, adding plentiful compost improves either sandy or clay soil!).

Associated outputs (videos, pictures, websites)

Chapter 3: Environmental Empathy

Bean to Bowl: Classroom Gardening Project

Source:

Serbia,
Primary school Jovan Sterija Popovic,
Belgrade

Proposed by:
Creative Station

Prepared by:
Marijana Veljić,
Teacher
Prof. Aleksandra Prokopijević

Description

This hands-on classroom project involves students in the complete lifecycle of growing beans, from planting in classroom pots to

harvesting, cooking, and eating. Students engage in planting beans in pots within the classroom, nurturing them until they produce pods. Upon maturity, the beans are harvested, soaked, and cooked in the school kitchen with the guidance of the school's cook. This activity culminates in a communal meal, allowing students to taste the results of their gardening effort.It introduces concepts of plant biology, sustainable living, and healthy eating habits.

Objectives

1	2
Understand the growth process of bean plants.	Learn about sustainable gardening practices.
3	**4**
Gain practical cooking skills.	Promote healthy eating habits and the importance of consuming freshly grown produce.

Required Materials

★ Bean seeds

- ★ Pots and planting soil
- ★ Watering cans
- ★ Access to the school kitchen and cooking utensils

Preliminary Preparation

- Secure bean seeds and sufficient pots for the classroom.
- Prepare a schedule for planting, care, and harvesting activities.
- Coordinate with the school's kitchen staff for the cooking session.

Duration

Variable, depending on the bean variety's growth cycle. The cooking and tasting class itself is 45 minutes.

Considerations

Ensure student safety during the cooking phase. Be mindful of any food allergies among the students.

How to Implement the Practice

Start by introducing a lesson on plant biology, focusing specifically on the growth of beans. This initial step sets a foundational

understanding of the life cycle of plants and the factors that influence their development.

Next, guide the students in planting bean seeds in pots. Discuss the care requirements, such as the appropriate amount of soil, water, and exposure to sunlight, emphasising the importance of each element in the growth process. This hands-on activity not only teaches students about plant care but also instills a sense of responsibility as they tend to their individual plants.

As the beans grow, take the opportunity to teach about photosynthesis, the necessity of regular watering, and the role of sunlight in plant health. Monitoring the growth of the beans provides a practical way to observe these biological processes in action, reinforcing the lessons with real-life examples.

When the beans have matured and produced pods, gather the students for a harvesting session. Demonstrate how to identify ripe pods, and involve the students in picking their own beans. This part of the project brings a sense of accomplishment, showing the tangible results of their care and patience.

Organise a cooking lesson in the school kitchen, where students can participate in the preparation and cooking process of their harvested beans under supervision. This activity not only teaches them basic

cooking skills but also emphasises the farm-to-table concept, highlighting the journey of food from growth to consumption.

Conclude the project with a communal meal, where students can enjoy the fruits of their labor together. Use this time to reflect on the experience, discussing what they learned about gardening, the significance of eating freshly grown food, and the broader benefits of sustainable living practices.

This approach, covering everything from planting to dining, provides a comprehensive educational experience.

Evaluation strategy

Assess students based on their participation in each phase of the project, their teamwork during the gardening and cooking activities, and their understanding of the concepts taught.

Associated outputs (videos, pictures, websites)

Capture the project's progress and final communal meal through photos or videos, sharing the story on the school's website or social media platforms to highlight the educational value of the project.

Bean to Bowl: Classroom Gardening Project

Water means life - "Our magic bean" (connection of living and non-living nature)

Chapter 3: Environmental Empathy

Natural fertiliser

Source:	Proposed by:	Prepared by:
Bulgaria, Elementary School “Nikola Obretenov”, Ruse	Elementary School “Nikola Obretenov”, Ruse	

Description

Composting is a process that shows the importance of recycling used materials for environmental protection and sustainable use of natural resources. In addition to helping students gain insight into certain processes and concepts, this science experiment also allows them to make sense of their ecological footprint and build environmental self-awareness.

In this experiment, students create mini composters from empty plastic bottles. They are small and easy to make, allowing each child to have their own composting system to explore the decomposition process. Mini composters will not produce much compost, but it is a great example of what happens in a bioreactor - after a few months it is impossible to identify the materials that were originally added to it and their volume is always reduced by half.

This experiment allows students to make sense of their ecological footprint and build environmental self-awareness.

Objectives

In the process of work, students will learn:

1	2
The nature of the composting process and ways of applying it at home	The benefits of implementing this process
3	**4**
The importance of microorganisms in the circulation of substances in nature	The possibilities of using composting as a source of energy

Required Materials

- ★ two large plastic bins with lids, one will serve as the base bin and the other as a cover bin
- ★ a nail for making holes
- ★ Shredded newspaper
- ★ Garden soil
- ★ Watering can
- ★ Kitchen scraps (fruits and vegetables peels, coffee grounds, eggshells, etc.)

