GreenComp School

Cross-sectoral Greencomp training of primary school Stakeholders, for the promotion of a sustainability mindset

GreenComp Handbook
"Project-based learning and board games for pupils and parents"

Introduction

The GreenComp School Handbook: Project-Based Learning (P-BL) scenarios and Board Games for Pupils and Parents is designed to support families in developing a sustainability mindset through engaging, hands-on learning experiences. This handbook provides parents with structured P-BL scenarios and interactive board games, enabling them to explore sustainability topics in an interdisciplinary way, together with their children in fun and meaningful ways. Through these, children and parents work as a team to tackle real-world sustainability challenges, fostering critical thinking, problem-solving, collaboration, and responsible decision-making. Whether through hands-on projects or engaging board games, this handbook makes sustainability tangible, practical, and inspiring for young learners.

What does this handbook include?
This handbook presents three Project-Based Learning (P-BL) scenarios and four educational board games, tailored to different age groups (Grades 1-2, 3-4, and 5-6). Each grade group focuses on a specific Sustainable Development Goal (SDG) topic as presented in the handbook.

The P-BL scenarios provide opportunities for pupils to observe, research, and create solutions for sustainability challenges in collaboration with their parents. Each project is designed to be completed at home, using simple materials, and encourages discussion, exploration, and critical reflection.

The board games introduce sustainability concepts through interactive play, allowing families to make decisions, solve challenges, and reflect on sustainable habits in a fun and engaging way. The games are designed to be flexible, easily adaptable to any household setting, and encourage creativity and teamwork between parents and pupils.

Introduction

How to use this handbook?
This material is designed to be flexible and adaptable to different family settings and daily routines.
Parents are encouraged to:
- Choose projects and games based on their child's age and interests.
- Follow the step-by-step guidance to implement each project or game at home.
- Foster curiosity and critical thinking by discussing sustainability concepts.
- Modify the projects or the games to fit their local context and available resources.

Each project includes clear instructions, materials needed, and discussion prompts, making it easy for parents to facilitate engaging sustainability learning experiences at home.

Similarly, each board game includes clear instructions and materials needed.

Moving forward
This handbook is part of a broader initiative to empower families with tools for sustainability education. The materials provided are engaging, adaptable, and impactful, ensuring that sustainability becomes an active part of everyday life—both at home and in the community.

By participating in these projects and board games, families can make sustainability a shared experience. Through play and exploration, children and parents develop habits and knowledge that contribute to a more sustainable lifestyle.

We invite you to explore the handbook, enjoy the games, and work alongside your children to build a greener future together!

This deliverable is part of a broader initiative to provide educators with innovative tools for fostering sustainability education and participatory learning. The materials provided here are designed to be engaging, adaptable, and impactful, ensuring that sustainability becomes an integral part of elementary education.

Aligning P-BL scenarios and Board Games with 2030 Sustainable Development Goals

The Project-based learning scenarios and Board Games presented in this handbook have been designed in line with the key Sustainable Development Goals of the United Nations 2030 Agenda. The aim was to address both environmental sustainability, which is central to the project, and social sustainability, fostering a holistic understanding of sustainability in education.

Grades 1-2
Desertification, Land Degradation, and Drought

Desertification, Land Degradation and Drought for Grades 1 and 2. The early years of elementary education are critical for building an understanding of natural ecosystems. By focusing on SDG 15, teachers provide pupils with the opportunities to explore the importance of land preservation and environmental resilience. This aligns with the green focus of the project; teaching pupils how human actions can impact the land and what can be done to mitigate these negative effects from an early age.

Grades 3-4
Cultural Sustainability and Environment

This goal was selected to introduce pupils to the idea that sustainability is not just about nature but also about human systems, including cultural and urban environments. SDG 11 emphasises the importance of preserving cultural heritage while ensuring that cities and communities develop in environmentally sustainable ways. By focusing on cultural sustainability, we bridge the gap between environmental protection and social responsibility, demonstrating how both must work together for sustainable futures.

Grades 5-6
Sustainable Production and Consumption

in these grades, pupils are able to engage with more complex concepts such as resource management, waste reduction, and the global supply chain. SDG 12 was selected for Grades 5 and 6 to deepen pupils' understanding of how individual consumption patterns influence global sustainability. This SDG aligns strongly with the green focus of the project by encouraging practical applications of sustainability principles, reducing waste, reusing materials, and making conscious choices as consumers.

Grades 1-2

Project-Based Learning Scenario 01
Save our Land!

GreenComp School

Save our Land!

Grades 1 and 2

Project overview

Pupils explore the concept of desertification and how land degrades over time due to various environmental and human factors. Through a simple experiment with soil and plant growth, they discover ways to protect and restore the land, applying this knowledge in a collaborative setting with their families. The project concludes with a visual presentation to showcase their understanding and solutions.

Project Topic

Desertification, Land Degradation, and Drought

GreenComp competences area

Embodying Sustainability Values
Embracing Complexity in Sustainability
Acting for Sustainability

Contribution to SDGs

15 LIFE ON LAND

GreenComp Competences

Promoting nature
Systems thinking
Critical thinking
Problem framing
Political agency
Individual initiative

Save our Land!

Objective

To help young pupils understand the importance of healthy land and the impacts of desertification, while teaching them practical ways to protect and preserve the environment.

Expected Learning Outcomes

Knowledge:
Upon completion of the project, children and parents be able to:
- Describe how nature, people, and places are interconnected.
- Discuss how lack of water affects everyday life.
- Explain why certain environmental problems may seem insignificant or go unnoticed by people.
- Examine the impact of drought and its long-term consequences on the environment.

Skills:
Upon completion of the project, children and parents be able to:
- Propose simple ways to protect the Earth and make the world a better place, by understanding the effects of desertification, land degradation and drought on the environment.
- Make their neighborhood a better place through fun and enjoyable activities.
- Make sustainable choices even in times of uncertainty or risk.

Attitudes:
Upon completion of the project, children and parents be able to:
- Make environmentally-friendly choices that benefit the Earth.
- Value working together to address sustainability issues.

Save our Land!

Interdisciplinary approach

GEOGRAPHY AND INFORMATICS

Pupils explore the geographical distribution of desertification-affected areas.
Use maps or digital tools to identify and analyze regions prone to desertification.
Research online to find case studies and photos of areas suffering from soil degradation.

LITERATURE

Pupils write reflective essays or stories about the impact of desertification on people and the environment.
Compose descriptive reports summarizing their experiment and findings.
Use storytelling to propose future solutions and inspire environmental action.

ARTS

Pupils design creative posters illustrating the effects of desertification and ways to prevent it.
Use drawings, diagrams, and symbolic imagery to communicate findings visually.
Incorporate artistic elements into solutions-oriented presentations.

MATHEMATICS

Measure and compare water retention and soil erosion in the experiment.
Create charts and graphs to visualize the data collected during the experiment.
Use numerical analysis to compare the effectiveness of different soil protection methods.

Save our Land!

Interdisciplinary approach

FOREIGN LANGUAGES

Research how different countries tackle desertification, presenting findings in a foreign language.

Learn and use environmental vocabulary in the target language in written and spoken formats.

Practice communication skills by integrating foreign terms into their posters and presentations.

PHYSICAL EDUCATION

Engage in practical, hands-on activities like planting grass or trees to protect the soil.

Participate in eco-games that simulate soil erosion and its prevention.

Learn the physical impacts of land degradation on local and global scales through experiential learning.

Save our Land!

Interdisciplinary approach

The project integrates several subject areas to provide a holistic learning experience that connects scientific concepts, environmental awareness, creative expression, and critical thinking. Each subject contributes uniquely to the overall learning experience, helping pupils understand the complexity of desertification and its broader environmental implications.

GEOGRAPHY AND INFORMATICS

Research Activity: Pupils use the Internet to find images and case studies of areas affected by desertification worldwide.
Mapping: Using maps or digital tools, pupils locate affected regions and discuss their geographical features (e.g., climate, terrain).

LITERATURE

Narrative Writing: Pupils compose short stories or essays imagining a world severely affected by desertification, emphasizing its consequences on people and nature.
Descriptive Reports: They write observational summaries about their experiments.

Save our Land!

Interdisciplinary approach

ARTS

Creative Expression: Pupils create posters or digital illustrations showing the impact of desertification and their proposed solutions.

Symbolic Representation: Art help communicate complex concepts like soil degradation through visuals.

Art allows Pupils to express their understanding creatively by designing posters. They use visual storytelling to demonstrate the impact of desertification and their proposed solutions, which encourages imaginative thinking and communication through visual mediums.

MATHEMATICS

Data Analysis: Pupils measure and compare water retention levels in protected vs. unprotected soil and use charts to visualize their results.

Calculations: Simple arithmetic help quantify differences in erosion, water retention, and plant growth.

Through comparison of water retention between protected and unprotected soil, Pupils apply basic mathematical skills. They track and compare data from their experiment, reinforcing their ability to use quantitative methods to analyze real-world problems.

Save our Land!

Interdisciplinary approach

FOREIGN LANGUAGES

Multilingual Research: Pupils can explore how other countries address desertification and present findings in a foreign language they are learning.

Vocabulary Expansion: They learn key environmental terms in the foreign language and use them in presentations or posters.

The project develops language skills as Pupils are required to describe their observations in writing and present their findings verbally to the class. This reinforces their ability to explain scientific concepts in simple terms and builds confidence in public speaking and structured communication. By weaving together these subjects, the project encourages Pupils to think critically and holistically about environmental problems. It promotes systems thinking, as Pupils realize that different areas of knowledge—science, math, art, and communication—are interconnected and necessary for solving complex challenges like desertification.

PHYSICAL EDUCATION

Outdoor Connection: Pupils can participate in hands-on activities like planting trees or visiting a nearby garden to connect physically with soil conservation practices.

Environmental Action: Engage in eco-games or physical challenges that simulate soil erosion and its prevention.

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INVOLVING PUPILS IN INTERDISCIPLANARY ACTIVITIES

Integrated Research and Mapping (Geography and Informatics):
Pupils use online resources to identify regions affected by desertification and analyze their causes and impacts.

Experiment and Data Recording (Mathematics):
Pupils conduct the soil experiment, track measurable differences in erosion and water retention, and present findings with charts or graphs.

Creative Poster Design (Art and Foreign Languages):
Posters combine visual representations with descriptions or solutions written in their native and a foreign language.

Physical Engagement (Physical Education):
Activities like planting or eco-games help Pupils physically connect to soil protection concepts.

Storytelling and Reflection (Literature):
Pupils write reflective essays or stories that incorporate their findings and propose future actions for soil conservation.

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Project organisational elements

Location and required resources and equipment

The experiment takes place at home, with each concrete step explained in school beforehand. Pupils conduct the activity at home with their parents, reinforcing their learning through hands-on experience.

Materials Needed:

- Two trays of soil
- Watering cans or spray bottles
- Pebbles, grass seeds
- Paper, crayons, markers for poster creation

Group organisation

Individual Work (At Home):

Each Pupil conduct the soil protection experiment individually at home, after teachers' directions, with guidance from their parents.

Pupils are encouraged to take ownership of the process, documenting their daily observations in a notebook or by taking photos.

Family Collaboration:

Parents act as facilitators during the home experiment, guiding observations and fostering discussions about the importance of soil conservation.

Parents are encouraged to share their own ideas or experiences related to protecting land and the environment.

Classroom Organization:

Group Work: Pupils form small interdisciplinary groups to pool their knowledge and findings from different subjects.

Role Assignment: Each group assign roles, such as "Geographer," "Scientist," "Artist," "Mathematician," and "Linguist," ensuring every subject is represented in their project.

PROJECT IMPLEMENTATION INSTRUCTIONS

Project organisational elements

Group organisation

Peer Sharing (In Class):
Upon completion of the experiment, Pupils group into small teams (3-4 persons) in the classroom.
Each group share findings, compare observations, and discuss the similarities and differences in their experiments.
The groups collectively brainstorm additional ideas for preventing desertification and protecting soil.

Classroom Presentations:
Each Pupil present their poster and findings to their small group, practicing communication and public speaking skills.
The group select the most creative or impactful ideas to share with the whole class during a final presentation session.

Collaborative Reflection:
After all presentations, the class engage in a guided reflection session led by the teacher.
Pupils form larger discussion groups to consider how their individual actions can collectively contribute to a sustainable future.

Recognition of Efforts:
Groups that collaborate effectively be recognized with certificates or a classroom "Green Star Award." This recognition encourages teamwork and a sense of achievement.

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Project Process

Define the problem to be solved

What happens when land is left bare without plants or protection?

Define the driving questions

How can we protect the land from drying out and becoming a desert?

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

1. Introduction to Desertification:
- The teacher introduces the topic of desertification and soil degradation, using images or videos to explain what happens when soil is left bare and unprotected. The teacher explain why plants and other ground cover are important to protect soil from erosion, water loss, and desertification.
- The teacher provide visual examples of protected and unprotected land (e.g., areas with vegetation vs. barren landscapes) to help Pupils visualize the differences.

2. Setting Up the Experiment (At home - Over 1 Week):

Materials Needed:
- Two trays or containers of soil (same size)
- Pebbles or small rocks
- Grass seeds or small plants (optional)
- A watering can or spray bottle
- Water
- Notebook for observations
- Camera (optional for documenting results)

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

3. Procedure of the experiment:

1. **Tray 1: Protected Soil**
   - In one tray, Pupils simulate soil protection by covering the soil with pebbles and/or planting grass seeds. The plants or pebbles act as a protective layer that reduces erosion and water evaporation.
2. **Tray 2: Unprotected Soil**
   - In the second tray, Pupils leave the soil bare, with no protective cover. This simulates the condition of soil left unprotected by plants or rocks, mimicking conditions that lead to desertification.
3. **Watering the Soil:**
   - **Pupils** water both trays equally every day for one week, using the same amount of water each time (e.g., 100 ml). They observe how the water interacts with the soil and note any visible changes (e.g., water absorption, erosion, or the drying out of soil).
4. **Observations:**
   - Throughout the week, Pupils observe and document changes in both trays. They should pay attention to factors such as:
     - How quickly the soil dries out
     - Whether the soil in each tray stays intact or erodes (washes away with water)
     - Differences in plant growth (if grass seeds were used)

Optional: Pupils can take photos of the trays at different stages to visually capture the differences.

PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

4. Analysis and Discussion (At Home):

- After one week, Pupils analyze their observations. They should compare the conditions of the protected soil (with pebbles/plants) and the unprotected soil (left bare).
- Parents can help guide the discussion with questions like:
  - "Which soil held the water better?"
  - "Which soil eroded more when watered?"
  - "How did the plants or pebbles protect the soil?"

5. Creating a Poster (At Home):

- Using the observations and any photos taken, Pupils create a poster that visually represents their findings.

The poster should include:

Title: A creative title that reflects the purpose of the experiment (e.g., "Protecting Our Soil!")

Illustrations: Drawings or photos showing both the protected and unprotected soil trays at different stages of the experiment.

Observations: A brief description of what happened in each tray and how the protection (or lack of protection) affected the soil.

Solution: Pupils should add a section with their own ideas on how to protect soil in real-life situations (e.g., planting more trees, using ground cover, reducing water waste).

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PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

6. Presenting the Results (Classroom):
- Back in the classroom, Pupils present their posters to the class. They explain:
  - The setup of their experiment
  - The differences between the protected and unprotected soil
  - Their ideas on how to protect land from desertification
- After each presentation, the class can discuss the different approaches used and learn from each other's findings.

7. Reflection (Classroom Discussion):

As a final step, Pupils participate in a group reflection. The teacher guide the discussion with questions like:
  - "Why is it important to protect the soil?"
  - "What happens when soil is left bare without plants or cover?"
  - "What can we do to protect land in our community?"

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PROJECT IMPLEMENTATION INSTRUCTIONS

General remarks for parents and teachers

Introduce the project to the pupils

Explain desertification and why it is important to protect the land, showing simple visual examples of healthy vs. degraded land.

Conduct research and inquire

At home, Pupils experiment with their parents, observing and recording changes in the soil, water absorption, and plant growth.

Final results

Pupils create posters illustrating the differences between protected and unprotected soil.
They also present simple solutions (e.g., planting grass, using stones) to the class.

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

General remarks for parents and teachers

Parent guidance

Parents help guide the experiment at home, encouraging observation and discussion. They assist with the creation of posters and provide feedback on their child's findings.

Reflection

In class, Pupils discuss what they learned, focusing on how the environment can be protected and what they can do to help.

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

Provide clear instructions for parents on how to support their child with the experiment, including observation tips and suggestions for making the project interactive. Encourage parents to let their children lead, fostering independence in problem-solving.

Planning and Preparation:

Project Design and Overview:
a.   Develop a clear and concise explanation of the project goals and interdisciplinary connections.
b.   Prepare step-by-step instructions for Pupils and parents, ensuring they understand the process and outcomes.

Resource Allocation:
c.   Provide materials (or a detailed list of materials) needed for the experiment, such as trays, soil, pebbles, and seeds.
d.   Share links to online resources, videos, or articles about desertification and soil protection to support family research.

Parent Guidance Materials:
a.   Create a user-friendly guide for parents, including the following:
i.   Overview of the project: What it aims to teach and why it's important.
ii.Step-by-step instructions for the experiment: Simplified and visual where possible.
iii.Suggestions for parent involvement: Example questions to ask, ways to encourage observation, and how to discuss results.
Ideas for family discussions: Encourage brainstorming about local environmental issues and solutions

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

Implementation and Communication:

Engaging Pupils:
a.   Introduce the project in class through interactive methods, such as:
i.   Showing videos or photos of desertification in action.
ii.Asking Pupils to share what they know about soil and its importance.
iii.Setting up a small demonstration of soil erosion to spark curiosity.

Parent Communication:
b.   Send a detailed project outline to parents through email, newsletters, or a dedicated parent-teacher platform.
c.   Host a brief online or in-person session to explain the project, its objectives, and their role in supporting their children.
d.   Regularly check in with parents via emails or a classroom portal to address concerns or provide encouragement.

Classroom Support:
e.   Guide Pupils in organizing their observations and reflections into structured reports.
f.   Support Pupils in creating interdisciplinary connections, helping them see how different subjects contribute to the project.
g.   Offer assistance in poster-making by providing templates or brainstorming sessions for design ideas.

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

Facilitating Reflection and Presentation:

Classroom Discussion:
a.   Organize group discussions where Pupils share their challenges, discoveries, and insights from the experiment.
b.   Encourage critical thinking by asking questions like:
i.   "What surprised you the most about your experiment?"
ii. "How can you apply what you learned to real-world situations?"

