Unplugged Activity

Title: Among bugs

Educational level: **Second cycle of Primary Education.**
Curricular areas: **Natural Sciences.**
Timing: **A 45-minute session after having taught invertebrate animals.**

Summary

In this proposal a flowchart is used as a tool to facilitate the distinction between the different groups and subgroups of invertebrate animals. First, a whole-class activity is conducted to help students understand how to interpret a flowchart. Then, students will do an activity in small groups focusing on classifying animals by using the flowchart.

Aims

- Identify characteristics of invertebrate animals that allow us to classify and categorise them in different groups and sub-groups.
- Solve problems by using computational thinking skills.
- Develop communication and collaboration skills.

Key competences to develop: literacy competence, competence in science, technology and engineering, and personal, social and learning to learn competence.

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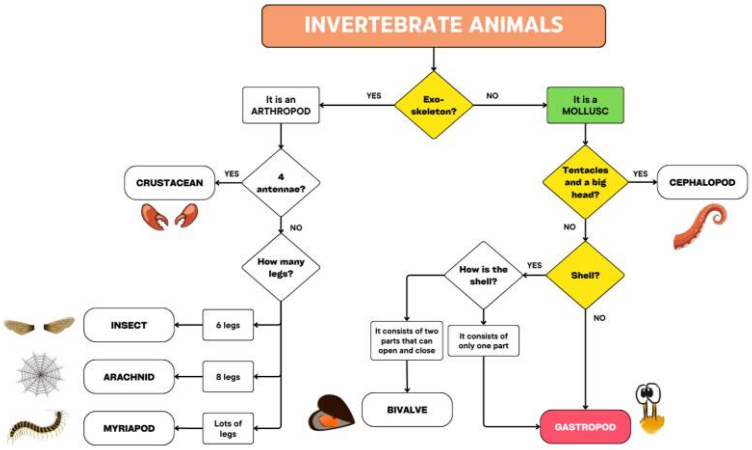
How do we do it?

1. **Introduction** (10 minutes):

   Whole-group presentation to get familiarised with the use of a flowchart. By using the slug as an example, the teacher explains how to move through the flowchart to classify it and put it into the molluscs group, gastropods subgroup.
   As a visual support, the teacher colours each of the nodes (rhombi or rectangles) used while in the process, as shown in the following picture:



2. **Guided practice** (15 minutes):

   Each student is given a duplicate flowchart worksheet (see “Resources”). Firstly, a picture of an animal, such as a centipede, is projected and the flowchart is used to find out the invertebrates group and subgroup it belongs to. The nodes used in the route are coloured step by step and so do students at the same time as the teacher.
   Then, a picture of another animal is projected and this time it is the students themselves who colour the route of the flowchart independently. Finally, a correction is provided.

3. **Independent practice in small groups** (15 minutes):

   The whole class is split up into small groups of two or three members and each group is given a worksheet with a set of pictures of invertebrate animals (see “Resources”). Despite printing it, an alternative is projecting the worksheet during the whole activity.
   A member of the group chooses one of the animals of the set without saying its name out loud and the other member asks about it by using the questions of the flowchart.
   When the final node is reached and once the student knows what group it belongs to, he/she tries to guess out the animal chosen by his/her classmate among the ones shown on the worksheet.

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Suggestions

Two difficulty levels of the flowchart are included. Whether to choose one or the other depends on the content previously taught in class:

- Beginner level: it only includes the largest groups of invertebrates, i.e. arthropods and molluscs.
- Advanced level: a more complex version that shows all the invertebrates categories.

In the same way, two different versions of the set of animal pictures are included for each of the difficulty levels.

Resources

- **Human:**

  Teacher and group of students.

- **Material:**

  · A projection screen or interactive whiteboard.

  · Duplicate flowchart worksheet.

  · Worksheet showing a set of pictures of invertebrate animals.

  · Coloured pencils or crayons.

Space: Homeroom or any regular classroom.

Type of activity: Modelling and activity in small groups (pairs or trios).