Preliminary Preparation

Explain to the students what the objectives of the experiment are – the students should build a mini composter in which they can observe the decomposition process of the biodegradable substances.

Video:

How a compost is done.

Duration

120 minutes; Each school year before the gardening season.

Considerations

Choose a suitable location for the composter - it should be placed in a well-drained area with good air circulation and partial sunlight. Avoid placing it too close to structures or trees.

Tight-fitting lids or covers should be used to secure the composter and discourage unwanted visitors.

How to Implement the Practice

Start with the base bin, which will hold the composting materials. Choose a bin that is large enough to hold a significant amount of compost but small enough

for kids to manage. Make several holes in the bottom and the sides of the bin to allow for drainage and aeration. Holes should be evenly spaced and about 5-6 cm apart. Then add the shredded newspaper at the bottom of the base bin. This will help to absorb excess moisture and provide aeration to the compost pile. Have the kids lay the kitchen scraps with garden soil to introduce beneficial microorganisms that aid in the decomposition process. Use a watering can to moisten the materials. The compost pile should be damp, similar to wrung-out sponge, but not waterlogged. Then place the second plastic bin (the cover bin) on top of the composting materials in the base bin. It will be used as a cover to help regulate moisture and temperature in the compost pile. Several holes should be made in the lid of the cover bin to allow for airflow. Kids are encouraged to add kitchen scraps to the compost regularly. Composting materials should be mixed occasionally to ensure even decomposition and aeration. Students should be taught how to monitor the compost pile for signs of decomposition such as steam, earthy smell and decrease in volume.

After several months, the composting materials will break down into nutrient-rich compost. Any large undecomposed materials should be removed.

Use the finished compost to amend garden soil and to fertilise plants.

Evaluation strategy

- ➔ Long-term sustainability
- ➔ Behaviour change and empowerment
- ➔ Feedback and reflection
- ➔ Environmental impact
- ➔ Hands-on experience
- ➔ Educational content

Associated outputs (videos, pictures, websites)

Not available.

Chapter 3: Environmental Empathy

The path of the alders

Source:	Proposed by:	Prepared by:
Spain, School Santa Mª del Naranco Altervia.	University of Oviedo	

Description

The school is located in the city. Most students have little or no contact with the rural environment; many of them do not know the origin of the food products they consume daily or the way they are grown. The aim is to promote care and respect for the environment, bringing the rural environment closer to their lives,

and understanding the processes necessary for food to reach their dishes. The school garden activity is carried out by all students in the school (kindergarten- 3 to 5 yrs- and all grades in primary education-6 to 11/12 yrs), nearly a thousand students participate in this activity.

Objectives

1	2
The aim is to achieve the following educational objectives:	**Environmental awareness:** Promote understanding of natural cycles, importance of biodiversity and the need to preserve the environment atmosphere.
3	**4**
Connection with nature: Allow students to experiment with nature directly, developing a deeper connection and being respectful to it.	**Food knowledge:** Learn about the origin of food we eat, how food products are grown and how they reach our table, promoting healthy habits and sustainable foods.

5	6
Practical skills: Develop practical skills such as gardening, soil preparation, watering and plant care, and the ability observation, monitoring growth.	Teamwork: Promote teamwork and collaboration among students by working together in caring for the garden and carrying out related tasks.
7	**8**
Responsibility and autonomy: Promote individual and collective responsibility by assigning specific tasks of caring for the garden and its surroundings. In this way students learn to take responsibility for their actions.	Raising awareness about sustainable agriculture: Educate about environmentally friendly agricultural practices, promoting the importance of sustainable agriculture for the future of the planet. Use of the composter to take advantage of garden waste.

By achieving these objectives, the school garden activity can provide a meaningful and enriching educational experience for all students at the school.

Required Materials

- ★ Greenhouse.
- ★ Terraces.
- ★ Earth
- ★ Seeds
- ★ Plants
- ★ Composter – compost.
- ★ Garden tools/utensils: long and short handled rakes, shovels, hoe, gloves, watering cans for children of different shapes and colours
- ★ Expendable materials.
- ★ In case of bad weather conditions, inside the classroom, audiovisual material: PC, projector, internet access...

Preliminary Preparation

All preliminary preparation for the practice is also carried out by the students, for example cleaning after the summer, tidying up the land prior cultivation.

To carry out our activity it will be necessary to follow the following steps:

- Space and resources: it must be taken into account the space available for the greenhouse and outdoor space, the materials and

resources necessary for the whole school year, such as seeds, gardening tools, substrate, pots or containers, among others.