Guidance for Presentations:
c.   Help Pupils rehearse their presentations, offering tips on clear communication and storytelling.
d.   Teach Pupils how to explain data visually (e.g., through graphs or diagrams).

Evaluation and Feedback:
e.   Provide constructive feedback on Pupils' posters, reports, and presentations, focusing on effort, creativity, and interdisciplinary integration.
f.   Recognize outstanding contributions to motivate continued interest in environmental topics.

Save our Land!

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

Encouraging Long-term Impact:

Inspiring Action:
a.   Discuss ways Pupils can apply their learning to their community, such as planting trees or joining conservation programs.
b.   Encourage Pupils to share their knowledge with peers or family members beyond the classroom.

Connecting to Curriculum:
c.   Link the project outcomes to ongoing lessons in Geography, Mathematics, Art, or other subjects, reinforcing the interdisciplinary learning approach.
d.   Offer suggestions for follow-up activities, such as a community clean-up day or a deeper study into local environmental challenges.

Grades 3-4

Project-Based Learning Scenario 02
Our Cultural Heritage and the Environment

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Our Cultural Heritage and the Environment

Grades 3 and 4

Project overview

Pupils explore the relationship between cultural heritage and the environment. They research a local cultural heritage site or practice, investigate how environmental issues impact it, and propose solutions to preserve both the site and the environment. They create a model or visual representation of their findings, which they present in class.

Project Topic

Cultural Sustainability and Environment

Preserving the past, shaping a sustainable future.

GreenComp competences area

Embodying Sustainability Values
Embracing Complexity in Sustainability
Envisioning Sustainable Futures

GreenComp Competences

Valuing Sustainability
Systems Thinking
Critical Thinking
Collective Action

Contribution to SDGs

11 SUSTAINABLE CITIES AND COMMUNITIES

Our Cultural Heritage and the Environment

Objective

To help Pupils understand the connection between cultural heritage and environmental sustainability and to encourage them to think of ways to protect both for the future.

Expected Learning Outcomes

Knowledge (to be able to):
- Explain the connection between caring for the planet and cultural heritage and (our) personal values (like being kind and responsible), and how this can make the world a better place for everyone.
- Describe the three key aspects of caring for the Earth – nature, people, and money – and explain their significance.
- Discuss how nature, environment, humans, and cultural heritage are interconnected, affecting each other, and understand the impact of our actions on the environment.
- State why it is important for governments and leaders to make decisions that protect nature and cultural heritage and promote the well-being of people both in our towns and all over the world.

Skills (to be able to):
- Solve real-life problems, including problems related to cultural sustainability and environment, to make the world a more sustainable place.
- Develop ideas to protect both the planet and cultural heritage while enhancing the lives of others by incorporating your personal values, such as kindness and responsibility.

Attitudes (to be able to):
- Embrace others' ideas on cultural sustainability and environment, even when they differ from your own ones.
- Take care of the planet by being responsible and continually learning new ways to help, even when circumstances change.
- Argue about the importance of cultural heritage, by exploring its role in promoting understading and respect among diverse groups of people.

Our Cultural Heritage and the Environment

Interdisciplinary approach

HISTORY

Provides an understanding of the cultural heritage site's significance.

ARTS

Helps Pupils creatively represent their findings through models or posters.

ENVIRONMENTAL SCIENCES

Explains environmental challenges (pollution, climate change) and their impact on cultural heritage.

LANGUAGE

Supports writing descriptions and oral presentations of their findings.

Note to teachers: *Subject names may vary slightly depending on your national curriculum, but the core skills and learning objectives remain the same. No matter what the subject is called in your school, you can easily adapt the activities with minor modifications to fit your classroom context. This handbook is also available in other languages, where subject names are aligned with local terminology for greater relevance.*

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Our Cultural Heritage and the Environment

Interdisciplinary approach

By combining **history, science, art, and language arts,** the project encourages Pupils to think holistically about the relationship between culture and the environment. They learn to analyze environmental impacts (science), understand historical significance (history), express their findings visually (art), and communicate solutions (language arts). This comprehensive approach develops critical thinking and problem-solving skills, showing Pupils how different areas of knowledge intersect to address real-world challenges.

HISTORY

This subject provides Pupils with the foundational knowledge about the significance of the cultural heritage site or practice they are researching. By learning the historical and cultural value of these sites, Pupils gain an appreciation of the importance of preserving cultural landmarks and traditions.

ENVIRONMENTAL SCIENCE

Environmental science plays a key role in helping Pupils understand the impact of environmental issues (such as pollution and climate change) on cultural heritage. Science explains how changes in the environment, such as air quality or extreme weather, can affect physical structures and cultural practices, showing the connection between natural and human-made systems.

Our Cultural Heritage and the Environment

Interdisciplinary approach

ARTS

Art is used to translate Pupils' research and observations into visual representations. By creating models or posters, Pupils express their understanding creatively, visualizing the cultural site, environmental impacts, and proposed solutions. This encourages Pupils to think about how to communicate their ideas in engaging ways.

LANGUAGE

Language supports Pupils in writing descriptions of their research and in presenting their findings through oral presentations. This strengthens their ability to communicate clearly, organize information logically, and explain their ideas effectively. It also enhances their capacity to convey complex concepts in an understandable way.

PROJECT IMPLEMENTATION INSTRUCTIONS

Project organisational elements

Location and required resources and equipment

Classroom and home (for family involvement)

- Notebook for taking notes
- Camera or phone to take pictures
- Craft materials for models (clay, cardboard, markers, etc.)
- Poster paper

Group organisation

Parent-Pupil Collaboration at Home, Individual Work at School

Three children could work independently with their parents at home on a common local cultural heritage site or practice and, once they arrive in class, they can create a new project, under the supervision of the teacher, that is the result of the union of the individual projects.

To complete the project Pupils in groups, could find a way to promote the cultural heritage site or practice so that it is not forgotten and could be passed down for future generations.

They could go to the other classes to promote the project. They could also promote their project on the school website and produce a school newspaper which could be presented to local associations and to the municipal administration. In this way the children become active citizens and the project could actually be implemented.

Our Cultural Heritage and the Environment

PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

1. Parent-Pupil Collaboration (At Home)

The first step of the project be done at home, where Pupils collaborate closely with their parents. The idea is for parents and Pupils to work together on researching a local cultural heritage site and investigating how environmental issues (pollution, climate change) affect it.

Roles:
Pupil: The Pupil lead the research, with parents providing support in areas where necessary, such as conducting research online, visiting the cultural site (if possible), and discussing findings.
Parent: Parents serve as facilitators, helping guide the Pupil's thinking, brainstorming ideas for solutions, and assisting in building the model or poster that represents their findings.

- **Task 1: Research and Inquiry (At Home):**

Pupils, with help from their parents, gather information about the chosen cultural site. They document the environmental challenges affecting the site and suggest ways to protect it.

- **Task 2: Model or Poster Creation (At Home):**

Once the research is complete, the Pupil and parent work together to build a model or create a poster that represents the cultural site and its environmental challenges. The model should highlight possible solutions to preserve both the cultural heritage and the environment.

Our Cultural Heritage and the Environment

PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

2. Transition to Individual Work (At School)

- Individual Presentation and Reflection:
  - After completing the collaboration phase at home, Pupils transition to working independently in school. They bring the models or posters created at home and present their findings individually in class. During this phase, Pupils focus on communicating what they learned and the solutions they developed with their parents.

- Reflection and Self-Assessment:
  - After the presentations, Pupils reflect on the experience by discussing what they learned through working with their parents and what they contributed individually. This reflection allow Pupils to process the learning journey from home to school, understanding how collaboration influenced their work.

Our Cultural Heritage and the Environment

PROJECT IMPLEMENTATION INSTRUCTIONS

Project steps

Summary:

- Home Collaboration: Pupils work with their parents to research a cultural heritage site, explore environmental issues, and create a model or poster. Parents serve as guides and facilitators.
- Individual Work at School: Pupils present their projects individually in class, showcasing their research and reflecting on the experience.

This structure ensures that Pupils benefit from parental support at home while developing their independence and presentation skills during the individual phase in school.

Our Cultural Heritage and the Environment

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Define the problem to be solved

How are cultural heritage sites affected by environmental issues?

Define the driving questions

How can we protect our cultural heritage and the environment at the same time?

Plan the project

Pupils research local cultural heritage sites and explore how environmental factors (pollution, climate change) affect them. They work at home with their families to gather information and create a model or poster.

Introduce the project to the pupils

The teacher/parents explains the importance of preserving both cultural heritage and the environment, using examples of cultural sites impacted by environmental changes.

Our Cultural Heritage and the Environment

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Conduct research and inquire

Visit a local cultural site (if possible) or research it through photos, books, or the internet.
Investigate the environmental challenges affecting the site, such as pollution or climate change. Record observations and take photos to document the research

Final results

Pupils build a model or create a poster representing the cultural heritage site and environmental challenges.
They include proposed solutions to protect both the site and the environment.

Parent guidance

Parents guide their children through the research process and assist with creating the model or poster. They help with brainstorming and problem-solving during the project.

Reflection

After presenting their models or posters, Pupils reflect on what they learned and discuss actions they can take to protect both cultural heritage and the environment in their communities.

Our Cultural Heritage and the Environment

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Teacher contribution

Firstly, teachers could meet parents and clearly explain the phases of the project, their role and how to best guide them in their research work.

Provide parents with guidance on how to support their children in researching cultural heritage sites and assist with the creative aspects of model or poster-making. Encourage parents to involve children in discussions about environmental protection and heritage preservation.

Grades 5-6

Project-Based Learning Scenario 03
Our Eco-Friendly Product

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Our Eco-Friendly Product

Grades 5 and 6

Project overview

Pupils research the environmental impact of everyday products and design their own eco-friendly alternative. They use recycled materials to create a prototype of a sustainable product and present it to the class, highlighting its environmental benefits.

Project Topic

Sustainable Production and Consumption

It is about doing more and better with less.

GreenComp competences area

Embodying Sustainability Values
Embracing Complexity in Sustainability
Acting for Sustainability

Contribution to SDGs

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

GreenComp Competences

Promoting nature
Systems thinking
Critical thinking
Problem framing
Political agency
Individual initiative

Our Eco-Friendly Product

Objective

In this project, pupils learn about sustainable production practices and responsible consumption. They research the environmental impact of common products, brainstorm ideas for an eco-friendly alternative, and create a prototype of their product using sustainable or recycled materials. The final product is presented to the class, along with a discussion on its environmental benefits.

Expected Learning Outcomes

Knowledge (to be able to):
- Pupils learn how products are produced and the environmental impact of production processes.
- They understand the principles of sustainable production and responsible consumption.

Skills (to be able to):
- Research skills for investigating product life cycles.
- Creativity in designing a sustainable product and building a prototype.
- Presentation skills to explain their design and its benefits.

Attitudes (to be able to):
- Appreciation of the importance of sustainable consumption.
- Responsibility towards reducing waste and choosing eco-friendly alternatives.

Our Eco-Friendly Product

Interdisciplinary approach

GEOGRAPHY AND INFORMATICS

Focus: Researching the global environmental impact of production processes and how technology aids in finding solutions.

Contribution: Pupils learn to analyze geographical data and use digital tools to map resource use and waste.

LITERATURE

Focus: Writing product descriptions, persuasive essays, or stories about sustainability.

Contribution: Develops Pupils' ability to articulate ideas clearly and persuasively.

Our Eco-Friendly Product

Interdisciplinary approach

MATHEMATICS

Focus: Calculating resource use and potential waste reduction for products.
Contribution: Helps quantify the sustainability impact of product designs through data and comparisons.

ARTS

Focus: Designing visually appealing prototypes and marketing materials.
Contribution: Encourages creativity and effective communication of sustainability concepts.

FOREIGN LANGUAGE

Focus: Creating presentations or materials in another language to promote the product globally.
Contribution: Enhances communication skills and fosters a global perspective on sustainability

Our Eco-Friendly Product

Interdisciplinary approach

The "Our Eco-Friendly Product" project integrates multiple subjects to help Pupils understand the importance of sustainable production and consumption. By combining knowledge and skills from various disciplines, Pupils can design and create an eco-friendly product that reflects their understanding of responsible consumption and environmental impact. Bellow it is describing how different subjects come together in this interdisciplinary approach:

🧪 MATHEMATICS

Mathematical skills are applied to calculate resource use, energy consumption, and waste reduction. Pupils might create graphs or charts to visualize the environmental impact of their prototypes compared to conventional products.

Integration: Mathematics quantifies the effects of sustainable choices, linking theoretical knowledge to practical outcomes.

💛 GEOGRAPHY AND INFORMATICS

Pupils explore the global impact of production processes, using geographic data and digital tools to map the flow of resources and waste. Informatics tools, such as online research platforms and visualization software, help Pupils analyze data, identify patterns, and propose solutions.

Integration: This subject provides the foundational knowledge to understand how consumption and production affect different regions, encouraging global thinking in local solutions.

Our Eco-Friendly Product

Interdisciplinary approach

🧪 FOREIGN LANGUAGES

Pupils prepare presentations or materials in a foreign language, simulating a global context for promoting their eco-friendly product.
Integration: This subject broadens the project's scope, fostering cultural awareness and communication skills relevant in an interconnected world.

👪 PHYSICAL EDUCATION

Activities like outdoor clean-up drives or material-gathering exercises promote teamwork and environmental awareness.
Integration: Physical education emphasizes the practical application of sustainability concepts, linking physical activity with environmental stewardship.

🧪 ARTS

Pupils use their artistic skills to design visually appealing prototypes and marketing materials, such as posters or packaging, that highlight the eco-friendly aspects of their product.
Integration: Art enables Pupils to communicate their ideas creatively, making their solutions more engaging and impactful.

👪 LITERATURE

Through writing tasks, such as product descriptions, persuasive essays, or stories, Pupils develop the ability to articulate the importance of sustainability.
Integration: Literature enhances communication and advocacy skills, allowing Pupils to share their insights persuasively with peers and a broader audience.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Project organisational elements

Location and required resources and equipment

Location: Home and classroom (for family involvement)

Resources: Internet or library resources for research
Recycled materials for prototype creation (paper, plastic, cardboard)
Craft supplies (glue, scissors, markers)

Group organisation

Pupils work individually to research products and design their eco-friendly alternatives, with support from their families. They present their work to the class (optional).

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Define the problem to be solved

Activity: Discuss the environmental impact of everyday products and the waste they generate.

1. Show examples of commonly discarded items (e.g., plastic bottles, cans, old clothes).
2. Highlight the problem: Why is waste harmful to the environment?
3. Ask Pupils to brainstorm examples of waste they encounter daily at home or school.

Define the driving questions

How can we create a product that is both useful and environmentally friendly?

1. Guide Pupils to reflect on how they can repurpose waste into something practical.
2. Discuss examples of upcycled products to inspire their thinking.
3. Encourage Pupils to imagine solutions that could solve real-life problems, like reducing plastic waste.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Introduce the project to the pupils

Pupils research common products and identify areas where waste or resource use can be reduced. They design an eco-friendly alternative to a chosen product and create a prototype.

Goal: Map out the steps to create a recycled product.

Steps:

1. Break the project into smaller tasks (e.g., research, design, assembly, presentation).
2. Provide 2-3 predefined examples, like a reusable bag, a pen holder, or a bird feeder, for inspiration.
3. Have Pupils sketch their product ideas and identify the materials they'll need.
4. Assign roles for team-based tasks, if applicable.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Introduce the project to the pupils

The teacher explains the environmental impacts of production and consumption and shows examples of eco-friendly products.
Activity: Explain the project and set clear expectations.

1. Present the problem of waste and the importance of recycling.
2. Showcase a simple example of a recycled product and explain how it was made.
3. Provide the driving question and outline the project phases.
4. Distribute a list of safe, recyclable materials and instructions for brainstorming.

Conduct research and inquire

Pupils research a product's production process, resource use, and environmental impact, and brainstorm alternatives.

Goal: Help Pupils gather information about the materials and their environmental impact.

1. Teach Pupils how to use the internet safely and verify sources.
2. Assign them to research the life cycle of materials they plan to use (e.g., how long does plastic take to decompose?).
3. Provide guidance on sustainable practices, like choosing biodegradable or recyclable materials.
4. Have Pupils document their findings in a simple report or journal.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Final results

Pupils build a prototype of their eco-friendly product using recycled materials. They also prepare a brief explanation of how their product benefits the environment.
Activity: Build the recycled product prototype.

1. Prepare the Materials:
2. Clean and sort recyclable items (e.g., plastic bottles, cardboard).
3. Ensure all materials are safe and appropriate for use.
4. Assemble the Product:
5. Follow the design sketch to create the product.
6. Use glue, tape, or other tools to secure parts.
7. Decorate and Finalize:
8. Add artistic elements to make the product appealing.
9. Ensure the final product is functional and durable.

Parent guidance

Goal: Engage parents in supporting the project at home.

1. Provide a simple guide for parents to help their children with material collection and preparation.
2. Encourage parents to assist with product assembly and safety checks.
3. Share ideas for involving the whole family, like brainstorming product designs together.
4. Suggest conversations about sustainability to reinforce the project's goals.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Project process

Reflection

After presenting their prototypes, Pupils reflect on what they learned about the environmental impact of products and how they can make better consumption choices.

Goal: Encourage Pupils to think critically about their learning experience.

- After presenting their products, ask Pupils to reflect on:
- What they learned about waste and sustainability.
- What challenges they faced and how they overcame them.
- How their product contributes to reducing waste.
- Have Pupils write a short paragraph or discuss in groups:
- "What would you do differently next time?"
- "What new ideas do you have for future recycled products?"

Teacher contribution

Provide parents with guidance on how to support their children in researching product life cycles and assist with the creation of the product prototype. Encourage Pupils to think critically about the materials they use and how their product can reduce environmental harm.

Objective: Equip teachers with clear guidance to effectively involve parents in the project, ensuring their support and active participation.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

1. Introducing the Project to Parents

Goal: Explain the purpose and goals of the project to parents.

- Send a letter or email to parents outlining:
- The project's theme: creating a useful product from recyclable materials.
- The importance of sustainability and how it connects to their child's learning.
- The role of parents in supporting the project at home.
- Highlight key dates, such as deadlines for gathering materials and presenting the product.

2. Providing Practical Tips for Home Support

Material Collection:
Encourage parents to help their child identify and collect safe recyclable items (e.g., bottles, cardboard, old fabric).
Share a list of suggested materials to avoid confusion.
Safety and Preparation:
Ask parents to ensure all materials are clean and safe to use.
Provide simple tools (e.g., scissors, glue) and supervise their child's use.
Creative Brainstorming:
Suggest parents work with their child to brainstorm product ideas, fostering creativity and collaboration.
Encourage family discussions about sustainability and responsible consumption.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

3. Clarifying the Parent's Role

Support vs. Leadership:
Emphasize that parents are there to guide and assist but the ideas and work should come from the Pupils.

