Unplugged Activity

Title: Brain and Senses in Action

Educational level: Second and Third Cycle of Primary Education.
Curricular areas: Interdisciplinary.
Timing: Any term.

Summary

This activity engages upper primary students in exploring the response function in living beings and its connection with the Internet of Things (IoT), illustrating how, similar to living beings, smart devices detect stimuli and respond to their environment using sensors and processors.

In teams, students must sequence situation cards following the process: stimulus → processing → response (e.g., pulling back a hand after touching something hot).

Aims

1. To understand the response function in living beings.
2. To identify basic components of an IoT system.
3. To relate natural systems with technological advancements.
4. To promote logical thinking and sequencing skills.

Key competencies to develop: mathematical, digital, linguistic communication, learning to learn, entrepreneurship, social and civic skills.

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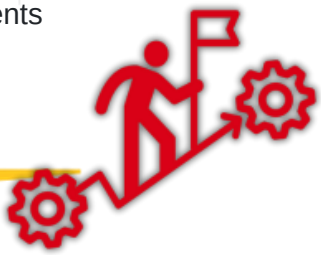
How do we do it?

1. Organise the classroom into learning stations or work corners with five areas.
2. Begin the session with a brief comparison between the response function in living beings and IoT: both detect stimuli and respond; living beings use senses and the brain, while IoT uses sensors and processors.
3. Distribute the shuffled situation cards for each scenario, along with the corresponding context card, across the different learning stations.
4. Divide the class into five groups and assign each group to a station.
5. Each group should read the context card to understand the situation, then arrange the cards according to the stimulus → processing → response steps, as it happens in our bodies.
6. Every 5 minutes, groups rotate to the next station. A pre-agreed signal will alert teams to rotate. Before rotating, groups must reshuffle the cards.
7. After all groups have visited every station, each group presents a sequence and explains it to the class.



Suggestions

Students could create their own situation cards. Once they have a strong understanding of the response function, ask them to research IoT examples and generate cards by breaking down these scenarios.

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Unplugged Activity

Resources

- **Human:** teacher and students.
- **Material:** laminated situation cards, laminated context cards, blank templates (optional).

Space: classroom.

Type of activity: learning stations in small groups.

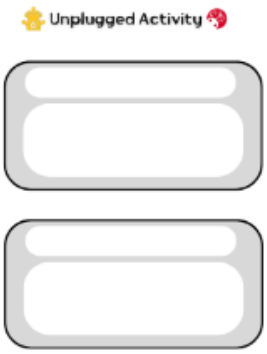
Printable cards:

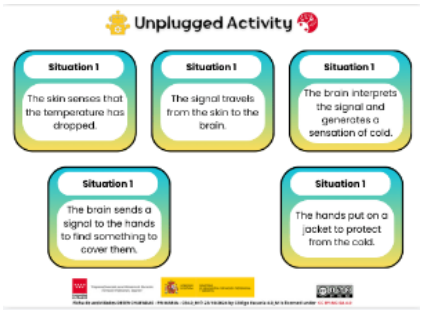
[Situation Cards]

[Context Cards]

[Situation Cards (Template 1)]

[Context Cards (Template 2)]





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What have we learned?

Evaluation Rubric

Assessment Criteria	4 Outstanding	3 Good	2 Satisfactory	1 Requires improvement
Understanding of the response function in living beings.	The student explains stimuli and responses with precision.	The student correctly identifies most key concepts.	The student shows some confusion on key concepts.	The student is unable to identify or explain the response function.
Identification of basic IoT components.	The student accurately describes all components and their functions.	The student recognises most components with minor errors.	The student confuses some components or their functions.	The student is unable to identify basic IoT components.
Link between natural systems and technological advancements.	The student clearly connects natural and technological systems.	The student makes suitable connections with some inaccuracies.	The student links concepts but with some confusion.	The student does not establish connections between the two systems.
Logical thinking and sequencing skills.	The student organises sequences in a clear and logical manner.	The student arranges sequences correctly with minor inaccuracies.	The student shows confusion in organising sequences.	The student has difficulty in organising sequences.

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Computational Thinking

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.

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

Situation cards

Context cards

Template 1

Template 2

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