Unplugged Activity

Title: ECOSYSTEMS IN CODE
Educational level: Second Cycle of Primary Education.
Curricular areas: Natural Science.
Timing: One lesson (45 minutes) during the term when the identification and characteristics of ecosystems are studied.

Summary

Students will investigate different ecosystems (meadow, pond, forest, coastline, and city) and use binary code to identify and represent their characteristics. This activity helps reinforce the understanding of classification and organisation concepts, applying them to Natural Science through binary code.

Aims

- Learn to organise information about some ecosystems using binary code.
- Classify different ecosystems based on their characteristics.
- Foster observation and logical skills.
- Identify one's own emotions and those of others, showing empathy and establishing appropriate relationships.

Key competencies to develop: Mathematical competence and basic competencies in science and technology, learning to learn competence (observation and analysis), cultural awareness and expressions (understanding the environment).

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How do we do it?

1. The teacher introduces binary code and its understanding for the students: 0 = OFF, NO or ABSENCE; 1 = ON, YES or PRESENCE.
2. The templates of YES, NO coding cards are presented for understanding.
3. This coding system is related to possible classification systems of natural elements; in this case, ecosystems according to the presence or absence of their constituent elements. Questions such as: Does this ecosystem have or not have? (see suggestions and coding template) are asked.
4. Students code each ecosystem with a binary code.
5. The activity is reinforced when, in pairs or small groups, one person shows a coding, and the others must guess which ecosystem it is.
6. A reflection on the types of ecosystems and their defining characteristics is carried out.
7. It concludes with a reflection that relates binary code coding to computer data processing, for example, letters and numbers.

Suggestions

Establish common characteristic elements of the different ecosystems to determine their presence or absence and thus establish the binary codes for each one, for example: abiotic factors (air, water, soil), biotic factors (animals and vegetation), human influence, etc.

Focus on the relevant information of each ecosystem for its classification and discard information that is not important for it.

Allow students to draw the classified ecosystems.

Consider the possibility of expanding the prescriptive ecosystems of the curriculum.

Use the coding template to classify the ecosystems, and the guessing template for a student to think of an ecosystem and the others to guess it by asking questions about its coding.

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Resources

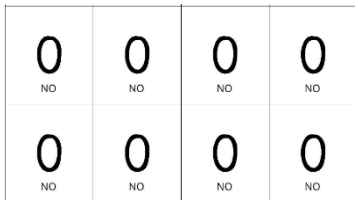
- **Human:** teacher and students.
- **Material:** binary code cards and images of ecosystems.

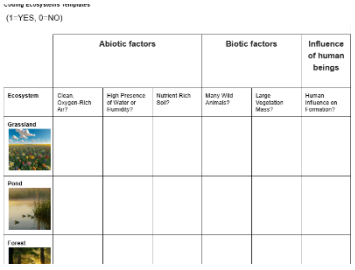
Space: classroom.

Type of activity: in small groups and pairs.

Recursos para imprimir.

YES/ NO cards | Images of Ecosystems | Ecosystem Templates





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What have we learned?

Assessment Criteria	4 Excellent	3 Very good	2 Satisfactory	1 Needs improvement
The student uses binary code correctly to classify ecosystems.	Classifies ecosystems accurately and without errors using binary code.	Classifies ecosystems correctly with few minor errors.	Classifies ecosystems with some errors affecting accuracy.	Has significant difficulties classifying ecosystems using binary code.
The student identifies relevant characteristics of ecosystems.	Identifies all relevant characteristics with detail and accuracy.	Identifies most relevant characteristics accurately.	Identifies some relevant characteristics but omits important details.	Has difficulties identifying relevant characteristics of ecosystems.
The student collaborates effectively in a team and can explain results.	Collaborates exceptionally, contributes actively, and explains results clearly.	Collaborates well, participates, and explains results comprehensibly.	Collaborates to a limited extent and has difficulties explaining results clearly.	Has difficulties collaborating in a team and explaining results.
The student shows empathy and establishes appropriate relationships	Demonstrates a high level of empathy and establishes positive and constructive relationships.	Shows empathy and establishes appropriate relationships with others.	Shows empathy but has difficulties establishing appropriate relationships.	Has difficulties showing empathy and establishing appropriate relationships.

Computational Thinking

Algorithms (steps and rules): is a step-by-step process that solves a problem or completes a task.

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

Patterns (recognise and use similarities): recognising similarities or patterns in problems or data, which means come up with solutions quickly and effectively.

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 linked to activity resources:

YES/ NO cards

Ecosystem Templates

Images of Ecosystems

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