Monitoring:
Advise parents to supervise research activities, ensuring their child uses credible online sources responsibly.

Encouragement:
Encourage parents to provide positive feedback and motivate their child to experiment with their ideas.

4. Keeping Parents Engaged Throughout the Project

Regular Updates:
Share updates on the project's progress via class newsletters or digital platforms (e.g., Google Classroom).
Invite parents to contribute ideas or resources through discussions or online groups.

Invitations:
Invite parents to attend the final product presentations or participate in a reflection activity, showcasing their child's achievements.

Our Eco-Friendly Product

PROJECT IMPLEMENTATION INSTRUCTIONS

Teacher contribution

5. Providing Examples

Include sample products to inspire parents and children, such as:
- A pencil holder made from cans.
- A shopping bag created from old T-shirts.
- Share a brief video tutorial or photo guide on how to create a simple recycled product.

6. Addressing Questions

Offer a Q&A session (online or during a meeting) where parents can ask about their role, materials, or any concerns regarding the project.

Annex A: Supporting materials for the P-BL

https://www.youtube.com/watch?v=pdDs1bWLKsM

https://www.youtube.com/watch?v=pdDs1bWLKsM&t=105s

https://www.youtube.com/watch?v=pf3EN5MAS3g

Grades 1-2

Board Game 01
Save the soil!

Save the soil

Grades 1 and 2

Board game overview

Players follow a winding path on the board, aiming to save the soil from various environmental threats. The winner is the first to reach the end of the path while improving the health of the soil along the way.

Game Topic

Desertification, Land Degradation and Drought

GreenComp competence area

Embodying Sustainability Values
Embracing Complexity in Sustainability
Acting for Sustainability

Contribution to SDGs

15 LIFE ON LAND

GreenComp Competences

Promoting nature
Systems thinking
Critical thinking
Problem framing
Political agency
Individual initiative

Save the soil

Expected Learning Outcomes

Knowledge (to be able to):
- Tell how nature, people, and places are interconnected.
- Describe how lack of water affects everyday life.
- Explain why certain environmental problems may seem insignificant or go unnoticed by people.
- Define sustainability by examining the impact of drought and its long-term consequences on the environment.

Skills (to be able to):
- Figure out simple ways to protect the Earth and make the world a better place, by understanding the effects of desertification, land degradation and drought on the environment.
- Take care of nature and make your neighborhood a better place through fun and enjoyable activities.
- Handle difficult situations by making wise choices that promote sustainability, even in times of uncertainty or risk.

Attitudes (to be able to):
- Make environmentally-friendly choices that benefit the Earth.
- Value working together to address sustainability issues can strengthen schools and communities and make them better for everyone.

Save the soil

GAME CONCEPT

Script

In "Save the Soil!", players enter a world where the health of the Earth's soil is at risk due to pollution, erosion, deforestation, and harmful farming practices. The soil, which is the foundation of life, needs the help of dedicated "Soil Guardians" — players who must work to restore and protect it from further damage. The players' mission is to journey through different landscapes, facing challenges and taking actions to save the soil, planting trees, preventing erosion, and cleaning up pollution. This journey takes them through forests, fields, rivers, and farmland, where they encounter both environmental threats and opportunities to improve soil health. The goal is to reach the destination, the Nature Reserve, a place where the soil is fully restored and protected.

Game environment & characters

Game Environment: The Earth's soil is in danger! Deforestation, pollution, and careless farming are eroding the land and making it harder for plants, animals, and people to thrive. You and your fellow players are the Soil Guardians, nature's heroes, chosen to protect the soil and restore its health. Together, you'll travel across different ecosystems, working to reverse the damage and make the soil fertile and alive again.
The journey is full of both challenges and opportunities. Sometimes, erosion wash away precious soil, or pollution damage the earth beneath your feet. But don't worry, you have the chance to plant trees, teach sustainable farming techniques, and build anti-erosion barriers to keep the soil safe.

Your mission is to journey from the starting point, a Degraded Land, to the destination, the Nature Reserve, where you have restored the balance and protected the soil for generations to come. The first player to reach the Nature Reserve is crowned the Greatest Soil Guardian! The environment in "Save the Soil!" is designed to immerse players in a vibrant, nature-focused world where the visual and thematic elements are rooted in environmental sustainability. The game takes players on a journey through various ecosystems, each facing specific challenges related to soil health and environmental degradation. The theme emphasizes the connection between human actions and the natural world, presenting an eco-friendly, colorful, and engaging setting that encourages players to protect the soil.

GreenComp School

Save the soil

GAME CONCEPT

Game environment & characters

Characters of the game: Soil Guardians (Players)
The players are heroes of nature, each representing a different force of environmental protection. Their role is to save and restore the soil in different areas as they move through the game board. The Soil Guardians could take on the form of animals or nature-themed figures, like anthropomorphic trees.

Board design

The game board represents a path winding through different ecosystems: a Degraded Farmland, Eroded Hills, Polluted Riverbanks, Deforested Woodland, Sustainable Farm, Protected Wetlands, and finally, the Nature Reserve.
Children draw each different ecosystem path and put them together to create the game board. Each area features distinct colors and visuals: brown for degraded areas, lush greens for healthy ecosystems, and dull grays for polluted zones.

The board visually communicates where players need to focus their restoration efforts (e.g., planting trees in deforested zones or cleaning pollution from riverbanks) as they progress through damaged environments to the protected reserve.

Save the soil

GAME CONCEPT

Key elements

Pieces:
Player Tokens (Soil Guardians):
Small, colourful pawns made from recycled wood or sustainable materials, representing nature-themed characters like animals (e.g., owls, hedgehogs) or natural elements (e.g., trees, water droplets).

One Big Dice:
A large, coloured dice made of recycled paper, whose number 6 is replaced by a drawing of a tree and allows the player to decide how many steps he can move (from 1 to 6).

12 Cards:
12 cards made from two sheets of paper, the size of a rectangle, 6 for solution cards, 6 for threat cards.
·**6 Solution** - **Positive Events Cards:**
Cards that introduce obstacles related to soil health, such as "Erosion Washes Away Topsoil" or "Pollution Damages Riverbank." These slow player progresses.
·**6 Threat** - **Negative Events Cards:**
 Reward cards that offer strategic advantages, like "Plant and draw a Tree to Stop Erosion" or "Build and draw Anti-Erosion Wall," allowing players to advance more quickly.

·**Material:**
 Made from recycled materials to align with the sustainability theme.

GAME DEVELOPMENT

BOARD DEVELOPMENT

One

Using recycled paper, children draw 5 of the following themes, plus the final Nature Reserve theme (one box, the finish line). Each drawing has a path on which tokens consisting of 10 squares are to be placed.

Two

The game board represents a path through different ecosystems: degraded farmland, eroded hills, polluted levees, deforested forests, sustainable farm, protected wetlands, and finally the Nature Reserve. Children draw the paths of the different ecosystems and join them together to create the game board. Each area has distinct colors and pictures: brown for degraded areas, green for healthy ecosystems, and gray for polluted areas.

Three

For the dice, children can use a sheet of recycled paper or possibly some dice they already have. The number 6 is replaced by a drawing of a tree and allows the player to decide how many steps they can move (from 1 to 6).

Four

For the cards, cut 12 pieces of paper of the same size and, behind each card (6 for solution cards and 6 for threat cards), write the sentences at the bottom of the next section.

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

Some sheets of recycled paper are needed, and the children draw the path and the board game. After that, it is time to prepare the dice. Each player starts at the beginning and places their token. Each scenario has 10 boxes on which characters pass, two of them are reserved for unexpected cards (instead of the relative number, draw a little tree). Each little box corresponds to an action, here are some actions you can use as the basis of the game for each scenario.

Degraded Farmland:
1. "Draw seeds in the soil to grow new plants."
2. "Plant trees to give fruit and help the land."
3. "Draw sprinklers to water the soil and make it fertile."
4. "Plant different types of plants to make the land stronger."
5. "Draw grass or flowers to stop soil from sliding away."
6. "Add a pile of leaves and old food to nourish the soil."
7. "Draw cows or sheep that help the soil with their manure."
8. "Draw plants that help rest the soil when needed."
9. "Draw trees around the fields to block the wind."
10. "Add plants that don't need much water."

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

Eroded Hills:
1. "Draw trees along the hill to stop water from washing away the soil."
2. "Create steps on the hill to hold the soil in place."
3. "Draw bushes that help hold the soil on the hill."
4. "Add rocks to stop the soil from sliding down."
5. "Draw climbing plants that protect the hill."
6. "Draw ditches to collect rainwater."
7. "Add plants that block the wind."
8. "Draw a stone wall that stops the soil."
9. "Draw trees with deep roots to hold the soil."
10. "Add grass that covers the hill and protects it."

Polluted Riverbanks:
1. "Draw flowers that clean the river water."
2. "Plant plants along the river to protect the water."
3. "Draw people picking up trash along the river."
4. "Draw trees along the river to stop waste."
5. "Create reeds that filter dirty water."
6. "Draw a small wetland with plants that clean the water."
7. "Add grass and trees to protect the river."
8. "Draw fish swimming in clean water."
9. "Create a plant barrier to block trash."
10. "Draw a sign that says: 'Don't throw trash in the river!'"

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

Deforested Woodland:
1. "Draw trees that grow back and bring the forest back."
2. "Plant lots of small trees to make them a forest."
3. "Add bushes and low plants to cover the ground."
4. "Draw animals returning to live in the forest."
5. "Plant a row of trees to block the wind."
6. "Draw a forest with many different types of trees."
7. "Add mushrooms growing near the trees."
8. "Draw an area where animals can hide among the trees."
9. "Draw streams flowing between the trees."
10. "Add fallen leaves under the trees to nourish the soil."

Sustainable Farm:
1. "Draw a farm full of fruits and vegetables."
2. "Plant fruit trees that give shade and food."
3. "Draw fields of corn and wheat watered by rain."
4. "Create a sprinkler that brings water to the plants."
5. "Draw a pile of leaves to make compost that nourishes the soil."
6. "Add cows or chickens that fertilize the soil."
7. "Draw a garden with flowers that attract bees."
8. "Create fields with plants that change every year."
9. "Draw hedges that protect the fields from the wind."
10. "Draw a farm with many trees and plants."

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

Protected Wetlands:
1. "Draw a wetland with plants that clean the water."
2. "Add reeds that protect the water and animals."
3. "Draw frogs happily living among the wetland plants."
4. "Plant trees near the wetland to protect it."
5. "Draw aquatic plants that keep the water clean."
6. "Add birds nesting among the wetland plants."
7. "Draw streams that keep water in the wetland."
8. "Add plant barriers that stop waste."
9. "Draw plants that soak up extra water when it rains."
10. "Add turtles and fish living in clean water."

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

There are **12 contingency cards, 6 positives and 6 negatives**, we give you some examples that you can decide to use, each of the following contingencies goes to replace a box from one of the previous times, you can put them anywhere you want.

Solution Card - Positive Events (Significant forward movements):
1. You planted many trees, and now the hill is safe from erosion! Move forward 5 spaces!
2. You planted flowers that attract bees and butterflies! Move forward 4 spaces!
3. You created a small garden with lots of vegetables, and now it looks beautiful! Move forward 3 spaces!
4. You turned a field into a sustainable farm with many different plants. Move forward 4 spaces!
5. You made a ditch that saved the wetland from flooding. Move forward 5 spaces!
6. You created a butterfly garden that helps pollinate the flowers! Move forward 4 spaces!

Threat Card - Negative Events (Significant backward movements):
1. Oh no! The river has been polluted with trash and plastic! Go back 5 spaces!
2. A heavy rain washed away the soil from the hill. Go back 4 spaces!
3. The forest has been cut down, and now the soil is no longer protected. Go back 5 spaces!
4. The field has been farmed without breaks, and the soil has become too dry. Go back 3 spaces!
5. A fire burned part of the forest, and the soil is left exposed. Go back 4 spaces!
6. A big storm caused flooding and washed away the seeds you planted! Go back 3 spaces!

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Decision points

Sometimes during the game, children must decide which space is the best choice because it could represent a choice or an action, which can lead to drawing a "Solution Card" or a "Threat Card."

Gameplay Turns:
Players roll the dice to move their pawns around the board, following paths that lead to different areas (such as forests, waterways, and farmlands). The youngest person starts first.

Interactions among the players

Children can suggest to other children the best paths and choices to take to reach the finish line first.

2-5 players

Winning conditions

A player wins by being the first to reach the Nature Reserve at the end of the game. If multiple players reach the Nature Reserve simultaneously, they win together.

Educational Value

Save the soil

The children are guided through a reflective process on the environments they have drawn, examining the specific characteristics of each ecosystem and exploring the crucial role that soil plays in their stability and productivity. This phase of observation and discussion allow them to analyze the various factors affecting soil health, such as erosion, pollution, and biodiversity loss, fostering a deeper understanding of the interconnections between natural elements and human activities.

Following this, through a structured and interactive pathway, the children have the opportunity to experiment firsthand with different strategies for soil conservation, applying their newly acquired knowledge and skills in an educational and playful context. Practical activities are proposed, such as simulating soil conservation processes, developing small-scale environmental protection solutions, and comparing different methods of sustainable resource management. This hands-on approach not only promote learning through doing but also help children develop a more responsible attitude towards the environment, reinforcing their ability to make informed decisions.

Interaction with peers and educators play a fundamental role in consolidating the knowledge acquired and fostering dialogue and cooperation. By sharing their ideas and collaboratively developing solutions, the children are able to practice critical thinking and problem-solving, gaining greater autonomy and confidence in their reasoning. Moreover, the active experimentation process allow them to observe in real time the effects of the strategies they implement, providing a concrete perspective on the effectiveness of soil conservation actions and the importance of sustainable resource management.

This experience go beyond simply conveying theoretical knowledge, becoming a genuine learning journey in which children not only acquire concepts related to environmental protection but also develop a heightened awareness of their role within the ecosystem. Active engagement in experimentation and problem-solving help them internalize the value of soil conservation, turning learning into a meaningful and lasting experience that can influence their future choices and behaviors.

Annex B: Supporting materials
Board Game 01
Save the soil

Cards

Set-up instructions

Some sheets of recycled paper are needed, and the children draw the path and the board game. After that, it is time to prepare the dice. Each player starts at the beginning and places their token. Each scenario has 10 boxes on which characters pass, two of them are reserved for unexpected cards (instead of the relative number, draw a little tree). Each little box corresponds to an action, here are some actions you can use as the basis of the game for each scenario.

Degraded Farmland:
1. "Draw seeds in the soil to grow new plants."
2. "Plant trees to give fruit and help the land."
3. "Draw sprinklers to water the soil and make it fertile."
4. "Plant different types of plants to make the land stronger."
5. "Draw grass or flowers to stop soil from sliding away."
6. "Add a pile of leaves and old food to nourish the soil."
7. "Draw cows or sheep that help the soil with their manure."
8. "Draw plants that help rest the soil when needed."
9. "Draw trees around the fields to block the wind."
10. "Add plants that don't need much water."

Eroded Hills:
1. "Draw trees along the hill to stop water from washing away the soil."
2. "Create steps on the hill to hold the soil in place."
3. "Draw bushes that help hold the soil on the hill."
4. "Add rocks to stop the soil from sliding down."
5. "Draw climbing plants that protect the hill."
6. "Draw ditches to collect rainwater."
7. "Add plants that block the wind."
8. "Draw a stone wall that stops the soil."
9. "Draw trees with deep roots to hold the soil."
10. "Add grass that covers the hill and protects it."

Cards

Polluted Riverbanks:
1. "Draw flowers that clean the river water."
2. "Plant plants along the river to protect the water."
3. "Draw people picking up trash along the river."
4. "Draw trees along the river to stop waste."
5. "Create reeds that filter dirty water."
6. "Draw a small wetland with plants that clean the water."
7. "Add grass and trees to protect the river."
8. "Draw fish swimming in clean water."
9. "Create a plant barrier to block trash."
10. "Draw a sign that says: 'Don't throw trash in the river!'"

Deforested Woodland:
1. "Draw trees that grow back and bring the forest back."
2. "Plant lots of small trees to make them a forest."
3. "Add bushes and low plants to cover the ground."
4. "Draw animals returning to live in the forest."
5. "Plant a row of trees to block the wind."
6. "Draw a forest with many different types of trees."
7. "Add mushrooms growing near the trees."
8. "Draw an area where animals can hide among the trees."
9. "Draw streams flowing between the trees."
10. "Add fallen leaves under the trees to nourish the soil."

Cards

Sustainable Farm:
1. "Draw a farm full of fruits and vegetables."
2. "Plant fruit trees that give shade and food."
3. "Draw fields of corn and wheat watered by rain."
4. "Create a sprinkler that brings water to the plants."
5. "Draw a pile of leaves to make compost that nourishes the soil."
6. "Add cows or chickens that fertilize the soil."
7. "Draw a garden with flowers that attract bees."
8. "Create fields with plants that change every year."
9. "Draw hedges that protect the fields from the wind."
10. "Draw a farm with many trees and plants."

Protected Wetlands:
1. "Draw a wetland with plants that clean the water."
2. "Add reeds that protect the water and animals."
3. "Draw frogs happily living among the wetland plants."
4. "Plant trees near the wetland to protect it."
5. "Draw aquatic plants that keep the water clean."
6. "Add birds nesting among the wetland plants."
7. "Draw streams that keep water in the wetland."
8. "Add plant barriers that stop waste."
9. "Draw plants that soak up extra water when it rains."
10. "Add turtles and fish living in clean water."

Cards

Solution Card - Positive Events (Significant forward movements):

1. You planted many trees, and now the hill is safe from erosion! Move forward 5 spaces!
2. You planted flowers that attract bees and butterflies! Move forward 4 spaces!
3. You created a small garden with lots of vegetables, and now it looks beautiful! Move forward 3 spaces!
4. You turned a field into a sustainable farm with many different plants. Move forward 4 spaces!
5. You made a ditch that saved the wetland from flooding. Move forward 5 spaces!
6. You created a butterfly garden that helps pollinate the flowers! Move forward 4 spaces!

Threat Card - Negative Events (Significant backward movements):

1. Oh no! The river has been polluted with trash and plastic! Go back 5 spaces!
2. A heavy rain washed away the soil from the hill. Go back 4 spaces!
3. The forest has been cut down, and now the soil is no longer protected. Go back 5 spaces!
4. The field has been farmed without breaks, and the soil has become too dry. Go back 3 spaces!
5. A fire burned part of the forest, and the soil is left exposed. Go back 4 spaces!
6. A big storm caused flooding and washed away the seeds you planted! Go back 3 spaces!

