ROBOSTEAMSEN
Training SEN teachers to use ROBOTICS for fostering STEAM and develop computational thinking

Project Number: 2023-1-ES01-KA220-SCH-000155379

Assembling a robot

Institution	Colégio Internato dos Carvalhos
Disciplina STEAM	Technology
IDD Student Context	Secondary students with Autism Spectrum Disorder (ASD) Level 1 and Attention Deficit Hyperactivity Disorder (ADHD)
Resource used	Kit Bot n Roll ONE A

Description of the step-by-step activity before the project

1. Presentation of the objectives of the activity.
2. Show all the parts that make up the robot kit.
3. Explanation of the function of each part and the necessary electrical connections.
4. Clearly explain the task to the students, ensuring they understand the objectives and steps involved.
5. Allow them sufficient time to start and engage with the activity independently.
6. Provide support as needed throughout the process, offering guidance and assistance when necessary.
7. If required, revisit the instructions and clarify any doubts before continuing.
8. Conclude the activity, ensuring all students have had the opportunity to assemble is robot.
9. Observe the assembled robot, reflecting on student performance and understanding of the improvements that can be made.

Description of the activity step by step (changes in red)

1. Presentation of the objectives of the activity.
2. Show all the parts that make up the robot kit.
3. Classify the IDD into Taxonomy: Use the Taxonomy framework to identify sensory sensitivities and cognitive challenges associated with Down Syndrome and Intellectual Disability.
4. Create the Profile for the Students: Develop profiles detailing individual interests in colors, sensory thresholds, and learning objectives.
5. Search for Similar Activities: Identify related AR activities like "Virtual Object Exploration" or "AR in Nature."
6. Define the Activity in the User Model: Document the activity, associating it with the students' educational plans for creativity and sensory engagement.
7. Demonstration: Showcase multiple AR-enhanced coloring examples, emphasizing variety and innovation.
8. Explanation of the function of each part and the necessary electrical connections.
9. Clearly explain the task to the students, ensuring they understand the objectives and steps involved.
10. Allow them sufficient time to start and engage with the activity independently.
11. Provide support as needed throughout the process, offering guidance and assistance when necessary.
12. If required, revisit the instructions and clarify any doubts before continuing.
13. Conclude the activity, ensuring all students have had the opportunity to assemble is robot.
14. Observe the assembled robot, reflecting on student performance and understanding of the improvements that can be made.

Extra resources	Tools, multimeter
Similar activities	Lego Mindstorms

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	ROBBO educational robot kit MBot

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3D Drawing of Robot Parts

Institution	Colégio Internato dos Carvalhos
Disciplina STEAM	Technology
IDD Student Context	Secondary students with Autism Spectrum Disorder (ASD) Level 1 and Attention Deficit Hyperactivity Disorder (ADHD)
Resource used	Autodesk Fusion

Description of the step-by-step activity before the project

1. Presentation of the objectives of the activity.
2. Presentation of the software Autodesk Fusion.
3. Explanation of the main features of the software.
4. Show the principal parts of robots and ask students to select a piece they want to draw.
5. Clearly explain the task to the students, ensuring they understand the objectives and steps involved.
6. Allow them sufficient time to start and engage with the activity independently.
7. Provide support as needed throughout the process, offering guidance and assistance when necessary.
8. If required, revisit the instructions and clarify any doubts before continuing.
9. Conclude the activity, ensuring all students have had the opportunity to draw is part of robot selected.
10. Export the piece designed and print on a 3D printer, then observe and reflect on the result to understand the improvements that can be made on the design.

