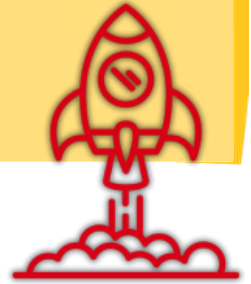


Title: Celestial bodies classifier

Educational level: Second Cycle of Primary Education.

Curricular areas: Knowledge of the Environment, Social Sciences.

Timing: 2 sessions of 45'. (1st term).



Summary

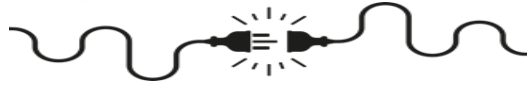
In this activity, students in the 2nd cycle of Primary Education will design a poster to classify the stars of the solar system using a decision tree. In pairs, each group will reflect on the characteristics of the different celestial bodies to write the most appropriate questions to classify them. They will then create a poster with the decision tree.



Aims



- Develop observation and analysis skills by exploring and classifying stars based on their main characteristics.
- Encourage logical reasoning by creating questions in a decision tree, facilitating the comparison of different stars in the solar system.
- Stimulate scientific curiosity by identifying and classifying stars, promoting interest in astronomy and the structured analysis of scientific information.

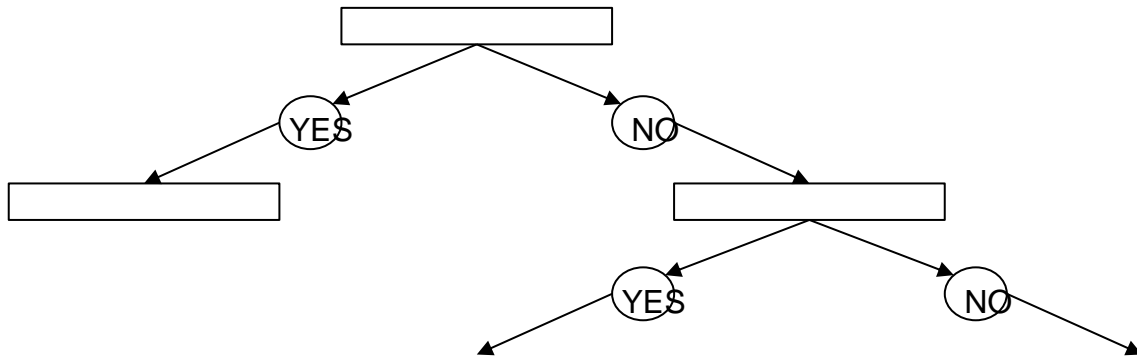
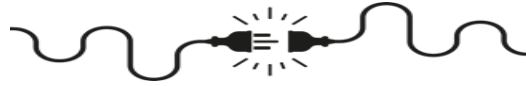


Key competencies to develop: competence in linguistic communication, mathematical competence and competence in science, technology and engineering, digital competence and personal, social and learning-to-learn competence.

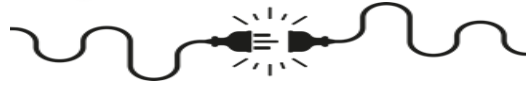


How do we do it?

1. Review of information about celestial bodies and their characteristics: review with the students the main stars of the solar system: star (Sun), rocky planets (Mercury, Venus, Earth, Mars), gas planets (Jupiter, Saturn, Uranus, Neptune), satellites (Moon), asteroids, comets, dwarf planets (Pluto)... Make sure they understand their key characteristics (such as whether they emit light or not, whether they are rocky or gaseous, etc.).
2. Introduction to the concept of a decision tree: explain what a decision tree is and how it is used to classify elements based on questions. You can also make a simple example with common objects or show a dichotomous guide.
3. Grouping: explain that their job will be to make a poster with a decision tree to classify the celestial bodies of the solar system in pairs or small groups. Make the grouping.
4. Identification of key characteristics: guide the students as they work in their groups to select the most important characteristics of each celestial bodies that can be used to classify. You can ask each team to create an identification card for each star to keep the information clear and then play a game to classify them.
5. Example of starting the tree: show an example of how they can start the decision tree. You can use this one:



6. Designing the decision tree for the poster: students design their tree, adding each question in a “node” and using branches to guide towards the next classification. Each answer leads to a specific celestial body at the end.
7. Classification and verification exercise: with the tree complete, students test whether they can correctly classify each star following the decision tree they have created. This exercise allows them to see if their tree works properly.
8. Designing the poster: once verified by the teacher, students design their poster with the decision tree created and decorated as they prefer to achieve an attractive final product.
9. Displaying the final products: the created posters will be displayed in a large place, for example a hallway, so that the rest of the students can see the work of each group and test and compare the decision trees created.
10. Final reflection: ends with a group reflection on how decision trees help classify and understand complex information in a visual and organized way.