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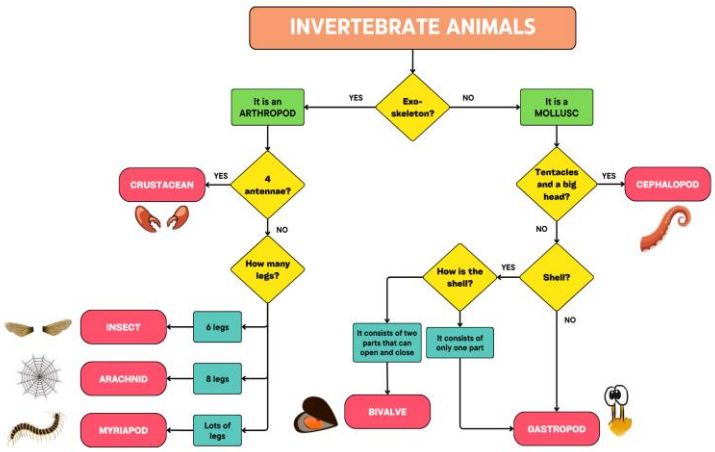
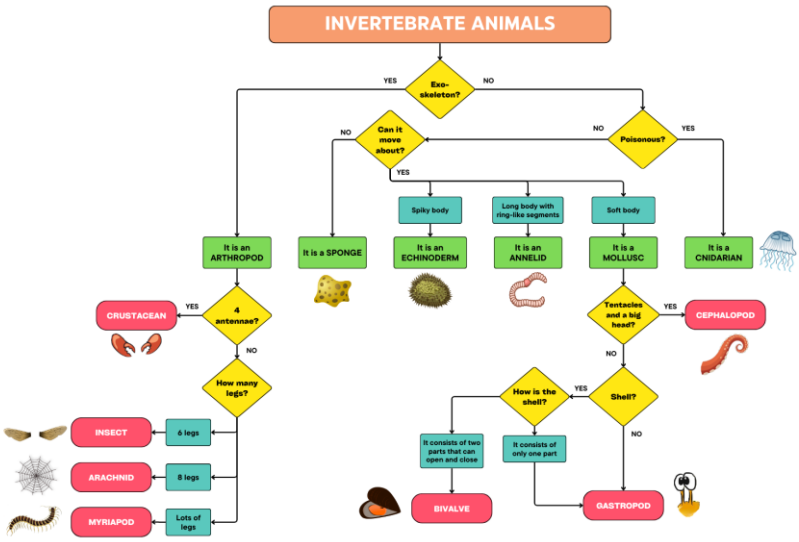
- Beginner level flowchart and worksheets (only arthropods and molluscs):



- Advanced level flowchart and worksheets (all groups of invertebrate animals):



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What have we learned?

Assessment Rubric:

Assessment criteria	4 Outstanding	3 Good	2 Satisfactory	1 Requires improvement
Interpreting a flowchart.	The student uses a flowchart without any major difficulty.	The student uses a flowchart skillfully although makes mistakes occasionally.	The student understands how to use a flowchart but makes mistakes frequently when using it.	The student doesn't understand how to use a flowchart.
Recognizing characteristics of invertebrate animals.	The student identifies a lot of characteristics of invertebrate animals.	The student identifies many characteristics of invertebrate animals.	The student identifies a few characteristics of invertebrate animals.	The student is not able to identify any characteristic of invertebrate animals.
Invertebrate animals classification into groups and subgroups.	The student classifies all the animals of the activity correctly.	The student classifies most of the animals of the activity correctly.	The student classifies some of the animals of the activity correctly.	The student classifies a few of the animals of the activity correctly or no animal at all.
Attitude towards teamwork	The student participates in a respectful and proactive manner.	The student participates in a respectful manner following the instructions of the activity.	The student participates although showing little involvement.	The student shows a reticent attitude towards teamwork.

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Computational Thinking

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

Photographs and icons retrieved from the open-source stock media website *Pixabay*.

QR codes to the activity resources:

Beginner level
flowchart and worksheets

Advanced level
flowchart and worksheets

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