- Schedule and planning of the school year: number of students served, directed, and the organisation of the garden schedule taking into account the rest of the school activities.
- Preparation of the sessions. Suitable for the course and ages of each level and grade.

Duration

The practice of this activity is carried out throughout the entire school year, It starts in October and ends in June. There is a schedule for all kindergarten and primary school students to be involved in this activity once or twice a month.

Considerations

Tasks developed are multiple and very varied;frequently bad weather conditions also affect normal activity in the school garden. In those cases, activities are developed in the classroom performing didactic or recreational tasks related to the school garden interests (stories, songs, crafts with recycled or reused products...). A valuable and accessible teaching resource for older students are National Geographic educational videos or Happy Learning videos. Through these resources, relevant topics are addressed such as pollution,

recycling chains and the impact of human beings on animals and plants.

How to Implement the Practice

Work in the garden begins from scratch: firstly, land preparation, using the necessary utensils (shovels, rake, watering can,hoe...). Then, procedures to plant, keeping track of the growth of the plants, watering them, taking care of them and finally observing the final product of so much effort. Everything that is harvested in the school garden is distributed among the students to take home.

An example of an outdoor session in the school garden would be: first thing in the morning we attended the first grade group to go to the garden. The students will make seedbeds, they plant and prepare the beds, then they collect leaves. Then, back to the classroom. A second group follows the same activities.

Evaluation strategy

Formal academic evaluation of the students during these activities are not performed. However, reviews and annotations are registered by teachers to continually improve the project. The main evaluation tool in these activities is direct observation, reflection, dialogue and student participation.

Associated outputs (videos, pictures, websites)

The projection on social media, school websites etc. if available.

During the sessions, sometimes both the tutors and the school garden coordinator take photographs to send to the families through the school internal channels, such as email.

Thay are shared also on the school social and institutional networks, which are:

- YouTube: SMNaranco - https://www.youtube.com/@smnarancotv
- X (Formerly Twitter): SMNARANCO.ALTERVIA (@SMNARANCOAV) /x. https://x.com/SMNARANCOAV
- Facebook: Colegio Santamariadelnaranco.AV https://www.facebook.com/SANTAMARIADELNARANCO.AV
- Instagram: Colegio Sta.María del Naranco. (@smnaranco) • https://www.instagram.com/smnaranco/

Co-funded by the European Union

Chapter 3: Environmental Empathy

From Trash to Treasure: A Sustainability Workshop

Source:

Cyprus,

Proposed by:

Smart Idea

Prepared by:

Blan B - original idea

Description

The "From Trash to Treasure" workshop offers a hands-on educational experience in sustainability, waste management, and creative recycling. Participants begin with a clean-up activity in a local park, collecting litter to understand waste's impact. They then sort and analyze the waste, discussing ways to reduce community waste. The highlight is creating flower pot installations from recyclables, transforming trash into art to beautify the area. The workshop concludes with a reflection, inspiring participants to adopt sustainable practices in their lives.

Objectives

1	2
To educate participants on the environmental impact of littering.	To promote waste sorting and recycling within the community.
3	**4**

To encourage creativity and innovation through the construction of recycled art installations.

To foster a sense of pride and responsibility towards local and global environmental issues.

Required Materials

★ Gloves and bags for the clean-up activity.

★ Bins for sorting different types of waste (plastics, metals, organics).

★ Recyclable materials collected during the clean-up for art projects.

★ Art supplies like paint, scissors, and glue for the sculpture creation.

Preliminary Preparation

- Coordinate with local authorities for permission and support in cleaning a designated park area.
- Collect and prepare the necessary materials for the clean-up, sorting, and art creation activities.
- Design a simple, safe plan for the sculpture that participants will create.

Duration

The workshop spans approximately 4 hour, adaptable based on the number of participants and the extent of the clean-up area.

Considerations

- Ensure safety measures are in place for the clean-up activity, especially for younger participants.
- Be prepared for a diverse range of trash types and have a clear plan for disposal post-workshop.
- Consider the environmental suitability of the art supplies used in the sculpture creation.

How to Implement the Practice

1. Clean-Up Activity: Participants start with collecting trash in a local park, learning about waste impact.
2. Sorting and Analysis: Post clean-up, the trash is sorted, and discussions on waste reduction strategies take place.
3. Sculpture Creation: Using collected items, participants collaboratively create a flower pot installation, showcasing creativity and recycling's potential.
4. Reflection and Discussion: The workshop concludes with participants reflecting on their experiences, discussing learned

environmental lessons, and exploring further actions for sustainability.

Collaboration with local artists would be beneficial, as they could lead the art creation segments, providing new techniques and ideas.