GreenComp School

Grades 3-4

Board Game 03
Heritage Rangers

GreenComp School

Heritage Rangers

Grades 5 and 6

Board game overview

The modern threats of urbanisation, tourism, pollution as well as climate change are threatening the planet Earth.

Its ancient landmarks, traditions, and ecosystems are at risk of being lost. As "Heritage Rangers", your mission is to protect, revive and heal threatened sites, before they vanish – forever.

Game Topic

Sustainable Production and Consumption

It is about doing more and better with less.

GreenComp competence area

Embodying Sustainability Values
Embracing Complexity in Sustainability
Acting for Sustainability

Contribution to SDGs

GreenComp Competences

Promoting nature
Systems thinking
Critical thinking
Problem framing
Political agency
Individual initiative

Heritage Rangers

Expected Learning Outcomes

Knowledge (to be able to):
- Explain the connection between caring for the planet and cultural heritage and (our) personal values (like being kind and responsible), and how this can make the world a better place for everyone.
- Discuss how nature, environment, humans, and cultural heritage are interconnected, affecting each other, and understand the impact of our actions on the environment.
- State why it is important for governments and leaders to make decisions that protect nature and cultural heritage and promote well-being of people in our town and all over the world.

Skills (to be able to):
- Solve real-life problems, including problems related to cultural sustainability and environment, to make world a more sustainable place.
- Develop ideas to protect both the planet and cultural heritage, while enhancing the lives of others by incorporating your personal values, such as kindness and responsibility.

Attitudes (to be able to):
- Take care of the planet by being responsible and continually learning new ways to help, even when circumstances change.

Heritage Rangers

GAME CONCEPT

Script

The planet is facing an unprecedented crisis: iconic landmarks, once proud symbols of Earth's rich cultural heritage, are slowly disappearing. Over-tourism, pollution, climate change, and urban development are causing these treasures to deteriorate, while the age-old traditions that sustained the people are fading into obscurity.

The Great Wall of China is vulnerable to erosion and unchecked tourism. The constant influx of visitors threats Machu Picchu; and Acropolis of Athens, standing for over 25 centuries, is now at risk from severe air pollution.

Players take on the role of Heritage Rangers, renowned for their wisdom, bravery, and deep knowledge of history and culture. Their mission is to journey across the planet, visiting three endangered sites—the Great Wall of China, Machu Picchu and the Acropolis. As they travel, they gather knowledge and apply eco-friendly solutions to protect the traditions and mitigate environmental challenges at each landmark.

At each site, players must answer critical questions related to the culture, history, traditions, and environmental issues surrounding the landmark. For each correct answer, they earn Heritage Points that help restore the site to its former glory. But the mission is urgent—if they fail to gather enough points, these cultural treasures may be lost forever, taking with them a piece of Earth's vibrant heritage.

Heritage Rangers

GAME CONCEPT

Game environment & characters

Environment:
The game feels like a global journey, where players travel from one landmark to another, experiencing the beauty of the world's heritage, while, at the same time, witnessing the threats each site faces.

Each landmark is illustrated with vibrant 2D images that show both the beauty of these monuments and the visible signs of pollution, erosion, and cultural loss. Dark shades of green, brown, grey, and black depict the environmental challenges threatening these treasures.

As players progress, through mini-quizzes and handmade crafts, the scenery changes: The landscape transforms into a greener, healthier environment, encouraging players to engage in efforts to restore and protect our world's heritage.

Characters:
The game consists of only 1 character, Zara. Zara is a wise and resourceful character with a blend of knowledge, environmental stewardship, restoration skills, community engagement, and tourism management expertise. As the ultimate protector of historical sites, Zara combines expertise in multiple domains to offer well-rounded advice and solutions for preserving cultural heritage in harmony with the environment and local communities.

Heritage Rangers

GAME CONCEPT

Board design

The is a square with three main monuments located in each corner:
- Great Wall of China
- Machu Picchu
- Acropolis of Athens

Corners:
- Top-left corner: Great Wall of China [Icon: Simplified section of the Great Wall]
- Top-right corner: Machu Picchu [Icon: Inca Temple Structure]
- Bottom-left corner: Acropolis of Athens [Icon: Classic Greek Column]

Path:
There are 20 stations in total, forming the outer loop.
- 4 landmark stations – one for each heritage site corner as described above.
- 4 eco-action stations: represented with a green leaf icon. Here, players take eco-friendly actions to help preserve the site.
- 4 cultural craft stations : represented with a paintbrush icon. Players complete small cultural or restoration-themed tasks (hands on craft activities)
- 4 quick-quiz questions to gain knowledge about the monuments and heritage protection.
- 4 draw-back challenge stations: represented by an exclamation mark. Each challenge spot describes a setback, causing players to lose points.

Heritage Rangers

GAME CONCEPT

Board design

Centre of the Board:
- Three-spots: In the centre of the board there are three spaces for action cards, question cards and draw-back cards. Players take these cards to answer questions or perform tasks as they travel around the board.

Black and Green Bottle Caps:
- At the start of the game, each station on the board (including monument corners, eco-action stations, cultural craft stations, quick-quiz stations, and draw-back challenge stations) is covered by a black bottle cap. These caps represent the negative environmental state or cultural degradation of the locations.
- As players move across the board and complete tasks, the board transforms visually from predominantly black (representing threats) to green (symbolizing recovery and sustainability).

Heritage Rangers

GAME CONCEPT

Key elements

Pieces
- **Zara**: simple pawn character, represented by a customised matchbox, that can be found in any house.
- **Dice**: standard six-sided dice.
- **Bottle Caps (Black and Green):**
- oBlack bottle caps: Represent environmental and cultural degradation at each station at the start of the game.
- Green bottle caps: Used to replace black caps as players answer questions correctly or complete tasks, symbolising progress and restoration.
- **Hourglass timer**: a simple hourglass timer, used to limit time for tasks and questions.
- **Points tracker:** A simple scoring sheet or counter to keep track of the earned points.

Cards
- **Total Number of Cards:** 66
- **3 broad card categories:** Question-Cards (30 in total), Action-Cards (28 in total) and Draw Back Challenge Cards (8 in total).
- **The size of all cards is**: 7x9 cm.

GAME DEVELOPMENT

BOARD DEVELOPMENT

One

Cut the board: Cut a square piece of cardboard measuring 50 cm x 50 cm for the game board.

Two

Design the board layout: Draw a large square grid on the board, dividing it into a path with 20 stations around the outer loop. Each path section should be 5 cm wide.

Three

Add corner icons:
·Top-left Corner: Draw and decorate an icon representing the Great Wall of China. [For inspiration, watch the video: https://www.youtube.com/watch?v=S_nudLtzRLA]
·Top-right Corner: Draw and decorate an icon representing Machu Picchu. [For inspiration, watch the video: https://www.youtube.com/watch?v=51GEVmlRIY8]
·Bottom-left Corner: Draw and decorate an icon representing the Acropolis of Athens [Classic Greek Column].

Four

Create the stations: Eco-Action Stations: Draw 4 green leaf icons spaced around the board.
·Cultural Craft stations: Draw 4 paintbrush icons at different locations.
·Quick-quiz stations: Draw 4 question mark icons around the board.
·Draw-Back Challenge Stations: Draw 4 exclamation mark icons at various points.

GAME DEVELOPMENT

BOARD DEVELOPMENT

five

Centre of the Board:

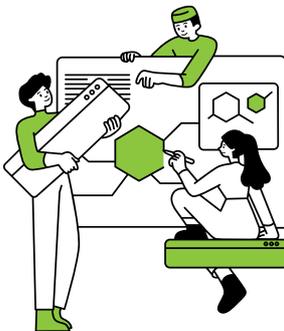·In the center, mark three spaces labeled for Action Cards, Question Cards, and Draw-Back Cards.
·Each space should be 10 cm x 10 cm.

six

Game pawn (Zara):

·Use a small matchbox.
·Paint the outer sleeve with a base color.
·Let it dry.
·Use markers to create designs on the matchbox. Consider patterns and symbols that represent Zara.
Stick stickers onto the matchbox for extra sparkle.

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

·Place the game board on a flat surface, visible and easy-to-reach by everyone.
·Shuffle the action cards, question cards and draw back challenge cards separately.
·Place the cards face down in the three designated areas at the centre of the board.
·Take the matchbox representing Zara and place it at the starting point of the game path (the bottom-left corner of the board).
·Place a black bottle cap on every station of the game board before starting.
·Keep a stack of green bottle caps nearby for use during gameplay.
·Place the dice on the board.
·Place the hourglass timer nearby for use during the game.

Decision points

Rolling the Dice: On your turn, roll the dice to determine how many spaces to move Zara along the path.

Landing on Stations
- Corner Monuments: If you land here, draw an Action Card and follow its instructions. For successful completion, you earn 5 points and replace one black bottle cap with two green bottle caps at the monument station.
- Eco-action stations: Complete an eco-friendly action to earn 10 points. For successful completion, replace one black bottle cap with two green bottle caps at the station.
- Cultural Craft Stations: If you land here, complete a small craft activity. Successfully finishing the task earns you 8 points and allows you to replace one black bottle cap with two green bottle caps at the station.
- Quick Quiz Stations: Draw a Question Card and answer the quiz question within 30 seconds, timed by the hourglass. Each correct answer earns 6 points and replaces one black bottle cap with two green bottle caps at the station.
- Draw-back challenge stations: Pick up a Draw-Back Challenge Card and follow the setback instructions. These stations do not allow for replacing bottle caps.

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Decision points

Use the timer:
·Quick-Quiz questions require a time-limit.
·Flip the hourglass timer and answer the question before the sand runs out.
·Each task has a limit of 30 seconds. · If the timer runs out, you lose 2 points.

Scoring points:
·Keep track of points throughout the game. Points can be earned from successful tasks, correct answers, and creative crafts.

End of the Game:
The game ends when Zara completes a full loop around the board. Count your total points to see how well you've done!

2-5 players

Winning conditions

A score of 50 points or more is considered a victory, reflecting excellent engagement, knowledge, and commitment to restoring cultural heritage and promoting sustainability. Additionally, if the majority of black bottle caps on the board have been replaced with green bottle caps by the end of the game, players achieve a bonus victory, symbolizing exceptional progress in environmental and cultural restoration.

At the end of 60 minutes, if Zara has not completed a full loop, the game ends, and players calculate their final scores based on completed tasks, correct answers, and the number of black bottle caps replaced with green ones.

Educational Value

Heritage Rangers

Heritage Rangers is an educational board game that combines adventure, cultural exploration, and environmental awareness. Players take on the role of Zara, a wise and resourceful character, whose mission is to protect endangered world heritage sites such as the Great Wall of China, Machu Picchu, and the Acropolis of Athens. The game immerses players in a global journey where they learn about the impact of urbanization, over-tourism, pollution, and climate change on cultural landmarks. Through strategic gameplay, players gain a deeper understanding of cultural heritage preservation and environmental sustainability.

As they navigate the game board, players encounter quiz questions that enhance their historical and cultural knowledge while fostering an appreciation for global diversity. By exploring the significance of each landmark and understanding the traditions and stories behind them, players develop cultural awareness and respect for different societies. The game also emphasizes environmental responsibility through eco-action stations, where players engage in practical tasks such as recycling, pollution control, and conservation. These activities teach players about sustainable practices and inspire them to adopt eco-friendly habits in their everyday lives.

The game promotes critical thinking and problem-solving as players strategically protect endangered sites by answering questions, overcoming challenges, and applying eco-friendly solutions. By making strategic decisions and navigating environmental and cultural obstacles, players enhance their cognitive skills, creativity, and teamwork. Heritage Rangers not only educates players about cultural heritage and environmental issues but also empowers them to become responsible global citizens. By connecting players to real-world sustainability challenges and inspiring a sense of stewardship, the game encourages them to make a positive impact on the world and preserve Earth's cultural and natural treasures for future generations.

Annex C: Supporting materials
Board Game 03
Heritage Rangers

QUESTION CARDS: 66 IN TOTAL

FEATURES MULTIPLE-CHOICE QUESTIONS RELATED TO EACH OF THE THREE LANDMARKS.

CARD 1: WHAT IS THE MAJOR THREAT TO THE GREAT WALL OF CHINA?

A)   SNOW EROSION

B)   OVER-TOURISM AND NEGLECT

C)   EARTHQUAKES

D)   IT IS TOO OLD TO STAND

CA:B

CARD 2: WHAT WERE THE EARLY SECTIONS OF THE GREAT WALL MAINLY MADE FROM?

A) PLASTIC

B)   WOOD AND METAL

C)   RAMMED EARTH, STONES, AND WOOD

D) GLASS

CA:C

CARD 3: WHY IS THE GREAT WALL IMPORTANT FOR TOURISTS?

A)   IT IS A PLACE TO PLAY GAMES

B)   IT IS ONE OF THE SEVEN WONDERS OF THE WORLD

C)   IT HAS MANY FAST-FOOD RESTAURANTS

CA:B

CARD 4: HOW DID THE GREAT WALL ORIGINALLY PROTECT CHINA?

A)   BY BLOCKING THE SUN

B) BY PREVENTING INVASIONS FROM THE NORTH

C)   BY PROVIDING FOOD

D) BY ATTRACTING ANIMALS

CA: B

CARD 5: WHAT IS ONE WAY THE GREAT WALL IS BEING DAMAGED?

A) BY RAIN

B)   BY CONSTRUCTION WORK THAT WIDENS GAPS

C)   BY BIRDS BUILDING NESTS

D) BY TOURISTS TAKING PICTURES

CAB

CARD 6: WHAT IS THE GREAT WALL LAW?

A) **A LAW TO PROTECT THE GREAT WALL FROM CHANGES IN THE ENVIRONMENT**

B)   A RULE FOR HOW TO BUILD NEW WALLS

C)   A LAW THAT ALLOWS ANYONE TO TOUCH THE WALL

D)   A LAW THAT MAKES THE WALL A PLAYGROUND

CA:A

CARD 7: WHAT IS BIOCRUST?

A) A TYPE OF CANDY

B) A CRUST MADE OF BRICKS

C) A TYPE OF WALL PAINT

D) A LAYER OF MOSS, LICHEN, AND CYANOBACTERIA THAT HELPS PROTECT THE GREAT WALL

CA:D

CARD 8: HOW DOES BIOCRUST HELP THE GREAT WALL?

A) IT MAKES THE WALL LOOK PRETTY

B) IT SPEEDS UP THE DECAY OF THE WALL

C) IT PROTECTS THE WALL FROM EROSION AND KEEPS IT DRY

D) IT ATTRACTS TOURISTS

CA:C

CARD 9: WHAT HAPPENS TO PARTS OF THE GREAT WALL WHEN PEOPLE TAKE STONES FROM IT?

A) IT BECOMES STRONGER

B) IT CAUSES THE WALL TO FALL APART

C) IT MAKES IT MORE BEAUTIFUL

D) IT HELPS PRESERVE IT

CA:B

CARD 10: WHY IS IT IMPORTANT TO PROTECT THE GREAT WALL OF CHINA?

A) IT IS A PLACE FOR PEOPLE TO HAVE PICNIC

B) IT IS WHERE MANY ANIMALS LIVE

C) IT IS ONLY A WALL AND DOES NOT MATTER

D) IT IS A FAMOUS HISTORICAL SITE THAT TELLS THE STORY OF CHINA'S PAST

CA:D

CARD 11: WHAT IS THE PRIMARY CAUSE OF EROSION AFFECTING THE ACROPOLIS OF ATHENS?

A) SEA LEVEL RISE

B) AIR POLLUTION AND ACID RAIN

C)   EARTHQUAKES

D) TOURIST FOOT TRAFFIC

CA:B

CARD 12: WHICH ANCIENT TEMPLE IS LOCATED ON THE ACROPOLIS AND WAS DEDICATED TO THE GODDESS ATHENA?

A) THE ERECHTHEUM

B) THE TEMPLE OF ZEUS

C) **THE PARTHENON**

·D) HE TEMPLE OF APOLLO

CA:C

CARD 13: IN WHICH CENTURY WAS THE PARTHENON BUILT?

A) 6TH CENTURY BC

B) 4TH CENTURY BC

C) 5TH CENTURY BC

D) 3RD CENTURY BC

CA:C

CARD 14: WHAT SIGNIFICANT CLIMATIC EVENTS HAVE BEEN OBSERVED AFFECTING THE ACROPOLIS?

A) ONLY DROUGHTS

B) ONLY HEAVY RAINFALL

C) A COMBINATION OF FLOODS AND DROUGHTS

D) NONE OF THE ABOVE

CA:C

CARD 15: WHICH OF THE FOLLOWING HAS BEEN RECENTLY INTRODUCED TO HELP MANAGE VISITOR NUMBERS AT THE ACROPOLIS?

A) REDUCED ENTRY FEES

B) TIMED ENTRY SLOTS

C) EXTENDED OPENING HOURS

D) FREE ADMISSION DAYS

CA:B

CARD 16: WHAT HISTORICAL FEATURE SURROUNDS THE SUMMIT OF THE ACROPOLIS?
A) A MODERN MUSEUM
B) A SHOPPING CENTER
C) A PUBLIC PARK
D) STRONG FORTIFICATION WALLS
CA:D

CARD 17: WHAT IS A MAJOR THREAT TO THE STRUCTURAL INTEGRITY OF THE ACROPOLIS DUE TO INCREASED TOURISM?
A) NOISE POLLUTION
B) EXCESSIVE LITTERING
C) OVERCROWDING DURING PEAK TIMES
D) INCREASED WILDLIFE ACTIVITY
CA:C

CARD 18: WHICH GROUP OF PROFESSIONALS IS RESPONSIBLE FOR THE RESTORATION AND CONSERVATION OF THE ACROPOLIS?

A) THE COMMITTEE FOR THE RESTORATION AND CONSERVATION OF THE ACROPOLIS MONUMENTS

B) LOCAL ARCHITECTS ONLY

C) THE MINISTRY OF TOURISM

D) INTERNATIONAL ARCHAEOLOGISTS

CA:A

CARD 19: WHAT IS A UNIQUE CHARACTERISTIC OF THE MARBLE USED FOR RESTORATION WORK ON THE ACROPOLIS?

A) IT IS SYNTHETIC

B) IT COMES FROM THE SAME MOUNTAIN AS IN ANTIQUITY (MT. PENTELI)

C) IT IS SOURCED FROM VARIOUS COUNTRIES

D) IT IS PAINTED WHITE

CA:B

CARD 20: WHICH HISTORICAL FIGURE IS ASSOCIATED WITH THE BUILDING OF THE PARTHENON?

