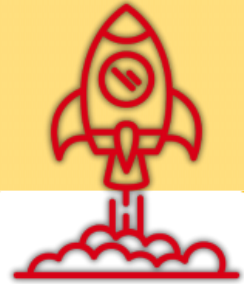


Title: Making 'trees'.

Educational level: Year 6.

Curricular areas: interdisciplinary.

Timing: three sessions (45 minutes each)
at any term.



Summary

This task aims to foster the understanding of ecosystems, their components and their interactions through the design and elaboration of a large collaborative tree diagram. Students will work in groups using tree diagrams that show the biotic factors, abiotic factors and threats affecting each ecosystem. This approach seeks to integrate computational thinking skills, such as decomposition and abstraction in order to organise the information in a visual and effective way.

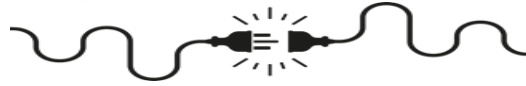


Aims

- Develop a basic understanding of ecosystems, their components, and the interactions between biotic and abiotic factors.
- Promote reflection on the threats to the balance in ecosystems.
- Foster computational thinking skills such as decomposition and abstraction.
- Encourage collaborative work and project-based learning.

Key competencies to develop: Science and Technology, Social and Civic, Initiative and Entrepreneurship, Learning to Learn.





How do we do it?

1st Session:

1. **Initial Motivation:** introduce the narrative of the activity with a message from the future asking for help to save the ecosystems of planet Earth in the year 2150.
2. **Brainstorming:** conduct a brief brainstorming session to agree on ways to help. With the teacher's assistance, the whole class concludes that the use of mind maps and diagrams will be an effective way to convey the most relevant aspects of any ecosystem. Thus, they will create a large collaborative mural of all the ecosystems on the planet.
3. **Distribution of Ecosystems:** form working groups and assign each group a shield representing an ecosystem (3-4 students per ecosystem).
4. **Pre-Reading:** using the textbook, each group begins to gather information about their ecosystem.

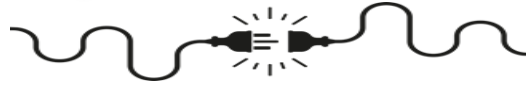
2nd Session:

5. **Pre-Reflection:** distribute a sheet of paper for small groups to classify elements of an ecosystem: biotic factors, abiotic factors, and threats (cause-effect) autonomously. However, if any group finds difficulties, the teacher can provide them with an adapted template (level A, B, C). In the diagram, they should also establish interrelationships between these elements (biotic and abiotic factors, and cause-effect relationships).
6. **Development:** As groups complete the pre-reflection stage, provide them with a set of arrows to design the corresponding tree diagram for their ecosystem, which will be displayed in a designated classroom space.

3rd Session:

7. **Reflection and Presentation:** each group presents their ecosystem and explains how its components interact with each other, while the teacher guides a discussion about the importance of balance in ecosystems and how external factors can alter it, using the created diagram as a visual aid.





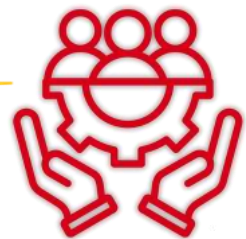
Suggestions

- Include cooperative learning roles in order to foster responsibility and improve work organisation (e.g.: designer, researcher, secretary, etc.).
- Incorporate peer evaluation to encourage constructive feedback through students' final oral presentations about their ecosystems.
- Extend the task in various curricular areas to promote interdisciplinarity.
- Integrate outdoor and nature-based activities so as to reflect on the topic in real-world contexts.



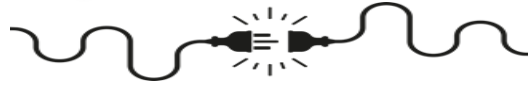
Resources

- **Human:** teacher
- **Material:**
 - Adapted tree diagram templates (three different levels).
 - Set of arrows to build cause-effect relationships, adapted for each ecosystem with a colour code.
 - Ecosystem shields.
 - Textbook to do research on each ecosystem.
 - Drawing materials for the collaborative mural.
 - Introductory video with the narrative for the activity.

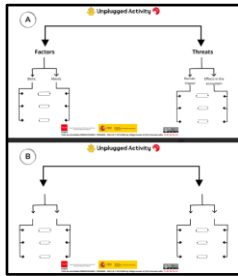


Space: classroom walls or school corridors.

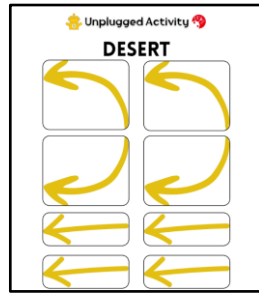
Type of activity: collaborative.



Adapted diagrams



Set of arrows.



Ecosystem shields.



Introductory narrative



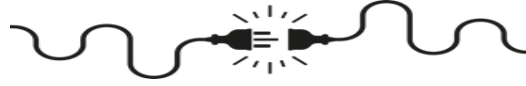
What have we learned?

Rubric to evaluate students:

Assessment Criteria	4 Excellent	3 Very good	2 Satisfactory	1 Needs improvement
To search, compare, and classify information to address environmental problems and seek solutions.	Carries out exhaustive research, classifies information accurately, and presents viable and creative solutions.	Conducts adequate research, classifies information accurately, and proposes clear solutions.	Searches for and classifies information with some difficulty and proposes poorly developed solutions.	Does not search for, classify, or propose adequate solutions to environmental problems.



Unplugged Activity



<p>To promote lifestyles consistent with protecting people and the planet.</p>	<p>Demonstrates a deep understanding and proposes concrete actions to protect the environment and promote social well-being.</p>	<p>Understands the importance of protecting the environment and proposes some actions with positive impact.</p>	<p>Shows limited understanding and proposes unclear actions for environmental protection.</p>	<p>Does not demonstrate understanding or propose actions to protect the environment or people's health.</p>
<p>To demonstrate the final product of the project, explaining the steps followed and their purpose.</p>	<p>Presents the project clearly and in an organised way, explains each step, and highlights the purpose in depth.</p>	<p>Presents the project clearly, describes the main steps and their purpose in an understandable manner.</p>	<p>Shows difficulties in organising the presentation and explaining some steps or purpose.</p>	<p>Does not explain the project, the steps followed, or their purpose comprehensively.</p>
<p>To apply the phases of computational thinking: decomposition and abstraction of a problem.</p>	<p>Applies decomposition and abstraction precisely, addressing each part of the problem in an organised and effective manner.</p>	<p>Decomposes and abstracts the problem adequately, with some details in each phase of the process.</p>	<p>Applies the phases with difficulty, addressing the problem partially or confusingly.</p>	<p>Does not apply the phases of decomposition or abstraction comprehensively, or does not demonstrate an understanding of the process.</p>



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Computational thinking skills developed:

Logic (prediction and analysis): thinking to make predictions, solve problems and make decisions based on available information.

Decomposition (breaking down into smaller parts): breaking down problems into smaller and more manageable parts, which are easier to understand and solve.

Abstraction (delete unnecessary details): simplifying things in a problem hiding unnecessary details or aspects to focus on those which are relevant and essential.

More information



QR codes to the activity resources:



Introductory narrative



Ecosystems shields



Ecosystems arrows.



Diagram's templates.