Evaluation strategy

➔ Feedback forms to gauge participants' understanding and feelings about the activities.

➔ Observations on engagement levels during the workshop and effectiveness of the discussion in generating actionable ideas.

Associated outputs (videos, pictures, websites)

https://global.cityoflearning.eu/sl/activities/15469

Chapter 3: Environmental Empathy

Growing from food scraps

Source:	Proposed by:	Prepared by:
Bulgaria Elementary School Nikola Obretenov, Ruse,	Elementary School Nikola Obretenov, Ruse	/name of person/

Description

Did you know that you can regrow some plants and fruits from food scraps? It's a great way to recycle food waste and show children how the food grows, what it looks like as a plant and what part of the plant they are actually eating.

In this activity, you will learn how to grow 9 different types of vegetables from scraps - an idea that can change the way you look at food scraps and turn garbage into a tasty and useful resource.

Objectives

1	2	3
Repeated harvesting	An economical and eco-friendly approach to farming	Recycle food waste

Required Materials

- A glass of water for each vegetable
- A container with soil
- Toothpicks (for ginger)
- Vegetables - carrots, green onions; leeks; lettuce; white cabbage; ginger; chinese cabbage; celery; pineapple (you can choose which ones)

Preliminary Preparation

It's not necessary.

Videos:

Ginger

Green onion

Duration

From a week to a month (for different vegetables)

Considerations

No considerations

How to Implement the Practice

1. Green onion - The most common plant that is grown for greens. Save the lower white part of the green onion, place it in a glass of water, and in two weeks you will have your first harvest.

2. Leeks - Place bulbs in water and wait for roots to form. You can plant them in a pot with soil or leave them in a glass. How to store vegetables to keep them fresh for a long time

3. Lettuce - Carefully remove the roots from the lettuce and transfer it to a container of water. Once the leaves start growing, transplant it into a container with soil and you'll save money on greenery.

4. White Cabbage - The first roots of a head of cabbage will require a little patience, but once they form, you can transplant it into a container with soil and enjoy tasty and nutritious vegetables.

5. Ginger - In addition to being a useful addition to tea, ginger can be grown at home. Place part of the root in water and after a short time shoots will sprout that you can plant.

6. Carrot - Carrots are an excellent addition to salads, soups and meat dishes. Do not throw away the top of the carrot, but place it in water - the leaves will sprout and you will have extra greens.

7. Chinese cabbage - Cut off the bottom of the Chinese cabbage and place it in a glass of water. After two weeks, new leaves will appear for you to use.

8. Celery - Cut off the rosette at the bottom of the celery stalk, place it in a moist environment and in a short time you will have young leaves ready to be transplanted into a pot with nutrient substrate. Don't throw away this waste - it will make vegetables grow in a flash

9. Pineapple - And while pineapple is not a vegetable, it can be grown from the tops. Do not throw away the top part with the leaves, plant it in well-drained soil and enjoy the beautiful fruit.

Evaluation strategy

With these ideas for growing vegetables from food waste, you can enjoy home-grown, tasty and fresh vegetables without spending a lot of money. Try them out and expand your farming skills while helping the environment at the same time.

Associated outputs (videos, pictures, websites)

Not available.

Chapter 3: Environmental Empathy

Pollinator - Friendly Garden

Source:
Bulgaria,
Elementary School Nikola Obretenov, Ruse

Proposed by:
Elementary School Nikola Obretenov, Ruse

Prepared by:

Description

A pollinator garden is a habitat that provides food, nesting areas, and overwintering sites for a variety of pollinators including butterflies, bees, moths, beetles, and others. Pollination is an essential part of plant reproduction. Pollen from the male part of the plant rubs or drops onto a pollinator. The pollinator then takes this pollen to another flower, where the pollen sticks to the stigma (the female part). The fertilised flower later makes seeds and fruits. Most fruits, nuts, berries, and other fresh produce require insect

pollinators. Foods like chocolate, vanilla, coffee, almonds, berries and others wouldn't be available without insect pollinators.

Objectives

1	2
Pollinator gardens support and maintain pollinators by supplying food in the form of pollen and nectar that will ensure that these important animals stay in the area to keep pollinating our crops for continued fruit and vegetable production.	Students get to understand the importance of saving the bees
3	
Students go through the process of pollination	

Required Materials

- Annual ornamental garden flowers

- ★ Containers or a basin (small containers enough for three plants from nursery pots)
- ★ Dry soil
- ★ Water
- ★ Gloves
- ★ Little shovel
- ★ Shallow dish for water for the bees

Preliminary Preparation

The school can be a provider for all the tools for planting, except the garden flowers, water dish and gloves (these can be brought by the students themselves)

Choose a spot in the school yard that receives plenty of sunlight, ideally at least 6-8 hours per day. Involve children by creating pathways. Invest in child sized gardening tools to make gardening tasks more manageable and enjoyable for students. Encourage the kids to document their gardening journey through photos, drawings or a garden journal which helps them track the progress of the garden over the time and reflect on their experiences.