A) ALEXANDER THE GREAT

B) SOCRATES

C) ARISTOTLE

D) PERICLES

CA:D

CARD 21: WHAT DOES "MACHU PICCHU" MEAN IN QUECHUA?

A) ANCIENT CITY

B) OLD MOUNTAIN

C) SACRED PLACE

D) LOST TEMPLE

CA:B

CARD 22: WHO REDISCOVERED MACHU PICCHU IN 1911?

A) HIRAM BINGHAM

B) THOMAS EDISON

C) JOHN SMITH

D) DAVID ATTENBOROUGH

CA:A

CARD 23: **HOW MUCH DID THE NUMBER OF VISITORS TO MACHU PICCHU INCREASE SINCE THE 1980S?**

A) 200%
B) 500%
C) 700%
D) 1000%
CA:C

CARD 24: **WHAT IS THE CURRENT DAILY VISITOR CAP FOR MACHU PICCHU AS PER THE RECENT REGULATIONS?**

A) 1,000
B) 2,500
C) 5,600
D) 10,000
CA:B

CARD 25: **WHICH MODEL IS MENTIONED AS A FRAMEWORK TO ADDRESS THE CHALLENGES FACED BY MACHU PICCHU?**
A) TRIPLE BOTTOM LINE
B) SUSTAINABLE DEVELOPMENT GOALS
C) SWOT ANALYSIS
D) ENVIRONMENTAL IMPACT ASSESSMENT
CA:A

CARD 26: **WHAT WAS THE INCREASE IN THE ADMISSION FEE TO MACHU PICCHU AIMED AT ACHIEVING?**
A) INCREASING TOURISM REVENUE
B) REDUCING TOURIST NUMBERS
C) IMPROVING VISITOR EXPERIENCE
D) FUNDING NEW ATTRACTIONS
CA:B

CARD 27: **WHICH OF THE FOLLOWING INITIATIVES AIMS TO PROMOTE SUSTAINABILITY IN THE MACHU PICCHU AREA?**
A) INCREASING TOURIST AMENITIES
B) PLASTIC BOTTLE COLLECTION
C) BUILDING NEW HOTELS
D) EXPANDING TRANSPORTATION SERVICES
CA:B

CARD 28: WHAT SIGNIFICANT PROBLEM HAS INCREASED WITH THE RISE IN TOURISM TO MACHU PICCHU?
A) CULTURAL MISUNDERSTANDINGS
 B) WILDLIFE PROTECTION ISSUES
C) POLLUTION AND WASTE MANAGEMENT
 D) ECONOMIC DECLINE
CA:C

CARD 29: WHAT IS ONE WAY THE GOVERNMENT IS WORKING TO BALANCE TOURISM AND PRESERVATION?
A) REDUCING THE NUMBER OF LOCAL GUIDES
B) PROMOTING ALTERNATIVE INCAN SITES
 C) ALLOWING UNLIMITED ACCESS TO MACHU PICCHU
 D) REDUCING ENTRY FEES
CA:B

CARD 30: HOW DO RESPONSIBLE TOURISM COMPANIES SUPPORT THE RIGHTS OF PORTERS WORKING ON THE INCA TRAIL?
A) BY NOT EMPLOYING THEM AT ALL
B) BY ENSURING FAIR PAY AND MANAGEABLE LOADS
 C) BY IGNORING THEIR NEEDS
 D) BY CHARGING THEM FEES FOR ACCESS
CA:B

ACTION CARDS

ACTION CARDS: 20 IN TOTAL

AC1: CREATE A CULTURAL COLLAGE - CUT OUT PICTURES FROM MAGAZINES TO CREATE A COLLAGE ABOUT INCAN CULTURE.

AC2: CREATE A CULTURAL COLLAGE - CUT OUT PICTURES FROM MAGAZINES TO CREATE A COLLAGE ABOUT ANCIENT GREEK CULTURE.

AC3: PLANT A MINI GARDEN: FIND AND PLANT A SMALL FLOWER OR VEGETABLE IN A POT!

AC4: CULTURAL STORYTIME: READ A STORY ABOUT THE INCAN EMPIRE WITH YOUR FAMILY!

AC5: CULTURAL STORYTIME: READ A STORY ABOUT ANCIENT GREEKS WITH YOUR FAMILY!

AC6: DRAW SOMETHING RELATED TO THE GREAT WALL OF CHINA!

AC7: FIND ON GOOGLE MAPS WHERE THE ACROPOLIS IS LOCATED IN THE WORLD!

AC8: FIND ON GOOGLE MAPS WHERE MACHU PICCHU IS LOCATED!

AC9: FIND ON GOOGLE MAPS WHERE THE GREAT WALL OF CHINA IS LOCATED!

AC10: LISTEN TO TRADITIONAL CHINESE MUSIC ON YOUTUBE.

AC11: WATCH A VIRTUAL TOUR OF ACROPOLIS ON YOUTUBE!

AC12: WATCH A VIRTUAL TOUR OF GREAT WALL OF CHINA ON YOUTUBE!

AC13: WATCH A SHORT VIDEO ABOUT MACHU PICCHU ON YOUTUBE!

AC14: SEARCH THE INTERNET AND FIND 3 INTERESTING FACTS ABOUT OVER-TOURISM AT THE ACROPOLIS.

AC15: RESEARCH AND FIND HOW OVER-TOURISM IS AFFECTING MACHU PICCHU'S ENVIRONMENT.

AC16: SEARCH FOR EFFECTS OF URBANISATION ON THE GREAT WALL OF CHINA AND DISCUSS THEM WITH YOUR FAMILY!

AC17: SEARCH FOR THE IMPACT OF ACID RAIN ON THE ACROPOLIS OF ATHENS AND DISCUSS THEM WITH YOUR FAMILY!

AC18: SEARCH ON THE INTERNET AND FIND A PROJECT THAT FOCUSES ON PROTECTING THE GREAT WALL AND EXPLAIN IT TO YOUR FAMILY!

AC19: RESEARCH A DISH THAT ORIGINATES FROM CHINA AND COOK IT WITH YOUR FAMILY!

AC20: FIND A DISH THAT ORIGINATES FROM GREECE AND COOK IT WITH YOUR FAMILY!

CULTURAL CRAFT CARDS: 8 IN TOTAL

CARD 1: USE FLOWERS AND LEAVES, ARRANGE THEM ON PAPER AND CREATE A LANDSCAPE SCENE INSPIRED BY MACHU PICCHU.

CARD 2: CREATE AN ANCIENT GREEK COLUMN FROM PAPER.

CARD 3: CREATE A MASK INSPIRED BY ANCIENT CHINESE CULTURE.

CARD 4: CREATE A MASK INSPIRED BY ANCIENT GREEK CULTURE.

CARD 5: PAINT A STONE WITH A SYMBOL OF MACHU PICCHU CIVILISATION.

CARD 6: PAINT A STONE WITH A SYMBOL OF ANCIENT GREEK CULTURE.

CARD 7: PAINT A STONE WITH A SYMBOL OF ANCIENT CHINESE CULTURE.

CARD 8: MAKE A FRIENDSHIP BRACELET INSPIRED BY CULTURAL COLOURS USING YARN!

DRAW BACK – CHALLENGE CARDS: 8 IN TOTAL

CARD 1: YOU FAILED TO REDUCE POLLUTION SO YOU LOSE 2 POINTS!

CARD 2: YOU IGNORED WASTE MANAGEMENT SO YOU LOSE 3 POINTS!

CARD 3: YOU NEGLECTED CLIMATE CHANGE IMPACT SO GO 3 STEPS BACK!

CARD 4: UNFORTUNATELY, YOU OVERLOOKED TOURISM EFFECTS. GO 3 STEPS BACK!

CARD 5: YOU IGNORED SUSTAINABLE TOURISM PRACTICES SO YOU LOSE 3 POINTS!

CARD 6: YOU OVERLOOKED THE NEED FOR ENVIRONMENTAL EDUCATION, GO 2 STEPS BACK!

CARD 7: YOU FAILED TO PARTICIPATE IN CLEANUP EVENTS SO YOU LOSE 2 POINTS!

CARD 8: YOU CONTRIBUTED TO INCREASED POLLUTION LEVELS, SO YOU LOSE 5 POINTS!

Grades 5-6

Board Game 03
GreenPolis

GreenComp School

GreenPolis

Grades 5 and 6

Board game overview

GreenPolis is a board game which has adapted some of the features and the structure of the well-known board game of Monopolis. The aim of the game is for pupils and parents to become aware of the issue of sustainability regarding consumption and production. The objectives of the board game are for pupils and parents to build the concept of sustainability, to develop sustainability awareness, to reduce overconsumption and to ensure environmental balance, to practice properly about natural resources as well as to be able to think critically and creatively, to solve problems and to invest in sustainable technologies.

Game Topic

Sustainable Production and Consumption

It is about doing more and better with less.

GreenComp competence area

**Embodying Sustainability Values
Embracing Complexity in Sustainability
Acting for Sustainability**

Contribution to SDGs

GreenComp Competences

**Promoting nature
Systems thinking
Critical thinking
Problem framing
Political agency
Individual initiative**

GreenPolis

Expected Learning Outcomes

Knowledge (to be able to):
- Explain what equality and fairness mean when it comes to protecting nature and respecting people's rights, particularly through the lens of sustainable production and consumption.
- Describe why having the right information and knowing how to use it is important for learning about the future, especially regarding sustainable consumption and production.
- List the skills necessary for people to develop effective plans for the future, ensuring sustainable consumption and production.
- Tell how sustainability relates to everyday life, including consumption and production, extending beyond merely caring for the environment.
- Elaborate on how different communities and countries can work together to address global challenges associated particularly with consumption and production.

Skills (to be able to):
- Demonstrate to others how to take care of the planet and make smart choices.
- Solve real-world problems related to sustainable production and consumption, by putting practical measures into action.
- Implement creative activities that promote sustainability in local community and around the world.

Attitudes (to be able to):
- Justify why future generations have the right to have the same or greater opportunities than those available to people today.
- Advocate for the rights of future generations to enjoy the same opportunities as those available to people today.
- Defend the necessity for transitioning from the current linear economy to a circular economy.
- Approach environmental and social issues with an open mind and flexibility, while promoting positive change.

GreenPolis

GAME CONCEPT

Script

GreenPolis is a board game which has adapted some of the features and the structure of the well-known board game of Monopolis which may be familiar to children of similar age (i.e. 11 to 12 years old).

Players invest in sustainability stations and projects that promote sustainable development by raising Resources and Profits through Sustainable Practices taking into account Environmental Impacts in the Consumption and Production sector. Using the dice each player takes turns.

There are nine sustainability station squares (water and sustainability, ethical trade, wind farms, reforestation, organic farming, recycling plant, solar energy, electric vehicles factory, urban vegetable gardens). For each station there are five closed multiple-choice questions with four possible answers (one correct answer).

There are also two stations with an image of the 17 SDGs called resource stations in which players when they get there, answer one of the 16 closed multiple-choice questions of energy resources with three possible answers (one correct answer). When the player replies correctly s/he wins a puzzle piece. There four puzzle pieces to make the whole image of a sustainable school.

There are three stations of environmental hazards (Factories, Plastic bags and Food overconsumption) on the board game, which have five open-ended questions each. When the player gets there, it stops for one round, as a GreenPolis is a board game which has adapted some of the features and the structure of the well-known board game of Monopolis which may be familiar to children of similar age (i.e. 11 to 12 years old).

GreenPolis

GAME CONCEPT

Script (continue)

Players invest in sustainability stations and projects that promote sustainable development by raising Resources and Profits through Sustainable Practices taking into account Environmental Impacts in the Consumption and Production sector. Using the dice each player takes turns.

There are nine sustainability station squares (water and sustainability, ethical trade, wind farms, reforestation, organic farming, recycling plant, solar energy, electric vehicles factory, urban vegetable gardens). For each station there are five closed multiple-choice questions with four possible answers (one correct answer).

There are also two stations with an image of the 17 SDGs called resource stations in which players when they get there, answer one of the 16 closed multiple-choice questions of energy resources with three possible answers (one correct answer). When the player replies correctly s/he wins a puzzle piece. There four puzzle pieces to make the whole image of a sustainable school.

There are three stations of environmental hazards (Factories, Plastic bags and Food overconsumption) on the board game, which have five open-ended questions each. When the player gets there, it stops for one round, as a penalty, and in order to get out of the hazards station, s/he needs to reply to an open-ended question.
The EcoHero makes the question and, based on the indicative replies available, is responsible to check if the reply given is correct.

If a player answers incorrectly, loses a turn and stays in the station.
Each station corresponds to a thematic unit of sustainability issues, i.e. Factories, Plastic bags and Food overconsumption (indicative answers are provided) and players in order to escape they need to answer one open-ended question.

GreenPolis

GAME CONCEPT

Script (continue)

Indicative answers are provided in the questions' file and be written on the back of the card with each of the open-ended questions. Parents and their children first use recyclable paper to produce the question cards. They can then write the indicative answers on the back of the cards.

Moreover, there is one station Greenschool in which the players have the opportunity to throw the dice again.

The player who manages to build (or assemble) a sustainable school with the resources he/she collects wins at the board game.

Game environment & characters

Game environment:
The board game can be played indoors or outdoors. The city where the game takes place is a fictional green city (GreenPolis) which has several signs that indicate that the inhabitants and the state care about the environment. Thus, we find a recycling plant outside the city, solar energy panels in the houses, the inhabitants care about water consumption, the state subsidises those who buy electric cars or use public transport that runs on electricity, the municipality has built urban gardens whose products are given to the needy in the city and organises reforestation around the city. But what this city lacks is a sustainable school. The aim, then, through this game is for the sustainable city to have a sustainable school. The winner of this game be the first to build a sustainable school.

GreenPolis

GAME CONCEPT

Game environment & characters

Characters:
Players invest in sustainability stations and projects that promote sustainable development by raising Resources and Profits through Sustainable Practices taking into account Environmental Impacts in the Consumption and Production sector.

The characters of the board game represent city engineers who aspire to be the ones to take on the construction of a sustainable school. The pawns can be bottle shells, pieces of old toys e.g. small cars or little people, coloured pebbles, paper straws, coloured plastic bottle caps.

Players can be between two and five individuals.

Players decide amongst them for a Banker every time they play the GreenPolis and for an EcoHero. The EcoHero checks whether each player uses the correct answer at the back of the card, so each player hands in the card to the EcoHero after having read the correct answer from the back of the card.

GreenPolis

GAME CONCEPT

Board design

One dashboard which can be created from a recycling paper clothes bag which can be cut into a large square 0.50 x 0.50 cm.

Nine sustainability images which correspond to the nine sustainability stations. They can be produced via pictures of magazines, food packaging and possibly make collage and/or drawing and/or toys at their home (more details are provided in the game development below). Then they write for each picture the label of the station name. Nine (9) envelopes with closed-ended multiple-choice questions for the respective areas of sustainability

Two resource images. They can be produced via pictures of magazines, food packaging and possibly make collage and/or drawing and/or toys at their home (more details are provided in the game development below). Then they write for each the label of the resource name. One folder with 16 multiple-choice resources questions.

Three environmental hazards' images. They can be produced via pictures of magazines, food packaging and possibly make collage and/or drawing and/or toys at their home (more details are provided in the game development below). Then they write for each the label of the rescue name. One release folder with six (6) open-ended questions.
- one Green comp image
- one folder with €
- one envelope with pictures of Resources for creating a sustainable school

GreenPolis

GAME CONCEPT

Key elements

Pieces:
- Euro banknotes (11,000 euro)
- 16 small plastic trees or leaflets as symbols of ownership
- 9 Sustainable Stations' symbols
- 3 symbols of environmental hazard zones
- 2 symbols with the 17 SDGs
- 1 Greencomp symbol
- 1 Bank symbol
- 4 pieces of the Sustainable School (4 pieces *4 times = 16 pieces)
- 1 starting point symbol
- 4 pawns

Cards:
- 9 Sustainable Stations' envelopes with 5 questions per envelope (45 questions in total)
- 1 Escape envelope with 15 questions (5 questions * 3 environmental hazard squares)
- 1 Resources' folder with 16 questions

GAME DEVELOPMENT

BOARD DEVELOPMENT

one

Take a cardboard box in the shape of a square (0.50m x 0.50m).

two

Draw four (4) squares on each side, equally spaced, starting with square No. 1 from the top left corner (a total of 16 squares).

three

Place the 9 Stations on the perimeter of the cardboard.
·Water and sustainability in square No. 1
·Ethical Trade in square No. 2
·Wind Farm in square No. 4
·Reforestation in square No. 6
·Organic Farming in square No. 7
·Recycling Factory in square No. 9
·Solar energys in square No. 10
·Electric Vehicle Factory in square No. 11
·Urban Vegetable Garden in square No. 14

Four
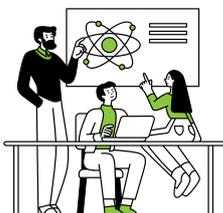
Place the three (3) environmental hazards' images in between the Sustainable Stations:
·Plastic Bags in square No. 3
·Polluting Factory in square No. 13
·Food Overconsumption in square No. 16

GAME DEVELOPMENT

BOARD DEVELOPMENT

Five

Place the two (2) images of the 17 SDGs (Sustainable Development Goals) in squares No. 8 and No. 15 respectively.

Six
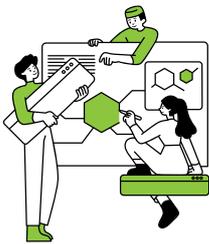
Place the GreenComp card in square No. 5 and Put the Start card in square No. 12.

Seven

Next to each Sustainable Station, place the purchase price:
·Water and sustainability: €200
·Ethical Trade: €500
·Wind Farm: €10,000
·Reforestation: €100
·Organic Farming: €100
·Recycling Factory: €10,000
·solar energys: €200
·Electric Vehicle Factory: €10,000
·Urban Vegetable Garden: €100
Note: For the banknotes, the Pupils and their parents use small pieces of paper bags and write their respective values on them in different colours.

Eight

In the center of the board, place a) the Bank with the money and b) the envelope with the 16 pieces of the Sustainable School.

GAME DEVELOPMENT

BOARD DEVELOPMENT

Nine

Place next to each card the envelopes with the corresponding questions (the questions are included in the attachments).

Ten
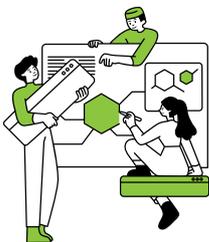
Design the Sustainable School
The Sustainable School can consist of:
·Cut-out images from magazines representing a sustainable school
·Natural materials such as sticks for the frame of the school, stones for the foundation, corks or egg cartons that be turned into honeycomb panels for insulation, leaves to build green walls, and pieces of grass to decorate the roof.