Description of the activity step by step (changes in red)

1. Presentation of the objectives of the activity.
2. Presentation of the software Autodesk Fusion.
3. Explanation of the main features of the software.
4. Show the principal parts of robots and ask students to select a piece they want to draw.
5. Classify the IDD into Taxonomy: Use the Taxonomy framework to identify sensory sensitivities and cognitive challenges associated with Down Syndrome and Intellectual Disability.
6. Create the Profile for the Students: Develop profiles detailing individual interests in colors, sensory thresholds, and learning objectives.
7. Search for Similar Activities: Identify related AR activities like "Virtual Object Exploration" or "AR in Nature."
8. Define the Activity in the User Model: Document the activity, associating it with the students' educational plans for creativity and sensory engagement.
9. Demonstration: Showcase multiple AR-enhanced coloring examples, emphasizing variety and innovation.
10. Clearly explain the task to the students, ensuring they understand the objectives and steps involved.
11. Allow them sufficient time to start and engage with the activity independently.
12. Provide support as needed throughout the process, offering guidance and assistance when necessary.
13. If required, revisit the instructions and clarify any doubts before continuing.
14. Conclude the activity, ensuring all students have had the opportunity to draw is part of robot selected.
15. Export the piece designed and print on a 3D printer, then observe and reflect on the result to understand the improvements that can be made on the design.

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Extra resources	PC, 3D Printer
Similar activities	3d Printing Design Thinking

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Develop Team work abilities

Institution	Polytechnic Institute of Bragança - Portugal
Disciplina STEAM	Robotics
IDD Student Context	College students with Autism Spectrum Disorder (ASD) Level 1 and Attention Deficit Hyperactivity Disorder (ADHD)
Resource used	Mbot Robots

Description of the step-by-step activity before the project

1. Introduction to scratch programming
2. Introduction to the concept of sensor and actuator
3. Explore the capacities of the Mbot robot
4. Propose a challenge based on the Mbot Apply
5. Form Groups
6. Evaluate the work in progress of the proposed Challenge

Description of the activity step by step (changes in red)

1. Introduction to scratch programming
2. Introduction to the concept of sensor and actuator
3. Explore the capacities of the Mbot robot
4. Classify the IDD into Taxonomy: Use the Taxonomy framework to identify cognitive and communication challenges associated with the student IDD.
5. Create the Profile for the Students: Develop profiles detailing individual interests in team work.
6. Search for Similar Activities: Identify different resources that can be applied for team work.
7. Define the Activity in the User Model: Document the activity, associating it with the students' educational plans for social skills and team work
8. Form groups
9. Monitor the student interaction with the group
10. Evaluate the work in progress of the proposed Challenge

Extra resources	https://scratch.mit.edu/ https://www.makeblock.com/pages/mbot-robot-kit
Similar activities	Team work using different robots, such as Lego Mindstorms, Sphero or Braccio from Arduino

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Introduction to programming

Institution	Polytechnic Institute of Bragança - Portugal
Disciplina STEAM	Computer Science
IDD Student Context	College students with Autism Spectrum Disorder (ASD) Level 1 and Attention Deficit Hyperactivity Disorder (ADHD)
Resource used	Sphero SPRK+
Description of the step-by-step activity before the project	
1. Introduction to SPRK+ 2. Explore the Interface development environment 3. Explore the capacities of the SPRK+ robot 4. Propose a challenge based on the SPRK+ robot 5. Evaluate the work in progress of the proposed Challenge	

Description of the activity step by step (changes in red)	
1. Introduction to SPRK+ 2. Explore the Interface development environment 3. Explore the capacities of the SPRK+ robot 4. Classify the IDD into Taxonomy: Use the Taxonomy framework to identify cognitive challenges associated with student IDD. 5. Create the Profile for the Students: Develop profiles detailing its individual interests. 6. Search for Similar Activities: Identify different resources that can be applied for this context. 7. Define the Activity in the User Model: Document the activity, associating it with the students' educational plans. 8. Propose a challenge adequate fir the student based on the SPRK+ robot 9. Evaluate the work in progress of the proposed challenge	
Extra resources	https://scratch.mit.edu/
Similar activities	Using different robots, such as Lego Mindstorms and Mbot

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