Video:
[How to re-pot a plant.]

Duration

30 - 40 minutes; Every spring

Considerations

No considerations

How to Implement the Practice

Students get to the place of gardening. Containers are placed on the ground of the garden and plants and soil is prepared. Spread some potting mix on the bottom of the containers, then gently squeeze their nursery pots around the sides to slide the flower out. Then set the plant on the potting mix. Fill the space around the plants with more potting mix so the stems are 2-3 cm below the rim of the container. Use your hands to press down lightly on the mix.

Don't forget to put a shallow dish with pebbles and water because bees need it to survive so it is important to add a source.

Evaluation strategy

Garden-observation plan will be in place on how the garden is growing and a journal of what kind of insects are visiting.

Associated outputs (videos, pictures, websites)

Not available.

List with the Selected Best Practices:

Chapter 4: Teamwork

Co-funded by the European Union

Chapter 4: Teamwork

School garden project

Source:

Primary School
Dr. Petar Beron

Proposed by:

Ragina

Prepared by:

Description

The School Garden Creation project invites young students to get their hands dirty and learn about nature by planting a garden at their school. They plant colourful flowers and learn how to care for them, from seeding to weeding. This gardening activity teaches children about growing plants and working together and helps the school to look beautiful.

Objectives

1	2
Engage students in hands-on learning about plant life cycles and the importance of environmental stewardship.	Promote teamwork and responsibility

3	4
Foster an appreciation for beautifying communal spaces and contributing to the school's ecosystem.	Introduce basic horticulture skills and knowledge of various plant species.

Required Materials

- ★ Garden for growing plants.
- ★ Flower seeds, soil.
- ★ Cups for growing the seeds.
- ★ Gardening tools (trowels, gardening gloves, watering cans).
- ★ Soil improvement materials (compost, mulch)
- ★ Water for watering the plants.

Preliminary Preparation

Prepare the garden area by marking out where the flower beds will be located. Gather all necessary materials and tools. Provide a brief introduction to the types of plants being used and basic gardening techniques.

Duration

Depending on the chosen seed (when the seedlings will be ready to be moved into the

garden), then 2-3 hours for planting in the garden and regularly taking care of them and follow up classroom activities.

Considerations

Ensure all students have appropriate gardening gear to keep them clean and safe.Supervise the students closely to ensure safe use of gardening tools.

Plan for regular maintenance of the garden to ensure the longevity of the planted flowers.

How to Implement the Practice

Start with a discussion about the importance of plants and their role in the environment. You may discuss the stages of plan development.

Then divide the students in small groups and provide them with cups (with holes in the bottom), soil and seeds. Choose garden plants that are appropriate for your climate. Let them plant the seeds and water them. Observe them growing and discuss the process. Take in consideration the weather conditions. When the temperatures outside are good and the plants are strong enough, go to the garden and demonstrate how to prepare the soil and plant seeds and seedlings properly.

Divide the students into small groups, assigning each a specific task (soil preparation, planting, watering).

Guide the students through the planting process, offering assistance and encouragement as needed.

Conclude the activity with a session on how to care for the plants and the importance of regular watering and weeding.

Evaluation strategy

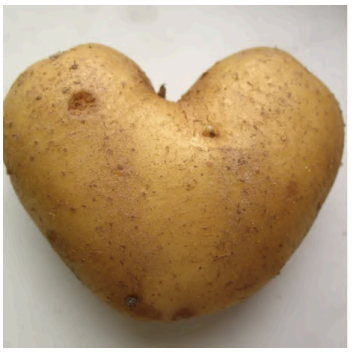
➔ Monitor the growth and health of the garden as a practical measure of the project's success. Have students keep a journal of their observations and responsibilities in caring for the garden. Assess students' engagement and learning through their ability to discuss the life cycle of plants and the importance of caring for the environment.

Associated outputs (videos, pictures, websites)

Link

Chapter 4: Teamwork

From Soil to Table: The Potato Project



Source:
Serbia,
Primary school
Jovan Sterija Popovic,
Belgrade

Proposed by:
Creative Station

Prepared by:
Marijana Veljić, Teacher
Prof. Aleksandra Prokopijević

Description

In this engaging class project, students experience the full cycle of food production through growing, harvesting, preparing, mand consuming potatoes. Starting with planting potatoes in the schoolyard, students are responsible for watering and caring for the plants. Once matured, the potatoes are harvested, cleaned, and cooked in the school's kitchen, culminating in a communal meal where students share the fruits of their labor. This hands-on approach not only teaches agricultural and environmental science but also promotes teamwork, healthy eating, and an appreciation for the effort involved in food production.