Eleven
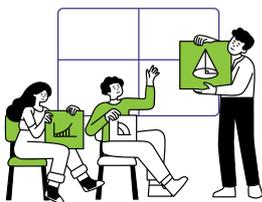
Create the game pieces from:
·Paper bags
·Bottle caps
·Toilet paper rolls
·Stones (painted)
·Paper straws
·Corks from wine bottles

Twelve

Design the property signs of the Sustainable Stations using:
·Small pictures of trees
·Colored corks
·Biodegradable materials
·Pieces of grass

115

GAME DEVELOPMENT

BOARD DEVELOPMENT

Thirteen

Design the dice in a cube shape from recyclable cardboard, drawing dots on each side with markers. You can fill the inside with paper or fabric to make it more durable.

Fourteen
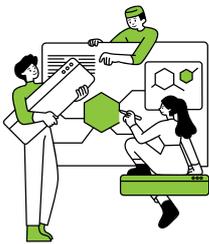
Write the Questions for the Sustainable Stations, Escape, and Resources on biodegradable materials such as old cardboard, invitations, or business cards. (The questions are included in the attachments).
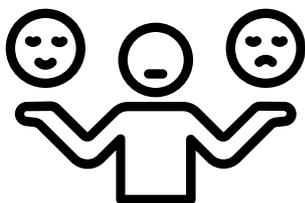
Alternative Suggestions
The board can be made from old clothes, fabrics, or mats, paper bags

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

Place the game board in the middle, in front of the players.
Next to each square, place the corresponding questions.
Choose one player to be the Banker, who distribute the money to the players.
Also choose one player to be the EcoHero as described above.

The Banker gives each player:
- **10 x €100**
- **5 x €200**
- **4 x €500**
- **7 x €1000**

(Any remaining amount stays in the Bank).
Players roll the dice. The player with the lowest roll goes first. Then, the next player takes their turn in a clockwise direction.

When it's Player A's turn, they roll the dice and move forward on the board the same number of squares as the number rolled. Two or more pieces (by the Players) can be on the same square at the same time as the game moves on.

Interactions among the players

When the players attempt to reply to one question in each respective station, they can see the correct answer after replying. In that way, even if they were incorrect, all players know which is the correct answer for next time.

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Decision points

Depending on the square the player lands on, s/he can do one of the following:

Sustainable Station Squares
They can choose not to purchase the property and wait until their next turn.
·They can purchase the property only if they answer one of the corresponding questions for that Sustainable Station correctly and pay the corresponding price.
·They pay rent to the player who has purchased the property if the property belongs to him/her.
Environmental Hazard Squares

·**The player loses their turn.**
·When their turn comes again, to re-enter the game, they must correctly answer questions related to the Environmental Hazards.
17 SDG Squares
·The player must correctly answer general open-ended questions related to the 17 Sustainable Development Goals.
·If they answer incorrectly, they wait until their turn comes again.
·If they answer correctly, they take 1 piece of the Sustainable School from the Resource box.
GreenComp Square
The player who reaches this square takes one piece of the Sustainable School and takes another turn

2-5 players

Winning conditions

The winner is the player who manages to build the Sustainable School first and does not bankrupt.

Educational Value

GreenPolis

The board game **GreenPolis** can provide knowledge and skills in an interactive and enjoyable way. It allows players to learn about sustainable practices such as wind farms, organic farming, recycling factories, electric vehicle factories, urban gardens, etc., while developing their critical thinking and realizing the importance of environmental protection. Players learn about major environmental issues, such as climate change, deforestation, pollution, and the depletion of natural resources, and they try to find sustainable solutions to these problems. Additionally, players are called upon to make decisions that affect the environment and resources in the long term. This helps them develop problem-solving skills, weigh their options, and understand the consequences of their actions.

Through questions they are asked to answer, players can learn specific practices that promote sustainability, such as recycling, energy conservation, the use of renewable energy sources, or waste management. This knowledge can be applied in their daily lives.

Moreover, GreenPolis can cultivate a sense of social responsibility in players, teaching them that individual actions have broader impacts on society and the environment. This can inspire civic engagement and action to improve the community and the planet.

By offering an engaging and fun experience, GreenPolis can encourage players to continue learning about sustainability even after the game ends. It can serve as a catalyst for further study and research on environmental issues.

Finally, GreenPolis can be an educational tool that promotes knowledge, awareness, and behavior change toward a more sustainable approach in everyday life and environmental choices

Annex D: Supporting materials
Board Game 03
GreenPolis

Questions in the GreenPolis
board game

1. Water and sustainability

1. What is the primary reason for conserving water?

a) To reduce energy consumption
b) To protect natural ecosystems
c) To ensure future water availability for all
d) To save money on water bills
Correct answer: c) To ensure future water availability for all

2. What's the best way to save water at home?
a) Taking shorter showers
b) Turning off the tap from time to time as we brush our teeth
c) Fixing leaky faucets and pipes
d) All the above
Correct answer: d) All the above

3. How much of the Earth's water is potable and ready for human use?
a) 10%
b) 2.5%
c) 1%
d) 0.5%
Correct answer: c) 1%

4. How does collecting rainwater help save water?
a) By reducing the need to clean water
b) By helping refill underground water
c) By giving us extra water to use for plants
d) All of the above
Correct answer: d) All of the above

5. With what policies can governments contribute to water saving?
a) By increasing the price of water according to consumption
b) By implementing policies that encourage water conservation and prevent water pollution
c) By subsidising agricultural crops that use water
d) By ceding the exploitation of water to private companies
Correct answer: b) By implementing policies that encourage water conservation and prevent water pollution

2. Ethical Trade

1. What does "ethical trade" mean?
a) To buy expensive products
b) To buy products that are produced in a fair and proper way for the workers and the environment
c) To buy products only from distant places
d) To sell things we don't need
Correct answer: b) To buy products that are produced in a fair and proper way for the workers and the environment

2. How does ethical trade help farmers and workers?
a) It pays them less
b) It forces them to work more
c) It enables them to sell their products only to rich countries
d) It ensures fair wages and better working conditions
Correct answer: d) It ensures fair wages and better working conditions

3. Which of the following is an example of ethical trade?
a) Buying the cheapest products without thinking about where they were made
b) Buying only products from big cities or countries
c) Buying products from companies that pay their workers well and respect the environment
d) Buying products mostly online
Correct answer: c) Buying products from companies that pay their workers well and respect the environment

4. How can we support ethical trade when we shop?
a) By buying products with the "Fair Trade" label
b) By buying only whatever is cheaper
c) By buying whatever we first find in the store
d) By buying only imported products
Correct answer: a) By buying products with the "Fair Trade" label

5. How does ethical trade contribute to sustainability?
a) By helping companies produce more products faster
b) By ensuring that products are made in a way that doesn't harm the environment and treats workers fairly
c) By using more natural resources to produce products
d) By reducing the quality of products to save money
Correct answer: b) By ensuring that products are made in a way that doesn't harm the environment and treats workers fairly

3. Wind Farms

1. What is the contribution of wind farms to sustainability?
a) They increase dependence on fossil fuels
b) They reduce energy consumption from polluting sources like oil and coal
c) They produce energy only for industries, not for homes
d) They have no effect on energy consumption
Correct answer: b) They reduce energy consumption from polluting sources like oil and coal.

2. How do wind farms contribute to the production of clean energy?
a) They generate electricity using wind power without polluting the environment
b) They need some petrol to work
c) They produce energy only at night when there is no wind
d) They use large amounts of water to generate electricity
Correct answer: a) They generate electricity using wind power without polluting the environment.

3. What is the main advantage of wind energy compared to fossil fuels?
a) It is cheaper
b) It requires no maintenance
c) It is easier to store
d) It is renewable and does not produce CO2 emissions
Correct answer: d) It is renewable and does not produce CO2 emissions.

4. What is the main disadvantage of wind energy?
a) It is renewable
b) It is dependent on weather conditions
c) It is more economical than fossil fuels
d) It can be easily stored
Correct answer: b) It is dependent on weather conditions

5. What is one of the main criticisms of installing wind farms?
a) They produce too little energy
b) They create pollution and harmful gases in the atmosphere.
c) They may affect the aesthetics of the landscape and endanger bird life
d) They are more expensive than fossil fuel power plants
Correct answer: c) They may affect the aesthetics of the landscape and endanger bird life

4. Reforestation

1. How does reforestation help in the production of goods?
a) Reforestation destroys the soil and prevents the production of goods
b) Forests planted through reforestation do not offer anything useful for the production of goods
c) Trees planted through reforestation provide wood and other raw materials for the production of various products
d) Reforestation makes products more expensive because it reduces the amount of raw materials
Correct answer: c) Trees planted through reforestation provide wood and other raw materials for the production of various products

2. What is reforestation?
a) The process of planting trees in an area that already has trees
b) The process of planting new trees in areas where trees have been cut down or destroyed
c) The process of removing trees from an area
d) The process of planting only evergreen trees
Correct answer: b) The process of planting new trees in areas where trees have been cut down or destroyed

3. What is the main reason for reforestation?
a) To support the timber industry
b) To aesthetically improve the landscape
c) To increase agricultural production
d) To reduce CO2 emissions and tackling climate change
Correct answer: d) To reduce CO2 emissions and tackling climate change

4. How does reforestation contribute to biodiversity protection?
a) It creates new spaces for human settlements
b) It provides shelter for many species of plants and animals
c) It prevents soil erosion
d) It negatively affects ecosystems
Correct answer: b) It provides shelter for many species of plants and animals

5. Which of the following actions can support reforestation?
a) Participating in local tree planting and environmental programs
b) Avoiding recycling paper
c) Buying products from deforested areas
d) Using more wood for burning
Correct answer: a) Participating in local tree planting and environmental programs

5. Organic Farming

1. How organic farming contribute to the production of healthy food?
a) It uses chemical fertilizers and pesticides for better yields
b) It produces food without harmful chemicals, offering healthier options for consumers
c) It increases production by using genetically modified organisms
d) It uses more energy to produce the products
Correct answer: b) It produces food without harmful chemicals, offering healthier options for consumers

2. What is the relationship between organic farming and the consumption of natural resources?
a) It increases the consumption of natural resources because it requires more fertilizers
b) It requires more water than conventional farming
c) It does not affect the consumption of natural resources at all
d) It reduces the consumption of natural resources by using natural farming methods that preserve the soil
Correct answer: d) It reduces the consumption of natural resources by using natural farming methods that preserve the soil.

3. What is the significance of organic certification?
a) It guarantees that the product is organic and free from chemicals
b) It is just a decorative sticker
c) It has no value
d) It is only used for commercial promotion
Correct answer: a) It guarantees that the product is organic and free from chemicals.

4. How organic farming contribute to the sustainability of the planet?
a) It increases pollution
b) It supports soil health and biodiversity
c) It requires more resources
d) It negatively affects the climate
Correct answer: b) It supports soil health and biodiversity

5. How organic products affect our health?
a) They produce more allergens
b) They are less nutritious
c) They are more dangerous for health
d) They reduce the intake of chemicals and harmful residues
Correct answer: d) They reduce the intake of chemicals and harmful residues

6. Recycling Factories

1. How do recycling factories contribute to the production of new products?
a) They burn all old materials to clean the environment
b) They only make paper from recycled materials
c) They use many natural resources to produce new products
d) They transform old materials into raw materials that can be used to produce new products
Correct answer: d) They transform old materials into raw materials that can be used to produce new products

2. How do recycling factories contribute to energy savings and the reduction of resource consumption?
a) By recycling, the energy needed to produce new products is reduced
b) By increasing the amount of waste that ends up in landfills
c) By producing more single-use plastic items
d) By consuming more new materials from nature
Correct answer: a) By recycling, the energy needed to produce new products is reduced

3. How do recycling factories contribute to the reduction of production costs for new products?
a) They process recycled materials and make them more expensive than new ones
b) They provide raw materials from old materials, which cost less than mining or producing new materials
c) They require more energy to turn recycled materials into new products
d) They use all recycled materials to make toys
Correct answer: b) They provide raw materials from old materials, which cost less than mining or producing new materials

4. How do recycling factories contribute to the reduction of natural resource consumption?
a) By producing single-use plastics that are quickly consumed
b) By not using any old materials in the production process
c) By reusing/recycling materials such as paper, glass, and plastic instead of needing to take new raw materials from nature
d) By cutting down more trees to create new products
Correct answer: c) By reusing/recycling materials such as paper, glass, and plastic instead of needing to take new raw materials from nature

5. What are the three words that form an important part of sustainable living, as they help reduce the amount of waste we need to dispose of?
a) Reduce, Reuse, Recycle
b) Replanting, Restoration, Revitalization
c) Recycling, Reduction, Disposal
d) Replacement, Renewal, Reassessment
Correct answer: a) Reduce, Reuse, Recycle

7. Solar energy

1. How do solar energy panels help sustainable development?
a) They produce energy only when it is cloudy
b) They produce clean energy from the sun, without polluting the environment
c) They only work at night and store energy
d) They use fuel to produce energy
Correct answer: b) They produce clean energy from the sun, without polluting the environment

2. How can we contribute to sustainable development using solar energy?
a) Leaving the lights on all day
b) Using more fuel together with solar energy panels
c) Consuming energy only when necessary
d) Installing solar energy panels in shady places
Correct answer: c) Consuming energy only when necessary

3. What can we do with the excess energy produced by the solar energy panels?
a) To waste it by leaving the devices open
b) To throw it away
c) To lose it because it has no value
d) Store it in batteries or return it to the grid for other consumers to use
Correct answer: d) Store it in batteries or return it to the grid for other consumers to use

4. Why is it important to use renewable energy sources, such as solar energy panels, for a sustainable development future?
a) Because they are cheaper than other energy sources
b) Because they never end and do not harm the environment
c) Because they only work when there is no sun
d) Because they make the air colder
Correct answer: b) Because they never end and do not harm the environment

5. Why is the use of solar energy panels considered environmentally friendly?
a) Because no active intervention is required, such as mining, pumping or burning
B) Because they don't make noise
c) Because it is made of glass
d) Because they only work during the day
Correct answer: a) Because no active intervention is required, such as mining, pumping or burning

8. Electric Vehicle Factory

1. How do electric car factories affect energy production?
a) **They increase the need to produce energy from renewable sources, such as the sun and wind, to charge cars.**
b) They only use gasoline to produce electric cars.
c) They don't need any energy to produce the cars.
d) They generate electricity from coal to power electric cars.
Correct answer: a) They increase the need to produce energy from renewable sources, such as the sun and wind, to charge cars.

2.Which of the following characteristics is true of most electric vehicles?
a) They use only the sun to produce energy.
b) They can move without batteries and without needing charging.
c) They use gasoline and electricity at the same time to move.
d) **They have an engine that runs on electricity and does not produce exhaust gases.**
Correct answer: d) They have an engine that runs on electricity and does not produce exhaust gases.

3. How do electric cars affect fuel consumption compared to traditional cars?
a) They consume the same amount of gasoline as traditional cars.
b) **They do not use petrol or diesel, thus reducing fuel consumption.**
c) They use more oil than traditional cars.
d) They operate only with water instead of electricity.
Correct answer: b) They do not use petrol or diesel, thus reducing fuel consumption.

4. How do electric vehicles affect the environment of a city?
a) It is faster
b) **They don't make noise**
c) They carry many people
d) They are very cheap
Correct answer: b) They don't make noise

5.Do electric vehicles have any disadvantages?
a) No, they haven't
b) Yes, they are very small
c) **Yes, because they need regular charging of their batteries**
d) Yes because they are difficult to drive
Correct answer: c) Yes, because they need regular charging of their batteries

9. Urban Vegetable Gardens

1. What is an urban vegetable garden?
a) A garden located within cities and neighborhoods where people grow vegetables and fruits.
b) A place where the townspeople can park their cars.
c) A special farm outside the city that supplies the market with vegetables.
d) A green space used for decorative purposes only.
Correct answer: a) A garden located within cities and neighborhoods where people grow vegetables and fruits.

2. How do urban vegetable gardens contribute to food production in cities?
a) Produce fresh vegetables and fruits locally, reducing the need for transport.
b) They need only soil and water, without requiring any care.
c) They produce food only for industries.
d) They do not produce food, but only ornamental plants.
Correct answer: a) Produce fresh vegetables and fruits locally, reducing the need for transport.

3. How do urban vegetable gardens affect food consumption in city dwellers?
a) They increase the consumption of imported food.
b) They offer the possibility for residents to consume fresher and healthier products.
c) They prevent people from buying local food.
d) Reduce the consumption of fresh vegetables and fruits.
Correct answer: b) They offer the possibility for residents to consume fresher and healthier products.

4. What reason makes a vegetable garden beneficial?
a) Reduces air pollution as crops improve air quality.
b) Enhances energy production for homes.
c) Increases parking spaces in apartment buildings.
d) It enables people to grow food only for sale
Correct answer: a) Reduces air pollution as crops improve air quality.

5. Who can participate in the care of an urban vegetable garden?
a) Only professional agronomists who have studied plant care.
b) City dwellers interested in growing their own vegetables and fruits.
c) Only companies that produce products of plant origin.
d) Residents who have their own garden at home.
Correct answer: b) City dwellers interested in growing their own vegetables and fruits.