Suggestions

- The decision tree can be used to play a game where players try to guess the celestial body someone is thinking of with the fewest questions possible.
- Once the decision tree is completed, they can create a digital version using flowchart tools like [Drawio](#).
- A physical mechanism can also be created to represent the decision tree using marbles that follow a path, as shown in this [video](#).



Resources

- **Human:** teachers and students.
- **Material:** blackboard, interactive whiteboard, digital whiteboard, or any other means for writing and drawing. Poster board and art supplies.



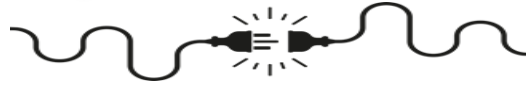
Space: classroom, display area (e.g., a hallway).

Type of activity: pairs – small group.



- Blackboard, interactive whiteboard, digital whiteboard, or any other means for writing and drawing.
- Poster board and art supplies.





What have we learned?

The assessment criteria correspond to Specific Competency 1 of Social Science for the Second Cycle of Primary Education and Specific Competency 1 of Technology and Robotics:

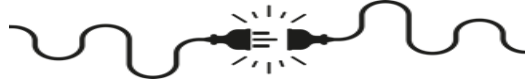
Social Studies 1: Identify the characteristics of different elements or systems in the environment, analyzing their organization and properties, and establishing relationships between them in order to recognize, preserve, and improve the value of cultural and natural heritage.

Technology and Robotics 1: Use computational thinking to solve problems, creating a creative and original product that addresses each of the challenges posed or generated through observation of the environment.

Assessment Criteria	4 Excellent	3 Very good	2 Satisfactory	1 Needs improvement
Social Science 1.1 Identifies the characteristics, organization, and properties of the different celestial bodies in the solar system.	Identifies all the celestial bodies in the solar system and their characteristics.	Identifies most of the celestial bodies in the solar system and their characteristics.	Identifies some celestial bodies in the solar system and their characteristics.	Does not identify the different celestial bodies in the solar system or their characteristics.



Unplugged Activity



<p>Social Science 1.2 Recognizes basic relationships between the different celestial bodies in the solar system, such as the orbits of planets around the Sun or the relationship between planets and their satellites.</p>	<p>Recognizes the basic relationships between the different celestial bodies in the solar system and can explain them.</p>	<p>Recognizes some of the basic relationships between the different celestial bodies in the solar system and can explain them.</p>	<p>Recognizes some of the basic relationships between the different celestial bodies in the solar system but cannot explain them.</p>	<p>Does not recognize the basic relationships between the different celestial bodies in the solar system.</p>
<p>TyR 1.2 Designs and applies an algorithm to classify celestial bodies in a decision tree, using sequences of yes/no questions for each level of classification.</p>	<p>Uses a decision tree to classify the celestial bodies in the solar system and knows how to design one.</p>	<p>Uses a decision tree to classify the celestial bodies in the solar system and knows how to design one with help.</p>	<p>Can use a decision tree to classify the celestial bodies in the solar system but does not know how to design one.</p>	<p>Does not understand the concept and use of a decision tree.</p>
<p>TyR 1.3 Observes and gathers data on the characteristics of celestial bodies to create key questions for the decision tree.</p>	<p>Understands and uses the main characteristics of celestial bodies to create a decision tree.</p>	<p>Understands and uses the main characteristics of celestial bodies to create a decision tree with help.</p>	<p>Is able to understand the characteristics of some celestial bodies and use them in a decision tree.</p>	<p>Does not extract the most relevant information from each celestial body.</p>



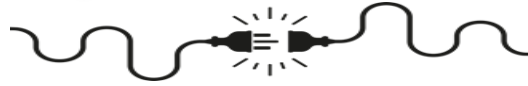
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Computational Thinking



A elegir los que consideréis:

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

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.

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

You can find more information about decision trees in this [article](#) by Programamos association.

QR codes to the activity resources:



Article by Programamos



Drawio



Decision tree video