Objectives

1	2
Understand the growth cycle of plants, specifically potatoes.	Learn about sustainable gardening and the importance of locally grown food.
3	**4**
Develop practical life skills in gardening and cooking.	Foster a sense of community and collaboration among students.

Required Materials

- ★ Potato seeds or small potatoes for planting
- ★ Gardening tools (shovels, watering cans)
- ★ Kitchen facilities for cooking
- ★ Ingredients for preparing the potatoes

Preliminary Preparation

- Prepare the garden plot in the schoolyard for planting.
- Schedule cooking activities in the school's kitchen.
- Organise students into groups for various tasks (planting, caring, harvesting, cooking).

Duration

Varies depending on the growth cycle of potatoes; typically a few months from planting to harvesting.

Considerations

Ensure that all students participate in each phase of the project.

Be mindful of food allergies and dietary restrictions when planning the communal meal.

How to Implement the Practice

Begin the "From Soil to Table: The Potato Project" with a discussion about agriculture's role and the farm-to-table journey. Emphasize goals like understanding plant growth, sustainable gardening, and appreciating locally grown food.

Preparation Phase:

Ready the plot in the schoolyard by choosing a good spot, ensuring fertile soil, and collecting gardening tools.Teach students about potato planting, care, and growth cycles.

Planting:

Split students into groups, allocating garden plot sections. Instruct on planting depth and spacing.

Maintenance:

Assign tasks for watering and weeding, adjusting frequency based on climate and plant needs. Introduce plant biology, weather effects on growth, and sustainable gardening.

Harvesting:

Lead a class activity to harvest mature potatoes, discussing maturity indicators and harvesting best practices.

Use this chance to talk about the nutritional value of potatoes.

Cooking:

Plan a cooking day in the school kitchen to prepare and cook the potatoes, choosing simple recipes.

Teach about healthy eating and various potato dishes.

Communal Meal:

Enjoy a shared meal with the grown potatoes, fostering community spirit.

Reflect on the project, focusing on learned lessons and feelings throughout the journey.

Evaluation and Reflection:

Assess students on engagement, teamwork, and understanding of the project's scientific and nutritional elements.

Prompt reflection on food production perspectives and the significance of sustainable practices.

Documentation:

Document each phase with photos or videos, potentially creating a digital diary or blog to share the experience with the school community or on social media, emphasizing the project's educational and community-building aspects.

This guide outlines creating a meaningful educational experience spanning biology, nutrition, teamwork, and sustainable living. By participating in the "From Soil to Table: The Potato Project," students gain hands-on knowledge about food production, emphasizing the value of sustainability and community in learning.

Evaluation strategy

➔ Assess students based on their participation, the creativity and scientific accuracy of their models, and their ability to work collaboratively. Feedback should highlight the integration of environmental science with practical life skills.

Associated outputs (videos, pictures, websites)

Document the project through photos or videos, sharing the process and final outcomes on the school website or social media to showcase the educational journey from gardening to cooking and eating.

From Soil to Table: The Potato Project

Chapter 4: Teamwork

Nature Scavenger Hunt

Source:	Proposed by:	Prepared by:
Bulgaria, OU “Otets Paisii”, Ruse	Ragina	Ragina Team

Description

Nature Scavenger Hunt is a hands-on educational activity, moving the classic treasure hunt outdoors, where even a pine twig becomes a treasure. In this dynamic quest, students leverage verbal, visual, and kinesthetic skills to explore and appreciate biodiversity, seeking out local plants and animals in gardens near the school or in the city park.

Objectives

1	2
To enhance observational skills and appreciation for local flora and fauna.	To foster teamwork and communication among students.
3	**4**
To encourage outdoor physical activity and interaction with nature.	To promote environmental awareness and conservation.

Required Materials

- ★ Checklist of local plants, animals, and other natural objects to be found.
- ★ Cameras or devices for taking pictures (optional).
- ★ Containers for collecting non-living specimens (optional).
- ★ Identification guides for local biodiversity.
- ★ Worksheets for recording observations.

Preliminary Preparation

- Research and create a list of local species that students can safely observe and collect.
- Prepare scavenger hunt lists and worksheets.
- If necessary, obtain permissions for exploration in designated areas.
- Organise materials and plan for students to work in teams.

Duration

Between 30-60 minutes, depending on the number of items in the prepared scavenger hunt lists.

Considerations

- Ensure students are aware of safety measures regarding interacting with nature.
- Highlight the importance of not disturbing living creatures or their habitats.
- Prepare for weather conditions and ensure students are appropriately attired.
- We recommend this activity to be done with more than 1 teacher if the students are outside of the school.