RESOURCE QUESTIONS

1. What is the main benefit of renewable energy compared to fossil fuels?
a) Lower production costs
b) It requires less technology
c) Reduced carbon dioxide emissions
Correct answer: c) Reduced carbon dioxide emissions

2. If you invest in an organic farm, what should you pay attention to in order to maintain its sustainability?
a) Soil quality and biodiversity
b) The use of chemical fertilizers
c) Only farm profits
Correct answer: a) Soil quality and biodiversity

3. How does the circular economy reduce the consumption of natural resources?
a) By avoiding the production of products
b) By recycling and reusing materials
c) By increasing the production of new products
Correct answer: b) By recycling and reusing materials

4. Which of the following is an example of responsible consumption?
a) Buy disposable products
b) Buy the cheapest products, regardless of origin
c) Buy local and seasonal products
Correct answer: c) Buy local and seasonal products

5. Which is the most sustainable solution for waste management in a city?
a) Waste incineration
b) Recycling and composting
c) Waste disposal
Correct answer: b) Recycling and composting

6. What is the effect of overfishing on the oceans?
a) It increases the fish population
b) It does not affect the environment
c) It wipes out species and disrupts the ecosystem
Correct answer: c) It wipes out species and disrupts the ecosystem

7. Which of the following is considered an investment in sustainable development?
a) Installation of solar energy panels
b) Construction of a new coal plant
c) Extraction of mineral resources
Correct answer: a) Installation of solar energy panels

RESOURCE QUESTIONS

8. What does the term "carbon footprint" mean?
 a) The amount of carbon stored in the soil
 b) The amount of carbon dioxide produced by the use of energy and resources
 c) The amount of carbon that soil contains
Correct answer: b) The amount of carbon dioxide produced by the use of energy and resources

9. Which is the best strategy for reducing the water you consume at home?
 a) Use of water from highly polluted sources
 b) Installation of water saving systems in taps and showers
 c) Increased consumption of bottled water
Correct answer: b) Installation of water saving systems in taps and showers

10. Why is biodiversity important for sustainable agriculture?
 a) It enhances the production of monocultures
 b) It reduces soil fertility
 c) It helps the resilience of crops and the health of the soil
Correct answer: c) It helps the resilience of crops and the health of the soil

11. How do electric vehicles affect the environment of a city?
 a) They have no effect
 b) They do not pollute the atmosphere with exhaust gases
 c) They do not generate much traffic
Correct answer: b) They do not pollute the atmosphere with exhaust gases

12. Who is responsible for protecting the natural environment of an area?
a) The inhabitants of the area
b) The local government
c) All of the above
Correct answer: c) All of the above

13. When is the operation of a factory considered environmentally friendly?
a) When it works for a few hours
b) When it has modern machinery
c) When it has strict environmental protection rules
Correct answer: c) When it has strict environmental protection rules

14. Organic agriculture is characterized by:
a) The large production
b) The non-use of fertilizers
c) The use of special machines
Correct answer: b) The non-use of fertilizers

15. Which of the following materials remains for many years in the environment?

 a) Iron objects

b) The plastics

c) Food residues

Correct answer: b) The plastics

16. We throw away the garbage for recycling

 a) In the bins together with the rest of the garbage

 b) In the bin outside our house

c) In the special bins for each material

Correct answer: c) In the special bins for each material

ESCAPE QUESTIONS (with provided possible answers)

A. FACTORY

1) What could factories do to use cleaner energy?
Answer: Factories can use clean energy from the sun, wind or water instead of air-polluting fuels. This reduce pollution and protect the environment.

2) How can factories reduce their waste?
Answer: Factories can recycle materials they no longer need or reuse them to make something else. Thus, they produce less garbage and pollution be reduced.

3) What could factories do to clean up the smoke coming out of their chimneys?
Answer: Factories can use special filters that clean the smoke before it is released into the atmosphere. In this way, less harmful gases come out in the air we breathe.

4. How can pollution from factories affect the water we drink?
Answer: Pollution from factories can get into water through chemical waste that ends up in rivers, lakes and seas. This contaminates the water that people, animals and plants drink, making it hazardous to health.

5. Why is it important for factories to use filters and renewable energy technologies?
Answer: It is important that factories use filters and renewable forms of energy, such as solar or wind, to reduce the emission of smoke and toxic gases into the atmosphere. In this way, the air we breathe is protected, the greenhouse effect is reduced and serious effects on health and the environment are avoided.

B. PLASTIC BAGS

1) Why are plastic bags harmful to the environment?
Answer: Plastic bags are harmful because they take hundreds of years to decompose. They contaminate land and water, and when they reach the oceans, they can cause harm or death to marine animals who accidentally ingest them.

2) How can factories make more environmentally friendly bags?
Answer: Factories can make bags from materials that break down more quickly in nature, such as paper, or biodegradable plastic, derived from plants such as corn. Thus, the bags do not pollute the environment for many years.

3) What can we do when we go shopping to reduce the use of plastic bags?
Answer: We can take reusable cloth bags with us every time we go shopping. That way, we won't have to use new plastic bags every time, and we'll be helping the environment.

4) How does the use of many plastic bags affect animals?
Answer: Many animals, especially marine animals, may mistake plastic bags for food and ingest them. This can cause them to have digestive problems or even die. Also, the bags can become entangled around their bodies, impeding their movement.

5) How many years do plastic bags take to completely break down in the environment?
Answer: Plastic bags take about 500 to 1,000 years to fully decompose. During this time, they cause serious pollution to the soil and oceans, affecting nature and animals.

C. OVERCONSUMPTION OF FOOD

1) What is overconsumption of food?

Answer: Overconsumption of food is when we buy or eat more food than we need. This leads to food waste, since many times the leftover food ends up in the garbage.

2) How does overconsumption of food affect the environment?

Answer: Overconsumption of food affects the environment because to produce more food, many natural resources are used, such as water and energy. Also, food that is thrown away creates pollution as it decomposes and produces gases that burden the atmosphere.

3) How can factories and producers help so that not so much food is wasted?

Answer: Factories and farmers can provide food that is just as much as needed and find ways to use all parts of fruits and vegetables. Thus, less food is produced that be thrown away and natural resources are not wasted.

4) What can we do when we buy or eat food, so that it does not go to waste?

Answer: We can buy only what we really need and get smaller amounts on our plate. In this way, we not throw away food and help the environment.

5) Do you know the total amount of food wasted each year worldwide, and what are the main reasons for this waste?

Answer: Every year, about 1.3 billion tons of food is lost worldwide, which is about 1/3 of the food produced. The main reasons for this waste are overconsumption, buying more food than needed, poor storage and not eating food before it expires.

Grades 5-6

Board Game 04
Green Living Home Quest

Green Living Home Quest

Grades 5 and 6

Board game overview

The Green Living Home Quest is a board game built on the idea of transforming a home into a sustainable one. The board represents a household and players navigate through rooms to make it more sustainable, addressing real-world instant actions and answering questions related to sustainable consumption and production

Game Topic

Sustainable Production and Consumption

It is about doing more and better with less.

GreenComp competence area

Embodying Sustainability Values
Embracing Complexity in Sustainability
Acting for Sustainability

Contribution to SDGs

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

GreenComp Competences

Promoting nature
Systems thinking
Critical thinking
Problem framing
Political agency
Individual initiative

Green Living Home Quest

Expected Learning Outcomes

Knowledge (to be able to):
- Understand Sustainable Consumption and Production
- Understand the Concept of Circular Economy

Skills (to be able to):
- Collaborate and share learning
- Think critically and solve problems
- Manage resources and understand the consequences of overconsumption.

Attitudes (to be able to):
- Become aware of everyday choices
- Make sustainable choices and adopt sustainable habits in their everyday tasks

Green Living Home Quest

GAME CONCEPT

Script

The purpose of the game is to help players become responsible consumers by becoming aware of the impact their different actions and daily habits have on the environment, the ecosystems, and even their fellow citizens.

Green Living Home Quest is a board game that places the players in a household. Players need to go through all the rooms and facilities illustrated on the board and respond to a number of ACTION - challenges and QUESTIONS - decisions in order to turn their household into a sustainable one.

The winner is the person that achieves to visit all "rooms", responds correctly to one action and one question in each room, and reaches the END of the path first.

Game environment & characters

The thematic setting of the game is a household consisting of one kitchen, one bathroom, one bedroom, a living room, a garden or balcony and a storage room, all connected by a corridor.

The board illustrates the floor plan of a house with a corridor of tiles going through all the rooms. In each room you can see the furniture, appliances and any other stuff kept or stored in the room, you can see how different goods are used and consumed (e.g. energy, water, food etc) etc.

Apart from the board game you have a set of 15 ACTION cards (tasks to do on the spot - in their home) and 15 QUESTION cards for each room. When the action and the question are correctly responded the player can throw the dice one more time and move accordingly. The game continues with the next player.

The pawns don't need to represent any characters, although it would make the game more interesting if they could simulate a family member (parent, child, grandparent, etc.). Suggest, that during the game, players can undertake any roles they would like, even different from their actual ones (children become parents).

GAME CONCEPT

Board design

The board is made of a large carton (e.g. empty cereal package or an empty box) on which the players need to draw a floor view of a house. The rooms need to be connected with a corridor made of tiles (steps). The steps do not need to be numbered. The image below illustrates an example of how to draw the board on the carton. The design is flexible, and players are free to design it any way they want as long as they include all the rooms where the cards be placed.

Figure: the House Plan
Note: available in Appendix for larger printout.

Green Living Home Quest

GAME CONCEPT

Key elements

Pieces: For making the pawns, be creative and re-use, re-purpose things you can find at home. Use for example small simple household items (e.g. toilet roll or matchbox...), You can imagine the characters, draw them on a piece of paper and stick them on the items... or make the pawns with dough, let it dry and paint it... be creative.

Cards: Apart from the board game you need to prepare a set of 15 ACTION cards (tasks to do on the spot - in their home) and 15 QUESTION cards for each room.

GAME DEVELOPMENT

BOARD DEVELOPMENT

One

For the board use the carton of an empty box. Cut it and give it any shape you want. The shape suggested above (fold on the intermittent lines and cut on the continuous) facilitates folding and storing the board for a future use. You can choose a box with a clean surface, to draw or paint on it the design of the house. See the example provided for the board design and draw something similar.
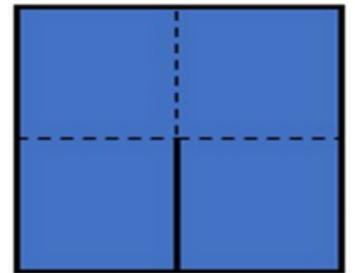
Figure: developing the board
Note: available in Appendix for larger printout.

Two

It is important to clearly illustrate and name the rooms, and clearly draw the tiles of the corridor.

Three

There should be 5-10 tiles (steps) between the rooms. In each room draw two rectangles and write on one QUESTIONS and on the other ACTIONS. In these rectangles you place the respective cards facing down.

Four

Also, clearly indicate on the board the Starting point and the Finish point. Starting point and finish point may be the same point.

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GAME DEVELOPMENT

BOARD DEVELOPMENT

Five

While developing the board, you can go into as much detail as you like to make the board more attractive. Draw the items that can be found in each room and perhaps use symbols that indicate sustainable consumption e.g. the recycling symbol, if they include a recycling bin in the kitchen, or a drop of water to indicate saving water on a tub, or a lightning on a light switch to indicate energy saving.

Six

On the other side of each card (not the colored side) write one question or one action. Place the cards with the question or action facing down, in the rectangles you drew in the corresponding rooms.

seven

For making the pawns, be creative and re-use, re-purpose things you can find at home. Use for example small simple household items (e.g. toilet roll or matchbox...), You can imagine the characters, draw them on a piece of paper and stick them on the items... or make the pawns with dough, let it dry and paint it... be creative.

eight

For the cards you can use thin cartons (e.g. cereal box), cut in in small rectangles to make the cards. You can color one side of the QUESTION cards with one color and the ACTION cards with another so that they can be easily distinguished. Write on each card the room to which it corresponds.
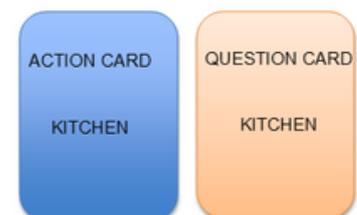
ACTION CARD
KITCHEN

QUESTION CARD
KITCHEN

Figure: developing the board
Note: available in Appendix for larger printout.

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Set-up instructions

You are responsible for turning your home into a sustainable one. You have to roll the dice and use the corridor tiles to move around the house. You are expected to visit all the rooms and respond correctly to one question and perform one action from the cards in the room.

Instructions of the game

1. All players throw the dice.
2. The player who brings the larger number plays first.
3. All pawns are placed at the starting point.
4. The player that plays first rolls the dice and moves his/her pawn as many steps (corridor tiles) as the number on the dice in the direction they wish. The objective is to visit all rooms once before reaching the FINISH line and responding successfully to one question and one action in each "room".
5. Players take their turn to play following a clockwise sequence.
6. In order to enter a room the player has to roll the exact or a greater number of steps with their dice. (e.g. if you need 2 steps and roll 2 you enter the room. If you roll 4 you also enter the room - the 2 extra steps do not count).
7. Upon entering the room, the player draws one of the Action Cards and has to perform the mission it describes in order to gain the right to draw one of the questions card (e.g. check that the lights are switched off, or close/open the window to keep the room warm/cool...).
8. After completing their action mission, players return to the game and draw one question card from the pile of cards in the room they entered. As the answer is given on the card, the question card is read to the player by someone else, (so that the player who is playing, not see the correct answer but the correct answer be seen and confirmed by the co-player).
9. If the player gives a correct answer to the question, they are allowed to throw their dice once more and start moving to the next room. If they answer incorrectly then they can have a second chance with the same card.
10. If they fail to answer the question correctly again on their second opportunity, they have to wait until it is their turn again to play and they need to respond to another action and question card from the piles as previously.
11. The winner of the game is the person that completes all the tasks successfully and reaches the FINISH line first.
12. We suggest that at the end of the game, you dedicate some time to discuss the game with the children. Reflect on what they have learnt. What actions in their daily lives could become more sustainable?

GAME DEVELOPMENT

GAMEPLAY INSTRUCTIONS

Decision points

There are no decision points per se. Decision points or interactive elements between players are included within the questions and the action cards that the players need to answer and could make the game more dynamic. When in the living room (in the middle of the house) players decide which room to visit first. They need to have in mind that they have to visit all rooms once, and respond to the challenge and question cards correctly, before heading for the FINISH line. They may visit the rooms in any order they wish. Multiple players can be present in the same room at the same time.

Interactions among the players

Interactions among the players:
Players may have the opportunity to interact through the questions and actions in the cards. E.g. Action Card: Ask one of the other players to explain to you how to use the washing machine and what to have in mind to save water and energy.

2-8 players

Winning conditions

The winner is the player who responds correctly to all the questions and actions and reaches the Finish line first.

Educational Value

Green Living Home Quest

1. Understand Sustainable Consumption and Production
Children and parents learn the basic concepts of sustainable consumption (using fewer resources, minimizing waste, choosing eco-friendly products) and sustainable production (producing goods with minimal environmental impact, reducing energy use, and limiting waste).

2. Promote Awareness of Everyday Choices
Players become aware of the impact of everyday choices, such as food consumption, energy usage, recycling, and shopping habits. This includes understanding how small actions can contribute to global sustainability.

3. Foster Collaboration Between Players
The game encourages teamwork between children and parents, with the goal of making sustainable decisions together. This fosters both cooperation and the sharing of knowledge across generations.

4. Encourage Critical Thinking and Problem Solving
The game presents players with scenarios and challenges related to sustainable production and consumption (e.g., managing resources, reducing waste, or making eco-friendly choices), requiring them to think critically and solve problems in creative ways.

5. Promote Long-term Behavior Change
By playing the game, participants are inspired to adopt more sustainable habits in their real lives. This can be achieved through reinforcing positive behavior (e.g., choosing reusable products, reducing energy consumption) within the game's framework.

6. Learn about Resource Management and the Consequences of Overconsumption
Players learn about the importance of managing resources efficiently and the negative consequences of overconsumption, including environmental degradation, waste generation, and depletion of natural resources.
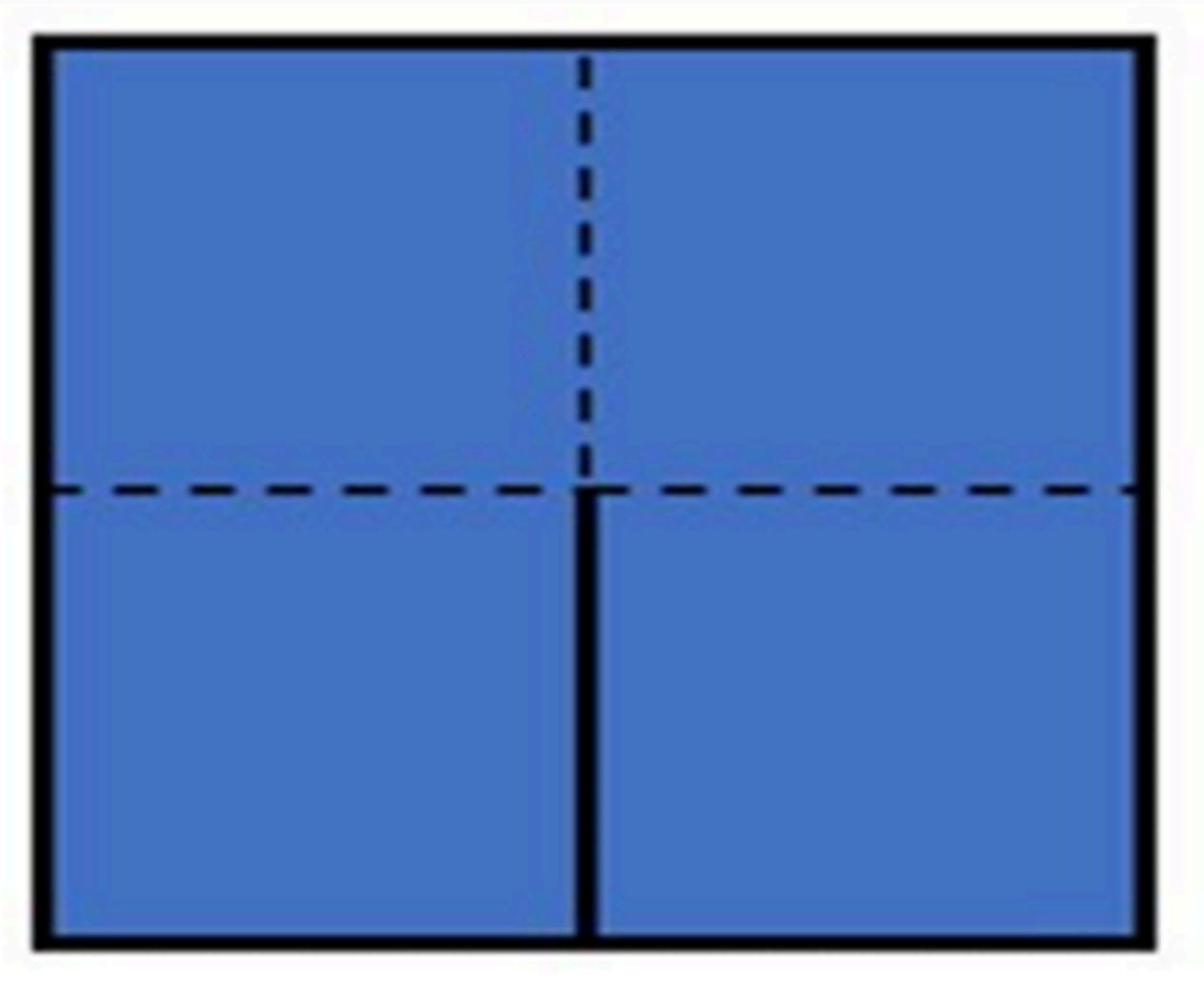
Annex E: Supporting materials
Board Game 04
Green Living Home Quest

Board development

Cards development

Cards development - example

Cards

Living Room Action Cards

1. Switch off all devices not in use (e.g. TV, lights).
2. Close or open curtains/blinds of the living room to regulate room temperature.
3. Check that the power strips in the living room are switched off if the devices connected to them are not being used.
4. Rearrange furniture to reduce the need for artificial lighting in the living room.
5. Create a small decorative item with a reused or upcycled item.
6. If a heating or cooling device is in use in the living room, regulate the thermostat to save energy (26-27°C in summer, 24-35°C in winter)
7. Test the room and identify any drafts that need to be sealed.
8. Calculate the TV usage hours and aim to reduce daily use by 20%.
9. Unplug a device in the living room that is in standby mode.
10. Clean or dust one window to maximize natural light in the living room.
11. Explain to your co-players, why it is better to use a fan instead of the air conditioner for cooling.
12. Explain to your co-players, why in winter, it is better to use a jacket or a footer instead of raising the temperature on the heating device's thermostat.
13. Identify an item in the living room that is sustainable and justify your choice.
14. Identify an item in the living room that you consider unnecessary. Explain to the other players why buying things we do not need is harmful to the environment (waste of natural resources and energy, creation of rubbish).
15. Check on your smartphone how the position of furniture in a room can affect the room temperature and inform the others.