How to Implement the Practice

Begin with an introduction to local biodiversity and its importance. Divide students into teams, distributing scavenger hunt lists and worksheets. Guide them on how to observe without disturbing the environment. Encourage creative thinking in finding and documenting items. If devices are used, students can photograph their findings. Conclude with a discussion and reflection session, where students share their experiences and learnings, reinforcing their connection with nature.

Evaluation strategy

➔ Assessment through observation checklists, team presentations of findings, and reflection discussions. Students can also create a visual display or digital presentation of their scavenger hunt experiences.

Associated outputs (videos, pictures, websites)

Not available.

Chapter 4: Teamwork

A school greenhouse to cultivate environmental responsibility

Source:	Proposed by:	Prepared by:
Spain, Colegio San Ignacio School Jesuitas Oviedo.	University of Oviedo	

Description

This project is based on the use of the school greenhouse to promote attitudes of respect, effort, creativity, environmental responsibility, love for nature, commitment and awareness of citizenship through Project-Based Learning. By experiential action students are co-responsible for their learning. They should select what to plant according to the time of year and/or purpose, establishing tasks and shifts, recognizing that tuning into nature is relevant to achieve optimal performance with minimal resources, acquiring inquiry and decision-making skills.

Objectives

1	2

Integrate environmental care skills.	Impact of misuse of finite resources on life and human relationships.
3	**4**
Promote love for nature	Promote commitment and aware citizenship
5	**6**
Give prominence to the students´ decisions.	Promote teamwork and co-responsibility
7	**8**
Promote attitudes of respect, effort, creativity and responsibility with the environment	Knowledge of cultivated and wild plants.
9	**10**
Know the economic, environmental and sensory benefits that plants provide us.	Know the ecological functions of plants, such as: soil protection, oxygen production,

	CO2 sink, climate regulation, etc.
11	**12**
Know the nutrient needs of plants.	Discover the advantages of organic farming versus intensive farming.
13	
Discover what soil is, how it is formed and how fragile it can be	

Required Materials

- Didactic materials related to plants, their reproduction and nutritional needs.
- Flat floor
- High beds with soil
- Planters of various sizes
- Seeds
- Substrate
- Gardening tools (hoes, rakes, trowels...)
- Seedbeds
- Gloves

- Watering cans
- Natural fertilisers

Preliminary Preparation

Before starting the practice, the teacher must become familiar with the planting times of the plant species to be used, as well as the necessary substrate or fertiliser

Duration

It requires a daily activity that, depending on the moment in which the garden is located, can range from 15 minutes to half an hour. The ideal would be to establish it for an entire course so that results can be seen.

Considerations

Before carrying out the practice, it is necessary to train the students regarding the needs of plants. It is important to consider the weather conditions that may be adverse and its effects on crops; as well as the necessary substrates and natural fertilisers, and the different water needs of the crops. Depending on their ages, it will be necessary to provide more or less support to students for the development of work schedules and shifts as well as in the organisation of the tasks to be carried out according to the different periods

How to Implement the Practice

The garden project runs in two parallel itineraries, the one related to horticultural activity and the one related to eco-responsible awareness.

In the first stage, students should be trained in the knowledge of plant species and their needs in terms of nutrition and reproduction. A distinction must be made between species belonging to the group of vegetables and species with purely ornamental purposes.

The students' choices about the plants grown and the planning of activities can be decisive for the success of certain crops, so the advisory work and joint teacher-student reflections are key factors in this phase.

Training on common gardening skills and horticulture work: preparing the land, making seedbeds, transplanting, sowing, watering, removing weeds, raking, etc. It would also be necessary to know the types of substrate on which the selected plants grow, as well as the various sowing times according to their typology, if it were necessary to previously make seedbeds to later transplant the

seedlings or if they allow direct sowing and their needs. regarding irrigation.

Distribute the beds/pots with the substrate so that adequate water drainage is achieved, studying the option of collecting drainage water for reuse and the appropriate lighting for each plant. Provide for the necessary spaces for each plant and the possible need to use sticks (sergeants) to support some crops.

Studying possible ways to protect the crop against frost or pests with ecological methods (with pest repellent purposes). Finally, it would be necessary to instruct students in the safe use of gardening tools, in their cleaning and conservation and establish the rotation of shifts and the work to be carried out. In parallel to the horticultural instruction itself, training related to ecology and ecological and sustainable crops should take place as opposed to intensive cultivation or with chemical fertilisers; should make the students aware of the responsibility, perseverance and effort required to achieve the project, being aware of the responsibility they acquire and the need to work as a team to make the garden become a reality.

It is interesting to promote the assembly format in regarding decision making about the steps to follow in the garden, as well as the usefulness of the fruits collected.

Evaluation strategy

➔ Last year, different results were obtained from the work in the garden. Carrots (with which a cake was made) and lettuce and tomatoes were harvested. The surroundings of the school were also decorated with natural flowers that were brought in the month of May and were later transplanted by the group of students from the garden to the planters.

Associated outputs (videos, pictures, websites)

https://www.facebook.com/profile/100064095309773/search/?q=invernadero

Chapter 4: Teamwork

Save Water - Collect Rainwater

Source:

Serbia, Primary school Jovan Sterija Popovic, Belgrade

Proposed by:

Creative Station

Prepared by:

Marijana Veljić, Teacher

Doc. Nina Stojanović

Description

This lesson focuses on the importance of water conservation through a practical activity of collecting rainwater. Students create a model that illustrates how rainwater can be collected and used, while also learning about the processes of condensation and evaporation. The lesson also includes the creation of a creative poster for the classroom door that promotes water conservation.

Objectives

1	2	3
Understand the importance of conserving and saving water.	Learn how rainwater can be collected and utilized.	Understand the processes of condensation and evaporation.

Required Materials

- Model making materials (recycled materials, plastic bottles, straws)
- Poster making materials (paper, colors, markers)

Preliminary Preparation

No additional training required for teachers. Materials need to be prepared, and the design of the model planned.

Duration

90 minutes

How to Implement the Practice

Instructions for Implementing Rainwater Collection and Water Conservation Education:

Water Conservation Overview:

Ensure there is enough space for model making.

The activity may require more time depending on the number of students.Importance of conserving water by managing freshwater efficiently to meet human needs while protecting the environment. Recognize rainwater collection as a sustainable method to reduce reliance on traditional water sources, using it for irrigation and non-potable purposes.

Group Collaboration:

Divide into teams to design and construct a rainwater harvesting model. This activity fosters teamwork, creativity, and practical application of STEM concepts, making the learning experience engaging and significant.

Exploring the Water Cycle:

Engage in discussions about condensation and evaporation, key elements of the water cycle. Learn how these processes contribute

to rain formation and the importance of harvesting rainwater. Understand its role in sustaining life on Earth and its cost-saving benefits.

Model Presentation:

Present your models to enhance communication skills and receive critical feedback from peers. Explore various problem-solving approaches, sparking innovation and reinforcing lessons learned.

Conservation Poster Creation:

Craft posters advocating for water conservation, translating insights into visual messages. Display these posters around the school to remind and educate the community about the importance of conserving water.

Reflective Discussion:

Conclude with a discussion on the learning outcomes, challenges faced, and innovative solutions devised. Highlight the practical advantages of collecting rainwater and its wider implications for water conservation.

Engaging the Wider Community:

Encourage students to share their knowledge and projects with others, extending the message of water conservation to school assemblies, community meetings, or digital platforms, thereby raising broader awareness.

Conclusion:

Through research and integrative learning, students achieve functional knowledge of rainwater harvesting and become advocates for sustainable water management. They gain valuable skills and insights into conserving this critical resource, fostering a culture of sustainability and environmental responsibility. This educational framework highlights the pivotal role of teaching in cultivating environmental awareness and proactive conservation efforts, preparing students to be informed stewards of our planet's resources.

Associated outputs (videos, pictures, websites)

Photos of models and posters, possible sharing on school websites or social media, YouTube Save Water - Collect Rainwater

The class book "Let's save water-10 tips", which supports the development of awareness among peers about the importance of

drinking water (and therefore saving - to replace it with rain water wherever possible) for life... We save today to have tomorrow!

https://www.youtube.com/watch?v=9Mqd5sBK6qQ

Final words

As we reach the end of this collection, we hope you've been inspired by this booklet that is leading sustainability education and key competencies in primary schools. The 22 best practices presented here are a testament to the power of collaboration, innovation, and a shared vision for a better future.

We encourage you to implement the practices that you like, in your own classrooms. By fostering a culture of continuous improvement and knowledge sharing, we can collectively raise the bar for education and empower our students to become informed, engaged, and responsible global citizens.

We extend our deepest gratitude to the individuals and organisations who contributed to this project, as well as to the countless educators who work to inspire and empower the next generation.

Let's continue to learn, grow, and collaborate to create a world where sustainability and environmental empathy are not just buzzwords but a living dream come true in every classroom.

Best regards,

The Project team

A living dream

Co-funded by the European Union

Partners

- ★ **University of Oviedo**
- ★ **Creative Station**
- ★ **ESNO Nikola Obretenov**
- ★ **Ragina Ltd.**
- ★ **Smart Idea**
- ★ **Youthfully Yours SK**

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