Cards

Living Room Question Cards
(Underlined are the correct responses)

1. Which type of light bulb uses the least energy? (<u>LED</u>, CFL, halogen)
2. What is a more sustainable source of entertainment? (Watching TV, Playing video games, <u>Playing outdoors</u>)
3. Which action saves more energy? (<u>Turning off devices</u>, Lowering brightness, Muting sound)
4. In winter, how does reducing room temperature by 1°C impact energy use? (Reduces energy by 1%, <u>10%</u>, 15%)
5. What can be done to lower heating and cooling costs? (Open windows all day, <u>Seal drafts</u>, Run heater at high levels)
6. Which is the best time to open windows to cool down the house in summer? (<u>Early morning or after sunset</u>, At 12:00, At 14:00)
7. How much energy is saved when a device is turned off completely instead of left on standby? (5%, 10%, <u>100%</u>)
8. How often should the air filter in an AC be cleaned for optimal efficiency? (Every week, <u>Once a year</u>, Every 5 years)
9. What is the best eco-friendly option for a movie night? (Watching alone, <u>Watching with others</u>, Watching on multiple devices)
10. Can the position of furniture affect room temperature and heating costs? (<u>Significantly</u>, Slightly, No effect)
11. How long does it take for a TV in standby mode to consume the same energy as being on for an hour? (1 day, 1 week, <u>1 month</u>)
12. What kind of houseplant can improve air quality in the living room? (<u>Aloe Vera</u>, Cactus, Orchid)
13. What sort of light can adjust the brightness according to your needs, reducing your energy consumption? (Fluorescent lights, Incandescent lights, <u>Dimmable LED lights</u>)
14. What are the most eco-friendly games to play as a family? (<u>Board games - such as Green Living Home quest!</u> - video games, electronic games)
15. What's the most important action that you have to do when you leave the room? (close the door, <u>switch off the light</u>, switch off the power strip)

Cards

Kitchen Action Cards

1. Check if there are any dirty dishes in the sink and wash them without wasting water.
2. If you are hungry prepare a snack using leftovers from the fridge.
3. Check and regulate, if needed, the fridge temperature settings for energy efficiency.
4. Open the window to let fresh air in.
5. Check for any recyclables in your waste bin and put them in the recycling bin.
6. Plan a meatless meal today to reduce your carbon footprint.
7. Show the other players a reusable container you use in the kitchen for food and explain how this saves plastic.
8. Unplug small kitchen appliances that are not in use.
9. Explain (or ask one of the other players to explain to you) how to cook a meal using energy-efficient methods like steaming or boiling.
10. Check for leaky faucets in the kitchen and tighten them.
11. Make a shopping list to avoid food waste.
12. Explain to the other players why it is better to defrost frozen food in the fridge overnight instead of using the microwave.
13. Find an old storage container and use it for collecting any organic waste in your kitchen that you could use for producing compost.
14. Make a home-made eco-friendly cleaning spray for the kitchen using vinegar, baking soda and water.
15. Do you have a running water filter? Ask an adult to explain how a water filter can help you reduce your plastic waste.

Cards

Kitchen Question Cards
(Underlined are the correct responses)

1. What is the most energy-efficient way to cook vegetables? (Boiling, <u>Steaming</u>, Frying)
2. What is the optimum fridge temperature to save energy? (0°-1°C, <u>4°-5°C</u>, 7°-8°C)
3. What is the best way to avoid food waste at home? (Cooking in bulk, <u>Buying the quantities of food you need</u>, Eating out more)
4. Which of these materials cannot be recycled? (<u>Ceramic containers</u>, Aluminum cans, Glass jars)
5. On average how much water can a leaking tap waste in one week? (1 liter, <u>140 liters</u>, 500 liters)
6. What is the most energy-efficient cooking appliance in the kitchen? (m<u>icrowave</u>, oven, air fryer)
7. How can you reduce energy consumption when using the oven? (Preheat the oven, <u>Use convention settings,</u> Open the door frequently)
8. Which type of material is best for keeping food fresh in the fridge? (Plastic, <u>Glass,</u> Aluminum foil)
9. What's the most sustainable way to wash dishes? (by hand, using paper plates, u<u>sing an energy efficient dishwasher</u>)
10. How can you reduce energy when using a refrigerator? (keep the door open while deciding what you want, t<u>hink what you want and then open the door,</u> s<u>e</u>t the fridge temperature to the coldest)
11. What is the benefit of using leftovers? (Wasting time, <u>Reducing waste</u>, Spending energy)
12. How long does it take for fruit and vegetable scraps to decompose in a landfill? (<u>few weeks</u>, few months, few years)
13. What's the most eco-friendly way to wash the dishes by hand? (washing each piece one by one under running water, soaking them in a bowl of water and then washing each piece one by one under running water, <u>washing them in a hot soapy bowl with a sponge and then rinsing them</u>)
14. What is the best way to wash vegetables? (Rinsing with running water, <u>collecting the water while rinsing the vegetables to water the plants</u>, using a product to wash them)
15. What sort of fruit is more sustainable to buy and to consume? (<u>local and seasonal fruit</u>, exotic fruit, greenhouse grown fruit).

Cards

Bedroom Action Cards

1. Check that your bedroom's lights are switched off.
2. Set your alarm clock to use the "energy saver" mode.
3. Unplug your phone charger if not in use.
4. Organize your clothes and find one item you no longer wear, to donate or repurpose it.
5. heck the material out of which your bed sheet is made. Explain if it is made from a sustainable source.
6. Adjust the window coverings in your room to control room temperature naturally.
7. Replace a piece of furniture with one made from reused or recycled materials.
8. Make sure to turn off any electronics in your bedroom before going to sleep.
9. Rearrange your room to maximize natural light and reduce the need for artificial lighting.
10. Explain to the other players why using rechargeable batteries for any battery-operated devices in your room is more environmentally friendly than regular batteries.
11. Declutter your desk and sort items for recycling (e.g., paper, plastic).
12. Ensure that your room's heating or cooling vents are unobstructed for energy efficiency.
13. Count how many pairs of shoes you have. Discuss with the others if they are too few or too many.
14. Count how many pairs of trousers you have. Discuss with the others if they are too few or too many.
15. Create a decorative ornament for your room using something that would otherwise be thrown away.

Cards

Bedroom Question Cards
(Underlined are the correct responses)

1. What's the most energy-efficient way to keep your room cool in summer? (Air conditioning, <u>Using a fan</u>, Opening windows at night)
2. How can using heavy curtains help reduce energy consumption? (By blocking drafts, Keeping sunlight out, <u>Both</u>)
3. What is the best way to reduce waste when buying new clothes? (Buying fast fashion, <u>Thrifting</u>, Buying online)
4. How much energy can you save by unplugging devices like a phone charger when not in use? (<u>10%</u>, 20%, 50%)
5. Which material is the most eco-friendly for bedding? (Polyester, Organic <u>cotton</u>, Silk)
6. How often should you clean air filters in your windows to ensure good air quality in the bedroom? (<u>Every 3 months</u>, Every 6 months, Once a year)
7. What is a sustainable option for redecorating your room? (Buying new, <u>Upcycling old furniture</u>, Hiring an interior designer)
8. What is a good way to reuse old clothing? (Throw away, Store for later, <u>Turn into cleaning rags</u>)
9. How does using energy-efficient bulbs in the bedroom help the environment? (<u>Less energy consumption</u>, Lower bills, higher carbon footprint)
10. How much energy can you save by lowering the thermostat by 5oC at night? (1-4%, 5-10%, <u>15-20%</u>)
11. What is the environmental impact of keeping electronics on standby mode? (None, <u>Moderate</u>, High)
12. What is the most sustainable way to clean the air in your room? (Using air fresheners, <u>Opening windows</u>, Using houseplants)
13. What is the most eco-friendly material for furniture? (<u>recycled wood</u>, plastic, steel)
14. What can you do if you feel cold in the bed? (Raise the heating temperature, use an electric blanket, <u>bring another blanket</u>)
15. Before sleeping you can...(<u>read a book</u>, watch the tv, play video games)

Cards

Bathroom Action Cards

1. Next time you brush your teeth, turn off the tap while brushing to save water.
2. Explain to the other players why taking a shower for no longer than 5 minutes is good for the environment and your health.
3. Go to the bathroom and find a natural or eco-friendly soap or shampoo. Explain to the other players why this is good for the environment.
4. Check for any leaky faucets and fix them.
5. What kind of toothbrush you have? Discuss with the other players the benefits of a bamboo toothbrush over a plastic one.
6. What type of showerhead do you have in your bathroom? Check it and explain to the other players that a water-saving showerhead or a flow restrictor can save water.
7. Ask an adult player how often do they wash the towels and ask them to explain why using a towel more than once before washing it saves water.
8. Find a reusable item in the bathroom and show it to the other players.
9. Find a recyclable item in the bathroom and show it to the other players.
10. Use cold water for handwashing to reduce energy use.
11. Check what type of toilet paper you have. Discuss if it is the most sustainable option with the other players. (e.g., bamboo or recycled paper).
12. Open the window or use a fan instead of turning on the bathroom heater.
13. Wash the sink of the bathroom using a home-made eco-friendly detergent. (baking soda, vinegar and water). Tell the others if you found it effective.
14. Use your phone to find a home-made recipe for making soap. Explain it to the others.
15. Use your phone to find a home-made recipe for making hair shampoo. Explain it to the others.

Cards

Bathroom Question Cards
(Underlined are the correct responses)

1. How much water is saved by turning off the tap while brushing your teeth? (1 liter, 5 liters, <u>10 liters</u>)
2. What's the best way to reduce water use in the shower? (Shorter showers, turning off water while soaping, b<u>oth</u>)
3. Which of these products is the most sustainable for the bathroom? (Plastic razor, <u>Reusable razor</u>, Electric razor)
4. How much water can be wasted in average by a dripping toilet tank in a day? (<u>200 liters</u>, 1,000 liters, 10,000 liters)
5. What is the environmental benefit of using a water-saving showerhead? (<u>Less water used</u>, Lower water bill, higher water pressure)
6. Which is more sustainable? (Single-use bathroom products, <u>Reusable bathroom products</u>, No difference)
7. What can you do with empty liquid soap bottles to reduce waste? (Throw away, recycle, <u>refill</u>)
8. How much energy on average can be saved by using room-temperature water for handwashing? (10%, 25%, <u>50%</u>)
9. What's the best way to maintain towels for sustainability? (Wash after every use, <u>wash when dirty</u>, Use disposable towels)
10. How much paper waste can be reduced by switching to recycled toilet paper? (10%, 30%, <u>50%</u>)
11. What is the most eco-friendly way to dry your hands? (Paper towels, Air dryer, <u>Reusable cloth towel</u>)
12. What's the best alternative to plastic bathroom products? (Glass, <u>Bamboo</u>, Metal)
13. Switching from liquid to solid personal care products could be a very eco-friendly action. Why? (<u>Helps reduce waste</u>, contains no chemicals, all of the above)
14. What can you use to clean your bathroom instead of chemical cleaners? (<u>Baking soda</u>, Olive oil, water and flour)
15. Which is the most eco-friendly toothbrush? (A plastic toothbrush, an electric toothbrush, <u>a bamboo toothbrush</u>)

Cards

Dining Room Action Cards

1. Set the table for dinner using reusable cloth napkins instead of paper ones.
2. Turn off the dining room lights after meals if not needed.
3. Check what is available in your fridge. Discuss with the other players a meal that you could prepare with what you have.
4. Suggest to the other players a way to avoid food waste (e.g. serving smaller portions, or reusing leftovers).
5. Suggest one action that you could do as a family to reduce energy use while having dinner.
6. What kind of tableware do you use for your birthday parties? Explain to the other players why using reusable or biodegradable tableware is good for the environment.
7. Search on an adult's smartphone for advice on how to store vegetables in the fridge to keep them fresh. Inform the other players.
8. Adjust the thermostat or open/close windows in the dining room to regulate temperature naturally during mealtime.
9. Find an old container and repurpose it as a table bin for waste during meals.
10. What kind of straws do you use at home? Explain to the other players why plastic straws are dangerous for wildlife.
11. Check for any appliances in your dining room that are not in use and switch them off.
12. Make a "no electricity" snack for your family
13. Identify an item in the dining room that is second-hand. Discuss why this is sustainable?
14. Identify an item in the dining room that is not used. Suggest any other ways it could be used (repurposed)
15. How many lamps are there in the dining room?

Cards

Dining Room Question Cards
(Underlined are the correct responses)

1. What is the most eco-friendly option for serving water at the dining table? (Plastic bottles, <u>Glass jar</u>, Single-use cups)
2. What should you do with leftovers from freshly cooked meals? (Throw it away, <u>Save it for later</u>, Compost it)
3. Which of these, is the most sustainable way to serve meals at family gatherings? (Disposable plates, <u>Reusable plates</u>, Paper plates)
4. How can reducing portion sizes help with sustainability? (<u>Less food waste</u>, Save time, Better presentation)
5. What's the most eco-friendly way to light the dining room? (Candles, <u>LED lights</u>, Incandescent bulbs)
6. What is the environmental benefit of using cloth napkins instead of paper napkins? (<u>Less waste</u>, Cost-effective, More stylish)
7. How can you keep your dining room cool in the summer without using air conditioning? (Open windows, Use the oven, <u>Use fans</u>)
8. What's the best way to reduce waste when serving drinks? (use plastic cups, <u>use glasses</u>, use cans)
9. What could be done with old food scraps? (Throw them away, <u>feed the chicken /animals</u>, Store them for another meal)
10. Why is a vegetarian / low meat consumption diet more environmentally friendly compared to a diet that consumes a lot of meat? (it is more healthy, it uses more energy, <u>it uses less energy</u>)
11. What is the most sustainable material for tableware? (Ceramics, Glass, <u>both</u>)
12. What's the best way to ensure you're not overusing electricity during meals? (<u>Turn off lights when done</u>, Use bright lighting, Leave lights on for later)
13. Which is the most sustainable option when having a party? (<u>Using normal reusable cutlery</u>, using wooden cutlery, using plastic cutlery)
14. Is more sustainable to clean the room with an electric vacuum cleaner or with a simple broom? (<u>broom</u>, electric vacuum machine, both)
15. When you have dinner with your family is better to....(watch tv, listen to music, <u>talk with your family members</u>)

Cards

Garden / Balcony Action Cards

1. Check if the plants in your garden need watering. If they do, then water them.
2. If you don't have a compost bin in your garden, use a big flower pot and open holes on its sides to let air in, to make a DIY compost bin. Use the pot's plate as a lid for your compost bin.
3. Take a few seeds from a tomato wash them and put them in a small plate on some wet cotton. Keep the cotton moist. When the seeds sprout plant the new tomato plant in a pot or in your garden.
4. Answer (in an adult) or ask an adult to explain the environmental impact the use of chemical fertilizers has.
5. Repurpose an empty milk bottle or another empty item in your house to make a watering can.
6. Collect rainwater to water your plants.
7. Clean the patio or the veranda in your house using a broom.
8. Put some seeds on a small plate for the birds in your garden
9. Put an old plate or bowl in the garden and fill it with water for the animals living there.
10. Turn off outdoor lights to save energy at night.
11. Suggest to the adults to add a mulch layer to your plants to retain moisture.
12. Explain how planting a tree or shrub can provide natural shade and keep the house cool.
13. Suggest to the family to install a solar light on the balcony.
14. Create a wildlife habitat: Decide on a small 1 m2 corner in your garden to leave small brush piles or undisturbed areas in your garden for insects, birds, and other wildlife to find shelter, encouraging biodiversity in your garden.
15. Explore with the help of an adult home-made eco-friendly solutions for protecting your garden from pests.

Cards

Garden / Balcony Question Cards
(Underlined are the correct responses)

1.   What time of day is best for watering plants to conserve water? (Midday, Lunch time, <u>early in the morning</u>)
2.   Which of these is compostable? (<u>Eggshells</u>, Plastic wrappers, Glass bottles)
3.   What's the most eco-friendly method for pest control? (Chemical spray, <u>Organic pesticides</u>, No treatment)
4.   What is the environmental benefit of planting a tree? (Shade, <u>Reduces CO2</u>, Increases property value)
5.   How much water can be saved by using a watering can instead of a hose? (<u>50%</u>, 70%, 90%)
6.   Which of the following is a natural way to fertilize plants? (Chemical fertilizer, Plant food, <u>Compost</u>)
7.   What is the best way to conserve water while maintaining a garden? (Install sprinklers, Use a watering can, <u>Water early in the morning or at night</u>)
8.   How long does it take compost to be ready to use? (2 weeks, <u>6 months - 1 year</u>, 5 years)
9.   What insect can help you control pests / aphids in the garden? (<u>Ladybird</u>, grass hoppers, ants)
10. How can using plants as part of a bioclimatic garden design impact your energy bill? (Increase it, <u>Decrease it</u>, No impact)
11. Which of the following materials can be used to make eco-friendly bird feeders? (Plastic, ceramic, <u>any old plate</u>)
12. How does using mulch benefit your garden? (Retains water, Stops weeds, <u>both previous</u>)
13. What's the LEAST eco friendly way to water plants? (<u>Use water directly from your tap</u>, use water that you used to wash vegetables, collect rainwater to water plants)
14. Which of the following materials is the least appropriate to use as mulch in you pots? (<u>Plastic cover</u>, grass straw, paper)
15. Which of these plants absorbs the most quantity of carbon dioxide? (Oak, <u>Bamboo</u>, Spruce)

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